

Care, labour force participation and health: the case of Italy

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Abstract

Purpose – This paper investigates the relationship between health and labour market participation considering the potential role played by the presence of children and elderly persons (with/without disabilities) in Italian households.

Design/methodology/approach – The authors use longitudinal data from the European Union Statistics on Income and Living Conditions and full-information maximum likelihood to estimate a two-equation model (one equation for labour force participation and one for health status) with instruments to address the endogeneity of the labour force participation choice. The model is estimated separately by gender.

Findings – The authors find that while the presence of children, elderly persons or both is positively associated with the health status of both genders, the presence of disabled elderly persons exerts a negative role. As for participation, interesting differences emerge. The presence of children discourages women's participation but is positively associated with men's labour force participation. Interestingly, a caring role for elderly persons without disability emerges for both genders when the presence of children is combined with that of elderly people. Gender differences are also at work for the role of childcare services and elderly and/or disabled home care/assistance.

Originality/value – The findings indicate a possible caring role for elderly persons without disabilities, neutralizing the effect of the presence of children on the labour force participation of both genders. The results also suggest that greater coverage of care services should increase the active participation of women in the labour market.

Keywords Labour force participation, Health status, Care responsibilities, Gender issues

Paper type Research paper

1. Introduction

The economic involvement of women has steadily increased worldwide in recent decades, following the economic development of countries and the social transformations that have occurred, such as the level of educational attainment of women overcoming that of men (Castellano and Rocca, 2014). Nevertheless, the labour force participation of women in some countries, such as Italy, ranks much lower than in other advanced countries (Bratti and Staffolani, 2012; De Philippis, 2017).

Some authors have investigated the time-use patterns of women and men to explain the different labour force participation dynamics across countries (Cousins and Tang, 2004; Anxo *et al.*, 2011; ISTAT, 2019): women tend to work more hours than men when considering

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market and housework overall. Other authors have linked this extra unpaid work not only to the reasons why women work less than men in the market but also to the negative self-perception of health status (Watts, 2008; Viitanen, 2010). Unpaid work, therefore, seems to be associated with both labour force attachment and health perceptions, especially for women.

This paper aims to assess whether caregiving responsibilities simultaneously impact both labour force participation and health outcomes of women and men in Italy. We explore the effects of the presence of members in need of care (children, elderly persons without disability and disabled household members) on the labour force participation and health outcomes of Italian women and men. Indeed, caregiving may affect both the extensive and intensive margins of work (Carmichael and Charles, 2003). Here, we explore the effects of caregiving on the extensive margin only: the effect of the presence of different types of care burdens (i.e. children, elderly persons with or without disabilities in the household) on labour force participation and health, separately for women and men. Traditionally, informal care has been supplied by women, especially in conservative southern countries such as Italy, where the breadwinner model is still present (for details, see Section 3). But nowadays, women are not only increasingly educated and more likely to work but also more likely to be significant contributors to family finances. We examine men and women separately, given their different levels of attachment to the labour force (Fabrizi and Mussida, 2014).

Several papers ask similar research questions. Mussida and Patimo (2021), for example, investigate the role of family responsibilities in the employment probability and health status of both women and men in Italy and France during and after the economic downturn. Similarly, we investigate the effect of family responsibilities, but we instead consider the impact on the decision to participate or not into the labour force. Additionally, here we explore Italy only; the reasons we use Italy as a case study are summarized in Section 3. A further novelty is that we do not offer a comparison of two periods but, rather, examine only one period: the period before the onset of COVID-19.

This article is structured as follows. Section 2 offers a review of the existing literature. Section 3 outlines the main stylized facts on Italy. The econometric model is described in Section 4, and the data in Section 5. Section 6 discusses the empirical results, and Section 7 offers some concluding remarks.

2. Literature review

Traditional theory suggests that the main reason for the low participation of women compared to men is the trade-off women face between market presence and family responsibilities, and especially those linked to care and childbearing (Becker, 1985). Some studies have found that women frequently work a greater number of hours overall, especially in terms of unpaid work activities (Anxo *et al.*, 2011; ISTAT, 2019). Other studies have linked this extra unpaid work not only to the reasons women participate less in the labour market but also to the negative self-perception of health status (Viitanen, 2010; Watts, 2008).

The effects of family responsibilities have been explored in the literature on labour force participation (or work) or on health. There are two separate strands of literature, one exploring the effects on labour market outcomes and the other exploring the possible impact on perceived health status—only a few studies jointly explore labour market outcomes and health status.

The literature analysing the relationship between caregiving and the labour market is quite extensive (for a comprehensive review, see Currie and Madrian, 1999). This broad literature has not led to a consensus regarding the sign and significance of the causal relationship between these two activities. Some have argued that the absence of a theoretical framework to study effects combining work and family roles has actually hindered research in this field (Greenhaus and Powell, 2006).

Moreover, differences have been found according to the type/intensity of care provided and the gender of the carer. [Van Houtven et al. \(2013\)](#) identify the relationship between informal care and work in the United States, investigating men and women separately and considering different types of care. Their findings suggest modest decreases in the likelihood of working for male caregivers providing personal care, while female caregivers are more likely to be retired.

Several studies have found a negative relationship between informal care provision and labour force participation ([Bolin et al., 2008](#); [Crespo and Mira, 2014](#)). The European literature reveals substantial heterogeneity in the impact of caregiving on work, but the overall effect tends to be stronger for intensive caregivers ([Carmichael and Charles, 2003](#); [Casado-Marín et al., 2011](#)). Some studies find stronger work effects for women caregivers compared to men ([Do et al., 2014](#)), while others do not find gender differences ([Bolin et al., 2008](#)).

As for the type of care provided, the findings confirm that care for household members with disabilities is associated with negative direct and indirect labour market effects. [Calegari et al. \(2022\)](#) explored the correlation between disability and individual work intensity for a sample of Italian households, confirming the negative direct correlation with disability, but also demonstrating an indirect negative correlation that, interestingly, depends on the family relationship between the disabled person and other household members. As for the indirect effect on cohabiting women, [Mussida and Sculli \(2019\)](#) investigate how the presence of a disabled person in the household affects the employment probabilities of cohabiting women in France, Italy and the UK. Their results suggest that in Italy, women experience reduced employment possibilities when cohabiting with disabled persons.

A parallel strand of studies has linked this extra unpaid work to the negative self-perception of health status ([Watts, 2008](#); [Viitanen, 2010](#)). This strand of literature is less developed than the first, but it has reached a consensus on the sign and significance of the effect of family responsibilities on perceived health status. More specifically, it was found that a higher load of paid and unpaid work hours has a negative effect on health ([Dinh et al., 2017](#)). Informal care particularly increases women's workloads and causes health stress ([Coe and Van Houtven, 2009](#); [Bauer and Sousa-Poza, 2015](#); [Dukhovnov and Zagheni, 2015](#)), influencing individual preferences regarding the choice to participate in the labour market.

To our knowledge, only a few studies explore the effect of care responsibilities on both labour force participation and health status by gender in Europe. There have been studies conducted in the United States and Australia (e.g. [Cai and Kalb, 2006](#); [Cai, 2010](#)), but the studies on European countries are more focused on the relationship between employment and health (for Italy, see [Devillanova et al., 2019](#), and [Mussida and Patimo, 2021](#)). We aim to fill this gap in the literature.

3. Stylised facts

Italy is an interesting case study given that the high cost of the (limited) available childcare ([Figari and Narazani, 2020](#)) and social services for the elderly and persons with disabilities strongly negatively influences women's work opportunities ([Brilli et al., 2016](#)). In Italy, a country characterized by strong family ties and social norms and a low availability of formal childcare and eldercare, gender roles are still defined based on the breadwinner model where caregiving is mainly delegated to women ([Anxo et al., 2011](#); [Cutillo and Centra, 2017](#)). Informally provided and unpaid caring activities constitute obstacles to women's labour market participation ([Watts, 2008](#); [Viitanen, 2010](#)). Despite Italy being an "early bird" compared to other European countries in terms of changing family law and putting in place childcare policies, it has not been able to innovate with regard to these policies when the economic and social context has changed. In particular, it has not fully reframed them as work-family conciliation policies ([Knijn and Saraceno, 2010](#)). These difficulties are

exacerbated if dependents have a disability/limitation impairing daily activities or if two groups or more of dependents are cared for within the same family (i.e. children, disabled household members, sick/disabled elderly persons (Bratti *et al.*, 2005; Marenzi and Pagani, 2005; Bratti and Staffolani, 2012; Mussida and Sciulli, 2019; Calegari *et al.*, 2022).

As for the type of welfare state, Italy can be considered a Southern/conservative country (Bambra and Eikemo, 2009). Among the characteristics of the Southern model, we find a fragmented labour market and an underdeveloped social protection system, a population employed in peripheral sectors or in the informal economy (especially women) and a tendency for care work for the elderly and children to be unpaid and undertaken by the family, in particular by women. This is one of the main reasons why Italy has one of the lowest rates of women's labour force participation in the EU. During the period investigated, according to Eurostat the labour force participation rate for women (aged 15–64) in Italy actually increased slightly from 55.2% in 2016 to 56.5% in 2019. These are well below the EU rates, however, which were 66.6% and 67.9% in 2016 and 2019, respectively.

4. Empirical strategy

We are interested in investigating the effects of family care responsibilities on the labour force participation and health of Italian women (and men). However, an endogeneity problem stemming from simultaneity or a two-way relationship between labour market participation and health status (i.e. reverse causality) can potentially arise because health status might guide labour force participation decisions. In order to deal with this endogeneity issue, we estimate a two-equation model with a recursive structure that can be consistently and efficiently estimated by full-information maximum likelihood. We model the labour force participation choice in the first equation; in the second, we model health status, including the (endogenous) labour force participation indicator on the right-hand side (Altonji *et al.*, 2005).

In our estimation strategy, both equations include variables that capture the effects of family care responsibilities on both phenomena, i.e. labour force participation and health. Potential confounding factors affecting both these responsibilities and labour force participation/health include individual motivations, preferences, women's (men's) attitudes towards work, as well as family structure, type of relationship and the knowledge and attitudes of women (men) towards child, elderly and disabled care services (Nigatu *et al.*, 2014). While we control for some of these factors, such as family structure and type of relationship (Section 5), we do not have information on the other potential confounders.

Our modelling strategy helps to control for these confounders and to understand their potential relationships with both health and the labour market participation outcomes of women and men by assuming that the error terms of both equations are correlated. The sign and significance of this correlation (proxied by the ρ parameter) help us understand whether there is endogeneity and the nature the relationship between the two outcomes.

Labour force participation is defined in a binary representation: the dependent variable of the equation is equal to one if the woman (or man) is participating (either employed or unemployed) and zero otherwise (inactive).

Health status is defined according to four ordinal categories: bad/very bad health, fair health, good health and very good health (coded as 1–4). The analysis is based on the perceived health status of individuals. This variable is understood to include various dimensions of health, such as physical, social and emotional function and biomedical signs and symptoms (for details, see Section 5 and footnote 3). A greater value of the ordinal indicator suggests that the associated health status determines a greater individual utility.

We estimate a system of two equations—a probit model for participation and an ordered probit model for health—taking account of endogeneity and potential reverse causality, by using Stata's *cmp* command provided by Roodman (2011). This is particularly suitable for

dealing with panel data and models including a structural and a reduced form equation, as in our case, providing instruments for identification of the parameters in the structural equation.

The probit model for the labour force participation equation (reduced-form equation) is derived from a latent continuous variable y_1^* related to a set of explanatory variables x , according to a standard linear model represented as follows:

$$y_{1i}^* = \beta x_i + v_i, \quad (1)$$

where β is a vector of parameters associated with x and v is an error term drawn from a standardized normal distribution. The vector x includes two indicators for identification purposes, i.e. childcare coverage (e.g. the percentage of children aged 0–3 in formal (public) childcare, including kindergarten, integrative and innovative childcare services) and elderly and/or disabled people receiving (public) home care/assistance at the regional level (Section 5). The estimates of the labour force participation equation could be problematic because of potential endogeneity and/or reverse causality. We consider the decision to participate in the labour market as endogenous, and we use childcare services and elderly and/or disabled home care/assistance as instruments since they affect labour force participation decisions (suspected to be endogenous) but not health status. On the one hand, high coverage of services for childcare and care for the elderly and/or disabled (we explicitly consider children, the elderly and disabled persons in our model) at the regional level may induce women to participate in the labour market. On the other hand, the availability of these services would not exert direct effects on the health status of women (and men).

While y_1^* is unobserved, y_1 is observed and related to y_{1i}^* through the following relationship:

$$y_{1i} = \begin{cases} 1 & \text{if } y_{1i}^* > 0 \\ 0 & \text{otherwise} \end{cases} \quad (2)$$

The ordered probit model for the health status equation (structural equation) is also derived from a latent continuous variable, y_2^* , related to a set of explanatory variables z according to a standard linear model as follows:

$$y_{2i}^* = \alpha y_{1i} + \gamma z_i + u_i, \quad (3)$$

where α is the coefficient associated with the endogenous labour market participation variable y_{1i} , γ is a vector of parameters associated with z , including some x -variables, and u is an error term drawn from a standardized normal distribution.

While y_2^* is unobserved, y_2 is observed and related to y_2^* through the following general relationship:

$$y_{2i} = \begin{cases} 1 & \text{if } y_{2i}^* \leq \mu_1 \\ 2 & \text{if } \mu_1 < y_{2i}^* \leq \mu_2 \\ 3 & \text{if } y_{2i}^* > \mu_2, \end{cases} \quad (4)$$

where μ_1 and μ_2 are a set of threshold parameters to be estimated. Under the normality assumption of the residual u_i , the corresponding model is a standard ordered probit specification.

The two-equation model allows correlation between the error terms of both equations. Accordingly, we also estimate a term ρ_{vu} measuring the correlation between residuals related to labour force participation and health. A positive correlation indicates that common

unobserved confounding factors (motivations, preferences and attitudes) improve both the probability of entering the labour force and health status, and vice versa in the case of a negative correlation. For each equation, we estimate average marginal effects (AMEs).

5. Data and sample

Our data are from the panel version of the European Union Statistics on Income and Living Conditions (EU-SILC). This survey is based on a harmonized methodology and definitions and is administered across most EU member states (Eurostat, 2010). EU-SILC is a rotating panel survey: the sample for any given year consists of four replications. A replication remains in the survey for four years; each year, one of the four replications from the previous year is dropped and a new one is added. Between year T and $T+1$, the sample overlap is 75%; between year T and year $T+2$ it is 50%; it is reduced to 25% from year T to year $T+3$ and to zero for longer intervals. We consider the fraction of the sample for which $T \geq 3$, including women and men aged 25–64 years. We select data for Italy for the 2016–2019 period, amounting to 17,803 observations of women and 16,893 of men [1]. Table 1 reports summary statistics for the variables used in the econometric analysis.

The dependent variable for the labour force participation equation is the probability of entering the labour force, either through employment or unemployment, while the dependent variable for the health equation is perceived health status. We create the health status variable using the EU-SILC variable PH010 “General Health”, which offers a disaggregation of “general health status” into five categories: very good, good, fair, bad and very bad. Given the small sample size for the “very bad” category, we merge the categories into four as follows: 1. bad/very bad health; 2. fair health, 3. good health; 4. very good health [2]. We note that slightly more than 2% of women and men suffer from bad/very bad health; for more than 12% of both samples the health status is fair, while around 85% report being in good/very good health.

We note that 61.5% of women aged 25–64 participated in the labour force in 2016–2019 (compared to 89.1% of men) [3]. We split the overall age range [25, 64] into four dummy variables (for the age ranges [25, 34], [35, 44], [45, 54], [55, 64]), as this allows capturing the particular characteristics of women (and men) involved in different types and intensities of care.

We distinguish between lower secondary, upper secondary, and post-secondary or tertiary education. We note that women have made notable progress in higher education in Italy (OECD, 2012): roughly 21% of women in our sample are highly educated, compared to 18.5% of men. The percentages for upper secondary education are instead more gender-balanced (around 46% for both genders), while slightly more men are low-educated (around 33% of women and 35% of men).

In the health equation, we also consider fixed effects for the geographical area of residence, namely the macro-regions (NUTS1) of North, Centre and South (see footnote 5 for details on regional effects in the participation equation). We include an indicator for densely populated areas and for being in a relationship, including legal relationships (marriage) and those that are not legally defined (non-marital cohabitation). More than 60% of women are involved in a relationship (56.6% of men). We also consider household size, and due to the fact that labour force participation is a decision generally taken at the household level, in the participation equation we include dummy variables representing whether the man (woman) in the household is actually a labour force participant, i.e. either employed or unemployed. We do not include household income, mainly because of its correlation with educational attainment.

The main variables of interest in both equations refer to family care activities. We first focus on childcare and include a dummy variable for the presence of dependent children. A dependent child is any person aged under 18 or an economically inactive person aged

	Women	Men
<i>Labour force participation equation</i>		
Dependent variable: Labour force participation	0.615 (0.487)	0.891 (0.311)
Age [25, 34]	0.166 (0.372)	0.174 (0.379)
Age [35, 44]	0.228 (0.419)	0.244 (0.429)
Age [45, 54]	0.312 (0.463)	0.307 (0.461)
Age [55, 64]	0.294 (0.456)	0.275 (0.432)
Primary education	0.331 (0.470)	0.350 (0.477)
Secondary education	0.460 (0.498)	0.465 (0.499)
Tertiary education	0.210 (0.407)	0.185 (0.388)
Being in a relationship	0.605 (0.489)	0.566 (0.496)
Household size*	2.834 (1.238)	2.784 (1.311)
Man/Woman employed in the household	0.607 (0.488)	0.415 (0.493)
Man/Woman unemployed in the household	0.082 (0.274)	0.072 (0.258)
Living in a densely populated area	0.319 (0.466)	0.311 (0.463)
<i>Caring responsibilities</i>		
Dependent children in the household	0.415 (0.493)	0.375 (0.484)
Not disabled elderly people in the household	0.088 (0.283)	0.072 (0.258)
Dependent children and not disabled elderly people in the household	0.014 (0.116)	0.007 (0.085)
No disabled people in the household	0.835 (0.537)	0.832 (0.533)
Disabled people in the household	0.128 (0.334)	0.129 (0.335)
Severely disabled people in the household	0.037 (0.188)	0.039 (0.194)
Regional childcare coverage*	15.37 (5.728)	15.35 (5.758)
Regional elderly/disability in home care*	2.618 (28.23)	2.619 (28.31)
<i>Health equation^(a)</i>		
Dependent variable: health status		
Bad/very bad health	0.031 (0.179)	0.026 (0.168)
Fair health	0.134 (0.333)	0.124 (0.307)
Good health	0.677 (0.541)	0.665 (0.517)
Very good health	0.159 (0.289)	0.185 (0.301)
North	0.479 (0.500)	0.484 (0.500)
Centre	0.275 (0.447)	0.268 (0.443)
South	0.246 (0.431)	0.249 (0.432)
Observations	17,803	16,893
Note(s): Standard deviation in brackets. Variables marked with a * are numerical, the others are dichotomous. Estimates are weighted. For the health equation, we only report the descriptive statistics of the covariates not included in the labour force participation equation Source(s): Authors' calculations from EU SILC 2016–2019		

Table 1.
Descriptive statistics
for labour force
participation and
health equations by
gender

18–24 years living with at least one parent [4]. We then account for the care of non-disabled elderly persons (individuals aged 65 years or over) in the household [5]. We also include an indicator for the joint presence of dependent children and non-disabled elderly persons in the household. The use of the interaction between these two variables is appropriate since the presence of non-disabled elderly persons in the household might generate opposite effects on women's labour force participation (and health status). On the one hand, non-disabled elderly persons might need care (increasing care responsibilities) and, therefore, might represent an obstacle to labour market participation (and possibly have a negative effect on health status). On the other hand, they may offer support for the caring activities of other household members, i.e. taking care of children (reducing care responsibilities), thereby facilitating participation (and possibly exerting a positive effect on health status). The use of interactions between the two possible caring responsibilities of women (i.e. children and the elderly) allows us to disentangle these effects on labour force participation and health status and

therefore avoid spurious estimates. We also control for the presence of household members with different degrees of disability/activity limitation using the categories of “some activity limitations” and “severe activity limitations”.

In the labour force participation equation, we include two indicators for identification purposes, namely childcare coverage (e.g. the percentage of children aged 0–3 in formal childcare, including kindergarten, integrative and innovative childcare services) and elderly and/or disabled people receiving home care/assistance at the regional level. The care of children, the elderly and/or disabled persons is indeed often an obstacle to full participation in the labour market. Data are available from ISTAT [6]. Given the use of panel data, we also included yearly dummy variables (in both equations).

6. Results

6.1 Labour force participation

In Table 2, the estimates for the labour force equation are shown by gender. In what follows, we outline the effects of the covariates for women and describe in more depth the effects of family responsibilities for both men and women, pinpointing similarities and differences.

Interesting differences emerge in terms of the age ranges investigated. We note that middle-aged women and men (35–44 years) have the highest labour force participation probability

	Women AME	Men AME
<i>Age: Reference – [55, 64]</i>		
Age [25, 34]	0.308*** (0.036)	0.592*** (0.046)
Age [35, 44]	0.758*** (0.035)	1.259*** (0.052)
Age [45, 54]	0.690*** (0.030)	1.162*** (0.044)
<i>Education: Reference – primary education</i>		
Secondary education	0.421*** (0.024)	0.249*** (0.033)
Tertiary education	0.808*** (0.033)	0.250*** (0.045)
Being in a relationship	–0.583*** (0.031)	0.143*** (0.041)
Household size	–0.152*** (0.013)	–0.085*** (0.017)
Man/Woman employed in the household	0.110*** (0.032)	0.135*** (0.036)
Man/Woman unemployed in the household	0.091* (0.045)	0.062 (0.061)
Living in a densely populated area	–0.047* (0.023)	–0.016 (0.032)
<i>Family care responsibilities</i>		
Presence of only non-disabled elderly	–0.475*** (0.038)	–0.352*** (0.051)
Presence of only dependent children	–0.218*** (0.026)	0.429*** (0.046)
Presence of both elderly and children	–0.103 (0.091)	–0.008 (0.174)
Disabled people in the household	–0.257*** (0.029)	–0.167*** (0.041)
Severely disabled people in the household	–0.152*** (0.051)	–0.295*** (0.064)
Regional childcare coverage	0.024*** (0.002)	0.001 (0.003)
Regional elderly/disability in home care	0.153*** (0.043)	0.069 (0.059)
<i>Yearly dummy variables Reference – 2019</i>		
2016	–0.120*** (0.036)	–0.200*** (0.048)
2017	–0.153*** (0.030)	–0.100* (0.041)
2018	–0.100*** (0.030)	0.030 (0.042)
Observations	17,803	16,893

Note(s): Average Marginal Effects (AME). Standard errors in brackets. * Significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level

Source(s): Authors’ calculations from EU SILC 2016–2019

Table 2.
Labour force
participation
probability of Italian
women and men: probit
model estimates

(+75.8 percentage points, pp.) compared to the base category of older women and men (55–64 years). The labour force participation probability of women (men) remains relatively high for the 45–54 age range and is also 69 pp. higher with respect to older women. These findings are mainly due to the differences in the characteristics of women (and men) captured by the age range categories. First, many women in their late 20s and early 30s will be having their first child and, therefore, will exhibit a relatively low labour force participation probability, while women in their 50s and early 60s are very unlikely to have a young child but are more likely to be at the end of their working career. Second, in contrast to older women, the youngest and middle-aged women are unlikely to have ageing parents requiring care. Third, the probability of being employed is higher among middle-aged women (35–44 years).

Labour force participation probability is positively associated with education, especially for women with high education. Women with tertiary education significantly increase their labour force participation probability (by 80.8 pp.) compared to low-educated women. The positive role of education for women is confirmed by similar studies on Italian women's participation (see [Bratti, 2003](#); [Bratti and Staffolani, 2012](#); [Arpino *et al.*, 2014](#)). We also find a positive association between labour force participation and education for men, but this is relatively low compared to women and more similar between secondary and tertiary education (+24.9 pp. and +25 pp. for secondary and tertiary education, respectively, with respect to primary education).

Being in a relationship exerts opposite effects on labour force participation by gender. While for women being in a relationship (marriage or cohabitation) reduces the likelihood of actively participating in the labour market (–58.3 pp.), for men there is a positive association with labour force participation (+14.3 pp.). These findings are in line with the existing literature. [Booth *et al.* \(2003\)](#), but also the more recent work by [Cipollone *et al.* \(2014\)](#) and [Fabrizi and Mussida \(2014\)](#), suggest that married women, on average, show a weaker attachment to the labour force compared to unmarried women, and this tendency is even stronger when compared to men (both married and unmarried). Household size is negatively associated with the labour force participation of both genders (–15.2 pp. for women and –8.5 pp. for men). Interestingly the presence of an employed man (woman) in the household has a positive effect on women's (men's) participation. This seems to be in line with the literature suggesting that in Italy, a husband's participation (and resources) has a positive effect on a wife's occupational attainment and vice versa ([Bernardi, 1999](#)).

Moving to caring responsibilities, we estimate the joint effects of the two indicators on labour force participation using interaction variables. In general, we find a negative association between women's participation probabilities and the presence of household members requiring care, whether these are dependent children or non-disabled elderly persons or both, suggesting that quite often child- and elder-care are almost entirely borne by women, and this is especially true for a Southern conservative country like Italy ([Anxo *et al.*, 2011](#); [Cutillo and Centra, 2017](#)). This is reinforced by our findings for men, which differ for the effect of the presence of children (only). From [Table 2](#), we note that the presence of (only) dependent children reduces women's participation by 21.8 pp, while it is significantly and positively associated with the labour force participation of men (+42.9 pp.). If we consider the presence of (only) non-disabled elderly persons, we see the participation of both genders decrease (by 47.5 pp. for women and 35.2 pp. for men). There are also interesting similarities between genders. The first is with regard to households with both children and non-disabled elderly persons. This suggests a possible caring role for elderly persons without disabilities, neutralizing the effect of the presence of children on the labour force participation of both genders. Second, we find an important negative effect of the presence of disabled persons in the household on the participation of both women and men, and especially for household members with severe disabilities (–15.2 pp. for women and –29.5 pp. for men).

The estimates therefore suggest that caring activities negatively and significantly affect labour force participation, especially for women. Our findings are in line with similar previous work examining the effect of the presence of children and disabled household members on women's labour force participation in Italy. [Bratti *et al.* \(2005\)](#), [Marenzi and Pagani \(2005\)](#), and [Bratti and Staffolani \(2012\)](#), among others, find that the presence of children and disabled members in the household reduces women's labour force participation, while [Calegari *et al.* \(2022\)](#) and [Mussida and Sciuilli \(2019\)](#) find a negative association between the presence of household members with disabilities and women's labour force participation.

As for supply-side factors, a high coverage of care services at the regional level for children, the elderly and/or disabled people is positively associated with women's labour force participation (+2.4 pp. and +15.3 pp., respectively). The significance of such indicators confirms their validity as instruments for identification purposes. Interestingly, the presence of these services does not exert a role on men's participation. These results suggest that a higher coverage of care services should increase the active participation of women in the labour market.

6.2 Health status

In the analysis of health status, we find that labour force participation affects the health perceptions of both genders, with the effects differing across the investigated health categories (as shown by the AMEs for the ordered probit model for health in [Table 3](#)).

We distinguish four health categories (bad/very bad health, fair health, good and very good health) to offer a more detailed investigation of health status and its relationship with labour force participation, individual and household characteristics, and caring responsibilities. We find that labour force participation is negatively and significantly associated with both bad/very bad health (−5.1 pp. for women and −4 pp. for men) and fair health (−11.5 pp. for women and −12.2 pp. for men). The association between participation and good and very good health is instead positive and significant (over +16 pp. for both genders and categories). On the one hand, the differences in the labour force participation effect across health categories confirm the importance of examining health separately. On the other hand, these results reveal that labour force participation is endogenous in the health equation. The relationship between the two variables is always significant, but the nature (sign) of the association changes across outcomes. The *rho* parameter, which summarizes the relationship between confounding factors affecting labour force participation (such as motivations and preferences) and health status (stress and fatigue), is negative and significant for both genders (−0.227 for women, and −0.176 for men, respectively).

Age is negatively associated with fair and bad/very bad health but positively associated with good/very good health. This is in line with expectations. We also find a significant role of education on health. Education positively affects the health status of both genders, with being highly educated (secondary and, especially, tertiary educational attainment) reducing the probability of being in bad or fair health and being positively associated with good health. The importance of education highlighted by these results is in line with the literature (see [Mussida and Patimo, 2021](#)).

Living in a densely populated area is positively associated with fair and bad/very bad health, while it is negatively associated with both good and very good health categories. Being in a relationship, either married or cohabiting, positively affects the health status of women (+6.1 pp. and +6.3 p.p. for good and very good health, respectively), whereas it does not exert a role for men.

As for caring activities, we find a positive association between good and very good health statuses for women and men and the presence of either non-disabled elderly persons in the household (very good: +3.5 pp. for women and +1.9 pp. for men) or dependent children (very good: +4.5 pp. and +4.2 pp. for women and men, respectively), as well as the joint presence of

Table 3.
Health statuses of
Italian women and
men: ordered probit
model estimates

	Bad/very bad health		Fair health		Good health		Very good health	
	women	men	women	men	women	men	women	men
Labour force participation	-0.051*** (0.007)	-0.040*** (0.006)	-0.115*** (0.011)	-0.122*** (0.010)	0.167*** (0.020)	0.163*** (0.019)	0.169*** (0.021)	0.167*** (0.020)
<i>Age: reference [45, 64]</i>								
Age [25, 34]	-0.039*** (0.003)	-0.031*** (0.002)	-0.087*** (0.006)	-0.097*** (0.007)	0.125*** (0.008)	0.129*** (0.009)	0.127*** (0.009)	0.131*** (0.011)
Age [35, 44]	-0.019*** (0.002)	-0.016*** (0.002)	-0.043*** (0.005)	-0.048*** (0.005)	0.061*** (0.007)	0.063*** (0.007)	0.063*** (0.007)	0.065*** (0.008)
<i>Education: reference primary</i>								
Secondary education	-0.012*** (0.002)	-0.007*** (0.001)	-0.029*** (0.006)	-0.024*** (0.005)	0.041*** (0.007)	0.032*** (0.006)	0.039*** (0.007)	0.030*** (0.006)
Tertiary education	-0.018*** (0.003)	-0.016*** (0.002)	-0.041*** (0.006)	-0.052*** (0.007)	-0.057*** (0.009)	0.065*** (0.008)	-0.059*** (0.009)	0.067*** (0.009)
Living in a densely populated area	0.005*** (0.002)	0.005*** (0.001)	0.012*** (0.004)	0.016*** (0.004)	-0.019*** (0.006)	-0.023*** (0.005)	-0.017*** (0.005)	-0.021*** (0.005)
Being in a relationship	-0.018*** (0.003)	-0.001 (0.002)	-0.041*** (0.004)	-0.002 (0.005)	0.061*** (0.007)	0.001 (0.006)	0.063*** (0.007)	0.003 (0.006)
Household size	-0.002* (0.001)	0.000 (0.001)	-0.004* (0.002)	0.000 (0.002)	0.002* (0.001)	0.000 (0.001)	0.002* (0.001)	0.000 (0.001)
<i>Family responsibilities: reference no child and elderly not disabled</i>								
Presence of only dependent children	-0.012*** (0.001)	-0.010*** (0.002)	-0.031*** (0.004)	-0.033*** (0.006)	0.041*** (0.006)	0.040*** (0.007)	0.045*** (0.007)	0.042*** (0.007)
Presence of only non disabled elderly	-0.010*** (0.003)	-0.004* (0.002)	-0.025*** (0.008)	-0.014* (0.007)	0.031*** (0.010)	0.017* (0.010)	0.035*** (0.011)	0.019* (0.010)
Presence of both children and elderly	-0.018*** (0.006)	-0.016* (0.008)	-0.043*** (0.015)	-0.052* (0.025)	0.061*** (0.023)	0.065* (0.033)	0.065*** (0.024)	0.069* (0.034)

(continued)

	Bad/very bad health		Fair health		Good health		Very good health	
	women	men	women	men	women	men	women	men
<i>Regional fixed effects: reference north</i>								
Centre	-0.010 ^{***}	0.009 ^{***}	0.023 ^{***}	0.026 ^{***}	-0.010 [*]	-0.015 [*]	-0.012 [*]	-0.017 [*]
South	0.006 ^{***}	0.008 ^{***}	0.013 ^{***}	0.023 ^{***}	-0.018	-0.031 ^{***}	-0.019	-0.033 ^{***}
	(0.002)	(0.002)	(0.004)	(0.005)	(0.007)	(0.006)	(0.007)	(0.006)
<i>Yearly dummies: reference 2019</i>								
2016	0.007 ^{***}	0.005 ^{***}	0.018 ^{***}	0.015 ^{***}	0.001 (0.000)	0.004 ^{***}	-0.025 ^{***}	-0.023 ^{***}
2017	-0.004 ^{***}	-0.003 ^{**}	-0.011 ^{***}	-0.009 [*]	0.001 (0.004)	-0.002 [*]	0.016 ^{***}	0.015 [*]
2018	0.002 (0.002)	0.002 ^{***}	0.006 (0.004)	0.007 ^{***}	0.001 (0.000)	0.002 [*]	-0.008 (0.005)	-0.011 [*]
Rho parameter	-0.227 ^{***}	-0.176 ^{***}						
	(0.047)	(0.039)						
Log-likelihood	-17411.3	-18987.4						
Observations	17,803	16,893	17,803	16,893	17,803	16,893		

Note(s): Average Marginal Effects (AME). Standard errors in brackets. * Significant at the 10% level; ** significant at the 5% level; *** significant at the 1 % level
Source(s): Authors' calculations from EU SILC 2016–2019

elderly persons and dependent children (very good: +6.5 pp. for women and +6.9 pp. for men). This is an interesting finding because caring responsibilities, while negatively affecting women's and men's labour force participation probabilities (with the exception of children for men; see [Table 2](#)), are positively associated with health. This is in line with the literature suggesting that caregivers experience both a sense of satisfaction and well-being (see [Haley et al., 2003](#)). We instead note a negative association between health status and caring for disabled persons with some and, especially, severe activity limitations (−12.1 pp. for women and −10.4 pp. for men). The negative impact of disabled persons was also found for labour force participation (see Section 5.1). As for regional heterogeneity, we note that living in the south of Italy is positively associated with bad/very bad health for both genders, but the effects are small in magnitude (+0.6 pp. for women and +0.8 pp. for men).

In conclusion, our findings suggest that analysing different health categories is relevant and informative, as significant differences emerge across groups. We find differences in the effect of labour force participation, as well as age and, especially, educational attainment. Finally, and most importantly, the effects of caring responsibilities due to the presence of elderly persons and dependent children also differ.

7. Conclusions

We analysed the effect of family care responsibilities (children, non-disabled elderly and disabled persons in the household) on the labour force participation and health status of both women and men. We ran this analysis for Italy, which is characterized by strong family ties and social norms and a low availability of formal childcare and elderly care, as well as gender roles defined primarily in accordance with the breadwinner model, where caregiving is mainly delegated to women. This is one of the main obstacles to women's full participation in the labour market and is also negatively associated with women's health perceptions. We estimate a simultaneous two-equation model pinpointing the effect of family care responsibilities on labour market participation and health. We stress the similarities and differences in these effects between genders.

Our findings suggest that while the presence of children, the elderly or both in the household is positively associated with health status for both genders, the presence of elderly disabled persons exerts a negative effect. As for participation, we find interesting differences between women and men. Notably, while the presence of children discourages women's participation, it is positively associated with men's participation. However, when the effect of children is combined with the presence of elderly people, the results suggest a potential role of elderly persons without disabilities in helping both genders take care of children. In so doing, they seem to neutralize the effect of the presence of children on the labour force participation of both genders. Another difference is associated with the impact of care services. While the presence of childcare services and elderly and/or disabled home care/assistance is positively associated with women's participation, it does not exert a role on men's participation. These results suggest that a higher coverage of care services should increase the active participation of women in the labour market.

All in all, the social savings implied by informal, unpaid and stressed caregivers cannot become private costs borne only by households, who may end up with triple care responsibilities for children (temporary at the beginning of one's professional life), the elderly (at the peak/end of professional life) and disabled family members (most likely across one's working life).

Our efforts to understand the nature of the factors shaping the health status of women indicate that lifestyle preferences and decisions (family formation, career) and other circumstances affecting private life and citizen status (health, disabled household members, chronically ill ageing family members) cannot be treated separately. Finally, although we only analyse data for Italy, our results can be generalized to other European countries. The 2022 report by the European Commission on the lives of women and men in Europe ([EC, 2022](#)) and considerations based on data from the Time-Use Survey indicate that women in the whole of

Europe still experience a greater load of domestic and care work within the household compared to men, even if at different levels in each country. Indeed, it is generally true Europe-wide that participation and employment gaps are still far more detrimental to women than men. Therefore, our results and policy implications may apply to various other European countries.

Our analysis calls for strong and prompt cooperation between institutions and firms offering private and public services to families (ILO, 2022). The main beneficiaries of the latter are typically women (not necessarily working women) because they alleviate the burdens that bring about the negative effects seen on both health and labour participation.

Regional context indicators (also used in our analyses) still reveal a low level of childcare and services for the elderly and those with disabilities, which are also unevenly spread across Italian regions.

The approach taken here in our analysis of data on Italian women and men can also contribute to the understanding of the situation in the post-COVID-19 years. The different and unbalanced loads and pressures of family responsibilities among women and men before 2020 may have created an uneven playing field for the rearrangements that occurred during this global health emergency, which, in turn, may have contributed to the widening of gaps between men and women.

Notes

1. We also analysed previous periods (2010–2013 and 2007–2010) to see whether the effects of family care responsibilities on the health status and labour force participation probabilities of Italian women were different compared to the period investigated here. However, the differences were negligible, and we decided to report only the more recent results.
2. As a robustness check, we used the variable PH020, that is, the answer to the survey question “Do you suffer from a chronic (or long-standing) illness or condition?” The answer is “yes” if the health status is either bad or very bad, or “no” if the health status is fair, good or very good. The findings were in line with our benchmark model. For the sake of brevity, the results are available upon request.
3. The definitions of employment and non-employment do not match the ILO definition, as the EU-SILC respondents are asked to self-define their main economic status.
4. To account for the fact that supervision time needed for dependent children varies substantially with the age of the child, we included dummy variables for different age ranges of children, i.e. 0–3; 3–6; 7–15 etc., but we did not find significant differences between these age groups. Therefore, we decided to control for the more general and exhaustive indicator/dummy variable for the presence of dependent children in the household.
5. We only consider cohabitating non-disabled elderly persons. In the EU SILC, we do not have information on elderly persons living near the household, who could also help in childcare. This is a possible limitation of our analysis.
6. For elderly and disabled persons, see [https://www.istat.it/it/benessere-e-sostenibilit%C3%A0/la-misurazione-del-benessere-\(bes\)/gli-indicatori-del-bes](https://www.istat.it/it/benessere-e-sostenibilit%C3%A0/la-misurazione-del-benessere-(bes)/gli-indicatori-del-bes); for children, see <https://www.istat.it/it/archivio/16777>. We investigate regional heterogeneity in both equations: we include fixed effects for geographical area of residence in the health equation, while we add these instruments at the regional level into the labour force participation equation.

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