

# **Gendered effects of intensified care burdens: Employment and sickness absence in families with sick or disabled children.**

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## **Abstract**

Using longitudinal register data, we examine the impact on maternal and paternal employment, earnings, and sickness absence of having a sick or disabled child. We hypothesise that parents with a sick or disabled child will have lower employment probabilities, lower labour earnings, and higher sickness absence than parents with a healthy child. We assume that mothers are more affected than fathers when having a child with extra care needs. A quasi-experimental difference-in-difference regression model shows that the employment probabilities of parents with a sick or disabled child are comparable to those of parents with a healthy child, and this result applied to both mothers and fathers. In relation to earnings and sickness absence, the analyses reveal that having a sick or disabled child reduces labour earnings and increases long-term sickness absence among mothers. However, fathers' labour earnings and sickness absence are less affected by having a sick or disabled child.

**Keywords:** disabled child, earnings, extra care needs, gender, labour market, sick child, sickness absence

## **Introduction**

Studies consistently find that the division between unpaid care work and paid work outside the home is gendered. Although the Western world has seen a sharp decline in the sole male breadwinner model and a dramatic increase in women's uptake of paid work over the past fifty years or so, women still adjust their attachment to the labour market according to the needs of their family to a larger extent than men. Gendered patterns in labour market attachment become particularly apparent when families have children (Blair-Loy, 2003; Crompton and Harris, 1999; Halrynjo and Lyng, 2009; Hochschild, 1997). In this article we ask what happens to families' adaptations between paid work and care when caring responsibilities are intensified due to having a chronically sick or disabled child.

Parents of children with extra care needs encounter a unique set of challenges that can go beyond the intensified need for caregiving in itself, like struggling to gain access to needed health services and support arrangements (DeRigne, 2012; Eriksen, 2003). Thus, having a disabled or chronically ill child can be time- and energy demanding, and will often intensify the conflict between family obligations and the demands of paid work. Since women have traditionally taken more responsibility for their family's care needs, it is not surprising that they are also found taking on additional care when having a child with extra needs (Burton et al., 2008; Olsson and Hwang, 2006). Children's special health care needs can lead parents to adapt their labour market attachment in different ways, for instance by reducing or terminating their participation in paid work, or by increasing it to compensate for their partner's reduced attachment to work. Even if paid work is sustained, the increased care burden can lead to adaptations such as extensive sick leave. The consequences of a weaker attachment to the labour market can be lower wages and fewer advantages such as promotions, which in turn can lead to increased vulnerability, poorer coping, compromised mental health, and lower quality of life.

Norway represents an interesting case for studying the gendered division of labour in the family, because together with the other Nordic countries, Norway stands out in an international context as a society characterised by a strong gender equality ideology and high female employment, including mothers. Most research on the gendered consequences of having a child with extra care needs has so far been conducted in the USA, Australia, and elsewhere, where welfare state structures differ considerably from Nordic models. Norwegian family policies largely aim at enabling women to combine motherhood with participation in paid work from when their children are very young. It is an explicit political goal that families with disabled children should be able to participate in work to the same extent as other families

(Tøssebro, 2012). In a context where the gendered division of labour is less striking than in most countries, what are the effects of intensified care?

This study contributes to knowledge about the gendered division of labour in general, and the effects of having a child with extra needs in particular, in a national context where we might expect the gendered effects to be smaller than in most other countries. Our analysis builds on a unique data set that includes the whole population of mothers who gave birth in Norway in the period from 2001 to 2005, as well as the fathers. The panel data allows us to follow families' adaptations to work over time. This article is thus concerned with gendered adaptations between work and care when the care burden is intensified, and it seeks to answer two research questions: 1) how does having a chronically sick or disabled child affect the labour market probability, labour earnings, and long-term sickness absence of parents, compared to having a healthy child? and 2) in what ways are the effects of having a chronically sick or disabled child determined by gender?

The innovation in this article is that we examine both mothers and fathers. Most studies on the topic have been concerned with *mothers'* adaptations to having a disabled or sick child, but we also analyse *fathers'* adaptations. One of the main strengths of this study is the use of register data containing information on children's health linked to information on their parents' labour market attachment and sickness absence. Since we have longitudinal information on the parents prior to and after having their first child, we can examine the effect of having a sick or disabled child on labour market outcomes and long-term sickness absence over time. A related advantage of the present study is that the longitudinal register data has a very large sample size ( $n=276,785$ ), so analyses can be undertaken for relatively small groups such as parents with sick or disabled children. The related literature is rather short of studies that combine a longitudinal approach with a large sample size and examine both mothers and fathers. Thus, this study contributes to knowledge about how mothers and fathers adapt to the labour market and how intensified care affects their health and sickness absence.

### **Work in the context of the Norwegian welfare state**

The Norwegian welfare state is a particular context for studying the gendered division of work and care. The Nordic countries are strong welfare states characterised by large public service sectors. The level of employment is high; among the OECD countries, only Iceland has higher female employment rates than Norway (NOU, 2012: 32). Yet the proportion of female part-time workers is higher than in most European countries, with over 40 per cent of employed women working part-time (NOU, 2012: 173). The Norwegian welfare state explicitly aims to

support the employment of mothers by offering, among other things, a generous parental leave scheme and state-sponsored childcare services (Ellingsæter, 2006; Stefansen and Farstad, 2010). Over the past decade Norway has invested heavily in childcare services and now guarantees access to kindergarten to all children over a year old, within a maximum fee limit. In addition, families have access to day care facilities for schoolchildren (so-called activity school) before and after the school day, which together with school provides full-time activity for children until the fourth grade. Children with special needs can be granted the right to use day care facilities until the seventh grade. Thus, families in Norway generally have access to good quality, affordable childcare.

An inclusive labour market is also a stated political goal beyond the mothers of young children. For instance, Norway has a generous sickness benefit system (OECD, 2009) that entitles workers to sick pay from the first day of sickness if they have been employed for at least four weeks. This entitlement is limited to a maximum period of one year. The sickness benefit is fully wage-compensated up to a set threshold, but for most workers the benefit level is set at 100 per cent of fixed pay.<sup>1</sup> The employer disburses sick pay for the first 16 consecutive days. After this period, sick pay is publicly disbursed and administered by the Norwegian Labour and Welfare administration (NAV). Sickness spells of up to three days are based on self-certification by the worker, while longer spells require certification by a physician.

Families with extraordinary care burdens are supported by various welfare state arrangements, in terms of practical assistance as well as transfers. Various actors are involved, like health, day care, and educational authorities. Generally, monetary transfers (e.g. assistance pension for extraordinary care and nursing needs) are administered by NAV, while practical assistance (such as respite services, support assistance, personal assistance, or short-term institutional care) is supplied by municipal or local welfare agencies. Municipalities may also pay family members a care wage for extraordinary care work performed for other family members at home due to disability or long-term illness (Eriksen, 2003).

### **Parenting a chronically sick or disabled child and labour market attachment**

Based on basic labour market theory, we expect that caring for a sick or disabled child will have a negative effect on parental, and especially maternal, employment. Caring for a disabled or chronically sick child would reduce the parents' labour market participation because of the child's greater care needs. This reduction could relate to the extra time needed to care for a

child with a disability, making it difficult to combine full-time work with extended caring. Moreover, the high cost or unavailability of adequate childcare may also reduce the parents' ability to sustain paid work (Stabile and Allin, 2012).

It has been well documented that having a child with extra care needs affects mothers' labour market attachment. A number of international studies show associations between children's care needs and reduced maternal employment rates, with more mothers working part-time (DeRigne, 2012; Gordon et al., 2007; Guyard et al., 2013; Lu, 2010; Porterfield 2002; Seltzer et al., 2001). Gordon and colleagues (2007) find that mothers of children with disabilities are not only more likely to be engaged in part-time work; they are also more likely to be in the lowest working hours category (0–15 hours per week).

Mothers' withdrawal from the labour market is associated with the severity of their child's extra needs; more severe conditions are more strongly related to lower employment rates (DeRigne, 2012; Einam and Cuskelly, 2002; Gordon et al., 2007; Hauge et al., 2013). A Norwegian study found that mothers of children with moderate care needs do not have an increased risk of dropping out of employment when the child is three years old, but the risk of opting out of work increases as the need severity increases. However, there was also a higher incidence of part-time work among mothers of children with moderate care needs (Hauge et al., 2013). Other studies from a Scandinavian context confirm the pattern that mothers of children with special care needs are less likely to be in the labour force and more likely to work part-time compared to other mothers (Lundeby, 2006; Nes et al., 2014; Olsson and Hwang, 2006; Tøssebro and Paulsen, 2014). Other studies find that participation in paid labour among mothers who care for a disabled child is particularly low when the child is below school age (Lu and Zuo, 2010), but low employment rates continue after the child reaches school age (Gordon et al., 2007). At the same time, Hauge and colleagues (2013: 358) find that the proportion of children with special health care needs increases rather dramatically as children reach preschool and school age. Care needs for very young disabled or sick children do not necessarily differ much from those of other children of the same age, but the differences between children with and without special care needs can become more apparent with age. This is also related to the child's diagnosis; some diagnoses are apparent and have consequences from birth, but others only start having effects later in the child's life (see Seltzer et al., 2001).

The overall findings in the aforementioned literature is that caring for a child with extra needs has a negative influence on maternal employment. However, there is less clarity about the extent to which having a sick child influences paternal employment. Relevant literature overwhelmingly shows that childcare responsibilities are gendered, with women, to a larger

extent than men, adjusting their work participation to meet family demands (e.g. Blair-Loy, 2003; Crompton, 1999; Crompton and Harris, 1999; Gerson, 2010; Halrynjo and Lyng, 2009; Hochschild, 1997). Families' adaptation to work should not solely be understood as an expression of individual preferences and choices. Individual work-family preferences are socially and culturally shaped, reproduced, and constrained (Blair-Loy, 2003; Duncan et al., 2003; Halrynjo and Lyng, 2009; Pfau-Effinger, 2012), and parents' attachment to work is shaped by normative and structural constraints (McRae, 2003).

The question of how to balance work and parenthood is tied to people's identities as moral beings and their understanding of 'the proper thing to do' in given circumstances (cf. Finch, 1989). It invokes notions of what a good mother is, what is best for children, and what makes for a meaningful life. The behaviour typically associated with being a "good mother" differs from the expectations of a "good father"; mothers are generally assumed to have a larger responsibility for caregiving, whereas fathers are responsible for breadwinning (e.g. Bernard, 1981; Duncan et al., 2003; Potuchek, 1997; Zelizer, 1997).

An interesting question, then, is the extent to which fathers in a Nordic welfare context are influenced by having a sick or disabled child in terms of their labour market participation. A central theory explaining a couple's division of labour is Becker's notion of comparative advantage (Becker, 1991). The key assumption is that individuals living in a household pool their resources and maximise a joint utility function. Assuming that mothers who look after a child with extra needs withdraw from the labour market, we would expect the fathers to continue working to maintain the family finances. Thus, paternal employment will be less influenced by having a sick or disabled child.

The few empirical studies that also include fathers find that fathers of children with special care needs are less affected than mothers in terms of both their participation in paid work and their well-being (Lundeby, 2006; Olsson and Hwang, 2006; Warfield, 2005; Wendelborg and Tøssebro, 2010). Other studies find that families' adaptations to their child's needs not only involve mothers reducing their labour force participation, but also fathers working longer hours (Seltzer et al., 2001: 266). Thus, families seem to have *gendered* adaptations to their child's extra needs.

### **Health and sickness absence among parents caring for a sick or disabled child**

In summary, it has been well established that having a child with special care needs can hamper parents', and particularly mothers', attachment to work. This can reflect the difficulties of

combining extra care responsibilities with employment outside the home. Caring for a sick or disabled child may have direct effects on parental employment such as reducing time available for work, but caring for a sick child may also have an indirect effect on employment through effects on parental health (Stabile and Allin, 2012). A high caregiver burden together with the stress and concerns associated with caring for a child with extra needs may impair parental health, which in turn increases long-term sickness absence, particularly among mothers who are often the primary caregivers.

Several studies show that having a child with special care needs has adverse effects on parents' health (Burton et al., 2008; Olsson and Hwang, 2006; Seltzer et al., 2001; Wendelborg and Tøssebro, 2010). However, one study finds that mothers who care for a disabled child have comparable and even better health compared to mothers with a non-disabled child (Emerson and Hatton, 2005), and Seltzer et al. (2001) only find adverse health effects for parents of children with mental health problems, not for parents of children with developmental disabilities. Moreover, the adverse effect of extra care is shown to be more prevalent among mothers than fathers (Burton et al., 2008; Olsson and Hwang, 2006). In their study of parents with disabled children, Wendelborg and Tøssebro (2010) only find an adverse health effect among mothers, while the fathers have the same health levels as other fathers (see also Burton et al., 2008). Mothers of disabled children report that their health is worse than that of other mothers, and they have more frequent and longer sickness absences from work. For men, having a disabled child is not associated with worse subjective health, but it is associated with more frequent and longer sickness absences (Wendelborg and Tøssebro, 2010). Based on this background we expect to find that mothers who care for a sick or disabled child will be more affected than fathers in relation to long-term sickness absence.

### **Data and Methods**

The data comes from the Medical Birth Registry of Norway (MBRN) and the Historical Event Database FD-Trygd compiled by Statistics Norway (SSB). The FD-Trygd panel database is widely used in research on welfare benefits and contains information on background variables such as country of origin, age, gender, labour market outcomes and welfare benefits for all individuals in Norway. The MBRN provides information on children with birth defects and serious illnesses. Many disorders are not detected at birth, and chronic illness and disabilities may also appear after birth. Therefore we use information on auxiliary benefits derived from FD-Trygd to identify chronically sick or disabled children. Individuals who suffer from a long-term illness and have a lasting need for care or personal nursing may be entitled to auxiliary

benefits. These are granted based on the care needs of the recipient and independent of other incomes (Hauge et al., 2013). Auxiliary benefits are paid according to a fixed rate determined annually by the Norwegian Parliament. In 2015 the auxiliary benefit rate 1 is EUR 138 per month, which reflects mild care needs. When the need for assistance is substantially larger than the auxiliary benefit coverage, an additional supplementary benefit may be granted. This amounts to twice, four times, or six times the ordinary auxiliary benefit, reflecting moderate to severe care needs. The additional supplementary benefit rate 2 is EUR 275 per month, and the highest, rate 4, is EUR 824 per month (NAV, 2015). The sample in the present study contains all primiparae women (N=139,561) who gave birth in the period between 2001 and 2005 and the fathers (N=137,224). For both mothers and fathers we have panel information for the period from two years prior to birth to four years after birth.

### **Dependent variables**

We utilise three dependent variables: employment, annual earnings, and number of sick days. Information on employment and earnings is based on employers' reports to the mandatory national insurance scheme. *Employment* is coded 1 if the individual was employed and 0 otherwise. People are classified as employed if they worked at all as paid employees during the reference week. *Annual earnings* covers all income from gainful employment (capital income and transfers not included). Amounts are adjusted according to the consumer price index. A logarithmic transformation is used to facilitate comparisons with previous research. For the third dependent variable, *number of sick days*, we use a duration measure of sickness absence. We analyse long-term sickness absence, since the recorded data includes sickness absences of 17 days or longer.

### **Independent variables**

Having a *chronically or disabled child* is measured by a dummy variable, taking the value 1 if the child is chronically sick or disabled and 0 if the child is healthy. Children who were granted attendance benefits (rates 2–4) by the age of three were classified as sick or disabled children. *Younger siblings* born in the observation period is measured as a dummy variable, taking the value 1 if there are younger siblings in the household and 0 otherwise. *Country of origin* is measured by three dummy variables (Norway, Western countries, and non-Western countries). *Age* of the parents is measured as number of years. *Marital status* is measured by a dummy variable indicating whether the mother and father are married or not. *Place of residence* is measured by a dummy variable, taking the value 0 if the parents live in Oslo and 1 otherwise. *Educational level* is divided into four levels: compulsory school or lower, upper secondary



school, bachelor's level, and master's level and PhD. Compulsory school or lower is the omitted category. Missing educational information is included as a separate category. Children who *died* within the observation period are also measured by a dummy variable, taking the value 1 if the child died and 0 otherwise. *Unemployment rate* in the local labour market (county) is measured each year. We also control for *birth cohorts*, using the year 2001 as the omitted category, and number of days employed. To be included in the analyses of labour earnings and sickness absence we require that the parents are employed.

## **Methods**

We analysed the impact of having a sick or disabled child on labour market attachment, labour earnings, and long-term sickness absence in the period from two years prior to birth to four years after birth, using a quasi-experimental difference-in-difference (DD) study design. We examine labour market attachment, wages, and sickness absence prior to and after the mothers and fathers had a sick or disabled child, as compared with matched control groups who had a healthy child over the same time period.

There are methodological challenges related to studying the effects of having a sick or disabled child on parental outcomes. The parents may have unobserved characteristics that affect both employment and sickness absence and the likelihood of having a sick or disabled child (Stabile and Allin, 2012). However, since we have longitudinal data for the outcome variables two years prior to and four years after the child was born, we can compare pre-trends in the outcome variables between the two groups. If the pre-trends are comparable in the two groups, we can assume that differences between the two groups after the child was born are caused by having a sick or disabled child.

The analyses of employment attachment are performed using a linear probability model (LPM), i.e. linear regressions on a binary variable. Logistic regression is often used when the outcome variable is binary. However, the coefficients in logistic regression not only reflect the effect of the independent variables but also the size of the unobserved heterogeneity, and therefore it is problematic to compare coefficients across samples (Mood, 2010). For that reason we compute a LPM. This gives results in terms of changes in probability. Sickness absences are analysed using Poisson regression, a method to model the frequency of event counts or the event rate. Poisson regression is a special case of a generalised linear model (GLM) with a log link, also called a log-linear model, and is often used for analysing rare events. It assumes that the outcome variable follows a Poisson distribution (Cameron and Trivedi, 2009). Poisson regression is appropriate since our dependent variables are counts of absence days (see Østhus

and Mastekaasa 2010 for a similar approach). All results are presented as marginal effects, evaluated at the mean of the explanatory variables. The third dependent variable is the logarithm of labour earnings. Ordinary linear regression is used. The models estimated in the analyses of labour earnings include the same independent variables as the corresponding models in the analyses of sickness absence.

## **Results**

### **Descriptive results**

One important assumption when using DD set-ups is that pre-trends in the dependent variable are similar for treatments and controls. We approach this issue by presenting pre-trends in long-term sickness absence, earnings, and employment for treatment (parents having a sick or disabled child) and controls (parents having a healthy child) (Figures 1–3).

*Figures 1 to 3 about here*

Figures 1–3 show that the pre-birth trends are very similar among parents caring for a sick or disabled child and parents caring for a healthy child; this result applies to both mothers and fathers. The numbers follow each other closely for earnings (Figure 2) and employment (Figure 3), while there is a small relative increase in sickness absence differences between mothers with a sick or disabled child and mothers with a healthy child from the year prior to birth and in the year of birth (Figure 1). However, the overall impression is that sickness absence, earnings, and employment among parents caring for a sick or disabled child and parents caring for a healthy child are very similar prior to birth. In birth year and in the post-birth period, Figure 1 shows that the series diverge, particularly for mothers, suggesting that having a sick or disabled child does have substantive effects on parents' sickness absence. Moreover, Figure 2 shows that the relative differences in labour earnings between mothers with a healthy child and mothers with a sick or disabled child are comparable during the first two years after birth, but the differences increase during the child's third year, and the gap is also substantial four years after birth. For the fathers, labour earnings were comparable in the two groups of fathers during the entire observation period. Finally, Figure 3 shows that the employment probabilities were very similar in the two groups of parents, and these results apply to both mothers and fathers.

### **Main results**

Table 1 presents the regression results for employment probabilities for mothers and fathers separately, using a LPM that includes the following variables: child's health (sick/disabled vs. healthy), year dummies, whether the child died in the observation period, parental age, immigrant background, length of residency in Norway, marital status, younger siblings, educational level, birth cohort, number of days employed, place of residency, and unemployment rate in the county. The model includes an interaction term between child's health and the year dummies. The interaction term tells us whether the differences between parents with a sick or disabled child and parents with a healthy child in the year prior to birth changed during the post-birth period.

Table 1 shows that the employment probability for women with a sick or disabled child decreases significantly compared to mothers with a healthy child in the post-birth period. However, the difference between the two groups of mothers is so small that we interpret it as largely insignificant. Two and three years after birth the employment difference was approximately 5 per cent. Four years after birth the difference was reduced to 3 per cent. Thus having a sick or disabled child has little impact on the mothers' probability of being employed.

*Table 1 about here*

Table 1 presents results from the same regression models for fathers. The interaction terms between the year dummies and child's health were insignificant, suggesting that having a sick or disabled child does not have any effect on fathers' probability of being employed.

To test whether the effect of having a sick or disabled child on employment varies according to gender, t-tests are used to compare mothers with fathers. The t-test points to significant gender differences in the effects of having a sick or disabled child on the probability of being employed in the period two to three years after birth. However, the gender differences are small, and the main conclusion is that caring for a sick or disabled child does not seem to substantially affect the parents' probability of participating in paid labour.

Labour earnings results are presented in Table 2. We include the same set of controls as in Table 1, but only working parents are included in the analyses. The labour earnings for mothers with a sick or disabled child decreased substantially compared to the earnings for mothers with a healthy child in the post-birth period. One year after birth the earnings difference between the two groups is 28 per cent. The earnings differences two, three and four years after birth are 50, 41 and 33 per cent, respectively.

*Table 2 about here*

Table 2 also presents results from the same regression models for fathers. There was no significant change in the sick/disabled-healthy child difference in the post-birth period. However, the result shows that fathers with a sick or disabled child earn approximately 9 per cent less than fathers with a healthy child during the child's birth year.

The t-test shows that the effect of having a sick or disabled child on labour earnings was significantly stronger for mothers compared to fathers in the post-birth period. The results indicate that mothers of a sick or disabled child reduce their working hours substantially in the post-birth period, and therefore their labour earnings decrease. However, fathers' labour market participation seems largely unaffected.

Table 3 presents the regression results for long-term sickness absence for mothers and fathers separately. All results are presented as marginal effects and evaluated at the means for the explanatory variables. We include the same set of controls as in Tables 2 and 3, but only working parents are included in the analyses. Table 3 demonstrates that the sickness absence among mothers caring for a sick or disabled child increased substantially compared to mothers with a healthy child in the post-birth period. Two years after birth, mothers with a sick or disabled child take 24 more sick days on average than mothers with a healthy child. Three years after birth the difference is reduced to 13 days. Four and five years after birth the differences between the two groups are still equal to approximately 10 days, and are highly significant.

*Table 3 about here*

Table 3 also presents results from the same regression models for fathers. The table demonstrating that sickness absences among fathers caring for a sick or disabled child increase compared to fathers with a healthy child in the post-birth period. In the four years after birth, fathers with a sick or disabled child take 6 to 7 more sick days on average than fathers with a healthy child.

The t-test shows that the effect of having a sick or disabled child on sickness absence is significantly stronger for mothers than for fathers in the first two years after birth. The results suggest that mothers' health, measured by long-term sickness absence, is more affected by having a child with extra needs than fathers' health, particularly when the child is very young.

## **Discussion and conclusion**

This article has investigated the impact of having a sick or disabled child on parental labour earnings, employment, and long-term sickness absence, starting with a general hypothesis that because of the intensified care burden, parents with a sick or disabled child have lower labour earnings and are less likely to be employed compared to parents of a healthy child. In support of this hypothesis, our results show that the labour earnings of mothers with a sick or disabled child decreased substantially compared to mothers with a healthy child in the post-birth period. Moreover, this article shows that the employment probability for women with a sick or disabled child is comparable to that of mothers with a healthy child in the post-birth period. Similar findings were found for the fathers. Therefore, we do not find evidence that mothers of children with extra needs withdraw from the labour market to a greater extent than mothers of healthy children. Contrary to other international studies which show a negative association between having a sick child and mothers' probability of being in paid labour (Guyard et al., 2013; Porterfield, 2002), our results suggest that mothers continue to participate in paid labour after having a sick or disabled child. This is in line with previous Norwegian research in this field (Wendelborg and Tøssebro, 2010).

The specific Nordic context for combining work and care might explain why we find this reduced effect on maternal employment. The dominant cultural understanding of the 'ideal' family in Norway can be characterised as the 'dual-breadwinner/state-carer model' (cf. Pfau-Effinger, 1999: 63). Both men and women are expected to work, and childcare is to a considerable extent seen as the responsibility of the welfare state, as reflected in the state's extensive childcare provisions (Leira, 2002). The Norwegian welfare state is characterised by a strong gender equality ideology, where women's right to participate in work has been central. Very few women are full-time homemakers, and the role of stay-at-home mother is perceived as problematic (Kitterød and Rønsen, 2013; Syltevik and Wærness, 2004). Moreover, in Norway the public sector's flexible working hours and extensive part-time opportunities allow for combining paid work with intensified childcare. It is reasonable to believe that all these factors bring women into the regular labour market in Norway to a greater extent than in countries outside the Nordic region. Although our results illustrate that having a sick or disabled child has little impact on parents' probability of participating in paid labour in Norway, the results do suggest that mothers who care for a child with extra needs adapt their work behaviour to their child's needs, but they do so by reducing their time in paid work.

In relation to labour earnings, we find that having a sick or disabled child reduces maternal labour earnings, perhaps because the additional childcare time reduces the time

available for paid employment, or perhaps because having a sick or disabled child also has an indirect impact on maternal labour earnings via impaired maternal health. Caring for sick or disabled children can be stressful, particularly for mothers, and thus can impair parental health, which reduces the time spent in paid labour and consequently decreases labour earnings. Our findings are consistent with previous literature which demonstrates that mothers who care for a sick or disabled child work less and earn less than mothers of healthy children (e.g. DeRigne, 2012; Tøssebro and Paulsen 2014). Moreover, the study's findings indicate that the effects among mothers caring for a child with extra needs are particularly large when the child is three to four years old. The differences seem to be less pronounced in the first two years after birth and when the children are older than four. One explanation for why the differences are less striking when the child is very young could be because the care needs of a sick or disabled child do not necessarily differ greatly from the intense needs of healthy children in the first two years of life.

Among fathers we found no effect of having a sick or disabled child on labour market earnings. The results support our second hypothesis that in dual-earner families the mothers of a sick or disabled child reduce their time spent in paid labour to a larger extent than the fathers. The results also show that the gendered pattern is more pronounced among parents caring for a sick or disabled child compared to parents caring for a healthy child. These results indicate that the adverse effect of the extra care burden on labour earnings is more prevalent among mothers than fathers; this is in line with previous research (e.g. Olsson and Hwang, 2006). Our findings support our assumption that caring for a sick or disabled child falls especially on women. Moreover, the results show that families tend to have gendered adaptations to their child's extra needs according to the time spent in paid labour. These results are in line with previous research that has examined gender inequality in the labour market. Although men in Norway might meet higher expectations to participate in caregiving and childrearing than men in many other national contexts (Aarseth, 2009; Brandth and Kvande, 2009), the patterns are still clear: Norwegian women adjust their participation in work to family demands to a larger extent than men (Ellingsæter and Widerberg, 2012; Halrynjo and Lyng, 2009). Typically this does not entail withdrawing from the labour market, but it can involve other strategies to minimise conflict between the demands of work and family, like taking up less demanding work (Halrynjo and Lyng, 2009) or reducing work hours (Kitterød and Rønsen, 2012). Our results underline that these patterns also apply to parents who care for a sick or disabled child, and the gender adaptations seem to be even more striking in these families.

One limitation in our study is that we do not have information on attendance allowance, and thus we might underestimate the differences in labour income between parents with a sick or disabled child and parents with a healthy child. Some parents are eligible for attendance allowance to compensate for their loss of income in connection with caring for a sick child.<sup>2</sup> Therefore, if we control for attendance allowance we might find a greater gap between the two groups of parents.

In this article we also examined how caring for a sick or disabled child affects parental long-term sickness absence. We hypothesise that parents caring for a sick or disabled child have higher sickness absences than parents caring for a healthy child. Moreover, we assumed that the sickness absence gap would be particularly large among mothers. In support of this hypothesis, the analyses reveal a substantial discrepancy between parents caring for a sick or disabled child and parents caring for a healthy child in relation to long-term sickness absence. However, the differences were more pronounced among the mothers. The results support our expectations and suggest that caring for a child with extra care needs impairs parents' health, and thus increases their long-term sickness absence. Again, the results illustrate that caring for a sick or disabled child falls especially on mothers, and that the sickness absence differences between the two groups of mothers are particularly large during the two first years after birth. This finding is consistent with previous research demonstrating that the birth of a child with a chronic illness or disability influences maternal health negatively (Burton et al., 2008; Nes et al., 2014). Moreover, the results are also in line with a Norwegian study (Wendelborg and Tøssebro, 2010) which found higher sickness absences among parents caring for a disabled child, and that mothers were particularly affected.

One conclusion from the present study is that mothers are more impacted by their children's illness or disability than fathers. As such, the findings underline that the gendered division of labour is more pronounced among parents caring for a child with extra needs. Analysing the effects of having a child with extra care needs is complicated, and more research is necessary for developing greater knowledge of the mechanisms that lie behind the observed pattern. There is a need for more longitudinal studies that follow children as they grow older, in order to detect causal relationships between children's health and parental labour market participation and health. Moreover, future research in this field should also pay more attention to different socioeconomic groups and parents from different national backgrounds.

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## Notes

<sup>1</sup> The majority of employers also offer a top-up for workers with an income that exceeds the threshold.

<sup>2</sup> In 2014 the mean attendance allowance received in Norway among parents caring for a sick or disabled child was 6506 EUR.

Figure 1: trends in employment probabilities in parents caring for a sick or disabled child and parents caring for a healthy child. The sample is birthcohorts 2001-2005.

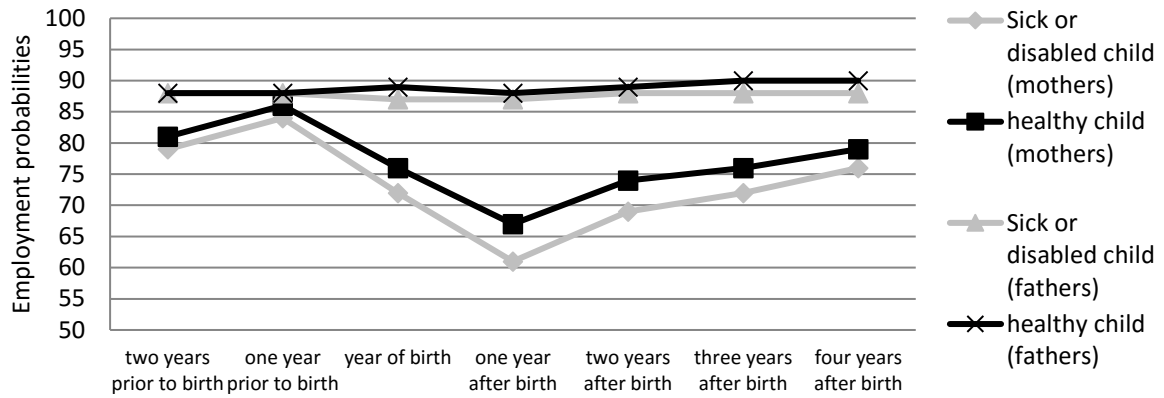


Figure 2: trends in labour earnings (log) in parents caring for a sick or disabled child and parents caring for healthy child. The sample is birthcohorts 2001-2005.

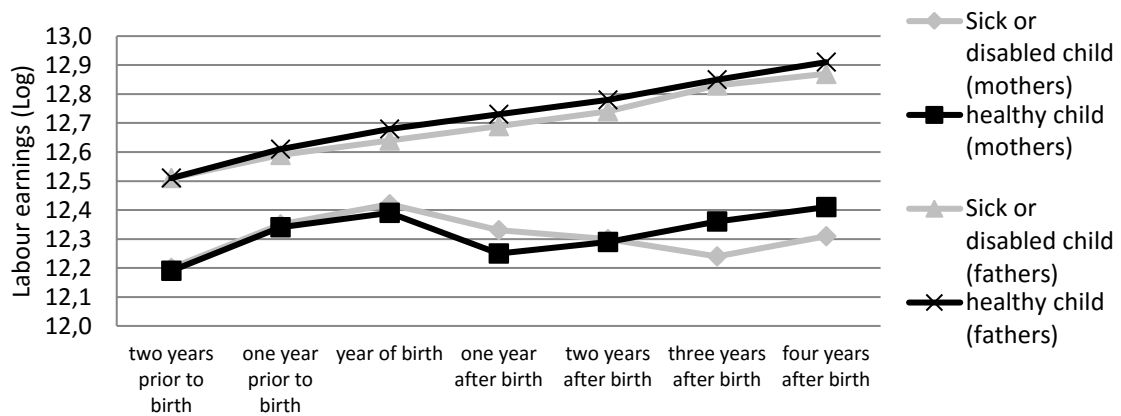


Figure 3: trends in sickness absence in parents caring for a sick or disabled child and parents caring for healthy child. The sample is birthcohorts 2001-2005.

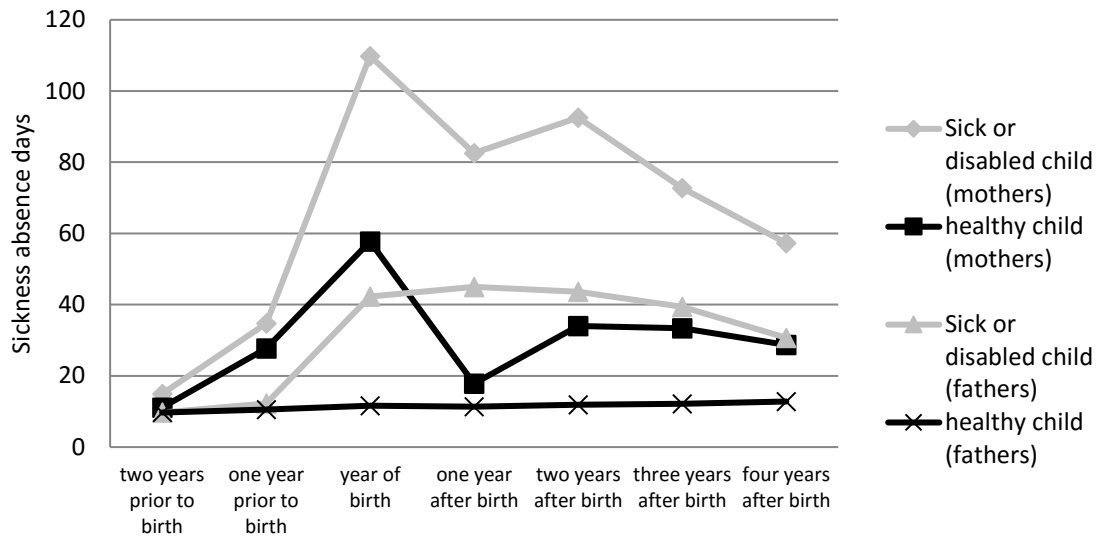


Table 1: *Employment. Dependent variable: employment status in reference week. LPM, women and men. The sample is birth cohort 2001-2005, primipara.*

| <i>Variables</i>   | <b>Mothers</b>  |                 | <b>Fathers</b> |                 |
|--|-----------------|-----------------|----------------|-----------------|
|  | <b>Coeff</b>    | <b>St.error</b> | <b>Coeff</b>   | <b>St.error</b> |
| <b>Caring for a chronically sick or disabled child</b>       | 0.003           | 0.011           | 0.003          | 0.008           |
| <b>Time (ref: 1 year prior birth)</b>                        |                 |                 |                |                 |
| 2 years prior birth  | -0.028**        | 0.001           | -0.006**       | 0.001           |
| birth year   | -0.076**        | 0.001           | 0.001          | 0.001           |
| 1 year after birth   | -0.169**        | 0.001           | -0.008**       | 0.001           |
| 2 years after birth  | -0.130**        | 0.002           | -0.005**       | 0.001           |
| 3 years after birth  | -0.125**        | 0.002           | -0.008**       | 0.001           |
| 4 years after birth  | -0.107**        | 0.002           | -0.010**       | 0.001           |
| <b>Interactions</b>  |                 |                 |                |                 |
| two years prior birth x chronically sick or disabled child   | -0.012          | 0.013           | 0.012          | 0.009           |
| birth year x chronically sick or disabled child              | -0.031          | 0.012           | -0.005         | 0.008           |
| one year after birth x chronically sick or disabled child    | -0.016          | 0.012           | 0.005          | 0.008           |
| two years after birth x chronically sick or disabled child   | <b>-0.046**</b> | 0.013           | <b>0.001</b>   | 0.009           |
| three years after birth x chronically sick or disabled child | <b>-0.045**</b> | 0.013           | <b>-0.012</b>  | 0.009           |
| four years after birth x chronically sick or disabled child  | -0.034**        | 0.013           | -0.011         | 0.009           |
| Constant   | -0.04**         | 0.01            | 0.466**        | 0.010           |
| N (person-years)   | 718115          |                 | 713882         |                 |
| R-squared  | 0.16            |                 | 0.07           |                 |

*Note: age, age squared, immigrant background, length of residency, educational level, marital status, younger children in the household, birth cohort, place of residency, number of days employed and unemployment rate are included in models. Note: T-tests are conducted with the women compared with the men, t-value 1.96. Bold values indicate when the gender differences shows significance.*

*\* p < .05; \*\* p < .01*

Table 2: Income, Dependent variable: income (log) from employment, OLS regression analyses, employed women and men. The sample is birth cohort 2001-2005, primipara.

| <i>Variables</i>   | <b>Mothers</b>  |                 | <b>Fathers</b> |                 |
|--|-----------------|-----------------|----------------|-----------------|
|  | <b>Coeff</b>    | <b>St.error</b> | <b>Coeff</b>   | <b>St.error</b> |
| <b>Caring for a chronically sick or disabled child</b>       | -0.675**        | 0.028           | -0.254**       | 0.028           |
| <b>Time (ref: 1 year prior birth)</b>                        |                 |                 |                |                 |
| 2 years prior birth  | -0.074**        | 0.003           | -0.073**       | 0.004           |
| birth year   | -0.035**        | 0.003           | 0.034**        | 0.003           |
| 1 year after birth   | -0.260**        | 0.003           | 0.050**        | 0.003           |
| 2 years after birth  | -0.257**        | 0.004           | 0.071**        | 0.004           |
| 3 years after birth  | -0.209**        | 0.004           | 0.108**        | 0.004           |
| 4 years after birth  | -0.179**        | 0.004           | 0.137**        | 0.004           |
| <b>Interactions</b>  |                 |                 |                |                 |
| two years prior birth x chronically sick or disabled child   | 0.055*          | 0.028           | 0.031          | 0.029           |
| birth year x chronically sick or disabled child              | <b>-0.235**</b> | 0.025           | <b>-0.088*</b> | 0.026           |
| one year after birth x chronically sick or disabled child    | <b>-0.276**</b> | 0.025           | <b>0.014</b>   | 0.026           |
| two years after birth x chronically sick or disabled child   | <b>-0.498**</b> | 0.027           | <b>0.015</b>   | 0.028           |
| three years after birth x chronically sick or disabled child | <b>-0.411**</b> | 0.027           | <b>-0.054</b>  | 0.028           |
| four years after birth x chronically sick or disabled child  | <b>-0.332**</b> | 0.027           | <b>-0.057*</b> | 0.028           |
| Constant   | 8.205**         | 0.044           | 9.368**        | 0.040           |
| N (person-years)   | 553648          |                 | 617659         |                 |
| R-squared  | 0.17            |                 | 0.09           |                 |

*Note: age, age squared, immigrant background, length of residency, marital status, younger children in the household, birth cohort, place of residency and unemployment rate are included in models. T-tests are conducted with the women compared with the men, t-value 1.96. Bold values indicate when the gender differences shows significance.*

\*  $p < .05$ ; \*\*  $p < .01$

Table 3: Sickness absence. Dependent variable: Number of sickness days, Poisson regression analyses, employed women and men. The sample is birth cohort 2001-2005, primipara.

| Variables  | Mothers         |          | Fathers        |          |
|--|-----------------|----------|----------------|----------|
|  | Coeff           | St.error | Coeff          | St.error |
| <b>Caring for a chronically sick or disabled child</b>       | 1.570**         | 1.560    | 1.400**        | 0.832    |
| <b>Time (ref: 1 year prior birth)</b>                        |                 |          |                |          |
| 2 years prior to birth                                       | -29.424**       | 0.433    | -0.892**       | 0.207    |
| birth year   | 20.002**        | 0.222    | 0.533**        | 0.176    |
| 1 year after birth   | -19.102**       | 0.343    | 0.178          | 0.181    |
| 2 years after birth  | 4.535**         | 0.279    | 0.863**        | 0.195    |
| 3 years after birth  | 3.876**         | 0.292    | 1.081**        | 0.199    |
| 4 years after birth  | -1.152**        | 0.316    | 1.624**        | 0.203    |
| <b>Interactions</b>  |                 |          |                |          |
| two years prior birth x chronically sick or disabled child   | -3.055          | 3.341    | -1.408         | 1.376    |
| birth year x chronically sick or disabled child              | <b>-0.334</b>   | 1.587    | <b>5.207**</b> | 1.006    |
| one year after birth x chronically sick or disabled child    | <b>23.578**</b> | 1.890    | <b>6.310**</b> | 1.030    |
| two years after birth x chronically sick or disabled child   | <b>13.200**</b> | 1.896    | <b>7.857**</b> | 1.136    |
| three years after birth x chronically sick or disabled child | 9.799**         | 1.958    | 7.562**        | 1.136    |
| four years after birth x chronically sick or disabled child  | 10.747**        | 2.083    | 6.208**        | 1.138    |
| N (person-years)   | 553648          |          | 617659         |          |
| Pseudo R2  | 0.093           |          | 0.067          |          |

Note: age, age squared, immigrant background, length of residency, marital status, younger children in the household, birth cohort, place of residency and unemployment rate are included in models. T-tests are conducted with the women compared with the men, t-value 1.96. Bold values indicate when the gender differences shows significance.

\*  $p < .05$ ; \*\*  $p < .01$