Title: How does she do it all? Effects of education on reconciliation of employment and informal caregiving among Austrian women

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Abstract

The introduction of reforms to the Austrian pension system in the early 2000s resulted in a significant increase in the employment rate of older working age women. This increase was highly differentiated along education groups, with increases in employment rates concentrated among those with secondary and tertiary education. Logistic regression analysis is applied to SHARE data from waves 1 and 6, to determine whether the increase in labour market participation of women aged 50 and older in Austria has affected informal care provision and whether this impact has been differentiated across education lines. Unlike their secondary and tertiary educated counterparts, lower educated women were more likely to provide high intensity care in 2015 than in 2004, resulting in an education gradient that was not present before. In comparison, the overall probability to provide care has not changed significantly, irrespective of older women's education. Other possible adjustments were also explored, such as decreased participation in social activities or higher care burden, but neither were confirmed. There is also limited evidence of compensation by increased informal care provision among men. Both employment and informal care provision have become more segmented in Austria in the wake of the pension reforms of 2004, suggesting growing inequalities among older working age women of different educational background.

Keywords: Unpaid care, Inequality, Long-term care, Labour market

Introduction

The demographic ageing of the European population has raised concerns about how to provide long-term care (LTC) to frail older people (Spasova et al., 2018). These concerns arise not only from the increase in the number of frail older people, but also from uncertainties about the future availability of informal care that could result in a *care gap* (Geerts et al., 2012). Although estimates vary according to studies and countries, informal carers remain the main source of LTC to frail older people across Europe, accounting for about two-thirds of care received by older people (Hoffmann & Rodrigues, 2010). Uncertainty about the future availability of informal care has been linked not only to demographic changes (e.g. declining family size), but also to rising employment rates of older working age women (Colombo et al., 2011).

This uncertainty and the potential for a care gap to arise is particularly relevant for countries that have historically relied heavily on informal care and have had lower employment rates of women. Austria has been characterized in the literature as a familialist country, where responsibility for care rests with the family, with low labour market attachment of women (Bettio & Plantenga, 2004, Sardadvar & Mairhuber, 2018, Le Bihan et al., 2019). The last decade, however, has witnessed a significant development in the labour market situation of older working age women in Austria, who are the prime group of informal caregivers. Starting in 2004, the historically low employment rates have steadily increased towards the EU average (Eurostat, 2019a). However, the growth in employment rates has been uneven within this group of Austrian women, as it has been mostly concentrated among the higher educated. In contrast, the employment rates of the lower educated groups have remained much lower. This raises two important questions. First, whether the rising labour market participation of older working age women in Austria has affected their informal care provision in a way that could suggest a widening care gap. Second, whether the differentiated labour market attachment by education level indicates a segmentation of informal caring and employment along education attainment

among these Austrian women. This study uses data from different waves of the Survey of Health, Ageing and Retirement in Europe (SHARE) for Austria to empirically answer these two questions.

Policy context of the Austrian labour market and long-term care sectors

The evolving Austrian labour market for older working age women

The labour market in Austria in the early 2000s was characterized by a low average age of retirement and consequently low employment rates of workers close to the statutory retirement age, particularly women. In 2000, the statutory retirement age stood at 60 for women and 65 for men, while the actual average age of retirement was 57 and 58 respectively (Böheim, 2017). This was accompanied by a steep education gradient in labour market attachment of this group of workers. Among those that remained employed, individuals with lower education were disproportionately underrepresented (Biffl, 2006). Different factors contributed to create this situation. First and foremost, financial incentives to continue working were weak due to high marginal tax rates and several pathways into early retirement (e.g. due to long-term unemployment, reduced capacity to work or long contributory careers), which offered relatively high replacement rates (Hofer & Koman 2006, Mara &Nazarini, 2011). Qualification mismatch and lower health also contributed to the lower employment rates among older workers, especially among women, who as a group lagged behind in terms of formal education. The labour market situation of older workers changed considerably after 2004, when significant changes to the Austrian pension system came into effect. The introduced changes altered the incentives faced by those approaching retirement age (Mara & Nazarini, 2011), by reducing and later eliminating the possibility to retire early with long contributory careers. The maximum replacement rate was also set at 80 per cent, for those retiring at 65 (for men)[i] with at least 45 years of paid social contributions – the so called "80/65/45 rule". The replacement rate was no longer applied to the average best 15 years of earnings, but was to be progressively

extended to include the average best 40 years by 2028 (OECD, 2013). The penalty for accessing early pension was increased to 4.2 per cent per year up to a maximum of 15 per cent of pension reduction (Mara & Nazarini, 2011). The yearly bonus that accrues to those working beyond the statutory retirement age was set at 4.2 per cent.

After these reforms came into fruition in 2004, the employment rate of older workers in Austria increased substantially, especially among women (Böheim, 2017). According to Eurostat data, the increase in the share of women aged 55-64 that were employed was substantial between 2004 and 2018, although differentiated by education level (Figure 1). The share of 55-64 years old women with less than secondary education that were employed increased by 18.4 percentage points (p.p.) within this period, albeit starting from a very low level. In comparison, for women with completed secondary and tertiary education, the increase was much steeper at 25.5 p.p. and 30.8 p.p., respectively. In absolute figures, there was an increase of 26 thousand among 55-64 years old women with less than secondary education (with the majority of the increase taking place till 2007 for this group), compared to 94 and 56 thousand for those with secondary and tertiary education, respectively. The increase is all the more remarkable considering the effects of the Great Recession and the fact that part-time work in percentage of total female employment remained constant throughout the period (Eurostat, 2019a).

[FIGURE 1 HERE]

Despite these transformations, the Austrian labour market continued to be characterized by strong gender segregation, with women over-represented in the service sector and among part-time workers (Böheim, 2017). This is reflected in the gender pay gap that remained at 19.9 per cent in 2017, above the EU average (Eurostat, 2019b).

The familialistic long-term care system in Austria

The Austrian long-term care system is considered an example of *familialism* (Leitner, 2003, Sardadvar & Mairhuber, 2018, Le Bihan et al., 2019) in which public policies explicitly support

the role of the family as the main caregiver. To this end, it provides generous "cash rights" and "time rights" to family carers (Leitner, 2003), especially the former. "Cash rights" take the form of a universal cash benefit provided to those in need of care (*Pflegegeld – care allowance*), introduced in 1993. No employment contract or proof of payment is needed if the allowance is used to reward informal carers. The amount of the cash benefit varies according to seven levels of assessed care needs, ranging from 154.20 to 1655.80 Euros, in 2015. These amounts represented 5.4 and 57.9 per cent of the average wage (OECD, 2019), making the *Pflegegeld* a relatively generous benefit within the European context (Da Roit et al, 2016).

"Time rights" have been strengthened only more recently. Since 2006, informal carers who reduce their working time or leave employment because of caring duties are covered by pension insurance. In 2013, approximately 9000 informal carers were insured (Pensionsversicherung, 2017). A care leave scheme to care for terminally ill relatives (*Familienhospizkarenz*) exists since 2002. It has a maximum length of up to six months and it may also take the form of a flexible working arrangement (Riedel & Kraus, 2011). In addition, since 2014, a care leave scheme entitles working carers to take up to 3 months of full or part-time paid leave (*Pflegekarenz*) with its amount indexed to the unemployment benefit. This latter care leave scheme is not however, a statutory right, requiring the accord of the employer. It is estimated that about 2.5% of all working age carers benefited from any of these forms of paid care leave schemes in 2016 (Schmidt et al., 2017).

In Austria, an estimated 80 per cent of those in need of care receive informal care at home (BMASK 2016). According to a representative survey of informal carers carried out in 2005, 80% of informal carers were women and one third of all informal carers had primary education, while only four per cent had completed tertiary education (Pochobradsky et al., 2005). A more recent survey shows the share of female carers down to 73% and approximately 22% of all informal carers with completed tertiary education (Nagl-Cupal et al., 2018). Data on working

age carers for 2010 showed that 46 per cent held a full-time job, while 20 per cent worked part-time (Statistik Austria, 2011). While men made up for a slight majority among informal carers employed full-time, women were overwhelmingly represented among those with part-time jobs or outside the labour market. Reducing labour participation, either through reduced working time or quitting the job, was correlated with higher needs from the user (Nagl-Cupal et al., 2018).

In parallel, the availability of home care services for older people has increased since the early 2000s. Still, in 2016 only 32 per cent of users of the *Pflegegeld* received formal care at home (Fink, 2018). Home care services are provided mostly by non-profit organizations with out-of-pocket payments calculated in proportion of users' income. Another important feature of the provision of long-term care in Austria are live-in carers of migrant origin (known as '24-hour carers') (Österle & Bauer 2012). Formerly an unregulated activity, 24-hour carers were regulated in 2007 with additional means-tested benefits being provided to families that employ them. Although detailed data on users of 24-hour care is limited, this type of care seems to be concentrated among more affluent users (Schmidt, 2017).

Specific patterns of employment and care by education group

Theoretical models of informal care provision and division of labour within families typically assume that providing informal care entails an opportunity cost in the form of foregone wages (Becker, 1965, Norton, 2000). Empirical evidence of this however, remains mixed. While some studies show that informal carers are indeed less likely to be employed (Carmichael & Charles, 2003; Bolin et al., 2008; Carmichael et al., 2010; Nguyen & Connelly, 2014), the magnitude of the effect of informal care on employment seems to be small and often not significant (Lilly et al., 2007).

Although empirical studies control for a variety of confounding factors very few report separate results for specific subgroups, including by education (Hohmeyer & Kopf, 2018). In theory,

higher education could be associated with greater opportunity costs for informal care giving in the form of foregone wages or greater possibility for obsolescence of job-specific skills (Norton, 2000). There seems to be some evidence that higher educated individuals are either less likely to become carers (Carmichael et al., 2010; Nguyen & Connelly, 2014; Tokunaga & Hashimoto, 2017; Hohmeyer & Kopf, 2018), or do not experience large reductions in the number of hours worked when providing care (Speiss & Schneider, 2003). Part of the differences by educational attainment could be explained by dissimilar ability to pay for care services to replace informal care provision, although results remain significant after controlling for household income (Tokunaga & Hashimoto, 2017; Hohmeyer & Kopf, 2018). Another possible causal pathway for education differences could be access to care leave schemes that would allow for a better conciliation of work and care. Access to care leave schemes has been found to vary significantly by education level, even in countries with a generous long-term care system (Oldenkamp et al., 2017).

Models of division of labour within families suggest that the impact of employment on informal care may be differentiated within the household. Specifically, employment may create competing demands for the limited available time of each spouse (Finley, 1989). Higher education or access to income through employment may enhance the power position of one spouse or lead to the specialization of one spouse in market activities while the other provides care (Becker, 1965). The empirical base for the division of labour within families remains limited. However, available studies seem to confirm the hypothesis that increased number of hours worked by male spouses impacts the number of hours of informal caregiving by women, bringing about greater gender equality (Bianchi et al., 2000, Sarkisian & Gerstel, 2004, Henz, 2010, Glauber 2017).

Aims

Starting in the early 2000s, the labour market attachment of older working age women has substantially changed in Austria. Given the importance of this group as primary providers of informal care, this development can be expected to impact informal care provision. Because the evolution of employment rates has varied across education levels, one would expect a similar pattern to emerge for rates of informal care provision. In line with Norton's model of employment, leisure and informal care provision (Norton, 2000), changes to female employment rates may have resulted in decreases in informal care provision, over-burdening of older women carers due to the competing demands of work and care provision or a shift of care responsibilities. We formulate the following hypotheses:

Hypothesis 1 (H1): Informal care provision by older women has decreased due to:

H1.1: a reduction in the probability to provide *any informal care* among higher educated older women, with respect to those with lower education achievement, or/and;

H1.2: a reduction in the probability to provide *high intensity informal* care among higher educated older women, with respect to those with lower education achievement;

Among those women who provide care, increasing labour market participation raises the issue of whether reconciliation of work and care have been achieved at the cost of the caregivers' well-being and time availability for leisure activities (Martire & Stephens, 2003).

Hypothesis 2 (H2): Participation in social activities (used as a proxy for leisure) has decreased among higher educated older women carers, with respect to those with lower education achievement;

Hypothesis 3 (H3): The probability to report feeling burdened has increased among higher educated older women carers, with respect to those with lower education achievement.

However, as suggested by the literature on the division of labour within the family, rising employment rates of female informal carers may have also resulted in a shift of care

responsibilities and increased informal care provisions by men, resulting in a more equalitarian gender division of informal care in Austria:

Hypothesis 4 (H4): The probability of providing informal care has increased among older men.

Data and Methods

Sample and analytical approach

This study uses nationally representative data collected in Austria during the first and sixth waves of the Survey of Health, Ageing and Retirement in Europe (SHARE), in 2004 and 2015 respectively. The sample includes all individuals (irrespective of gender) aged between 50 and 64 at the time of the interview, an age restriction that reflects the focus on older workers. This includes 1112 women (428 interviewed in wave 1 and 648 in wave 6) and 848 men (358 interviewed in wave 1 and 490 in wave 6).

Statistical analyses are carried out for gender specific samples and concern primarily the group of older women. Our study focuses on identifying differences in population level patterns of care provision between 2004 and 2015, stratified by education level. We provide a twofold analysis of differences:

- *Differences between time points (for each population group)*: track changes between 2004 and 2015 for groups of older women defined by their education achievement, with 2004 acting as the reference category for each level of education.
- *Differences between groups (for each time point)*: track differences between groups of older women with different education background at each time point considered, with primary education acting as the reference category both in 2004 and 2015. This approach is equivalent to estimating the education gradient at each time point.

All analyses are run in a logistic regression framework, with differences between time points and groups assessed on the basis of average marginal effects (AMEs) or contrasts of predictive

margins for the interaction terms of education attainment and year of analysis. This approach allows us to compare directly the magnitude of the effects calculated for each subsample defined by the level of education attainment in 2004 and 2015, thus circumventing the problem of unobserved heterogeneity between different samples in logistic regression (Mood, 2012).

In each analysis we control for a set of socio-economic characteristics (age, marital status, number of children, employment status, equivalized household income quartile) and the health status of the respondent (poor self-reported physical health, poor mental health – a score higher than 3 on the EuroD scale). All statistical analyses were carried out using the Stata 15.0 statistical package (StataCorp. 2017. Stata Statistical Software: Release 15. College Station, TX: StataCorp LLC).

Education achievement

We use a categorical variable with three levels indicating the highest educational achievement of the respondent. Primary education achievement (first level, reference category) includes pre-primary or primary education, secondary education covers lower secondary, upper secondary and post-secondary education while tertiary education indicates completion of first or second stage tertiary education.

Dependent variable(s)

We test each formulated hypothesis independently and consider four different dependent variables. *Informal care provision* (H1.1 and H4) refers to the provision of any type of care in the previous 12 months either to a household member or to any individuals residing outside the caregiver's household. This may include help with personal care to compensate for limitations in activities of daily living (e.g. dressing, bathing or showering), as well as with practical household help to provide support for limitations in instrumental activities of daily living (e.g. transportation, shopping).

High intensity informal care (H1.2) refers to informal care provided daily to at least one individual in need of support or on a weekly basis to two or more individuals in need of support contemporaneously. This describes a situation in which care tasks are provided with a frequency that can be considered burdensome and difficult to reconcile with continued full-time employment.

Participation in social activities (H2) refers to whether the individual reports having done at least one of the following activities in the 12 months preceding the interview: voluntary or charity work; attending an educational or training course; going to sport, social or other kind of club; taking part in religious or in a political or community-related organization.

Feeling burdened (H3) indicates if the respondent failed to report participating in any enjoyable activities recently (lack of enjoyment) or have felt they have too little energy to do the things they wanted to do (fatigue). Analyses of changes in the patterns of high intensity care provision, social participation and feeling overwhelmed are carried on the subsample of older women carers (i.e. have positive values on the informal care provision indicator) at each of the two time points considered.

Descriptive statistics for the sample of older working age women are presented in Table 1. It is noteworthy that even as care provision levels among older working age Austrian women have increased significantly in the decade following the pension system reform (from 34 to over 40 per cent) so have participation levels in social activities. During the same period, the age, employment status and education attainment composition in the sample have also shifted, with a higher representation of older (60 to 64 years old), higher educated women (increase of 10 p.p. in share of tertiary educated respondents) and employed older women in 2015. In comparison, the characteristics of the parallel sample of older men have remained more stable, with a significant increase in share of older respondents (60-64) and a decrease in the share of primary educated individuals (Appendix 1).

[TABLE 1 HERE]

Table 2 provides a disaggregation of the dependent variables by education group and a bi-variate comparison of the difference between waves. Results show that some of the changes previously observed in Table 1 are unevenly distributed across education groups, even if most are not statistically significant. The increase in the probability to provide care among women aged 50 to 64, for example, is concentrated among those with secondary and tertiary education. Among female carers with this education level there is also a decrease in the probability to provide high intensity care between the two waves, whilst the opposite is observed for female carers with primary education. The latter is the group with the highest prevalence of high intensity informal care provision in any of the waves. For men, there is a statistically significant increase in the probability to provide informal care for those with tertiary education between 2004 and 2015. Among the other variables, participation in leisure activities increased across all education groups. This increase was particularly noteworthy among higher educated female carers.

[TABLE 2 HERE]

Results

After controlling for the effect of socio-economic factors and the health status of the respondents, there is no statistically significant change in the probability of providing informal care (all types) among different groups of women aged 50 to 64, between 2004 and 2015 – *differences between time points*. Furthermore, the probability of informal care provision is not significantly different between different education attainment groups, indicating that higher educated women (secondary or tertiary level) are equally likely to provide informal care to a family member, friend or neighbour in need of support, with respect to older women who have completed only primary education – *differences between groups*.

[TABLE 3 HERE]

Conversely, the predicted probability of providing high intensity care among female carers aged 50 to 64 has significantly changed between the two time points (Table 4). While in 2004 no significant differences were observed between women with primary education achievement (reference category) and those who had completed secondary or tertiary education, a decade later secondary-level educated women were significantly less likely to provide high intensity informal care tasks than primary educated women (decrease of -0.418) – *differences between groups*. Even more marked is the difference at the extremes of the education achievement scale. Whereas in 2004 no significant difference was revealed in the data, by 2015, the probability of providing high intensity informal care was 47 percentage points lower for tertiary educated women with respect to those with primary education only.

[TABLE 4 HERE]

The marked differences in the probability to provide intensive care across education levels that have emerged between 2004 and 2015 can only partly be attributed to decreases in probability of high intensity care provision among secondary and tertiary educated groups of older working age female carers (slight decrease, not statistically significant) – *differences between time points*. The more pronounced effect over this period has been the large and significant increase in the probability of high intensity care provision for lower-educated women (primary education).

Table 5 presents the results from the multivariate analysis on the probability that older working age female carers participated in at least one social activity regularly (H2). We find no evidence of significant differences in social participation, neither between education groups within each wave nor between the two time points considered within each education group. While descriptive statistics indicated an increase in the share of older working age women who participated in social activities between 2004 and 2015, this effect is not confirmed in the logistic regression analysis.

[TABLE 5 HERE]

Hypothesis 3 concerning the sample of older working age women carers posited that if more older working age women with higher education attainment remained in employment without renouncing their care responsibilities, the considerable time demands this would place on them would translate in an increased sense of being burdened and overwhelmed (H3). The results offer no support to this hypothesis (see Table 6). There are no statistically significant differences in the probability that older working age female carers in Austria feel burdened irrespective of their education attainment. This was equally the case for *differences between time points* and *education groups*.

[TABLE 6 HERE]

The final hypothesis reflects on the role of older working age men in informal care provision (H4). *Differences between time points* are not statistically significant for men of any of the education attainment groups. There are however differences in the probability to provide any care types between lower educated older working age men and their counterparts with higher education in 2015, that are not observed in 2004 (Table 7) – *differences between groups*. The results are only statistically significant at a 10% confidence level though.

Discussion

The findings support the conclusion that the differentiated increase in the employment rates of older women across education groups was accompanied by changes in the profile of informal care giving. The adjustment has occurred through lower intensity of informal care-giving (H1.2) rather than through reduced probability to provide care (H1.1). Unlike their secondary and tertiary educated counterparts, lower educated older working age women were more likely to provide the former type of care in 2015 than in 2004. As a result, while there was hardly an education gradient in the probability to provide high intensity informal care in Austria in 2004, one is clearly present in 2015. This adjustment is in line with empirical studies that account for

intensity of care. These have found a large and significant negative effect of informal caregiving on employment, but only for high intensity care (Heitmueller 2007; Van Houtven et al., 2013; Ciccarelli & Suet 2018). The findings do not indicate changes in employment rates affected leisure activity patterns or led to higher rates of perceived burden, according to Norton's (2000) theoretical model of informal care provision. Descriptive statistics show an increase in the share of older working age women who participated in social activities during the period of analysis, but after controlling for possible confounders there was no discernible change to the probability to undertake social activities (as proxy for leisure) across education groups (H2). Furthermore, no education gradient for these activities was observed for either 2004 or 2015. This suggests that the probability of social participation across education groups did not change, but rather the education structure of the group of working older women changed over the same period.

From the early 2000s, in contrast with the pension system, there have been only limited reforms to the long-term care system in Austria (Rodrigues et al., 2018). 24-hour carers and the development of services at home have arguably enhanced the possibility of defamilializing care provision through the market (i.e. to outsource care outside the family) (Le Bihan et al., 2019). At the same time, "time rights" have also been strengthened. The latter development has further reinforced the supported familialism nature of the system, although it is debatable whether this has improved the conciliation of paid work and informal care (Le Bihan et al., 2019, Sardadvar & Mairhuber, 2018).

Juggling informal caregiving and work by secondary and higher educated women may be aided by the increased availability of care services during the period of analysis (Oesterle & Bauer, 2012). Similarly, the legalization of 24-hour carers and the accompanied benefits to pay for this form of care may have made this option more affordable to middle-class families (Oesterle & Bauer, 2012). The possibility of defamilializing care provision through the market (i.e. to

outsource care outside the family) (Le Bihan et al., 2019) may have been enhanced, in a context marked by quite inequitable access to home care services across socio-economic condition in Austria (Rodrigues et al., 2018, Ilinca et al., 2017). Despite this, the profile of care use (e.g. the use of mixed forms of care by older people) does not show marked changes during this period, according to SHARE data (results available on request from authors). It could also be argued that the increase in home care service provision could still not fully account for the differentiated impact on informal caregiving by education attainment, since this increase in provision took place in the subsidized sector and would have thus been as likely to benefit households with low economic resources. As elsewhere in the literature, the models used have also controlled for household income to account for any differences in access to home care services (Tokunaga & Hashimoto, 2017; Hohmeyer & Kopf, 2018). The education gradient remains in place even after controlling for this.

Other factors may explain this differentiated adjustment by education. Firstly, the characteristics of jobs held by secondary and higher educated older women may better allow them to conciliate employment and care. Schneider and colleagues (2013) investigated intentions to leave jobs or the labour force of older women in Austria and found that job characteristics, such as flexibility, played a bigger role in explaining intentions to stay in the labour market in the event of caring needs. In addition, unobserved characteristics such as personal traits, preferences and social norms may also vary across educational groups rendering some individuals more prone to provide informal care (Leigh, 2010, Nguyen & Connelly, 2017). Informal carers may self-select into certain occupations or types of employment (e.g. part-time), which render them less likely to remain employed when care duties arise later in their lives (Hohmeyer & Kopf, 2018). Evidence from other familialistic contexts indicates that lower educated female informal carers and their frail relatives may place a greater emphasis on informal care provision as part of intrafamily reciprocity (Timonen et al., 2013; Conlon et al.,

2014). In the Austrian context, the cash benefit may work as an important incentive to exit the labour market and this incentive may be greater for those in the fringes of the labour market or with lower income.

This study also tested whether the adjustments to informal care provision arising from higher employment rates of women may have taken place across gender lines (H4). Previous empirical research seems to indicate that participation in the labour market (e.g. increased number of hours worked) creates competing demands for the available time of spouses and may enhance the bargaining power of working spouses (Bianchi et al., 2000, Szinovacs & Davey, 2008, Henz, 2010). Overall, there were no changes in the probability to provide informal care among men aged 50-64 in Austria. A closer look at the disaggregation by education groups, revealed a weakly significant education gradient in 2015 that was not at all present in 2004: men with secondary and tertiary education are now more likely to provide informal care than those with primary education achievement. The presence of this gradient alone however, is not sufficient to conclude that the increased labour market participation of women has brought about greater gender equality in the provision of informal caregiving, as postulated by the literature on division of labour within families (Bianchi et al., 2000, Sarkisian & Gerstel, 2004, Henz, 2010, Glauber 2017).

The increase in the labour market participation of older women who already take on caring duties has often raised concerns about them facing a "second shift" (Hochschild, 1989). We did not find evidence however, of older women carers reporting they feel more burdened between 2004 and 2015 (H3), nor was there any indication of an education gradient. A partial explanation can be glimpsed in the results for probability of high intensity care provision. As a larger number of higher-educated women remain in the labour force while simultaneously providing care, it is likely that the care they provide is less frequent and thus compatible with continued employment without placing an overwhelming demand on their time.

It is within the dissimilar outcomes found for different groups of women, but also men, that lies the greatest contribution of this paper to the literature on employment and informal care. The results highlight the lack of homogeneity within these groups and that over-reliance on averages can hide important differences. Informal caregiving, but also employment, is thus likely to be defined not only along gender, but also social class lines (e.g. education) (Rummery, 2009; Timonen et al., 2013; Conlon et al., 2014). It is at the intersection of these, as well as other characteristics that lies the greatest potential to understand the impact of policy changes (Timonen et al., 2013). The Austrian pension reform and its impact on the labour market and informal care provision is a case in point. Our results suggest that while the reform had the desired effect of increasing participation in market activities, an unintended consequence has been the exacerbation of inequalities across education groups both in market and non-market (i.e. unpaid informal care) activities. Increases in labour market participation among higher educated older women did not lead to a decrease in their likelihood of providing informal care, suggesting that greater labour market attachment is not incompatible with all types of care provision within this population group. While the gains have primarily accrued among higher education groups, for primary educated women, labour participation rates have risen much slower and intensive caregiving has become more prevalent. Underlying these trends was also a change in the composition of the female population in Austria within this age group by education. Those with less than secondary education represented 40 percent of women aged 55-64 in 2004, while those with tertiary education only accounted for 8 percent (Eurostat 2019a). In 2018, the figures were, 28 and 18 per cent respectively. This means that the results reported here take place against a backdrop in which women aged 55-64 with tertiary education become an increasingly less self-selected group in the Austrian population.

The results of our study have important policy implications. They indicate that raising employment rates of older working age women may be compatible with informal caregiving,

if care is spread more evenly between potential caregivers: be it women, men or professional services. There is evidence that conciliating less intensive informal caregiving with employment may have important benefits, particularly as it may improve the financial situation and independence of informal carers and contribute to their wellbeing (Martire & Stephens, 2003). At the same time, the developments observed for Austria between 2004 and 2015 are deeply differentiated across educational groups. This raises the issue of whether women with lower education are being afforded the same chances to continue working as their higher educated counterparts. The results hint at a deeply segmented work/care division of labour for women of different educational backgrounds in Austria, which in itself raises issues as to the equity of the current arrangements. Older working age women with primary education may thus be a particularly vulnerable group of the Austrian population when it comes to the possibility to conciliate employment and care tasks.

Limitations

This study has a number of potential caveats. It is based on cross-sectional data (repeated observations in waves 1 and 6 were randomly selected to avoid bias) and therefore it only captures changes in the correlations between education and dependent variables between the two time points. The high intensity care indicator used is constructed from low precision information on frequency of care over a week. This prohibits a fine-grained analysis of the actual number of hours spent providing care or the nature of the care tasks that could have revealed more subtle differences between time points and groups. Moreover, SHARE provides limited information on the characteristics of the informal care receiver. This has limited our ability to control for important factors impacting informal care provision, namely the possibility that informal carers across educational groups differ in their ability to combine (or fully replace) informal care with home care services. It was also not possible to control for the needs of older people to whom women in the sample were providing informal care. The

possibility that women with lower education provide care to less affluent relatives that have higher care needs and therefore require more intensive care, could thus not be ruled out.

As with other studies on informal caregiving, there is the possibility of self-selection due to mortality and institutionalization (van Ourti, 2003), with both risks disproportionately affecting less affluent households. However, if a bias exists, it would likely work in the direction of reducing demand for informal caregiving among the less educated – as their parents are likely to be themselves poorer and thus more likely to die early or move into institutional care.

Conclusions

The labour market participation of older working age women has undergone remarkable transformations in Austria, spurred by the reform of the pension system in 2004. Nonetheless, analysing the results a decade after the reform it is apparent that its effects have been highly variable for different population groups and might have had the unintended consequence of deepening educational inequalities in work and care. For women with secondary and tertiary education the possibilities to conciliate paid work and informal caregiving may have increased between 2004 and 2015. In contrast, for lower educated women during the same period there has been an increase in high intensity caregiving, without a sizeable transformation of their employment prospects. From a research point of view, this highlights the highly differentiated experiences of informal care giving among women with different education backgrounds reinforcing the need for analyses that takes into consideration the contribution of different characteristics as intersecting sources of disadvantage. From a policy perspective, our findings suggest a possible dualization of informal care giving according to education groups, which raises important questions in terms of equity effects of policies affecting labour participation and informal care provision in Austria.

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Table 1: Descriptive statistics for the sample of women aged 50-64 (percentage)

	1st wave (2004)	6th wave (2015)	p-value
Dependent variables			
Provide informal care	34.1	40.4	0.037
Provide high intensity informal care	9.8	9.5	0.864
Carry out leisure activities	42.3	51.8	0.002
Feeling burdened	31.8	31.4	0.905
Independent variables			
Education			
Primary	16.8	7.3	<0.001
Secondary	67.3	66.7	
Tertiary	15.9	26.0	
Age			
50-54	23.1	12.4	<0.001
55-59	37.9	37.7	
60-64	39.0	49.9	
Being married	62.4	65.9	0.228
Having at least one child	86.5	88.9	0.224
Employed	21.5	36.0	<0.001
Income quartile			
1st	30.1	23.5	<0.001
2nd	20.1	31.1	
3rd	15.9	25.9	
4th	33.9	19.4	
Poor self-reported health	21.0	22.7	0.523
Poor self-reported mental heath	24.3	23.4	0.729

Notes: Non-weighted results. Sample size: 1112 (wave 1=428, wave 6=684).

Table 2: Descriptive statistics for dependent variables by education level

	1st wave (2004)	6th wave (2015)	p-value
Women 50-64			
Probablity to give care			
Primary education	26.4	24.0	0.766
Secondary education	36.1	40.5	0.224
Tertiary education	33.8	44.4	0.133
Sample size	428	684	
High intensity care †			
Primary education	26.3	41.7	0.373
Secondary education	28.9	24.3	0.400
Tertiary education	30.4	19.0	0.240
Sample size	146	276	
Leisure activities †			
Primary education	52.6	58.3	0.756
Secondary education	50.0	58.4	0.169
Tertiary education	56.5	76.0*	0.069
Sample size	146	276	
Feeling burdened †			
Primary education	42.1	41.7	0.981
Secondary education	27.9	33.0	0.370
Tertiary education	39.1	36.7	0.833
Sample size	146	276	
Men 50-64			
Probablity to give care			
Primary education	33.3	30.0	0.842

Secondary education	35.4	31.7	0.370
Tertiary education	30.8	42.1*	0.068
Sample size	358	490	

Notes: Percentages refer to share of individuals in each education group. Non-weighted results. * p-value < 0.1; ** p-value <0.05; *** p-value < 0.001, for differences between waves

† The regression for probability of providing high intensity informal care is applied only to the subsample of older women who have provided any care. Total sample size 422 across the two waves.

Table 3: AMEs for probability to provide care among women aged 50-64, by education

	1st wave (2004)	6th wave (2015)
AMEs for differences between time points by education group (1st wave as reference category for each education group)		
Primary education	1	0.0106
Secondary education	1	0.0320
Tertiary education	1	0.0790
AMEs for differences between education groups (primary education as reference category for each wave)		
Primary education	1	1
Secondary education	0.0858	0.1075
Tertiary education	0.0353	0.1012
Sample size	428	684

Notes: * p-value < 0.1; ** p-value <0.05; *** p-value < 0.001

Logistic regression results, including controls for age, marital status, having children, employment status, household income quartile, physical and mental health status.

Table 4: AMEs for probability to provide high intensity care among women carers aged 50-64, by education

	1st wave (2004)	6th wave (2015)
AMEs for differences between time points by education group (1st wave as reference category for each education group)		
Primary education	1	0.3801**
Secondary education	1	-0.0640
Tertiary education	1	-0.1214
AMEs for differences between education groups (primary education as reference category for each wave)		
Primary education	1	1
Secondary education	0.0263	-0.4179**
Tertiary education	0.0352	-0.4717**
Sample size	146	276

Notes: * p-value < 0.1; ** p-value <0.05; *** p-value < 0.001

The regression for probability of providing high intensity informal care is applied only to the subsample of older women who have provided any care. Total sample size 422 across the two waves.

Logistic regression results, including controls for age, marital status, having children, employment status, household income quartile, physical and mental health status.

Table 5: AMEs for probability to participate in social activities among women carers aged 50-64, by education

	1st wave (2004)	6th wave (2015)
AMEs for differences between time points by education group (1st wave as reference category for each education group)		
Primary education	1	-0.0888
Secondary education	1	0.0086
Tertiary education	1	0.1467
AMEs for differences between education groups (primary education as reference category for each wave)		
Primary education	1	1
Secondary education	-0.0524	0.0434
Tertiary education	0.0244	0.2622
Sample size	146	276

Notes: * p-value < 0.1; ** p-value <0.05; *** p-value < 0.001

The regression for probability of providing high intensity informal care is applied only to the subsample of older women who have provided any care. Total sample size 422 across the two waves.

Logistic regression results, including controls for age, marital status, having children, employment status, household income quartile, physical and mental health status.

Table 6: AMEs for probability to feel overburdened among women carers aged 50-64, by education

	1st wave (2004)	6th wave (2015)
AMEs for differences between time points by education group (1st wave as reference category for each education group)		
Primary education	1	0.0554
Secondary education	1	0.0822
Tertiary education	1	-0.0093
AMEs for differences between education groups (primary education as reference category for each wave)		
Primary education	1	1
Secondary education	-0.0858	-0.0542
Tertiary education	0.0387	-0.0259
Sample size	146	276

Notes: * p-value < 0.1; ** p-value <0.05; *** p-value < 0.001

The regression for probability of providing high intensity informal care is applied only to the subsample of older women who have provided any care. Total sample size 422 across the two waves.

Logistic regression results, including controls for age, marital status, having children, employment status, household income quartile, physical and mental health status.

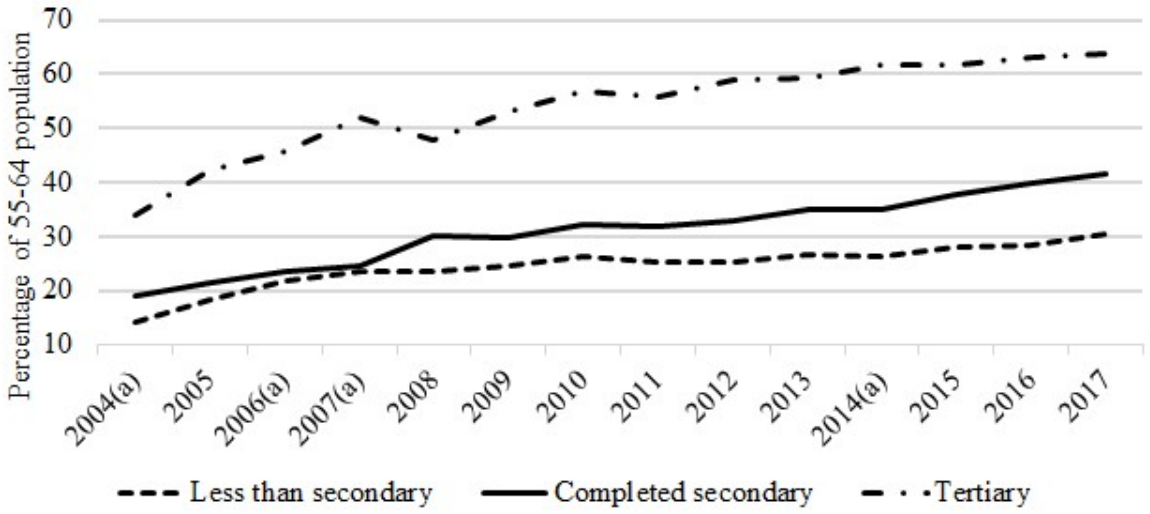
Table 7: AMEs for probability to provide care among men aged 50-64, by education

	1st wave (2004)	6th wave (2015)
AMEs for differences between time points by education group (1st wave as reference category for each education group)		
Primary education	1	-0.1444
Secondary education	1	-0.0007
Tertiary education	1	0.0793
AMEs for differences between education groups (primary education as reference category for each wave)		
Primary education	1	1
Secondary education	0.0324	0.1759*
Tertiary education	-0.0190	0.2041*
Sample size	358	490

Notes: * p-value < 0.1; ** p-value <0.05; *** p-value < 0.001

Logistic regression results, including controls for age, marital status, having children, employment status, household income quartile, physical and mental health status.

Figure 1: Evolution of employment rates (as share of total population) for 55-64 women in Austria, by education level (2004-2017)



Source: Eurostat (2019a).

Notes: [a] Break in series.

Less than secondary refers to primary education (completed or not) and lower secondary education. Completed secondary education refers to upper secondary and post-secondary non-tertiary education.

[i] It was also decided to equalise the statutory retirement age of women and men, albeit this process will only start in 2024 with full equalisation not taking place before 2033, which renders this measure not relevant for the current analysis (OECD, 2013).