European Child & Adolescent Psychiatry
https://doi.org/10.1007/s00787-026-03195-0

RESEARCH

Early identification of individual, parent and family related factors associated with different levels of youth care services

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Received: 23 February 2026 / Accepted: 10 September 2026
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Abstract

Intensive youth care (out-of-home care and repeated outpatient care) is often provided to children with complex and persistent difficulties and is associated with adverse later outcomes. In order to reduce the escalation of care needs by timely referring to lighter forms of youth care, it is essential to differentiate children according to their risk for these intensive types of youth care. The aim of this study is to examine whether individual, parental, and family-related factors are differentially associated with light and intensive forms of youth care. Register data of 15,116 children and their parents was retrieved from Statistics Netherlands. The use of youth care was divided into three ordered levels; none, light and intensive. Ordinal logistic regression analyses were used to assess the association between individual, parent and family related factors at age 0–4 and the use of youth care at age 5–8. Of all included children, 2,565 (17%) used youth care between age 5–8, of which 534 (21%) received intensive forms. Sex, migrant background, parental educational level, parental unemployment, and parental delinquency showed a differential association with the use of intensive forms of youth care. Girls and children with a Moroccan or non-Western background were less likely to receive intensive forms of youth care, while children from parents whose educational level is unknown, parents with delinquent behavior and unemployed parents were more likely to receive intensive forms of youth care, compared to not receiving youth care or receiving light forms. The findings of this study suggest that already early in life child and parent-factors are differentially associated with light and intensive forms of youth care. This could help professionals to identify high-risk children and families, and timely deploy targeted preventive interventions.

Keywords Risk factors · Youth care services · Children · Ordinal regression

Introduction

According to the United Nations Convention on the Rights of the Child, every child has the right to grow up in a supportive, protective, and caring environment that promotes their full potential [1]. More recent policy frameworks have reaffirmed this principle by emphasizing children's rights, the best interests of the child, and integrated child protection systems in contemporary practice [2, 3]. In the Netherlands, this perspective is reflected in the Youth Act, which regulates the organization of youth care for children and families who need additional support [4]. Youth care includes lighter forms of support, such as basic or specialized mental health care, or family coaching and parenting support, provided by community teams or specialized youth healthcare professionals. When these forms of care are insufficient to address complex or escalating concerns, more intensive forms of

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Published online: 18 September 2026

care, such as out-of-home care or repeated out-patient care, may be considered.

Although intensive forms of youth care are intended to safeguard child development in situations of serious risk, previous research shows that intensive forms of youth care can increase the negative impact on the child later in life. Children who were in out-of-home care reported an overall lower physical and mental health in adulthood and had an increased mortality risk, including a higher risk of suicide, compared to children who grew up in a parental household [5–8]. Children with prolonged or repeated outpatient specialist mental health contact tended to belong to a higher-risk group with poorer later mental health and broader adverse health outcomes [9–11]. However, these associations are difficult to interpret causally, as children placed in out-of-home care or children in need of repeated out-patient trajectories are more likely to have been exposed to pre-existing adversities, such as maltreatment, family instability, or socioeconomic disadvantage [12–14]. This highlights the importance of identifying early risk factors and providing timely and appropriate support.

A growing body of literature, including several systematic reviews, has identified several child, parental, and family-related factors associated with youth care use, such as socioeconomic disadvantage, single-parent households, young maternal age, parental mental health problems, unemployment or reliance on social assistance, and parental involvement with the justice system [15–19]. At the same time, youth care utilization is not determined solely by individual and family characteristics. System-level and contextual factors, including service availability, referral pathways, professional decision-making, and local policy arrangements also influence whether and what type of care children receive [20]. However, for early identification and support of children and families at risk, it is helpful to have insights in individual, parental and family characteristics that can differentiate between children with higher and lower risks for intensive forms of care.

Most existing literature on child, parental, and family-related factors associated with youth care use adopts a binary approach to care utilization, focusing on either light or intensive forms of care. As a consequence, it remains unclear whether early-life risk factors are similarly associated across levels of care, or whether risk factors differentially relate to more intensive forms of youth care.

In the Netherlands, and specifically in urban settings such as Rotterdam, a substantial number of children come into contact with intensive forms of youth care services in addition to lighter forms of youth care [21]. In an urban setting characterized by diversity like the city of Rotterdam, gaining insight into early-life risk factors of different intensity levels of youth care use is therefore highly relevant for both policy and practice.

The aim of this study is to examine whether individual, parental, and family-related factors at age 0–4 are differentially associated with light and intensive forms of youth care at age 5–8 in a large register-based cohort in Rotterdam, The Netherlands.

Methods

Study design and population

For this longitudinal study, pseudonymized individual-level register data from Statistics Netherlands (CBS) covering the years 2011–2021 were used. These registers include information on all individuals legally residing in the Netherlands and can be linked across domains and between family members. This data is available for scientific purposes under strict conditions.

The study population consisted of children born in 2011 or 2012 who could be linked to at least one parent in the Personal Records Database. Children were included if they (i) were not involved in any form of youth care at age 5, and (ii) resided in the Netherlands between ages 0 and 8 years, with at least one day of residence in the municipality of Rotterdam. The focus on Rotterdam reflects the implementation of an integrated preventive youth policy program aimed at promoting safer and healthier child development [22]. The final sample consisted of 15,116 children.

In this study, risk factors were assessed between age 0–4 years and the outcome was measured between age 5–8 years. By measuring exposures and outcomes at different time points within the same individuals, the study adopts a longitudinal design. Risk factors were selected based on earlier research into determinants of service use [16, 17, 19].

Outcome measure

The use of youth care services between age 5–8 is the outcome measure, and was divided into three levels, based on the intensity of the care (i.e., none, light and intensive). In The Netherlands, youth care services are offered based on trajectories, with a start and end date. Within a trajectory, multiple visits can take place. The outcome levels of youth care are described in Table 1. None refers to no use of youth care. Light refers to non-residential care, such as basic mental health care, specialized mental health care, or parenting support provided by community teams or specialized youth healthcare professionals, with no more than two light trajectories during the outcome period. Intensive refers to residential, institutional, or foster care, with or without

Table 1 Description of the three intensity levels of youth care

Level	Description	
1	None	No use of youth care.
2	Light	Non-residential care, such as basic mental health care, specialized mental health care, or parenting support provided by community teams or specialized youth healthcare professionals, and no more than two light trajectories in the outcome period.
3	Intensive	Residential, institutional or foster care, with or without involvement of youth protection and/or probation, or three or more light trajectories in the outcome period.

involvement of youth protection and/or probation, or three or more light trajectories during the outcome period. Three or more light trajectories in the outcome period were considered as intensive forms of care because of the duration of problems and higher need for treatment. The threshold of three or more light trajectories was selected as a pragmatic, operational indicator of repeated or persistent care use, rather than a clinically validated cutoff.

Child factors

Sex was determined at birth as boy or girl, whereby boys were the reference category. Birth weight was registered in percentiles corrected for sex and gestational age. These percentiles were rounded to deciles and then dived into four categories; unknown, decile 0–4, decile 5 and decile 6–10, whereby 5 was used as the reference category, as this represents the median birth weight. Migrant background, based on countries of birth of both the parents and the child, was categorized into Dutch, Antillean, Moroccan, Surinamese, Turkish, Central and Eastern Europe (i.e., Bulgaria, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovenia, Slovakia or Czech Republic), Western (i.e. the rest of Europe except Turkey, North America, Oceania, Indonesia or Japan) or non-Western (i.e., Africa, Latin America, Asia except Indonesia and Japan or Turkey) according to definitions of Statistics Netherlands. Dutch was used as the reference category. Relocation was defined as the number of times a child changed address, and divided into three categories; 0, once, or two or more, whereby 0 was used as the reference category.

Parent factors

Data on parental factors were obtained solely from the biological parent(s). Maternal age was defined as age of the mother when giving birth to the child and dichotomized into 25 years or younger and 26 years or older. Parental educational level was divided into four categories; unknown, low, middle and high, whereby the highest educational level from one of the two parents was used. If the educational level of both parents was unknown, they were categorized as unknown. High education level was used as the reference category. Based on registered health insurance costs for mental health care or medication, parental mental health was divided into none of the parents have mental health problems and one or both parent(s) have mental health problems, whereby no mental health problems was used as the reference category. Parental delinquent behavior was defined as the number of times a parent has been suspected of a crime. Although being suspected of a crime is not the same as convicted, nor proof of actual delinquent behavior, before a person is classified as a suspect there must be facts or circumstances where there is a reasonable suspicion of guilt of a criminal offense and for which prosecution took place. In addition, the suspected crime remains on the criminal record, even if the prosecutor decides not to pursue the case (dismissal) or if the judge acquits the person. If both parents were suspected of one or more crimes, the data of the parent with the highest number of suspected crimes was used. Delinquent behavior was categorized into; not suspected; once suspected; and two or more times suspected, whereby not suspected was the reference category. Parental employment status was defined as one or both parent(s) have received a social benefit because of unemployment and dichotomized into yes/no, based on the registered type of income of the parent(s), whereby no was used as reference category. Health insurance defaulter was defined as one or both parent(s) have health insurance payment arrears of at least 6 months and dichotomized into yes/no, whereby no was used as reference category.

Family factors

Number of parents was defined as the number of biological parents that are registered in the Personal Records Database, and dichotomized into one or two biological parents, whereby two was used as reference category. The number of children in the household was categorized into; one, two, and three or more, whereby one as used as reference category. Family situation was defined as the number of adults living in the household, whereby two adults was the reference category. This definition also included stepparents or other non-biologically related adults residing in the household. Rent allowance was defined as the household received rental housing benefit and dichotomized into yes/no, whereby no was the reference category.

Previous youth care use

Previous youth care use was defined as the number of times a child used youth care services between age 0–4 years,

and divided into three categories; 0, once, or two or more, whereby no use of youth care services was used as the reference category.

For all variables that can change over time, the highest value in the period 0–4 years was used. In order to limit model complexity, the highest value from either parent was used. Only birth weight and parental education level contained missing values, for which the category unknown was added.

Statistical analyses

Descriptive statistics were used to describe the study population. Ordinal logistic regression analyses were performed to examine the associations between child, parental and family factors and the use of youth care services categorized in three levels based on the intensity, no use = 1, use of light forms = 2, use of intensive forms = 3. One of the assumptions underlying ordinal logistic regression is the assumption of proportional odds; the effect of an independent variable is constant for each increase in the level of the response, resulting in one set of coefficients across all levels. However, this assumption is often violated in real practice. To test the proportional odds assumption for ordinal logistic regression, the Brant test was used [23]. If the proportional odds assumption was violated, the partial proportional odds model was used. The most important aspect of partial proportional odds models is that they allow independent variables to affect each level of the outcome variable differently, while other independent predictors adhere to the proportional odds assumption.

For the analysis, first a model without previous youth care use between 0 and 4 years was constructed. Prior service use is known to be a strong predictor of later service use [15]. Therefore, previous youth care use was added in a second model. This approach allows for the examination of both the total associations and the associations independent of prior service use. P-values below 0.05 were considered statistically significant. All analyses were performed with R version 4.0.5.

Results

A total of 15,116 children were included, of which 2,031 (13.4%) used light forms of youth care and 534 (3.5%) used intensive forms (Table 2). Of the total population, 51% were boys and 52% had a Dutch background. Only 3% of the total population used youth care services between age 0–4. Around half of the parents had a high educational level (47%), and most parents had no mental health problems (77%), no delinquent behavior (83%), and were employed (61%). Around two-thirds of the children lived in a two-adult household (66%), without rent allowance (68%). The results of the Brant test are presented in Supplementary Table 1. In both models 1 and 2, the risk-factors sex, Moroccan background, Non-Western background, unknown educational level of the parents, delinquent behavior of the parents and unemployment of the parents violated the proportional odds assumption and have differential coefficients for light and intensive forms of youth care. The other risk-factors followed the proportional odds assumption and have one odds ratio across all levels.

The results of the partial proportional odds model are presented in Table 3. In the first model, without adjusting for previous use of youth care, the variables sex, migrant background (only Moroccan and non-Western children), parental educational level (only unknown level), parental delinquent behavior and parental unemployment showed a significant differential association across levels of youth care. Compared to boys, girls were found to have a lower odds (OR = 0.67, 95%CI = 0.61; 0.73) for receiving any form of youth care compared to not receiving youth care, and a lower odds (0.54, 0.45; 0.65) for receiving intensive forms of youth care, compared to no and light forms. Compared to Dutch children, children from Moroccan (0.51, 0.43; 0.61) and non-Western background (0.72, 0.62; 0.84) were found to have a lower odds of receiving any form of youth care compared to not receiving youth care and a lower odds for receiving intensive forms of youth care compared to no and light forms of care (0.32, 0.22; 0.48 and 051, 0.37; 0.70, respectively). Compared to children from parents who had a high educational level, children from parents whose educational level was unknown had a non-significant higher odds (1.17, 0.93; 1.47) for receiving any form of youth care compared to not receiving youth care and a higher odds (1.83, 1.19; 2.82) for receiving intensive forms of youth care, compared to no or light forms. Compared to children from parents who were not suspected of delinquent behavior, children from parents who were suspected of delinquent behavior once had a non-significant higher odds (1.15, 1.00; 1.33) for receiving any form of youth care compared to not receiving youth care and a higher odds (1.61, 1.25; 2.06) for receiving intensive forms of youth care, compared to no or light forms. Compared to children from parents who were not suspected of delinquent behavior, children from parents who were suspected of two or more delinquent behaviors had a higher odds (1.27, 1.08; 1.49) for light and intensive forms of youth care compared to no youth care, and a higher odds (1.85, 1.44; 2.37) for intensive forms of youth care compared to no and light forms. Compared to children from parents who were not unemployed, children from parents

Table 2 Child, parent, and family factors at age 0–4 years for the total population and according to no, light and intensive forms of youth care

	Total	No youth care	Light forms of youth care	Intensive forms of youth care
	N (%)*	*N* (%)*	*N* (%)*	*N* (%)*
	15,116 (100)	12,551 (83.0)	2,031 (13.4)	534 (3.5)
Child factors				
Sex				
Boys	7,708 (51.0)	6,192 (49.3)	1,165 (57.4)	351 (65.7)
Girls	7,408 (49.0)	6,359 (50.7)	866 (42.6)	183 (34.3)
Birth weight				
Decile 5	4,682 (31.0)	3,862 (30.8)	649 (32.0)	171 (32.0)
Decile 0–4	2,941 (19.5)	2,381 (19.0)	413 (20.3)	147 (27.5)
Decile 6–10	6,824 (45.1)	5,748 (45.8)	881 (43.4)	195 (36.5)
Unknown	669 (4.4)	560 (4.5)	88 (4.3)	21 (3.9)
Migrant background				
Dutch	7,800 (51.6)	6,344 (50.5)	1,131 (55.7)	325 (60.9)
Antillean	674 (4.5)	496 (4.0)	137 (6.7)	41 (7.7)
Moroccan	1,562 (10.3)	1,360 (10.8)	173 (8.5)	29 (5.4)
Surinamese	889 (5.9)	728 (5.8)	119 (5.9)	42 (7.9)
Turkish	1,070 (7.1)	978 (7.8)	77 (3.8)	15 (2.8)
Central and Eastern European	354 (2.3)	301 (2.4)	41 (2.0)	12 (2.2)
Western	947 (6.3)	810 (6.5)	113 (5.6)	24 (4.5)
Non-Western	1,820 (12.0)	1,534 (12.2)	240 (11.8)	46 (8.6)
Relocation				
0	7,273 (48.1)	6,208 (49.5)	877 (43.2)	188 (35.2)
1	5,210 (34.5)	4,327 (34.5)	699 (34.4)	184 (34.5)
2+	2,633 (17.4)	2,016 (16.1)	455 (22.4)	162 (30.3)
Previous use of youth care				
0	14,614 (96.7)	12,294 (98.0)	1,872 (92.2)	448 (83.9)
1	383 (2.5)	206 (1.6)	116 (5.7)	61 (11.4)
2+	119 (0.8)	51 (0.4)	43 (2.1)	25 (4.7)
Parent factors				
Maternal age				
25 or younger	3,287 (21.7)	2,544 (20.3)	554 (27.3)	189 (35.4)
25 or older	11,829 (78.3)	10,007 (79.7)	1,477 (72.7)	345 (64.6)
Educational level				
High	7,105 (47.0)	6,137 (48.9)	810 (39.9)	158 (29.6)
Middle	5,311 (35.1)	4,213 (33.6)	846 (41.7)	252 (47.2)
Low	1,969 (13.0)	1,566 (12.5)	303 (14.9)	100 (18.7)
Unknown	731 (4.8)	635 (5.1)	72 (3.5)	24 (4.5)
Mental health problems				
No	11,689 (77.3)	10,011 (79.8)	1,375 (67.7)	303 (56.7)
Yes	3,427 (22.7)	2,540 (20.2)	656 (32.3)	231 (43.3)
Delinquent behavior				
0	12,554 (83.1)	10,610 (84.5)	1,598 (78.7)	346 (64.8)
1	1,454 (9.6)	1,145 (9.1)	222 (10.9)	87 (16.3)
2+	1,108 (7.3)	796 (6.3)	211 (10.4)	101 (18.9)
Employment status				
Employed	9,287 (61.4)	7,971 (63.5)	1,103 (54.3)	213 (39.9)
Unemployed	5,829 (38.6)	4,580 (36.5)	928 (45.7)	321 (60.1)
Health insurance defaulter				
No	12,438 (82.3)	10,562 (84.2)	1,533 (75.5)	343 (64.2)
Yes	2,678 (17.7)	1,989 (15.8)	498 (24.5)	191 (35.8)
Family factors				
Number of known biological parents				
2	13,783 (91.2)	11,557 (92.1)	1,781 (87.7)	445 (83.3)
1	1,333 (8.8)	994 (7.9)	250 (12.3)	89 (16.7)
Number of children in the family				

Table 2 (continued)

	Total	No youth care	Light forms of youth care	Intensive forms of youth care
	N (%)*	*N* (%)*	*N* (%)*	*N* (%)*
	15,116 (100)	12,551 (83.0)	2,031 (13.4)	534 (3.5)
1	3,501 (23.2)	2,815 (22.4)	540 (26.6)	146 (27.3)
2	7,518 (49.7)	6,296 (50.2)	970 (47.8)	252 (47.2)
3+	4,097 (27.1)	3,440 (27.4)	521 (25.7)	136 (25.5)
Family situation				
Two-adult	9,952 (65.8)	8,588 (68.4)	1,126 (55.4)	238 (44.6)
One-adult	5,164 (34.2)	3,963 (31.6)	905 (44.6)	296 (55.4)
Rent allowance				
No	10,260 (67.9)	8,794 (70.1)	1,216 (59.9)	250 (46.8)
Yes	4,856 (32.1)	3,757 (29.9)	815 (40.1)	284 (53.2)

* Due to rounding, percentages might not add up to 100.

who were unemployed were found to have a higher odds (1.26, 1.14; 1.40) for light and intensive forms of youth care compared to no youth care, and a higher odds (1.80, 1.48; 2.19) for intensive types of youth care compared to no and light forms. In model 2, after adjustment for previous use of youth care, the results remained comparable.

All other variables did not show a differential effect across levels of youth care, meaning that the association is constant for each increase in the level of youth care (i.e., the odds ratio for light and intensive forms of youth care vs. no youth care, and for intensive forms of youth care vs. no and light forms is the same). However, some of these variables showed a significant association. In model 1, before adjusting for previous youth care use, the variables migrant background (only Surinamese, Turkish, Central and Eastern European, and Western children), relocation (only 2 or more times), educational level (only low and middle), parental mental health problems, parental health insurance default, family situation and family rent allowance showed a significant association with the use of youth care. Some of these variables did not show any significant associations with use of youth care: birth weight, migrant background (only Antillean children), relocation (only once), maternal age, number of known biological parents, and number of children in the family. In model 2, after adjustment for previous use of youth care, the results remained comparable except for family situation and family rent allowance, as these were not significant anymore.

In model 2, the use of youth care services between 0 and 4 years showed non-differential significant associations with the use of youth care services between 5 and 8 years. Compared to children who did not have previous youth care, children who received light forms of youth care between age 0–4 had a higher odds (3.18, 2.58; 3.91) of receiving any level of youth care between age 5–8, and children who received intensive forms of youth care between age 0–4 had a higher odds (4.40, 3.09; 6.26) of receiving any level of youth care between age 5–8.

Discussion

This study examined individual, parental and family-related factors at age 0–4 and their association with different intensity levels of youth care for 5- to 8-year-olds in a registry-based database of 15,116 Dutch children. Sex, migrant background, parental education, parental delinquency and parental unemployment showed a differential association with the use of youth care. More specifically, girls and children with a Moroccan or non-Western background were less likely to receive intensive forms of youth care, while children from parents whose educational level is unknown, from parents with delinquent behavior and from unemployed parents were more likely to receive intensive forms of youth care. Migrant background, relocation, educational level, parental mental health problems, parental health insurance default, family situation and family rent allowance showed significant associations with the use of youth care, but not differential for intensive forms of youth care. Previous use of youth care services (i.e. between age 0–4) was strongly associated with use of youth care at a later age.

All studies on determinants of intensive types of care, such as out-of-home care, lead back to the paper of Bebbington and Miles in 1989 [24]. They found that having a single parent was the greatest risk factor for receiving this type of care. Several studies did a similar analysis whereby poverty and social disadvantage increased the risk of out-of-home care [16, 17, 25]. This is in line with findings from our study, as lower education, unemployment, rent allowance, health insurance defaulter and one adult family were all associated with receiving intensive types of youth care. Although it should be noted that in our study these determinants were similarly associated with light and intensive forms of youth care combined, only unemployment showed a differential effect for intensive forms.

In our study, children from parents with delinquent behavior and children from unemployed parents were more likely to receive intensive forms of youth care compared to

Table 3 Partial proportional odds model for the use of youth care

	Model 1		Model 2	
	Light and intensive forms of youth care vs. no youth care	Intensive forms of youth care vs. no and light forms	Light and intensive forms of youth care vs. no youth care	Intensive forms of youth care vs. no and light forms
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Child factors				
Sex				
Boys (ref.)				
Girls	**0.67 (0.61; 0.73)**	**0.54 (0.45; 0.65)**	**0.67 (0.62; 0.74)**	**0.55 (0.46; 0.66)**
Birth weight				
Decile 5 (ref.)				
Decile 0–4	1.05 (0.93; 1.18)	1.05 (0.93; 1.18)	1.03 (0.91; 1.17)	1.03 (0.91; 1.17)
Decile 6–10	0.92 (0.83; 1.02)	0.92 (0.83; 1.02)	0.91 (0.82; 1.01)	0.91 (0.82; 1.01)
Unknown	0.96 (0.77; 1.21)	0.96 (0.77; 1.21)	0.97 (0.77; 1.21)	0.97 (0.77; 1.21)
Migrant background				
Dutch (ref.)				
Antillean	1.04 (0.86; 1.27)	1.04 (0.86; 1.27)	1.03 (0.85; 1.26)	1.03 (0.85; 1.26)
Moroccan	**0.51 (0.43; 0.61)**	**0.32 (0.22; 0.48)**	**0.52 (0.44; 0.63)**	**0.34 (0.23; 0.50)**
Surinamese	**0.81 (0.67; 0.98)**	**0.81 (0.67; 0.98)**	0.83 (0.69; 1.00)	0.83 (0.69; 1.00)
Turkish	**0.35 (0.28; 0.44)**	**0.35 (0.28; 0.44)**	**0.36 (0.29; 0.46)**	**0.36 (0.29; 0.46)**
Central and Eastern European	**0.69 (0.51; 0.94)**	**0.69 (0.51; 0.94)**	**0.69 (0.51; 0.93)**	**0.69 (0.51; 0.93)**
Western	**0.74 (0.61; 0.90)**	**0.74 (0.61; 0.90)**	**0.74 (0.61; 0.90)**	**0.74 (0.61; 0.90)**
Non-Western	**0.72 (0.62; 0.84)**	**0.51 (0.37; 0.70)**	**0.71 (0.62; 0.83)**	**0.50 (0.37; 0.69)**
Relocation				
0 (ref.)				
1	1.05 (0.95; 1.16)	1.05 (0.95; 1.16)	1.05 (0.95; 1.17)	1.05 (0.95; 1.17)
2+	**1.23 (1.09; 1.40)**	**1.23 (1.09; 1.40)**	**1.19 (1.05; 1.35)**	**1.19 (1.05; 1.35)**
Parent factors				
Maternal age				
25 or younger (ref.)				
25 or older	1.08 (0.97; 1.21)	1.08 (0.97; 1.21)	1.09 (0.98; 1.23)	1.09 (0.98; 1.23)
Educational level				
High (ref.)				
Middle	**1.35 (1.20; 1.51)**	**1.35 (1.20; 1.51)**	**1.33 (1.19; 1.49)**	**1.33 (1.19; 1.49)**
Low	**1.53 (1.31; 1.78)**	**1.53 (1.31; 1.78)**	**1.44 (1.24; 1.68)**	**1.44 (1.24; 1.68)**
Unknown	1.17 (0.93; 1.47)	**1.83 (1.19; 2.82)**	1.16 (0.92; 1.47)	**1.84 (1.19; 2.83)**
Mental health problems				
No (ref.)				
Yes	**1.85 (1.68; 2.04)**	**1.85 (1.68; 2.04)**	**1.77 (1.61; 1.96)**	**1.77 (1.61; 1.96)**
Delinquent behavior				
0 (ref.)				
1	1.15 (1.00; 1.33)	**1.61 (1.25; 2.06)**	1.11 (0.96; 1.28)	**1.54 (1.20; 1.98)**
2+	**1.27 (1.08; 1.49)**	**1.85 (1.44; 2.37)**	**1.20 (1.02; 1.42)**	**1.70 (1.32; 2.18)**
Employment status				
Employed (ref.)				
Unemployed	**1.26 (1.14; 1.40)**	**1.80 (1.48; 2.19)**	**1.24 (1.12; 1.38)**	**1.73 (1.43; 2.11)**
Health insurance defaulter				
No (ref.)				
Yes	**1.17 (1.03; 1.32)**	**1.17 (1.03; 1.32)**	**1.14 (1.01; 1.29)**	**1.14 (1.01; 1.29)**
Family factors				
Number of known biological parents				
2 (ref.)				
1	0.99 (0.85; 1.16)	0.99 (0.85; 1.16)	0.98 (0.83; 1.14)	0.98 (0.83; 1.14)
No. of children in the family				
1 (ref.)				

Table 3 (continued)

	Model 1		Model 2	
	Light and intensive forms of youth care vs. no youth care	Intensive forms of youth care vs. no and light forms	Light and intensive forms of youth care vs. no youth care	Intensive forms of youth care vs. no and light forms
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
2	0.95 (0.85; 1.06)	0.95 (0.85; 1.06)	0.93 (0.84; 1.04)	0.93 (0.84; 1.04)
3+	0.92 (0.81; 1.05)	0.92 (0.81; 1.05)	0.90 (0.79; 1.02)	0.90 (0.79; 1.02)
Family situation				
Two-adult (ref.)				
One-adult	**1.14 (1.01; 1.28)**	**1.14 (1.01; 1.28)**	1.12 (0.99; 1.26)	1.12 (0.99; 1.26)
Rent allowance				
No (ref.)				
Yes	**1.11 (0.98; 1.26)**	**1.11 (0.98; 1.26)**	1.09 (0.96; 1.24)	1.09 (0.96; 1.24)
Previous use of youth care				
None (ref.)				
Light			**3.18 (2.58; 3.91)**	**3.18 (2.58; 3.91)**
Intensive			**4.40 (3.09; 6.26)**	**4.40 (3.09; 6.26)**

Bold indicates significant at 0.05 level

the combined category of no and light forms of care. This finding is comparable to another Dutch study that assessed the risk of child welfare involvement, in which parental delinquency and parental unemployment were found to be risk factors for child welfare involvement [19].

A recent systematic review on determinants of child and adolescent mental health care use, found inconsistent evidence on the association between sex and mental health care use [15], while our study found a differential association between sex and the use of youth care, whereby girls are less likely to receive intensive forms of youth care. This could be explained by age, as some studies reported an interaction between sex and time, all suggesting that boys use more care during early childhood and girls during adolescence [26–28]. Since our outcome period is 5–8 years, corresponding more to early childhood than adolescence, this could explain our finding of girls to be less likely to receive youth care.

Children with a migrant background were less likely to receive youth care in our study, while the previous mentioned review by Eijgermans et al. [15] found inconsistent evidence on this determinant [15]. Another study on determinants of psychosocial care use of 9-year-old children, that was also conducted among Dutch children living in Rotterdam, showed that psychosocial care use was less likely for girls and children with a Moroccan/Turkish or other non-Western background [29], which is comparable to our findings. Furthermore, this study showed that this association was independent of problem behavior. A possible explanation could be that non-Western parents perceive more barriers in accessing psychosocial care, such as stigma or language related barriers [30].

In a systematic review on parent and family determinants, parent psychopathology and single-parent household were found to be associated with service use by young people, which is comparable to the findings of our study [18]. Parent psychopathology and single-parent household can be characterized as situations whereby the parental availability to the child is reduced, which could lead to children and their parents seeking professional care when it is less available from the parents.

Relocation was found to be associated with the use of youth care in our study, especially when the child was relocated 2 or more times before the age of 4. This is in line with findings from a study on the effects of relocation during early childhood, which found that increased residential mobility in early life, was associated with increased internalizing behavior problems in children at age 9 years [31].

Findings from our study indicate that previous use of youth care services between age 0–4 was associated with use of youth care at a later age. Children who engage with mental health services at a young age are more likely to continue needing such services as they grow older [32]. This continuity can be influenced by various factors, including the severity of the initial condition, the presence of ongoing or unresolved issues, and the cumulative effects of adverse childhood experiences like household dysfunction or psychological maltreatment [33]. This highlights the importance of early intervention and sustained support to address the ongoing mental health needs of children as they grow older. On the other hand, this continuity could also indicate that the provided care does not have the desired effect, and care is still needed at a later age.

Strengths and limitations

To our knowledge, this is the first study that used the partial proportional odds model to differentiate between determinants for light and intensive forms of youth care. Furthermore, this study used a large register based longitudinal cohort of more than 15,000 children. However, some limitations should be taken into account. First, because we used a register-based cohort, we do not have information on child behavior and/or child mental health. In essence, the reason for the use of youth care is unknown. Second, the quality of register data is usually unknown, because it was not collected for research purposes. However, our register data are derived from Statistics Netherlands, a governmental organization, of which sufficient quality can be assumed. Third, we combined repeated outpatient care and out-of-home care in the intensive care category. Both types of intensive care may reflect different underlying processes and combining these may therefore obscure potentially meaningful distinctions. Fourth, we were not able to impute the missing data for the variables birth weight and parental education. These missings did not occur at random, but they were mainly seen in children who were born outside the Netherlands (for birth weight) and/or when the child has non-Dutch parents (for parental education). Therefore, we decided to take these missings as a separate category for both variables. Fifth, for the parental variables, the highest value from either biological parent was used. This approach may obscure potentially meaningful differences between families where only one parent has a given risk factor and those where both parents share the same risk factor. Furthermore, data solely derived from the biological parent(s) may not fully capture the complexities of family dynamics, particularly in households with step-parents or non-biological parental figures. Lastly, this study was performed within a cohort of children living in an urban area in The Netherlands, which may cause a lower external validity for other regions or countries due to regional characteristics and differences in care systems. Therefore, the results may not fully reflect the experiences of children in other regions of the Netherlands, particularly those in rural or less diverse areas. Further, care systems and professional decision-making processes vary widely across countries, which may influence how the identified risk factors relate to youth care use. However, the individual, parental and family determinants that were examined in this study are quite common across different regions and countries.

Future research is needed in which register data is linked to health records and/or questionnaire data to gain more insight in the role of behavioral and mental health problems in relation to the use of different forms of youth care. Information on the reason for the use of youth care could also help to get a better understanding of the relationship between care use at an early age and care use and a later age. Furthermore, future research could focus on the difference in combinations of risk factors, or risk profiles, that are present in children attending light forms of youth care versus intensive forms. Additionally, future research could examine the effect of single-parent versus two-parent exposure to risk factors, rather than relying solely on the highest observed value from either parent. This distinction would allow for a better understanding of how the distribution of risk factors within a family influences the use of youth care.

The findings of this study suggest that already early in life individual, parent and family characteristics might play an important role in the development of problems for which youth care is needed at a later age. Knowing which characteristics are linked to the use of youth care, could facilitate early identification of children and families with an increased risk of future need of youth care. Furthermore, if these children and families are identified at an early stage, intervention and prevention of escalation of problems is more promising when performed as early as possible. In this context, family support programs targeting families exhibiting these risk factors could be particularly beneficial. By offering early support to families facing challenges such as socioeconomic disadvantage, parental mental health issues, or unstable family structures, such programs can help mitigate the risk of future youth care involvement. These interventions could help reduce the escalation of care needs to more intensive levels, thereby promoting family resilience, which is crucial for long-term positive outcomes for children.

Conclusion

We found individual and parental risk factors between age 0–4 that are differentially associated with the use of youth care services at age 5–8. Girls and children with a Moroccan or non-Western background were less likely to receive intensive forms of youth care, while children from parents whose educational level is unknown, from parents with delinquent behavior, and from unemployed parents were more likely to receive intensive forms of youth care. Migrant background, relocation, educational level, parental mental health problems, parental health insurance default, family situation and family rent allowance showed significant associations with the use of youth care, but not differential for intensive forms of youth care. Previous use of youth care was strongly associated with the use of youth care at a later age. This knowledge could help professionals to identify high-risk children and families, and timely deploy targeted preventive interventions.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s00787-026-03195-0.

Acknowledgements The authors would like to thank Tos Sambo for his support in performing the statistical analysis.

Author contributions HDS, DSW, TB. and WJ contributed to the study concept and design. JA, MB, and SV prepared and analyzed the data. The data analysis was supervised by TB and WJ. The first draft of the manuscript was written by SV. All authors contributed to the interpretation of data and critically reviewed the manuscript.

Funding No funding was received for conducting this study.

Data availability Statistics Netherlands is the owner of the registration data. Request for access can be directed at Statistics Netherlands (http://www.cbs.nl/microdata).

Declarations

Ethics approval This study was approved by the Erasmus Medical Centre Ethics Committee (ref. no. MEC-2021-0181).

Competing interests The authors declare no competing interests.

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