

Child health and relatives' employment in South Africa: The gendered effect beyond parents

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Abstract:

This paper assesses how child's serious illness/disability affects labour market participation of all adults living in a household. It goes beyond the usual father-mother analyses and accounts for the context of developing countries characterised by an extended family structure. It uses the NIDS panel data and utilizes fixed-effects logistic regressions and linear regressions for analysis. The results show child's illness/disability significantly increases the employment odds of fathers while it reduces those of mothers. These effects are even stronger among married parents. Non-parent males are more likely to work, while no significant effect is found on females. Child illness is associated, although not significantly, with the wider difference in the proportion of males and females working at the household level. These show the urgency for policy makers to be concerned about the family with ill/disabled children, to reduce the employment gender gap and make progress toward the SDG number five.

1. Introduction

The presence of an ill child in a household can influence the family by compelling members to reconsider family goals and plans and by diverting attention from important aspects that are needed for the family to function. This is because ill children in the household may be more prone to hospital visits (Hockenberry and Wilson 2014) or may require additional physical care compared to children who are not disabled (Kuo et al. 2014). This could also result in increased medical costs (special diet and wheelchairs), which may result in a huge financial burden for parents (Anderson et al. 2007; Stabile and Allin 2012). Time spent during hospital visits can prevent members of the family from engaging in other activities, such as employment. For

instance, research has found that families caring for ill children have lower incomes because of the employment constraints they face (Heymann, McNeill, and Earle 2013).

Despite a number of programs and policies emphasising investment in early childhood development, developmental delays and incapacities still exist. There are about 3.6 million children aged 1–9 years living with autism and more than 15 million living with idiopathic developmental intellectual disability (Vos et al. 2015). Other estimates report that about 5.1% of the world’s children are living with a ‘moderate or severe disability’ (UNESCO 2014). The majority (4 out of 5) of the children with disabilities are in developing countries, with the highest levels in sub-Saharan Africa (UNESCO 2010). In South Africa, recent census data report that the prevalence of childhood disability is 27.5% for children under the age of 4 and 11% for children aged 5–9 (Statistics South Africa 2012a).

Family types in developing countries are very specific. In fact, the 2015 World Family Map (WFM) report showed clearly that extended family structures, including parent(s) and kin from outside the nuclear family, are common in Asia, the Middle East, Central/South America, and sub-Saharan Africa but not in the other regions in the world (World Family Map 2015). In South Africa, the family has undergone key transformations, resulting in a number of different family units. Some researchers have attributed the changes in family life to apartheid (Hosegood, McGrath, and Moultrie 2009). In other words, the existing family types differ by race. For instance, the nuclear family type is particularly common among Whites and Asians to a certain extent, whereas Blacks and Coloureds (Mixed-Race persons) are more likely to live in an extended family system (.Amoateng, Heaton, and Kalule-Sabiti 2007). Meanwhile, Blacks and Coloureds (Mixed-Race Persons) represented 88.1% of the South African population in 2011 (Statistics South Africa 2012b). The WFM report showed that in 2007, 70% of children in South Africa were living in an extended family with other adults in addition to parents. This percentage was higher than what was observed between 2000 and 2014 in sub-Saharan African (SSA) countries like Kenya, Nigeria, Uganda, Ethiopia, Ghana, or the Democratic Republic of the Congo, and was the highest percentage among the sample of WFM countries.

Because of this structure, the cost of raising children can no longer be restricted to the biological parents alone. Close relatives in the household also help share in the cost of caring for children. This may not be restricted to financial costs alone but can also include time and other material support (Wusu and Isiugo-Abanihe 2006). Although there is research available

on the association between labour force participation of parents and child health (Gould 2004; Powers 2003; Burton et al. 2014; Simo Fotso 2017), there is a paucity of research on the relationship between child health and labour force participation of other caregivers in the household.

The scarcity of evidence on the relationship between child health and labour force participation of relatives in the context of extended family types like those in SSA makes South Africa, which is among the countries with the highest percentage of children living in such a family structure, a good case for studying this relationship. This study therefore examines how child health influences the outcomes of parents and other adult members in the household, especially their labour force participation in South Africa. It also questions whether this effect is gendered and how the effect varies among married parents.

This is important because, whether this effect is positive or negative, it can be very detrimental for these adults, the family, and society in general; therefore, this issue needs adequate attention from policy makers. On the one hand, an increase in labour force participation can intensify stress and anxiety on the adults concerned. On the other hand, a reduction in labour force participation can reduce income sources for the household and deprive society of an important labour force component that goes beyond the issue of parents caring for their children. This would be much more concerning if such a deprivation affected women only, because it would make them more vulnerable and widen the employment gender gap, which the international community is trying to reduce in accordance with Sustainable Development Goal (SDG) number five (UN 2015).

2. Literature review

The economic theory of domestic production, enriched by Becker (Becker 1965), is a good framework to understand the effect of child health on family members' employment. This theory, in general, offers an advantage because it considers the fact that in addition to paid work and leisure, unpaid work is also a part of an individual's or family's decision portfolio. Hence, time for caring for a child with a serious illness, which is a part of domestic production, must be considered by the family in the context of the maximisation of its utility function.

A number of studies have documented the cost of child health for mothers' labour market participation in developed countries (Powers 2003, 2001; Gould 2004; Burton et al. 2014; Zimmer 2007), but also in developing countries (Simo Fotso 2017; Gupta, Das, and Singh

2013), with sometimes contradictory results. A few studies have also examined the effect on fathers or on the couple (Gould 2004; Burton et al. 2014) and trying to identify how the child's health affects the father's or the couple's coping strategy to participate in the labour market. Other studies differentiated among time-intensive and cost-intensive children such as Gould (Gould 2004) in the United States and Simo in Cameroon (Simo Fotso 2017). Some authors like Power and Gould compared married and female household heads and found some heterogeneity in term of labour supply (Powers 2003, 2001; Gould 2004).

Despite the relatively abundant literature on parents, few studies exist on the cost of child health on developmental outcomes, especially the labour force participation of other relatives in the household. According to Reichman et al. (2008), living with an ill child can have adverse consequences on the entire household, including parents, siblings, and extended family members. Most of the research in this area has focused on families without parents. In the absence of parental care (e.g., with the death or migration of both parents), extended family members appear to be the most popular alternative for caring for an ill child, and, among family members, (Zagheni 2011) grandparents are usually the favourite option (Beegle et al. 2010; Karimli, Ssewamala, and Ismayilova 2012).

Acknowledging the importance of grandparents as key support mechanisms for households that have children with disabilities, Miller et al. (2012) used a phenomenological method to understand the everyday lived experiences of grandparents living in households with disabled children. The grandparents in their study highlighted the fact that the presence of disabled children in the household often delayed the life goals of family members and also disrupted the schedules of other family members. Other studies also found increased psychological distress among grandparents taking care of disabled children (Hartley et al. 2005; Mitchell 2007; Hillman 2007; Wakefield et al. 2014).

Examining the labour market outcomes of grandparents caring for children among families in the United States using two-stage least-squares models, Wang and Marcotte (2007) concluded that grandparents caring for children were more likely to participate in the labour market with grandmothers working longer than grandfathers. Using a framework of family financial well-being, Bailey et al. (2013) examined the income streams and expenditures of grandparents raising grandchildren in Montana and also found gender differences. Their study found that grandparents had to work additional hours to increase their income to care for the children in the household. These results are similar to the work done by Ho (2015) using

longitudinal data. Ho's results pointed out marital differentials in the labour market participation of grandparents, with married grandparents having a higher likelihood of being employed.

Besides grandparents, other relatives may exist in the household who are able to care for ill children. A number of researchers have examined the relationship between child health and financial burdens of other members in the family. For instance, a descriptive study in China found that the presence of an ill child in the household resulted in the loss of employment for some members of the household in the past year preceding the survey. Apart from losing jobs, some members of other families studied reported that someone in the household had quit, rejected a job offer or changed jobs (Ou et al. 2015). These results are similar to the results from another study in the United States, which found that someone in the family had quit a job, not taken a job, or changed the type of job because of the presence of an ill child in the family (Montes and Halterman 2008).

Other studies have found different results when adult health rather than child health was examined. These studies established a positive relationship between caregiving and labour force participation. In the United Kingdom, female caregivers were more likely to be in the labour force compared to their counterparts who were noncaregivers (Carmichael and Charles 1998). This was also found to be true in the United States among male caregivers (DENTINGER and CLARKBERG 2002).

In sub-Saharan Africa, where a number of countries have been hit by HIV/AIDS, children are increasingly seen as caregivers in cases of adult mortality, and other relatives sometimes have to care for children in the household. The literature on HIV/AIDS care has found that caregivers who are in the working age group are unable to participate in the labour market (Akintola 2008).

To the best of our knowledge, the literature on the labour supply of other relatives in households with long-term ill children in SSA, especially South Africa, is scarce. Therefore, the purpose of this study is to examine the influence of child health on the employment of fathers, mothers, and other male and female relatives in the household to determine whether there is a penalty for women.

3. Method

3.1. Data

The main data source of this study is the National Income Dynamics Study (NIDS) panel data set. NIDS was conducted by the Southern Africa Labour and Development Research Unit at the University of Cape Town under the initiative of the Department of Planning, Monitoring, and Evaluation. The data were collected from February 2008 through August 2015 in 4 waves. NIDS used a combination of household, child, and adult questionnaires. The survey successfully interviewed 26,776 individuals during wave 1. With newborn children and other new arrivals in the household, this number rose to 37,396 in wave 4. There was also some attrition both among the original sample and among new arrivals across the waves (Chinhema et al. 2016).

The analyses of this paper focused first on adults aged 18 to 60 who have at least one child under 17 years of age living with them, they constitute our parent sample. Then, they focused on adults aged 18 to 60 who are living in the same household as at least one parent of a child under 17 years of age, these adults are our nonparent sample. The lower bound age of 18 was chosen based on the South African Children's Act 38 of 2005, according to which a child is any person aged under 18 (South Africa 2006). Additionally, 60 years is the 'normal' retirement age in South Africa (Limpopo Legislature 2014).

3.2. Variables

Employment status was drawn from the labour market module of the adult questionnaire. Based on the International Labour Organisation's recommendation (ILO 2016), our measure of employment included all types of jobs, including full-time, part-time, and temporary/casual paid jobs, self-employment, work in one's own farm or plot, and assistance of others in business activities. The employment variable was a dummy variable taking the value 1 if the individual worked and 0 if not.

Child's serious illness/disability variable was measured differently for parents and nonparent relatives. For parents, the study used a variable indicating if a mother or a father had at least one child with a serious illness or disability. This meant a child with conditions like tuberculosis; respiratory problems (asthma, bronchitis, and pneumonia); physical handicaps; problems with sight, hearing, or speech; mental problems; HIV/AIDS; diabetes; heart disease; cancer; epilepsy/fits; or other serious illnesses specified by the respondent. For the other

relatives, this variable indicated if they lived with a parent of a child with a serious illness or disability.

The health conditions were self-reported by children aged 15 to 17, while the mother/caregiver or another household member knowledgeable about children aged 0 to 14 were asked about the health conditions of the latter. This method of measuring child health can raise many issues. First, some studies have shown discrepancies between self-reported conditions and medical health records (J. E. Miller et al. 2001). However some authors argue that this measurement error decreases with the severity of the condition (Baker, Stabile, and Deri 2004; Burton et al. 2014). Because the conditions accounted for in this study are serious illnesses, this measurement error should be very limited.

The second issue raised by the literature is ‘justification bias’ (Baker, Stabile, and Deri 2004). In fact, some parents/respondents can justify their poor labour market results by falsely reporting children in poor health. Further, some working parents who feel guilty because of the time they spend away from their homes are more likely to report serious child health problems. However, some studies have shown that maternal self-reporting of specific conditions rather than a general assessment of child health tends to be more objective (Powers 2003; Gould 2004). To measure health, this study used the question ‘Has this child had any serious illnesses or disabilities?’ with subsequent reports of specific conditions by the respondents rather than questions on general assessments of health. Hence, this ‘justification bias’ should be very small.¹

The estimations also controlled for marital status. An interaction term between child health and marital status was introduced to account for the variation in effects according to the mother’s marital status, which is reported in the literature (Powers 2001). Including an interaction term for marital status in the overall sample allowed for a larger sample and more power for estimations. A set of individual characteristics reported in the literature as potential determinants of labour market participation, such as age, age square, education, immigrant status, parent’s own health status (Burton et al. 2014), were used as covariates.² Additionally, the relationship of individuals to the household head was controlled for. This was done to assess whether being a household head, family member or an in-law had an impact on employment status. Moreover, the study accounted for other variables susceptible to affecting the reservation wage (i.e.the lowest wage at which an individual is willing to work), such as individuals’ nonlabour income (measured as the log of nonlabour income plus one), the number

of children aged 0–6 and 7–17, the number of adults present in the household, and the total monthly income of the household (measured as the log of income plus one). Because residence type is not part of NIDS’s publicly released data, our study controlled for the density of the population of the province of residence (high, medium, low) using the 2011 census. The unemployment rate of the province was also included as a control variable to account for employment opportunities. The unemployment data came from the Quarterly Labour Force Survey published by Statistics South Africa (Statistics South Africa 2017). The unemployment rate of the third quarter of the starting year of the survey wave for the corresponding province was used.

3.3. Estimation strategy

Because the dependent variable was dichotomous, logistic regression was used. The panel structure of the data allowed three type of models to be considered: pooled logistic regression, random-effects logistic regression, and fixed-effects logistic regression (Greene 2012). The fixed-effects logistic model was used for this study.

The choice of this model was guided by the fact that it allowed us to control for individuals’ observable and unobservable characteristics that were stable over time (Allison 2009). In fact, it has been argued in the literature that mothers of ill or disabled children can differ from those of healthy children in terms of career motivation or work attachment (Allison 2009). Others have argued that some unobservable characteristics like mother’s ability can affect both child health and mothers’ employment outcomes (Zimmer 2007; Powers 2003; Simo Fotso 2017). To correct the estimations from this source of endogeneity bias, the logistic fixed-effects model appears to be a good option.

In addition to this theoretical reasoning, a set of empirical tests was conducted to choose the ideal model. A likelihood-ratio test of ρ equals 0 showed that the panel level variance measure was important; hence, pooled logistic regression was not relevant. Further, the Hausman test clearly showed that the fixed-effect model was a better fit for the data than the random-effect models. To correct for attrition between waves 1 and 4 of the survey, the panel weights of wave 4 were used.

4. Results

4.1. Sample and descriptive statistics

The sample consisted of 4141 observations by 1727 fathers and 12,597 observations by 5069 mothers with nonmissing information for any analysis variables. A total of 2294 nonparent adult males with 4028 observations and 1738 nonparent adult females with 2816 observations and nonmissing information were identified as living in the households of these parents.

Overall, the proportion of working fathers was higher than for mothers (76% vs 45%). This was true whether or not they had an ill/disabled child. Among fathers, as shown in the first panel of Table 1, those having an ill/disabled child were more often employed than those who did not (83% vs 76%). The opposite was observed among women, where those with ill children were very slightly less likely to be working. The same tendency was observed among nonparent relatives presented in the second panel. Males living in a household with an ill child tended to work more often than those in households with healthy children (50% vs 45%), whereas females in such households worked less than others (35% vs 37%).³

Table 1: Proportion of adult in employment by child illness status and odds ratios of fixed effects logistic regression of employment status

	Proportion	Proportion	Proportion	Proportion
	No ill child	Presence of a Ill child	No ill child	Presence of a Ill child
Panel 1: Parents				
	Fathers		Mothers	
Employment status	0.758	0.827	0.455	0.450
Panel 2 : Non-parents				
	Males		Females	
Employment status	0.449	0.498	0.371	0.351
Panel 3 : Parents				
	OR	SE	OR	SE
	Fathers		Mothers	
A child with serious illness/dis.	1.142***	(0.014)	0.891***	(0.003)
Married	0.435***	(0.003)	0.738***	(0.002)
A child with serious illness/dis.*Married	1.027*	(0.014)	0.890***	(0.005)
Age	1.455***	(0.007)	1.119***	(0.003)
Age2	1.000***	(0.000)	0.996***	(0.000)
Education (<i>No education</i>)				
<i>Primary</i>	0.616***	(0.007)	2.372***	(0.024)
<i>Secondary</i>	1.489***	(0.022)	2.210***	(0.025)
<i>Vocational</i>	5.471***	(0.092)	2.312***	(0.028)
<i>Higher</i>	1.528***	(0.028)	5.089***	(0.061)
Immigrant	3.399***	(0.051)	0.474***	(0.006)
Adult ill	0.575***	(0.003)	1.192***	(0.003)
Log(non-labour income+1)	0.888***	(0.001)	0.954***	(0.000)
Relationship to the HH (<i>HH</i>)				
<i>HH family</i>	0.375***	(0.003)	0.756***	(0.002)
<i>HH in-law/Non-relative</i>	0.644***	(0.002)	1.171***	(0.002)
Number of children 0-6	1.013***	(0.003)	0.921***	(0.001)
Number of children 7-17	1.033***	(0.003)	0.939***	(0.001)

Number of adult in the hous.	0.958***	(0.002)	0.892***	(0.001)
Log(Household income+1)	2.025***	(0.004)	1.544***	(0.001)
Provincial unemployment rate	0.956***	(0.000)	0.988***	(0.000)
Population density (<i>High density</i>)				
<i>Middle density</i>	0.700***	(0.009)	1.140***	(0.009)
<i>Low density</i>	1.671***	(0.028)	0.490***	(0.004)
Observations‡	1312		5577	
Panel 4: Non-parent relatives				
	Males		Females	
Lives with child with serious illness/dis.	1.352***	(0.008)	0.996	(0.013)
Married	3.206***	(0.031)	1.841***	(0.034)
Age	1.125***	(0.005)	1.858***	(0.016)
Age2	0.999***	(0.000)	0.993***	(0.000)
Education (<i>No education</i>)				
<i>Primary</i>	3.239***	(0.087)	4.514***	(0.088)
<i>Secondary</i>	3.345***	(0.092)	0.528***	(0.013)
<i>Vocational</i>	3.815***	(0.106)	0.349***	(0.011)
<i>Higher</i>	4.539***	(0.127)	2.012***	(0.055)
Immigrant	0.801***	(0.023)	9.524e+09	(1.659e+13)
Adult ill	0.433***	(0.002)	1.601***	(0.013)
Log(non-labour income+1)	0.969***	(0.001)	0.993***	(0.001)
Relationship to the HH (<i>HH</i>)				
<i>HH family</i>	1.090***	(0.008)	2.788***	(0.025)
<i>Head in-law/Non-relative</i>	0.984*	(0.009)	1.647***	(0.019)
Number of children under 6	1.036***	(0.002)	1.011**	(0.004)
Number of children aged 6-17	0.844***	(0.001)	0.930***	(0.004)
Number of adult	1.027***	(0.001)	0.891***	(0.003)
Log(Household income+1)	1.151***	(0.001)	1.501***	(0.005)
Provincial unemployment rate	0.972***	(0.001)	1.095***	(0.001)
Province pop density (<i>High density</i>)				
<i>Middle density</i>	1.912***	(0.043)	0.000	(0.000)
<i>low density</i>	0.560***	(0.012)	0.000	(0.000)
Observations‡	1422		653	

Note: Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Variables in parentheses are reference categories. OR: Adjusted Odds ratios SE: standard error. ‡ The observations presented differ from those of the descriptive statistics section, for the fixed effects logit regression drop automatically the individual observed only once in the panel as well as those with identical outcomes across waves. Wave dummies are included but not reported.

4.2. Individual analyses of the effects of child's serious illness on employment

The third panel of Table 1 presents the adjusted odds ratios of the fixed-effects logistic regressions of parents' employment. The first column shows that, everything else being equal, among single fathers, the odds of working when they have an ill child is 1.14 times the odds of working when they have a healthy child. The odds of working for married fathers are 57% lower than the same odds for single fathers among fathers with healthy kids. For married fathers with at least one unhealthy child, the odds of working are slightly higher than for single fathers

with unhealthy kids (OR=1.03). Therefore, the increasing effects of child illness are stronger among married fathers. For women, the opposite effects were observed. The odds of being employed are lower for mothers with ill children compared to mothers with healthy children among the single women (OR=0.89). Similar to what was observed for fathers, among mothers of healthy kids, married mothers are less likely to work than single mothers (OR=0.74). Once again, the observed effects of child illness were stronger for married women. In fact, the odds of working for married women were lower than single women when they both have unhealthy children (OR=0.89).

As shown in the fourth panel of Table 1, males living in the same household as a parent of a child with a serious illness/disability have higher odds of working (OR=1.35). A different effect was observed for female adults living in a similar household. Their odds of being employed were not insignificantly different (OR=1). Contrary to what was observed for parents, married nonparent males and females have greater odds of being employed.

4.3. Household analyses

Individual level analyses do not account for the fact that the employment decisions of household members are linked and can be taken at a household level as a coping strategy to deal with the presence of a seriously ill child. To account for the fact that the employment decisions in a household can be taken at a household level, an analysis was also conducted at the household level. The proportion of working adult males and the proportion of working adult females, and their differences, were used as employment outcomes. For this analysis, a linear regression model was used.⁴ Given that household data are not longitudinal in NIDS, in the sense that only individuals, not households, were followed across waves and that a new household identifier was assigned at each wave (Chinhema et al. 2016), the data were pooled with waves dummies introduced as control variables. The variables measured at the household and regional levels quoted above were also used as controls. Calibrated weights, which were measured at a household level and allowed the sample to be representative of the national population (Chinhema et al. 2016), were used.

Table 2: Linear regression of employment outcome at the household level

	Proportion of males working		Proportion of females working		Difference in proportion (males-females)	
	Coef	SE	Coef	SE	Coef	SE
Child with illness/dis.	0.049**	(0.024)	-0.009	(0.026)	0.053	(0.045)
Number of children under 6	-0.030***	(0.006)	-0.074***	(0.005)	0.035***	(0.010)
Number of children aged 6-17	-0.061***	(0.005)	-0.028***	(0.005)	-0.042***	(0.008)
Log(Household income+1)	0.107***	(0.006)	0.091***	(0.005)	0.020**	(0.008)
Provincial unemployment rate	0.006***	(0.002)	0.004**	(0.002)	-0.000	(0.003)
Population density (<i>High density</i>)						
Middle density	0.027*	(0.015)	-0.007	(0.015)	0.024	(0.026)
low density	-0.051***	(0.018)	-0.069***	(0.017)	0.005	(0.031)
Constant	-0.131*	(0.067)	-0.175***	(0.054)	0.108	(0.093)
Observations	9356		14929		8629	

Note: Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Variables in parentheses are reference categories. Coef: coefficient SE: robust standard error. Wave dummies are included but not reported.

As shown in the first column of Table 2, the presence of an ill/disabled child in a household is significantly associated with a higher proportion of adult males working in that household. This confirms what was found at the individual level for fathers and male relatives. The presence of a seriously ill child is negatively associated with the proportion of women working in that household, even if the relation is not significant. The difference between the proportion of male and female workers seems to be positively, although non-significantly, associated with the presence of a seriously ill child. This seems to confirm the hypotheses of a gendered effect of child illness on adult family members with the increase of the employment gap between males and females.

5. Discussion and conclusion

The aim of this chapter was to investigate the effect of a child's serious illness/disability on the employment status of adults living in a household in South Africa. This chapter went beyond father–mother analyses and accounted for the context of developing countries characterised by an extended family structure by analysing whether and how child health affects labour market participation of parents and nonparents in the household. Using the South African NIDS panel data, fixed-effects logistic regression, and linear regression at the household level, a number of results were obtained.

First, the individual analyses showed that the presence of a child with a serious illness/disability significantly increases the odds of fathers being in employment and reduces the same odds for mothers. This was similar to Burton et al.'s result, although they found that the effect for fathers was not statistically significant (Burton et al. 2014). Second, the negative effect is even stronger among married mothers, suggesting that the gendered effect of child

illness is much more present among couples. This contrasts with the results of Power (2003), who found using his dynamic model that employment of female household heads was adversely affected by child's disability and had no effect for wives. Third, the gendered effect of child illness goes beyond parents and affects nonparent adults living in the household. Male relatives are more likely to work, whereas no significant effects are found for females. Finally, the analyses at the household level showed that the proportion of working males is significantly and positively associated with the presence of an ill child. The presence of an ill child seems to be associated, although not significantly, with a wider difference in the employment gap between males and females.

This study has some limitations. First, the effects of some individual characteristics like race, which is a very important variable in South Africa, were not calculated because of the method used. Nevertheless, given the advantage of the fixed-effect model in accounting for individuals' observable and unobservable characteristics, the study used that method despite this limitation. Second, because household data are not longitudinal in NIDS, the analyses at the household level were not dynamic and did not account for households' unobservable traits. Hence, they may be biased. Further research using household panel data could be conducted to assess the coping strategies at the household level.

Despite the limitations, the results obtained have important policy implications. First, they show that child illness has a wider effect going beyond parents; it affects nonparents of working age living in the same household as parents. It will be necessary for policy makers to provide urgent support to limit this effect. Second, the effect appears to be gendered, making males breadwinners and females caregivers. This suggests that child illness and disability is a penalty for maternal labour market participation, especially when mothers are married. A cash transfer system should help to relieve financial cost for these families and reduce the pressure on males regarding employment. Such a system could help to balance carer roles in families and ultimately improve mothers' labour market participation. A formal childcare system adapted to seriously ill/disabled children that is affordable for families should help to reduce the employment gender gap, allowing women to be more productive in the labour market. This should contribute to the achievement of SDG number five on gender equality and the full and effective participation of women in the labour force.

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¹ For people aged 15 and above, a separate question was asked regarding the presence of some specific conditions. This was followed by the question "Do you have any other major illnesses or disability not mentioned above?" with subsequent reports of the illness/disability.

² There are, however, few immigrants among nonparent female relatives, so the results of this variable in this group should be interpreted cautiously.

³ The full table of descriptive statistics is available upon request.

⁴ The generalised linear model with binomial family and logit link for proportion produced very similar results.