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HEALTH ECONOMICS

Association of a child's mental disorder with parental income and employment: analysis of nationwide register-based cohorts in Finland and Denmark

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ABSTRACT

Background The onset of a severe physical illness of a child has been associated with earnings and employment losses among parents, but less is known in the context of children's mental disorders.

Objectives We estimated parental income and employment trajectories associated with a child's mental disorder diagnosis in nationwide register-based cohorts from Finland and Denmark.

Methods All parents whose child was diagnosed with a mental disorder (F00–F99 in ICD-10) at ages 1–25 in Finland and in Denmark during 1994–2019 were matched 1:1 to parents with a child without a mental disorder on psychiatric and sociodemographic characteristics. Generalised estimating equations were used to estimate the associations of a child's mental disorder with parental annual income and employment outcomes from 5 years before to 5 years after the child's diagnosis.

Findings In 1994–2019, over one million parents in Finland and Denmark had at least one child diagnosed with a mental disorder at age 1–25. Parents exposed to a child's mental disorder had consistently lower income and were more often unemployed compared with the matched unexposed parents, already 5 years before the child's diagnosis. These differences became slightly larger over time, especially in analyses on strata involving parents whose child was diagnosed at a younger age. However, there was no consistent evidence of a change in parental annual income or employment around the time of their child's diagnosis.

Conclusions Our analysis shows that even in countries with strong welfare systems, a younger child's mental disorder may contribute to widening socioeconomic inequity among families. However, the inequity in children's mental health appears to primarily exist prior to, rather than in response to, a child's mental disorder.

Clinical implications Clinical and policy efforts should prioritise addressing pre-existing socioeconomic vulnerabilities for effective primary prevention of children's mental disorders.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Previous studies have shown earnings and employment losses among parents of a child diagnosed with a severe physical illness, but less is known in the context of mental disorders.

WHAT THIS STUDY ADDS

⇒ In this analysis of Finnish and Danish nationwide register-based cohorts, a child's mental disorder was consistently associated with lower annual income and a lower annual probability of employment among parents, already several years before the child's diagnosis.

⇒ There was no consistent evidence of a change in parental annual income or employment around the time of their child's diagnosis.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ While a child's mental disorder can disrupt family life, it does not necessarily translate into immediate socioeconomic consequences for parents in welfare states.

⇒ Further studies are needed in populations with different welfare systems and less universal access to healthcare.

BACKGROUND

A child's mental disorder may disrupt family life, interfere with family roles and dynamics and increase vulnerability to psychological distress in all family members.[1–5] For parents, adapting to a child's mental disorder may not only involve psychological strain but also changes in financial situation or position in the labour market. Taking care of a child with a mental disorder may limit parents' capacity to engage in work or find and maintain full-time employment. On the other hand, in welfare states, social welfare mechanisms available to parents (eg, unemployment benefits, child care allowance) may compensate for economic hardships due to a child's mental disorder.[6 7]

While the onset of a severe physical illness of a child has been linked with labour market losses, that is, a temporary decline in income and employment among parents,[8–11] much less is known in the context of mental disorders. Previous studies report lower income and employment outcomes among parents exposed to a child's mental or

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neurodevelopmental disorder,[12–18] but most focus on only a limited set of disorders in children within a wide age range, are based on cross-sectional data or small samples, or rely on self-reported measures of socioeconomic outcomes, which are susceptible to response bias. In a Swedish register study, parents of individuals diagnosed with schizophrenia were more likely to be unemployed and receive more family-related social welfare benefits than parents of healthy controls, while no differences in low-income or disability pension status were observed.[19] Due to a lack of information on parental income and employment status prior to their child's diagnosis, it is yet unclear whether these findings merely reflect the socioeconomic gradient in children's mental disorders,[20 21] rather than a change in parents' financial or labour market situation in response to the child's disorder. Furthermore, the association between a child's mental disorder and parental socioeconomic outcomes may vary according to several factors, such as the child's specific disorder, or age at the disorder onset.

OBJECTIVE

We conducted a matched cohort study in Finnish and Danish nationwide administrative and health registers to provide comprehensive estimates of the socioeconomic trajectories among parents of a child with a mental disorder compared with parents of children without mental disorders. We followed the parents' annual income and employment before and after a child's mental disorder diagnosis classified under the major diagnostic categories included in the International Classification of Diseases, 10th revision (ICD-10). We hypothesised that parents of a child with a mental disorder experience a reduction in annual income and employment at the time of their child's diagnosis. Additionally, we evaluated whether the associations of a child's mental disorder with parental income and employment outcomes differ depending on the child's age at diagnosis. Interactive visualisations of the results are available at https://mentalnet.shinyapps.io/app_ses/.

METHODS

Study design and data sources

This study was a pair-matched register-based cohort study using population-based administrative and health records of eligible individuals and their children in Finland and in Denmark. The details of the registers used in the present study are provided in online supplemental emethods. The registers were linked using unique personal identity numbers issued to all Finnish and Danish residents. The study was approved by the Ethics Committee of the Finnish Institute for Health and Welfare (THL/184/6.02.01/2023§933) and registered with the Danish Data Protection Agency at Aarhus University (No 2016-051-000001-2587). Data were linked with the approval of Statistics Finland (TK-53-1696-16), Statistics Denmark, the Finnish Institute of Health and Welfare and the Danish Health Data Authority. According to Finnish and Danish law, informed consent is not required for register-based studies.

Study population and exposure

The analyses were performed separately in Finland and in Denmark. All individuals living in Finland and Denmark whose child was diagnosed with a mental disorder in outpatient or inpatient secondary healthcare at age 1–25 between 1 January 1994 and 31 December 2019 were each matched to one control with a child without a mental disorder diagnosis and without siblings with a mental disorder diagnosis. Exposure to a child's mental disorder was defined using diagnostic codes included in the subchapter F of the ICD-10 (F00–F99) (online supplemental etable 1). The first diagnosis among children of each family (ie, same two parents) was considered (for details, see online supplemental emethods).

In addition to any mental disorder, we examined exposure to specific disorders of the child. These disorders were classified into nine higher order categories of mental disorders primarily based on the subchapter F categories of the ICD-10 (eg, substance use disorders (F10–F19), psychotic disorders (F20–F29), mood disorders (F30–F39), etc) (online supplemental etable 1). Exposure to a child's specific mental disorder was restricted to diagnoses recorded in outpatient or inpatient secondary healthcare when the child was considered sufficiently old to receive a diagnosis, that is, 5–25 for ICD-10 codes F10–F60, and 1–25 years old for ICD-10 codes F70–F98. Each individual whose child was diagnosed with a given mental disorder in Finland or in Denmark was matched to one control with a child without a diagnosis from the same diagnostic category and without siblings with a diagnosis from the same category.

Parents exposed to a mental disorder of a child were matched to unexposed parents on the child's birth year and birth month (±2 months), the child's place of birth categorised into major geographical regions (four regions in Finland, five regions in Denmark; Finnish data from year 1987 were used if the child was born before 1987), both parents' history of a mental disorder (any disorder/no disorder) prior to their child's diagnosis and both parents' educational attainment (primary/secondary/tertiary) at the time of their child's birth (Finnish data from year 1987 was used if the child was born before 1987, Danish data from year 1985 were used if the child was born before 1985). Women and men were matched separately.

Outcomes

The outcomes were the individuals' records of annual income and employment during a period that started 5 years before and ended 5 years after their child's diagnosis. For the unexposed individuals, the diagnosis date of the matched parent's child was used as the reference time point. We used records of annual earnings (in euros (EUR) when using Finnish data and Danish krone (DKK) when using Danish data), annual total disposable income (EUR/DKK), annual amount of received social welfare benefits, such as unemployment benefits, disability pension or child benefits (EUR/DKK) as well as annual records of employment status (yes/no) (for details, see online supplemental emethods). All income and employment measures were recorded on the last day of each year. Earnings, disposable income and social welfare benefits were adjusted for inflation using the Finnish and Danish consumer price index, respectively, with 2015 as the base year. Earnings and disposable income were top-coded at the 99th percentile. To facilitate reporting of the results, DKK was converted to EUR using the average exchange rate for 2015 (1 DKK=0.1341 EUR).

Statistical analysis

Generalised estimating equations (GEE) were used to estimate the associations of a child's mental disorder with parental annual income and employment status during the observation period from 5 years before to 5 years after the child's diagnosis. All income and employment measures were analysed in separate models. We conducted Poisson GEE models with a log link function for annual earnings, disposable income and social welfare benefits, and binomial GEE models with a logit link for

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Table 1 Descriptive characteristics of the Finnish and Danish cohorts

	Finland					Denmark			
Characteristic	Men unexposed	Men exposed	Women unexposed	Women exposed		Men unexposed	Men exposed	Women unexposed	Women exposed
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
N	331 385	331 385	331 385	331 385		215 511	215 511	215 511	215 511
Sex of child, number (%)									
Female	162 029 (49%)	152 665 (46%)	162 029 (49%)	152 665 (46%)		103 930 (48%)	109 255 (51%)	103 930 (48%)	109 255 (51%)
Male	169 356 (51%)	178 720 (54%)	169 356 (51%)	178 720 (54%)		111 581 (52%)	106 256 (49%)	111 581 (52%)	106 256 (49%)
Child's age at diagnosis, years		13.26 (6.77)		13.26 (6.77)			15.39 (5.98)		15.39 (5.98)
Parent's age	45.28 (8.87)	45.11 (8.88)	42.85 (8.43)	42.52 (8.44)		47.32 (7.90)	47.05 (8.10)	44.50 (7.23)	44.19 (7.37)
Earnings*	35.62 (27.13)	33.07 (26.65)	23.62 (17.88)	21.59 (17.97)		57.98 (36.56)	55.15 (33.43)	44.31 (19.02)	43.03 (17.99)
Disposable income*	29.68 (18.02)	28.20 (17.13)	23.79 (10.49)	23.29 (10.25)		37.18 (21.14)	35.28 (19.41)	31.17 (12.21)	30.23 (11.54)
Social welfare benefits*	3.60 (7.51)	4.19 (7.76)	6.30 (7.00)	7.40 (7.55)		4.28 (8.46)	5.06 (9.02)	8.29 (10.13)	9.9 (10.95)
Employed, number (%)									
No	62 038 (20%)	73 635 (23%)	71 669 (22%)	89 915 (28%)		53 870 (26%)	58 405 (29%)	61 099 (29%)	71 119 (34%)
Yes	253 890 (80%)	241 287 (77%)	252 372 (78%)	235 836 (72%)		150 724 (74%)	145 874 (71%)	148 170 (71%)	139 640 (66%)
Matching criteria									
Child's year of birth	1994.18 (9.99)	1994.18 (9.99)	1994.18 (9.99)	1994.18 (9.99)		1993.32 (9.53)	1993.32 (9.53)	1993.32 (9.53)	1993.32 (9.53)
Child's birth region, number (%)									
Helsinki-Uusimaa	103 931 (31%)	103 931 (31%)	103 931 (31%)	103 931 (31%)	Capital city	67 535 (31%)	67 535 (31%)	67 535 (31%)	67 535 (31%)
North & East Finland	84 223 (25%)	84 223 (25%)	84 223 (25%)	84 223 (25%)	Central Denmark	48 112 (22%)	48 112 (22%)	48 112 (22%)	48 112 (22%)
South Finland	71 141 (21%)	71 141 (21%)	71 141 (21%)	71 141 (21%)	North Jutland	18 402 (8.5%)	18 402 (8.5%)	18 402 (8.5%)	18 402 (8.5%)
West Finland	72 090 (22%)	72 090 (22%)	72 090 (22%)	72 090 (22%)	Southern Denmark	50 901 (24%)	50 901 (24%)	50 901 (24%)	50 901 (24%)
					Zealand	30 561 (14%)	30 561 (14%)	30 561 (14%)	30 561 (14%)
Education, number (%)									
Lower secondary or less	96 110 (29%)	96 110 (29%)	85 949 (26%)	85 949 (26%)		71 080 (33%)	71 080 (33%)	84 068 (39%)	84 068 (39%)
Upper secondary	152 758 (46%)	152 758 (46%)	144 202 (44%)	144 202 (44%)		111 478 (52%)	111 478 (52%)	89 314 (41%)	89 314 (41%)
Post-secondary or tertiary	82 517 (25%)	82 517 (25%)	101 234 (31%)	101 234 (31%)		32 953 (15%)	32 953 (15%)	42 129 (20%)	42 129 (20%)
Other parent's education, number (%)									
Lower secondary or less	85 949 (26%)	85 949 (26%)	96 110 (29%)	96 110 (29%)		84 068 (39%)	84 068 (39%)	71 080 (33%)	71 080 (33%)
Upper secondary	144 202 (44%)	144 202 (44%)	152 758 (46%)	152 758 (46%)		89 314 (41%)	89 314 (41%)	111 478 (52%)	111 478 (52%)
Post-secondary or tertiary	101 234 (31%)	101 234 (31%)	82 517 (25%)	82 517 (25%)		42 129 (20%)	42 129 (20%)	32 953 (15%)	32 953 (15%)
Prior mental disorder, number (%)									
No	276 449 (83%)	276 449 (83%)	273 499 (83%)	273 499 (83%)		189 303 (88%)	189 303 (88%)	179 516 (83%)	179 516 (83%)
Yes	54 936 (17%)	54 936 (17%)	57 886 (17%)	57 886 (17%)		26 208 (12%)	26 208 (12%)	35 995 (17%)	35 995 (17%)
Other parent's prior mental disorder, number (%)									
No	273 499 (83%)	273 499 (83%)	276 449 (83%)	276 449 (83%)		179 516 (83%)	179 516 (83%)	189 303 (88%)	189 303 (88%)
Yes	57 886 (17%)	57 886 (17%)	54 936 (17%)	54 936 (17%)		35 995 (17%)	35 995 (17%)	26 208 (12%)	26 208 (12%)

Based on analyses including exposure to any mental disorder (F00–F99) of a child. Values are means (SD) unless otherwise noted.
*Thousand euros (€).

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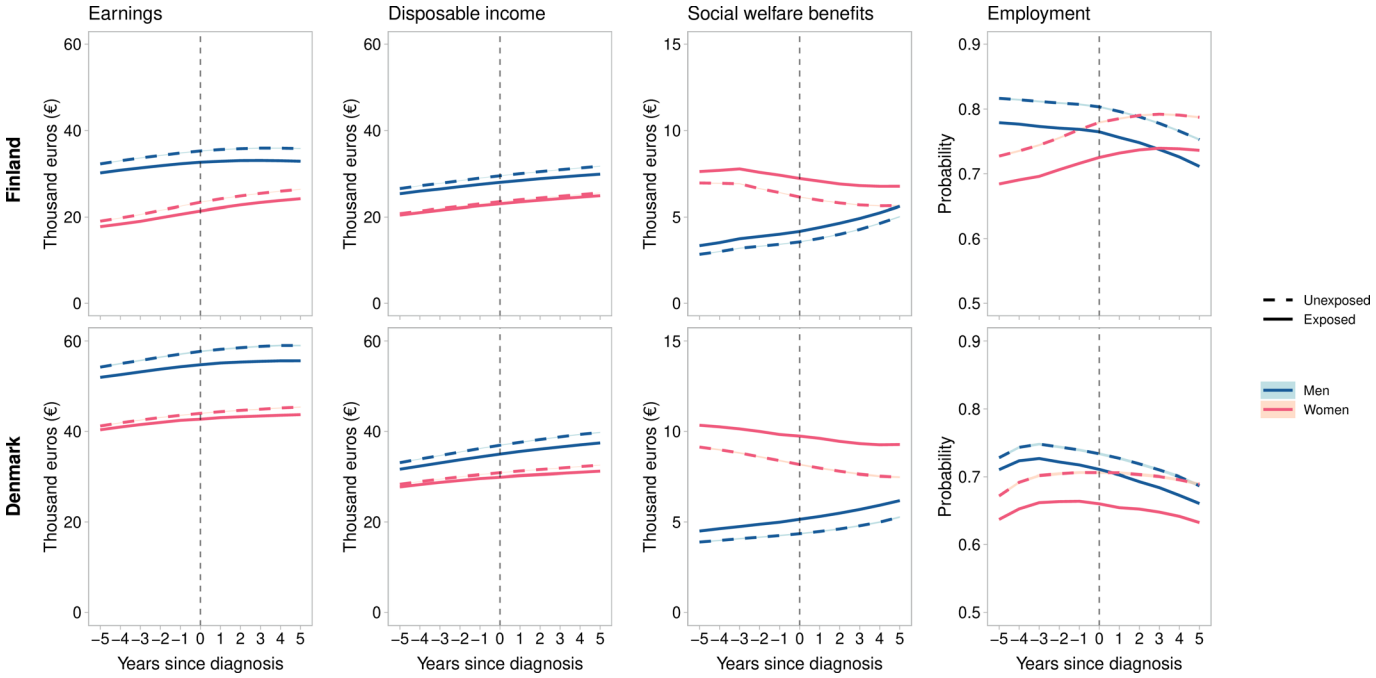

Figure 1 Marginal predictions of annual income and employment trajectories among parents exposed to child's mental disorder and unexposed parents in Finland and Denmark. Shaded areas represent the 95% CIs.

employment status. All GEE models assumed an exchangeable correlation structure, and robust SEs were used to allow for model misspecification. We used all available data on parental income and employment outcomes, that is, individuals contributed data in the analysis if both the exposed individual and the matched control had non-missing outcome data from at least 1 year during the observation period. Women's and men's income and employment measures were analysed in separate models.

In addition, we repeated all analyses stratified by the child's age at diagnosis (5–9 years, 10–14 years, 15–19 years, 20–25 years for F10–F60, and 1–4 years, 5–9 years, 10–14 years, 15–19 years, 20–25 years for F70–F90 and F00–F99; categories were collapsed if there were too few diagnoses within a stratum). Statistical analyses were conducted in Stata V.17 and R 4.2.2/4.4.1 in Finland, and Stata V.18 and R V.4.4.1 in Denmark.

FINDINGS

Descriptive characteristics of parents exposed to any mental disorder of a child and the unexposed parents in the year of the affected child's diagnosis are shown in table 1. Between 1 January 1994 and 31 December 2019, 662 770 individuals (331 385 women and 331 385 men) in Finland and 431 022 individuals (215 511 women and 215 511 men) in Denmark had at least one child diagnosed with a mental disorder at age 1–25. The most common diagnoses among children were anxiety disorders, followed by mood disorders and childhood-onset behavioural and emotional disorders. The child's average age at diagnosis was 13.3 (SD, 6.8) in Finland and 15.4 (SD, 6.0) in Denmark. The characteristics of parents included in each disorder-specific analysis are reported in online supplemental etables 2–10. Average and total amount of follow-up years during the observation period in each analysis are reported in online supplemental etable 11.

Figure 1 shows marginal predictions for the income and employment outcomes among parents exposed to any mental disorder of a child and the unexposed matched parents in Finland and in Denmark (for exact values, see online supplemental etable 12). Across both women and men, exposure to a child's mental disorder was consistently associated with lower annual earnings, lower annual disposable income, a greater annual amount of received social welfare benefits and a lower annual probability of employment throughout the observation period. Similar findings were consistently observed when examining exposure to each specific disorder of a child, except for eating disorders; during the observation period, the differences in income and employment between parents exposed to a child's eating disorder and the unexposed parents were smaller and less consistent, and a child's eating disorder was associated with greater annual earnings and disposable income among parents both in Finland and Denmark (figure 2, online supplemental efigures 1–3, etables 13–21).

Across both women and men, the differences in income and employment between parents exposed to any mental disorder of a child and the unexposed parents remained relatively stable throughout the observation period. Based on marginal predictions, women whose child was diagnosed with a mental disorder earned 7% less than the unexposed women 5 years before and 8% less 5 years after the child's diagnosis in Finland. In Denmark, they earned 2% and 4% less, respectively (figure 1, online supplemental etable 12). There was no evidence of an immediate change in any of the outcomes among the exposed parents at the time of their child's diagnosis. The results from the disorder-specific analyses were similar; the income and employment trajectories diverged slightly during the observation period between exposed and unexposed parents, but there was no evidence of a change at the time of the child's diagnosis (figure 2, online supplemental efigures 1–3, etables 13–21).

In analyses stratified by the child's age at diagnosis, the differences in earnings, social welfare benefits, employment and, to a lesser extent, disposable income became larger during the period of observation between parents exposed to a younger child's mental disorder and the matched unexposed parents. In contrast, this trend levelled off when the child was diagnosed in late adolescence or early adulthood. For instance, based on

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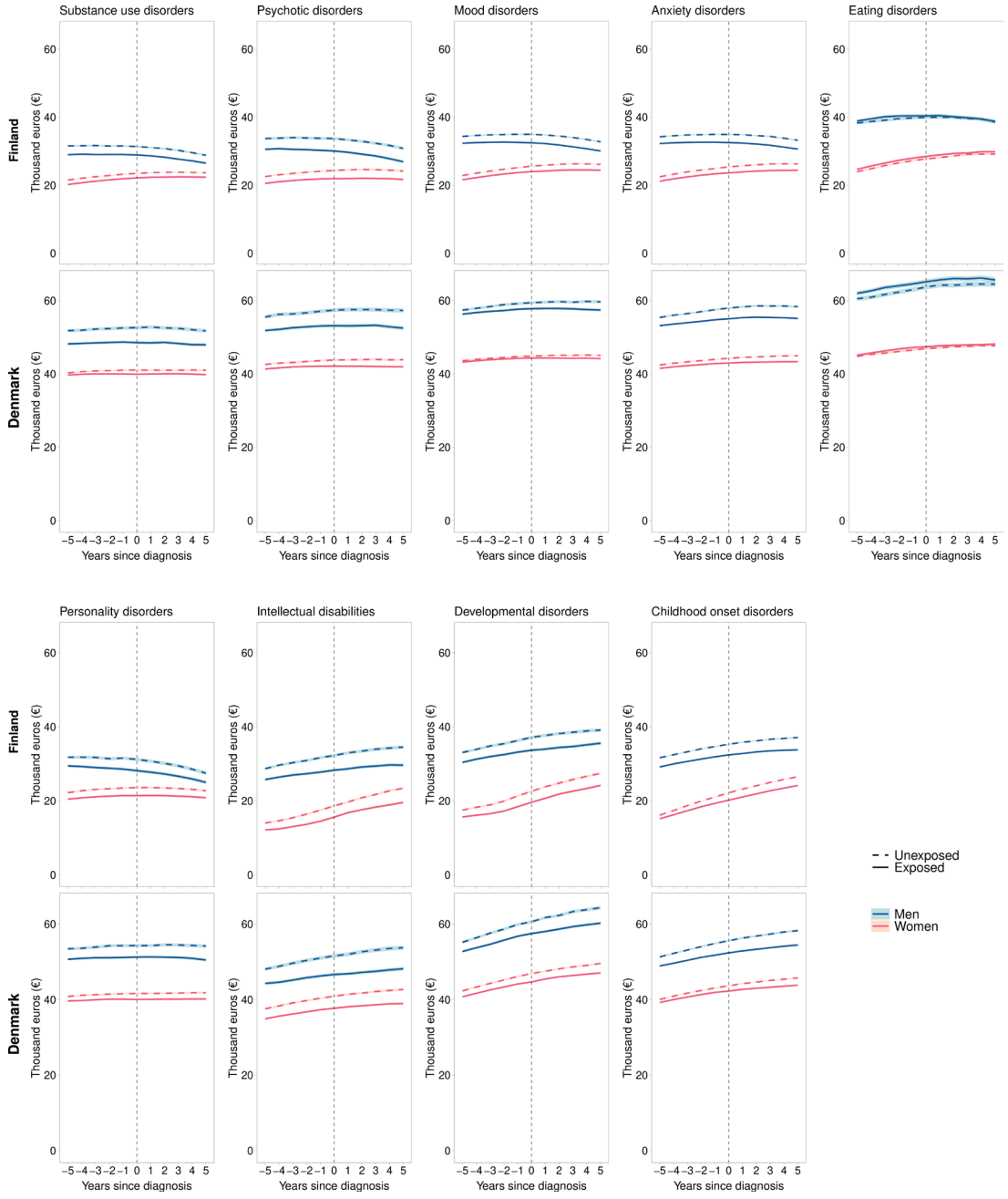

Figure 2 Marginal predictions of annual earnings among parents exposed to child's specific mental disorders and unexposed parents in Finland and Denmark. Shaded areas represent the 95% CIs.

marginal predictions, women with a child diagnosed before age 5 in Finland earned 8% less than the unexposed women 5 years before the child's diagnosis and 15% less 5 years after the diagnosis, while women with a child diagnosed at age 20–25 earned 6% less than the unexposed women 5 years before and 5% less 5 years after the child's diagnosis (figure 3, online supplemental efigures 4–6, etables 22–25). Overall, similar patterns were observed in the disorder-specific analyses, although there was variation across different diagnostic categories. For instance, both in Finland and Denmark, the trajectories of receipt of social welfare benefits and employment clearly diverged among women exposed to a younger child's anxiety disorder, while for substance use disorders and psychotic disorders, differences across strata were less pronounced (online supplemental efigures 7–42, etables 26–61). After no initial difference between exposed and unexposed women during the 5 years leading to a child's diagnosis, women with a child diagnosed with an eating disorder at age 5–9 in Denmark received markedly more social welfare benefits and were less likely employed in the 1–2 years following the child's diagnosis. However, due to the low number of eating disorder cases in this stratum, the confidence intervals were wide, and no comparable trend was evident in Finland (online supplemental efigures 25–26, etables 44–45).

DISCUSSION

In this analysis of two nationwide cohorts covering over a million parents of children with mental disorders, we examined how a child's mental disorder is associated with parental income and employment outcomes across a broad spectrum of mental

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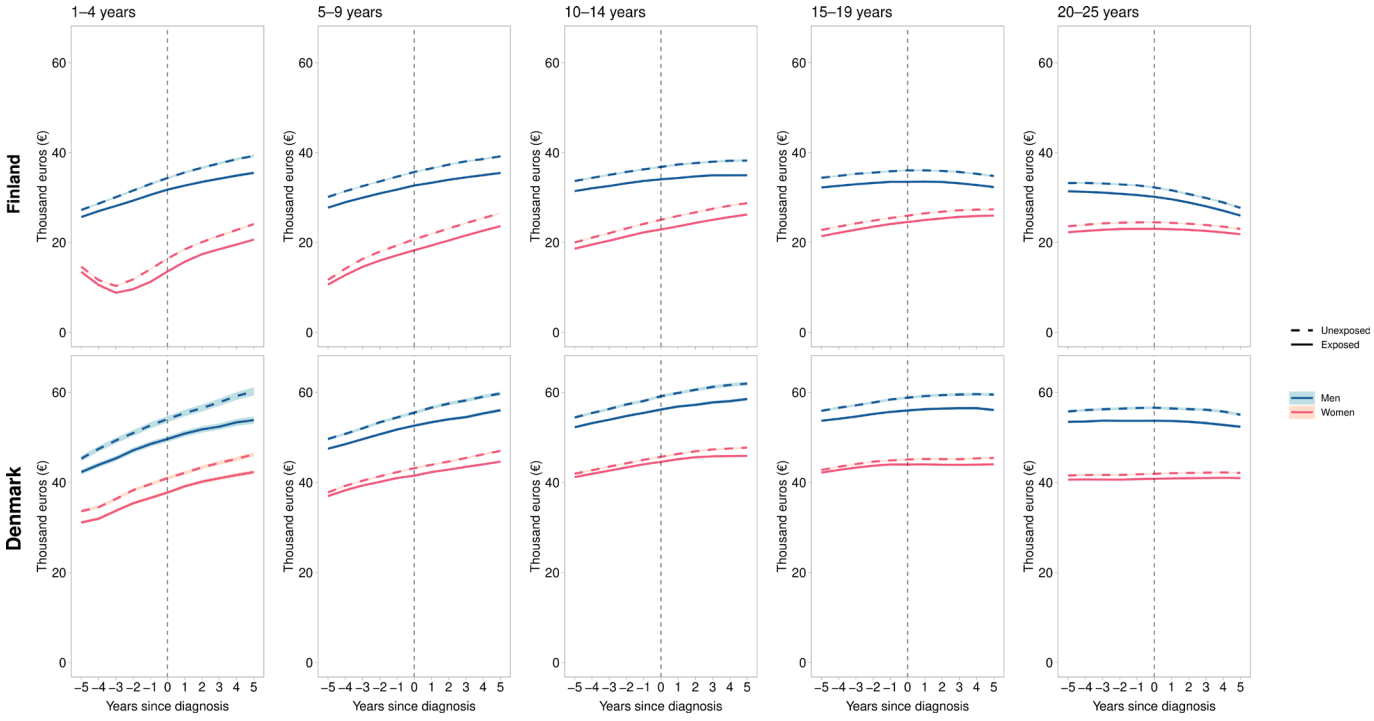

Figure 3 Marginal predictions of annual earnings among parents exposed to child's mental disorder and unexposed parents stratified by the child's age at diagnosis in Finland and Denmark. Shaded areas represent the 95% CIs.

disorders. During a period from 5 years before to 5 years after a child's diagnosis, parents whose child was diagnosed with a mental disorder had consistently lower annual earnings and disposable income, received a greater annual amount of social welfare benefits and had higher annual unemployment than unexposed parents. While these differences became slightly larger during the observation period, especially among parents whose children were diagnosed young, there was no evidence of a change in parental annual income or employment status among the exposed group at the time of their child's mental disorder diagnosis. Similar findings were observed when examining exposure to specific disorders of the child.

These findings align with evidence on socioeconomic disparities in children's mental disorders;[20 21] in our study, parents of children diagnosed with a mental disorder were on a lower income and employment trajectory already several years before the child's diagnosis. The only exception to this overall pattern was the inverse association observed for exposure to child's eating disorders. In line with the previous evidence,[22] parents of children diagnosed with an eating disorder were generally on a higher income trajectory throughout the follow-up, which has been hypothesised to reflect genetic factors, environmental expectations or a socioeconomic gradient in seeking or receiving care for an eating disorder, for instance.[22 23]

Distinct from the pre-existing differences in parental income and employment, our data are not consistent with the hypothesis that parents of children with a mental disorder would experience an immediate reduction in their income or employment on their child's diagnosis. In a Swedish register-based study, parents of individuals diagnosed with schizophrenia were more likely unemployed and received more social welfare benefits than parents of healthy controls, while no differences in low-income status or disability pension were observed.[19] Given the lack of control for parental socioeconomic situation prior to their child's diagnosis, these previous results may yet reflect an overall socioeconomic gradient in children's mental health rather than a change in parents' socioeconomic situation since the onset of their child's disorder. Our study indicates that differences in parental income and employment status already existed 5 years before the child's diagnosis, with parents exposed to a child's mental disorder remaining on a lower socioeconomic trajectory throughout the period of observation.

In contrast to Nordic register-based studies reporting an immediate reduction in parental earnings and employment at the time of a child's cancer diagnosis,[8–11] we observed no evidence for comparable labour market losses at the time of the child's mental disorder diagnosis. The different findings likely reflect higher demands of caring for a child with cancer (eg, more intensive treatment courses, severe side effects), greater perceived unpredictability, immediacy or threat associated with a severe physical illness, or stigma related to mental illness, which may explain why parents of children with mental disorders could be more likely to maintain employment and their normal work routine. Indeed, the only instance of an immediate change in parental socioeconomic outcomes was observed among women in Denmark whose child was diagnosed with an eating disorder at age 5–9; these women received markedly more social welfare benefits and were less likely to be employed in the 1–2 years following the child's diagnosis. This observation requires cautious interpretation, as the estimates were imprecise and not replicated in Finland. However, it is possible that eating disorders in young children mirror physical illnesses in some respects, such as requiring acute care initially, which could underlie the observed trajectory among women in Denmark.

The nature of mental disorders is often complex and varied, and diagnostic delays with several psychiatric conditions have been reported to be considerably longer than with severe physical conditions in paediatric populations.[24–26] Thus, the time of diagnosis may not be an unambiguous time zero for a mental disorder onset, but families may cope with their child's

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psychiatric symptoms over extended time periods of varying lengths, even years.[27] While the pre-existing socioeconomic disadvantage among parents is likely a risk factor for children's mental disorders, it can also represent an early consequence of managing an undiagnosed child's difficulties, in part explaining why no immediate change in parental socioeconomic outcomes was observed at the time of the child's mental disorder diagnosis. In addition, the diagnostic delay could underlie the widening differences in income and employment between parents exposed to a younger child's mental disorder compared with the unexposed parents during the observation period. Even subclinical symptoms a child experiences prior to the diagnosis can require parents to allocate resources to providing care for their child, potentially impeding parents' career progression or compromising their capacity to work full time, especially with children diagnosed at younger ages. Also, as expected, parents exposed to a younger child's mental disorder were younger on average. Disruptions at earlier career stages have been associated with diminished long-term labour market prospects,[28–30] which can partially underlie the less progressive socioeconomic trajectory we observed among parents exposed to a younger child's mental disorder.

There are limitations to our study. First, this is an observational register-based study, and causal interpretations of our findings have to be taken with caution. Although we controlled for a set of confounders with known or hypothesised associations with the exposures and outcomes through matching, there could be additional confounders, and we cannot rule out the possibility of unmeasured or residual confounding. Second, we used clinical diagnoses received in secondary healthcare to evaluate exposure to a child's mental disorder. Although the diagnostic validity of many register-based mental disorders is considered good,[31 32] parents with children whose mental disorders were untreated, or treated solely in the primary healthcare were misclassified as unexposed in our analysis. In addition, we had no information on the timing of the child's symptom onset, remission or recovery, which likely affect parents' capacity to engage in work. Finally, our data are from two Nordic welfare states, which limits generalisability. However, the similar findings in both Finland and Denmark strengthen the robustness of our conclusions in this context.

In this study, a child's mental disorder was consistently associated with lower annual income and employment among their parents before and after the child's diagnosis. While parents with younger children diagnosed with mental disorders followed a less progressive income and employment trajectory, there was no consistent evidence of an immediate decline in parental income or employment around the time of the child's diagnosis. These findings suggest that in countries with robust welfare systems, a younger child's mental disorder may contribute to widening socioeconomic inequity among families. However, the inequity in children's mental health appears to primarily exist prior to, rather than in response to, a child's mental disorder.

Clinical implications

Although a child's mental disorder can disrupt family life, it does not necessarily lead to immediate socioeconomic consequences for parents in welfare states. Clinical and policy efforts should prioritise addressing pre-existing socioeconomic vulnerabilities for effective primary prevention.

Contributors KK: conceptualisation, methodology, visualisation, writing—original draft. RN: methodology, formal analysis, visualisation, writing—reviewing and editing. MG: methodology, formal analysis, visualisation, writing—reviewing and editing. NCM: formal analysis, writing—reviewing and editing. PB: conceptualisation, methodology, writing—reviewing and editing. ME: project administration, supervision, writing—reviewing and editing. OP-R: conceptualisation, methodology, formal analysis, funding acquisition, project administration, supervision, writing—reviewing and editing. CH: conceptualisation, methodology, visualisation, funding acquisition, project administration, supervision, writing—reviewing and editing. KK, RN, MG and CH accessed and verified the Finnish data. NCM and OP-R accessed and verified the Danish data. All authors accept responsibility for the decision to submit for publication. OP-R and CH are co-senior authors. CH is the guarantor.

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Data availability statement Data may be obtained from a third party and are not publicly available. The person-level data that support the findings of this study are available from the National Institute of Health and Welfare (http://www.thl.fi) and Statistics Finland (www.stat.fi) for Finnish data, and Statistics Denmark (https://www.dst.dk) and the Danish Health Data Authority (https://sundhedsdatastyrelsen.dk) for Danish data. Restrictions apply to the availability of these data, which were used under license for this study. Inquiries about secure access to Finnish data should be directed to data permit authority Findata (https://findata.fi/en/). Researchers who fulfill the requirements set by the Danish data providers could gain access to Danish data through Statistics Denmark (https://www.dst.dk) and/or the Danish Health Data Authority (https://sundhedsdatastyrelsen.dk).

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REFERENCES

1 Jayasinghe A, Wrobel A, Filia K, *et al*. Distress, burden, and wellbeing in siblings of people with mental illness: a mixed studies systematic review and meta-analysis. *Psychol Med* 2023;53:6945–64.
2 Schulze B, Rössler W. Caregiver burden in mental illness: review of measurement, findings and interventions in 2004-2005. *Curr Opin Psychiatry* 2005;18:684–91.

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3 Caqueo-Urízar A, Rus-Calafell M, Craig TKJ, *et al*. Schizophrenia: Impact on Family Dynamics. *Curr Psychiatry Rep* 2017;19:2.
4 Hakulinen C, Gutvilig M, Niemi R, *et al*. Associations of mental disorders in children with parents' subsequent mental disorders: nationwide cohort study from Finland and Denmark. *Br J Psychiatry* 2025;1–8.
5 Ademosu T, Ebuenyi I, Hoekstra RA, *et al*. Burden, impact, and needs of caregivers of children living with mental health or neurodevelopmental conditions in low-income and middle-income countries: a scoping review. *Lancet Psychiatry* 2021;8:919–28.
6 O'Campo P, Molnar A, Ng E, *et al*. Social welfare matters: a realist review of when, how, and why unemployment insurance impacts poverty and health. *Soc Sci Med* 2015;132:88–94.
7 Keskimaki I, Tynkkynen LK, Reissell E, *et al*. Finland: Health System Review. *Health Syst Transit* 2019;21:1–166.
8 Lindahl Norberg A, Montgomery SM, Bottai M, *et al*. Short-term and long-term effects of childhood cancer on income from employment and employment status: A national cohort study in Sweden. *Cancer* 2017;123:1238–48.
9 Öhman M, Woodford J, von Essen L. Socioeconomic consequences of parenting a child with cancer for fathers and mothers in Sweden: A population-based difference-in-difference study. *Int J Cancer* 2021;148:2535–41.
10 Vaalavuo M, Salokangas H, Tahvonen O. Gender Inequality Reinforced: The Impact of a Child's Health Shock on Parents' Labor Market Trajectories. *Demography* 2023;60:1005–29.
11 Mader L, Hargreave M, Bidstrup PE, *et al*. The impact of childhood cancer on parental working status and income in Denmark: Patterns over time and determinants of adverse changes. *Int J Cancer* 2020;147:1006–17.
12 Busch SH, Barry CL. Mental health disorders in childhood: assessing the burden on families. *Health Aff (Millwood)* 2007;26:1088–95.
13 Cidav Z, Marcus SC, Mandell DS. Implications of childhood autism for parental employment and earnings. *Pediatrics* 2012;129:617–23.
14 Richard P. Children's Mental Disorders and Their Mothers' Earnings: Implications for the Affordable Care Act of 2010. *J Fam Econ Iss* 2016;37:156–71.
15 Parish SL, Seltzer MM, Greenberg JS, *et al*. Economic implications of caregiving at midlife: comparing parents with and without children who have developmental disabilities. *Ment Retard* 2004;42:413–26.
16 Kvist AP, Nielsen HS, Simonsen M. The importance of children's ADHD for parents' relationship stability and labor supply. *Soc Sci Med* 2013;88:30–8.
17 McEvilly M, Wicks S, Dalman C. Sick Leave and Work Participation Among Parents of Children with Autism Spectrum Disorder in the Stockholm Youth Cohort: A Register Linkage Study in Stockholm, Sweden. *J Autism Dev Disord* 2015;45:2157–67.
18 McCall BP, Starr EM. Effects of autism spectrum disorder on parental employment in the United States: evidence from the National Health Interview Survey. *Community, Work & Family* 2018;21:367–92.
19 Mittendorfer-Rutz E, Rahman S, Tanskanen A, *et al*. Burden for Parents of Patients With Schizophrenia-A Nationwide Comparative Study of Parents of Offspring With Rheumatoid Arthritis, Multiple Sclerosis, Epilepsy, and Healthy Controls. *Schizophr Bull* 2019;45:794–803.
20 Reiss F. Socioeconomic inequalities and mental health problems in children and adolescents: a systematic review. *Soc Sci Med* 2013;90:24–31.
21 Suokas K, Koivisto A-M, Hakulinen C, *et al*. Association of Income With the Incidence Rates of First Psychiatric Hospital Admissions in Finland, 1996-2014. *JAMA Psychiatry* 2020;77:274–84.
22 Koch SV, Larsen JT, Plessen KJ, *et al*. Associations between parental socioeconomic-, family-, and sibling status and risk of eating disorders in offspring in a Danish national female cohort. *Int J Eat Disord* 2022;55:1130–42.
23 Huryk KM, Drury CR, Loeb KL. Diseases of affluence? A systematic review of the literature on socioeconomic diversity in eating disorders. *Eat Behav* 2021;43:101548.
24 Dang-Tan T, Franco EL. Diagnosis delays in childhood cancer: a review. *Cancer* 2007;110:703–13.
25 Keramatian K, Pinto JV, Schaffer A, *et al*. Clinical and demographic factors associated with delayed diagnosis of bipolar disorder: Data from Health Outcomes and Patient Evaluations in Bipolar Disorder (HOPE-BD) study. *J Affect Disord* 2022;296:506–13.
26 Boulton KA, Hodge MA, Jewell A, *et al*. Diagnostic delay in children with neurodevelopmental conditions attending a publicly funded developmental assessment service: findings from the Sydney Child Neurodevelopment Research Registry. *BMJ Open* 2023;13:e069500.
27 Hansen AS, Kjaersdam Telléus G, Færk E, *et al*. Help-seeking pathways prior to referral to outpatient child and adolescent mental health services. *Clin Child Psychol Psychiatry* 2021;26:569–85.
28 Schmillen A, Umkehrer M. The scars of youth: Effects of early-career unemployment on future unemployment experience. *Int Labour Rev* 2017;156:465–94.
29 Möller J, Umkehrer M. Are there Long-Term Earnings Scars from Youth Unemployment in Germany? *Jahrbücher Für Nationalökonomie Und Statistik* 2015;235:474–98.
30 Strandh M, Winefield A, Nilsson K, *et al*. Unemployment and mental health scarring during the life course. *Eur J Public Health* 2014;24:440–5.
31 Sund R. Quality of the Finnish Hospital Discharge Register: a systematic review. *Scand J Public Health* 2012;40:505–15.
32 Mors O, Perto GP, Mortensen PB. The Danish Psychiatric Central Research Register. *Scand J Public Health* 2011;39:54–7.

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