



Short- and medium-term effects of informal care provision on female caregivers' health[☆]



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ABSTRACT

In this paper, we present estimates of the effect of informal care provision on female caregivers' health. We use data from the German Socio-Economic Panel and assess effects up to seven years after care provision. The results suggest that there is a considerable negative short-term effect of informal care provision on mental health which fades out over time. Five years after care provision the effect is still negative but smaller and insignificant. Both short- and medium-term effects on physical health are virtually zero throughout. A simulation analysis is used to assess the sensitivity of the results with respect to potential deviations from the conditional independence assumption in the regression adjusted matching approach.

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1. Introduction

Europe's societies are getting older. Low birthrates and population ageing due to technological progress in medicine shift the age structure towards higher shares of elderly individuals. This has strong implications for labour markets and social security systems with the long-term care sector as one important part of those. The World Alzheimer Report, for instance, expects, as a result of growing numbers of people in need of long-term care, publicly funded

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costs of long-term care in the European Union (EU 27) to increase from 1.2% of GDP in 2007 to 2.5% in 2060 (*Alzheimer's Disease International, 2013*).

Already today, costs are one reason why many governments prefer informal care (care provision of close relatives and friends) over professional formal care provision. In Germany, for instance, the public long-term care insurance paid 700€ per month in 2012 for care recipients of the highest care level who are cared by family members and 1550€ per month to the same recipient cared by professional caregivers. Germany is a country in which long-term care is still predominantly regarded the task of the family (*Schulz, 2010*) and informal care is more common than in comparable states like the Netherlands (*Bakx et al., 2015*). More than one million official care recipients (about 46% of all) are exclusively cared by family members rendering informal care the most important part of the German long-term care system.

However, provision of informal care is both mentally and physically challenging. We, therefore, analyse the question of whether there are some hidden costs – or costs often neglected in the public debate – that make informal care provision not as economic as often thought. This could be the case if informal care provision goes along with health impairments of the caregivers. Other costs (not

considered here but heavily analysed in the economic literature¹) are forgone income for those who leave the labour force to provide care.

The economic literature on health effects of caregiving is fairly scarce.² To the best of our knowledge, there are only three studies on the effect of care provision on health in a narrow sense. [Coe and van Houtven \(2009\)](#) estimate health effects of informal caregiving in the US using seven waves of the Health and Retirement Survey (HRS). They use sibling characteristics and the death of the mother as instrumental variables that control for selection into and out of caregiving in order to identify causal effects. They find that continued caregiving leads to a significant increase in depressive symptoms for both sexes while physical health does not seem to be affected. [Do et al. \(2015\)](#) use data from South Korea where informal care is quite common among females caring for their parents-in-law. The data allow identifying a health effect for daughters-in-law where selection into care is taken into account by instrumenting the informal care decision with parents-in-law's health endowment. Their findings suggest that there is an increased probability of worse physical health by providing informal care. [Di Novi et al. \(2013\)](#) use the first two waves of SHARE to estimate the effect of caregiving on self-rated health and quality of life, measured by the CASP-12. They find positive effects of care provision on self-rated health (seen as a measure of physical health) and mixed evidence regarding quality of life (seen as a measure of mental health).

Two further papers evaluate the relationship of caregiving and caregiver drug utilisation. On the one hand, drug intake could be seen as an objective measure of poor health. On the other hand, it sheds light on direct costs of caregiving. [Van Houtven et al. \(2005\)](#) assess the impact of caring on the intake of drugs using data on caregivers for US veterans. One finding is that the intensive care margin is an important factor for drug intake. [Schmitz and Stroka \(2013\)](#) exploit data of a large German sickness fund that enables to consider prescriptions of anti-depressants and drugs to restore physical health. Their results support [Van Houtven et al. \(2005\)](#), providing some evidence that caregiving increases the intake of anti-depressants in particular if coupled with having a job. Other studies look at broader welfare consequences of caring and use life satisfaction as a proxy ([Bobinac et al., 2010](#), [Van den Berg and Ferrer-i Carbonell, 2007](#), [Leigh, 2010](#), [van den Berg et al., 2014](#)). One issue with these studies is that they do not address reverse causality and selection problems based on time-varying unobserved heterogeneity.

We use representative household data from the German Socio-Economic Panel to estimate the effects of informal care provision on female caregivers' health. The outcome variables are mental and physical summary scale measures (called MCS and PCS) for the years 2002 to 2010 that capture the multidimensional nature of health. Our contributions to the literature on health and informal care are twofold: First, we use a different approach to address selection into and out of care provision. Except for [Di Novi et al. \(2013\)](#), previous studies that deal with endogeneity problems all use instrumental variables approaches. We try to identify the effect of caring using different assumptions that can put the literature on a broader basis and thereby complement it. Our approach is to fully exploit the time dimension and richness of panel data in order to

justify the conditional independence assumption that would allow for a causal interpretation of the results. To be more precise, we use a regression adjusted matching approach. Although we argue below that, given our data we can justify the conditional independence assumption, we allow in a sensitivity analysis that follows [Ichino et al. \(2008\)](#) for certain deviations from this assumption.

Second, to the best of our knowledge, this is the first study that does not only look at contemporary, or short-term effects of informal care provision on health, but also on medium-term effects of up to seven years after care provision. By medium-term effects we mean: if a woman provides care in a certain year, what is her expected change in health up to seven years afterwards. This adds on work by [Coe and van Houtven \(2009\)](#) who also discuss persistence of health effects but need to stick to a two year period. Medium-term consequences could be more severe than instantaneous short-term health impacts restricted to the period of providing care. Moreover, knowledge about the persistence of health effects is arguably more important for policy makers than about short-run effects only.

The results suggest that there is a considerable negative short-term effect of informal care provision on mental health which, however, fades out over time. Five years after care provision the effect is still negative but smaller and insignificant. Both short- and medium-term effects on physical health are virtually zero throughout. The sensitivity analysis suggests that sensible deviations from the conditional independence assumption do not change these results.

The paper is organized as follows. Section 2 briefly outlines the institutional setting of long-term care in Germany. Section 3 discusses the empirical approach, Section 4 presents the data. The results are reported in Section 5 while Section 6 assesses the sensitivity of the results. Section 7 concludes.

2. Institutional background

The German social long-term care insurance system was introduced in 1995 as a pay-as-you-go system. It is financed by a mandatory pay payroll tax deduction of currently 2.35% of gross labour income (2.6% for employees without children). In order to qualify for benefits, individuals need to be officially defined as care recipients and be classified into one of three care levels. In care level one individuals need support in physical activities for at least 90 min per day and household help for several times a week. Individuals in need of more care are classified into care levels two or three, where the benefits increase in care levels.

Benefits also depend on the type of care, where monthly payments for informal care range from 235€ (level one) to 700€ (level three), for professional ambulatory care from 450€ to 1550€ and for professional nursing home care from 1023€ to 1500€. The latter, in particular, does not fully cover the expenses for nursing home visits and copayments of up to 50% are standard. Copayments for professional ambulatory care are smaller and amount to an average of 247€ or about 20% ([Schmidt and Schneekloth, 2011](#)). Social welfare may step in if individuals are not able to bear the copayment. Thus, the decision for formal or informal ambulatory care is usually not driven by financial aspects as each care recipient who is assigned a care level is entitled to benefits for all kinds of care.

The introduction of the insurance system in 1995 stressed the family as the main provider of care, as it is thought to provide care cheaper, more agreeable, and more efficiently. From the care recipient's perspective, the decision to receive informal care typically expresses a preference for being cared by familiar relatives or friends. In some cases, informal care recipients are additionally supported by professional carers. These are, on average older recipients with a higher care level and, thus, a higher care burden

¹ E.g., [Carmichael and Charles, 2003](#); [Heitmueller, 2007](#); [Heitmueller and Inglis, 2007](#); [Bolin et al., 2008](#); [Leigh, 2010](#); [Van Houtven et al., 2013](#); [Meng, 2013](#).

² In the medical literature, there is a fair amount of studies on the relationship of health and care provision. They mainly stem from the US (see e.g., [Schulz et al., 1995](#); [Stephen et al., 2001](#); [Gallicchio et al., 2002](#); [Tennstedt et al., 1992](#); [Beach et al., 2000](#); [Ho et al., 2009](#); [Shaw et al., 1999](#); [Lee et al., 2003](#); [Dunkin and Anderson-Hanley, 1998](#); [Colvez et al., 2002](#)). In general, these studies use non-representative samples and widely disregard endogeneity problems. Furthermore, they often concentrate on more specific definitions of care, such as caring for people with dementia.

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