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Dipartimento di Biopatologia e
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IS FAMILY HEALTH DETERMINANT? A GENDER-SPECIFIC MULTILEVEL ANALYSIS IN ITALY

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Word count: 2997 (Main text); 250 (Abstract)

Running title: Family, Perceived Health and Gender in Italy

Keywords: perceived health, socio-economic determinants, family structure, gender differences

Abstract

Background: The traditional model of the Italian family, the married couple with children, is suffering a declining trend and many other family types are imposing. The aim of this paper is (i) to assess the role of family structure as determinant of perceived health (ii) to investigate the existence of a geographical gradient of health. **Methods:** The study is based on data taken from the 2004 EU-SILC survey of Eurostat and regards people living in Italy, aged 25 years and over. **Results:** Living alone or in an extended family without children is perceived an adverse health determinant for both sexes. Living in a traditional family with two children is protective for women health. The north-south geographical gradient of health is confirmed. **Conclusion:** Family structure is strongly associated with perceived health, with differences between genders. There is some evidence of a social gradient reflecting the north-south geographical differences in Italy.

Introduction

The importance of family for health is well established in the literature, as family membership and its structure stand out among all the other socio-economical determinants of an individual's health. One reason is that the family is a material and relational resource for individuals and, furthermore, it represents the context within which individuals make their own choices with respect to labour market participation and social activities¹. Indeed, families offer emotional support and the basis for self-identification/belonging². They provide practical support in dealing with everyday life, especially in caring and housework, and a financial contribution when an individual's income is insufficient to preserve his/her own standard of living. This is particularly true in societies where young people delay becoming self-sufficient due to difficulty of finding a job and labour contracts: family

mediation in this case concerns housing, income protection (in case of unemployment) and financial credit³. However, the family's supportive role is not without a price: family care requires a great deal of time and energy allocation.

The European literature concerning the relation between family structure and health has shown that women who combine family life with paid work and those who have multiple roles within family and community feel better than women with fewer roles.^{4,5,6,7,8} In Italy, the study of Costa, Marinacci et al. (2003)⁹ on data extracted from the National Health Interview Survey (NHIS) for the year 2000, have combined information on the effects of family structure and other socioeconomic conditions as determinants of perceived health and chronic illness. To define family structure, they considered only three categories, i.e. single-parent families, single-person families and couples with/without children of any age and they demonstrated the existence of a social gradient reflecting the north-south geographical differences, with better health conditions in the north of the peninsula for both males and females.

Indeed, the traditional model of Italian family, the married couple with children (20%), is suffering a declining trend and it no longer describes the majority of families. Other family types are present: extended families with or without children (49%), uni-person (11.9%), cohabitants with or without children (9.3%) and uni-parent families (1.9%)¹⁰. Family care-giving is a female task, as revealed by available statistics¹¹.

In this study, we analysed the gender-specific differences of the impact of family structure on perceived health and we extended the analysis to all family types present in Italy. Further aim of the study was to explore the existence of a geographical gradient of health in Italy for two dimensions of perceived health, i.e. self-rated health and limitation in activities because of health problems. The analysis was referred to people aged 25 years and over because almost all (97%) of Italian younger people live at home with their parents without a partner, and their health perception is good or very good (99.0%)¹².

DATA AND METHODS

Data

We considered data from the 2004 EU-SILC survey (Community Statistics on Income and Living Conditions)¹⁰. It contains a health section relating to an individual's general health with various questions about chronic suffering and any limitation in activity due to health problems. Moreover, it considers a family structure variable of nine categories, a detail which makes us question if the family can be considered a significant health determinant. The survey offers a large quantity of statistics relating to income and material deprivation, which enables us to specifically take into account the effect of family structure combined with poverty and financial worries impinging on health.

The whole data-set collected by the EU-SILC-survey for Italy counts 52,509 individuals aged 14+, residing in the territory of Italy at the time of data collection. In this study, we considered the sub-set of 46,025 individuals aged 25 years and over (21,882 males and 24,143 females).

Outcome variables

Two dimensions of perceived health were considered in the analysis.

Self-rated health (SR), measured by means of the item: "How is your health in general?" to whom the respondent could answer with five ordered categories: *very bad, bad, fair, good* and *very good*. In this analysis, SR has been dichotomized into *fair/good/very-good* as null category and *bad/very-bad* co-joined within the other category.

Limitation in activity because of health indicator (LABH), measured by means of the item: "Are you limited in your activities because of health problems?" to which the respondent could answer *yes* if the person was currently limited or has been limited in their activities for at least the last 6 months or *no*, if this was not the case.

Explanatory variables

For the family level, we considered family structure, poverty indicator and financial worries.

To define *family structure*, we adopted the EU-SILC classification into nine categories and we labelled each category as it is written in parenthesis: one-person household (living alone); two adults, no dependent children, both adults under 65 years (couple); two adults, no dependent children, at least one adult 65 years or more (tower family); other households without dependent children (flat family); a single-parent household, one or more dependent children (lone parent); two adults, one dependent child (traditional family with one child); two adults, two dependent children (traditional family with two children); two adults, three or more dependent children (traditional family with three or more children); and other households with dependent children (extended family).

"Tower" label was chosen for families with adult members only and, therefore, high mean age, while "flat" was used for families composed by members not organised in a hierarchical way, like, for example, families composed of adult brothers and/or sisters.

Poverty indicator is a dichotomous variable, assuming null value if total equivalised disposable income is more or equal to 60% of median income and unit value if it is less than 60% of median income¹¹.

Financial worries variable measures the household respondent's assessment of the difficulty experienced by the household in making ends meet. We have dichotomised its six ordinal categories into *with difficulty* versus *easily*.

For individual level, we considered age, gender, education, marital and professional status, and chronic suffering. We classified age into three categories: 25-39 years, 40-59 years and >60 years. In this study we considered only two social and economic structure variables (SES): *educational level* (three categories, with pre-primary and primary as null) and *professional status* (eight categories, with full-time worker as null).

For the regional level, we have selected the contextual variables in agreement with the international literature. The United Nation Development Programme, for example, yields a Human Development Index as a composite indicator of economic, social and health simple indicators. The *contextual variables* of this study are: regional GDP at constant prices (year 2005) for the economic dimension; the percentage of primary educated or uneducated people and youth employment rate for the social dimension; infant mortality rate for the health dimension.¹³ Contextual determinants have been standardised.

Statistical Methods

To measure the differences between genders of the impact of family structure on perceived health, a logistic regression model was firstly estimated with the following explanatory variables: demographic (age and gender), SES (education, professional status, household poverty indicator), chronic suffering, family structure and financial worries. The association between variables was assessed using the χ^2 test. Marital status was found to be significantly associated with family structure and it was, therefore, excluded.

To estimate the region effect, a multilevel logistic regression model with random parameters was estimated¹⁴, with individuals nested within regions. This model was stratified by gender in order to analyse differences between sexes in health determinants. A random slope was specified for chronic suffering. The adjusted odds ratio with a 95% confidence interval (CI) was provided for all independent variables included in the models. Separate analyses were conducted for SR and LABH. The data were weighted to take into account the sampling design and non-response¹⁰. The statistical analysis was performed by means of the SAS/STAT 9.0¹⁵ and MLWIN 2.02¹⁶ computer packages.

RESULTS

When the SR outcome was considered, the health gap was found to be in favour of males, who have more favourable perceptions regarding their health than females (OR=0.895 95%CI=[0.825; 0.972]). However, this male advantage was not more significant when the LABH was considered (OR=0.933 95%CI=[0.866; 1.006]) (data not shown).

Results of Multilevel Model: SR outcome

Going from couples to those living alone increased the likelihood of perceiving bad health both for men ($OR_{MAN}=1.428$ 95%CI=[1.124; 1.813]) and women ($OR_{WOMAN}=1.502$ 95%CI=[1.223; 1.846]). Living in a tower family was also associated with the health perceptions of both sexes ($OR_{MAN}=1.398$ 95%CI=[1.127; 1.734], $OR_{WOMAN}=1.511$ 95%CI=[1.228; 1.860]). Living in a flat family worsened health perceptions only for women ($OR_{WOMAN}=1.276$ 95%CI=[1.047; 1.556]) and living in a traditional family with two children served to protect women's health ($OR_{WOMAN}=0.694$ 95%CI=[0.498; 0.967]). Moreover, the analysis revealed the negative effect on health of low educational levels, of having an individual income below the median and of being worried about making ends meet. Moreover, unemployed, retired and other inactive people felt worse than male and female full-time workers. (Table 1).

Looking at the contextual determinants acting on a regional level, the percentage of primary educated or uneducated people was only significant for women ($p<0.05$) while the youth employment rate was only significant for men ($p<0.01$). Concerning the regional heterogeneity of health, the only significant random coefficient was the variance between the regions, i.e. the random intercept component, for women ($p<0.05$). The random coefficient associated with chronic suffering was not significant either for women or for men (Table 2). From the graphical display of the second level residuals and their confidence intervals, it could be observed that only the external intervals did not overlap and they confirmed the significance of differences between regions only for women (Fig. 1).

Results of the Multilevel Model: LABH outcome

Examining the LABH indicator, moving from a couple to someone living alone increased the likelihood of men and women displaying limited activity ($OR_{MAN}=1.415$ 95%CI=[1.149; 1.742], $OR_{WOMAN}=1.504$ 95%CI=[1.251; 1.808]). Living in a tower family was associated with limitations regarding activity for men but not for women ($OR_{MAN}=1.416$ 95%CI=[1.169; 1.716]). Living in a traditional family was not associated with health either for men or for women. Financial worries in making ends meet was a significant determinant both for women and men ($OR_{MAN}=1.581$ 95%CI=[1.397; 1.789], $OR_{WOMAN}=1.709$ 95%CI=[1.528; 1.911]).

As was the case with SR analysis, being educated acted as a protective factor as regards health. The results of the LABH and SR models were similar for professionals, except for workers whose part-time work acted as a negative health determinant for women but not for men. Performing a domestic role became significant for men too. The LABH analysis revealed the highest ORs for those with special mobility needs. Indeed,

women were ten times more likely to be characterised by limited activity than able women, and disabled men were twenty-four times more likely to suffer worse health. The adjusted OR associated with the individual poverty indicator showed that men with an individual income below the median were more likely to feel bad about their health ($OR_{MAN}=1.223$ 95%CI=[1.053; 1.419]) while the female poverty indicator was not significant (Table 1).

Looking at the contextual determinants acting at a regional level, GDP at constant prices, infant mortality rates and youth employment rates were significant only for women ($p<0.05$, $p<0.001$, $p<0.001$, respectively). Moreover, the between-regions variance results were significant only for men whilst the random coefficient associated with chronic suffering was significant for both sexes ($p<0.05$) (Table 2). Moreover, the second level residuals and their confidence intervals confirmed the significance of differences between regions only for men, while the effect of chronic suffering at the regional level was significant for both sexes (Fig. 1).

DISCUSSION

The results of our analysis regarding the effect of family structure on health in Italy seemed to confirm the role of domestic care for health. In agreement with the nordic countries analysis of Roos, et al. (2005)⁷ and with the Italian study of Costa, Marinacci et al. (2003)⁹, where a similar result was reported only for mental health dimension, living alone seemed to be an adverse health determinant for both sexes. This circumstance can be due to 'letting oneself go' or pessimistically perceiving one's own health status when living alone. Living in an extended family without children, like tower and flat family, was also perceived as an adverse health determinant. Subjectively, those who live in a family with elderly members feel worse because of the burden of time and the strain caused by care-giving and housework. Confirming these remarks, living in a tower family for women was no longer a health determinant when the LABH is considered. Living in a flat family was an adverse health determinant only for women as regards self-rated health, possibly due to the onerous responsibilities of family care-giving. Such results look coherent with the Italian welfare model, which is founded on family support favouring the weakest population segments, such as elderly members¹⁷.

Finally, the fact of women living in a traditional family with two children was a protective health determinant as regards their self-rated health. We can also interpret this result in light of the heterogeneity of family structures across the regions. The percentage of traditional families with two dependent children on average is four percentage points more in the islands of the south than in the north-centre of the peninsula (Fig. 2).

Our results showed that the extended family in the Italian context was mostly perceived as a source of worries and strain and it was, therefore, associated with a significant probability of perceiving bad health. Women living in a couple with two children perceive a better health status because they have realized the most attractive and desirable family model as regards Italian women's expectations. The transition from only one child to two or more children recently has become an increasingly less frequent event, because of the advanced age of the first pregnancy, caused by the long time needed to reach an adequate educational level and professional status¹⁷.

Regarding socio-economic indicators, there was a different effect of poverty on male and female health perception. When the SR outcome was considered, being above the median income served to protect the health of males and females, but when the LABH indicator of perceived health was considered, it was found to be no more significant to females. Regarding a possible cause, we believe that women give less importance to financial aspects, and wealth accumulation is not as important for women as it is for men. Professional status yields similar effects for both sexes and health dimensions except for those with special mobility needs and part-time workers. Being disabled is an adverse health determinant, for both dimensions of perceived health considered. A woman choosing to work part-time improves her health perception and subjective limitations while for a man it is indicative of unemployment, a fact which leads him to think less of himself even in the absence of sickness and disease. The occurrence of financial worries is also associated with an increased probability of feeling worse with no observed difference between the sexes.

Our results suggested that some public policy intervention to support family may prevent health problems, especially for women. The disadvantages experienced by women can be in part explained by a higher incidence of disease (chronic and disability problems) and socio-economic problems (lower educational levels and lower employment rate). Since gender is a measure of both biological/genetic and social differences, it is likely that the health inequalities between men and women discussed earlier reflect both sex-related biological and social factors, and the interplay between them^{18,19,20,21,22,23}. However, domestic and family care can also explain the health gap between the sexes. Indeed, women provide domestic care 77% of the time (85% in the period 1988-89), thereby revealing the persistence of significant gender inequalities, although there has been some indication of restoring the balance between the two sexes¹⁷.

Finally, our analysis confirmed our opening hypothesis regarding the existence of the health gap on a regional level. The proposed models highlight a significant regional variation around the intercept which can suggest the presence of unmeasured contextual health determinants acting at the regional level. Moreover, the significant random coeffi-

cient associated with chronic suffering for LABH outcome, can be explained by regional heterogeneity over a series of welfare services, which can include the number of specialists and specialized assistance centres, transportation for the disabled, care services and so on.

Examining the shape of the regional confidence intervals (Fig.1), we can say that, when considering the perceived limitation of activities due to health, only for men there was a north-south gradient. Men living in the south (Abruzzo, Molise, Sicily, Campania) were on average more likely to be limited in their life than men living in the north (Friuli Venezia Giulia, Trento, Aosta Valley) and the effect of chronic suffering on the LABH outcome was reinforced in the south (Sicily, Sardinia, Calabria, Abruzzo). Regarding the SR outcome, remarkable regional differences existed only for women but such discrepancies did not correspond to a gradient; their distribution was variegated. We can observe some differences in the contextual indicators for female health. Regarding SR, regional educational level was the only significant indicator and we believe it was consistent with affective, emotional and family related priorities. When LABH was considered, regional education was no more significant for women while other contextual factors become significant. This result confirmed the role of economical benefits in the presence of pathologies or disabilities which restrict life.

Two are the principal conclusions from our study. First, family structure was strongly associated with perceived health, with differences between genders. In particular, living in an extended family without children was perceived as an adverse health determinant, while living in a traditional family with two children was protective for female health. For this reason, public policy for supporting family could prevent health problems, especially for women. Second, there was evidence of a social gradient reflecting the north-south geographical differences for male perceived health, as it was measured by the limitation in activities because of health. For women, regional discrepancies did not correspond to a gradient.

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Table 1. Fixed part of Multilevel Logistic Regression Model for SR and LABH by gender, adjusted for age, year 2004

Effect	SR						LABH					
	Men			Women			Men			Women		
	OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI	
<i>Intercept</i>	0.094	0.069	0.128	0.101	0.072	0.141	0.308	0.238	0.398	0.343	0.268	0.438
<i>Chronic suffering</i>												
no vs yes	0.049	0.041	0.059	0.056	0.049	0.065	0.041	0.033	0.051	0.040	0.034	0.048
<i>Family structure</i>												
living alone vs couple	1.428	1.124	1.813	1.502	1.223	1.846	1.415	1.149	1.742	1.504	1.251	1.808
lower family vs couple	1.398	1.127	1.734	1.511	1.228	1.860	1.416	1.169	1.716	1.177	0.977	1.418
flat family vs couple	1.069	0.867	1.319	1.276	1.047	1.556	1.111	0.927	1.330	1.130	0.951	1.342
lone parents vs couple	1.445	0.412	5.065	1.035	0.628	1.705	0.766	0.247	2.377	1.112	0.754	1.639
traditional family with one child vs couple	1.021	0.752	1.386	1.208	0.909	1.605	0.899	0.701	1.152	0.967	0.764	1.223
traditional family with two children vs couple	0.757	0.543	1.057	0.694	0.498	0.967	1.018	0.794	1.306	0.875	0.683	1.120
traditional family with three or more children vs couple	0.963	0.558	1.660	0.945	0.555	1.607	1.068	0.694	1.644	0.743	0.471	1.173
extended family vs couple	0.980	0.749	1.282	1.091	0.859	1.386	1.091	0.871	1.367	0.914	0.741	1.127
<i>Financial worries</i>												
with difficulty vs easily	2.125	1.828	2.472	2.061	1.814	2.341	1.581	1.397	1.789	1.709	1.528	1.911
<i>Educational level</i>												
tertiary vs pre-primary and primary	0.466	0.340	0.639	0.471	0.344	0.646	0.538	0.426	0.679	0.620	0.488	0.788
secondary vs pre-primary and primary	0.584	0.498	0.684	0.558	0.479	0.650	0.672	0.591	0.763	0.682	0.601	0.775
<i>Professional status</i>												
part-time vs full-time worker	1.626	1.065	2.483	0.720	0.505	1.027	1.401	0.986	1.989	0.744	0.572	0.967
unemployed vs full-time worker	1.906	1.398	2.598	1.505	1.087	2.084	1.976	1.516	2.574	1.395	1.060	1.836
student vs full-time worker	0.541	0.124	2.361	0.762	0.266	2.178	1.116	0.501	2.488	0.932	0.458	1.899
in retirement vs full-time worker	2.270	1.852	2.784	1.605	1.301	1.979	1.707	1.443	2.021	1.632	1.368	1.947
disabled vs full-time worker	12.884	9.565	17.356	6.184	4.618	8.282	23.903	16.601	34.417	9.806	7.096	13.550
domestic role vs full-time worker	1.409	0.877	2.264	1.320	1.079	1.616	2.377	1.635	3.457	1.318	1.118	1.554
other-inactive vs full-time worker	3.047	2.311	4.016	1.718	1.360	2.169	2.542	1.982	3.261	2.173	1.776	2.659
<i>Poverty indicator</i>												
below vs above median income	1.369	1.166	1.608	1.161	1.018	1.324	1.223	1.053	1.419	1.065	0.938	1.210

Table 2. Random part of Multilevel Logistic Regression Model for SR and LABH by gender, adjusted for age, year 2004

REGIONAL LEVEL EFFECT	SR				LABH			
	Men		Women		Men		Women	
	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
<i>Contextual determinants</i>								
GDP at constant prices, 2005	-0.025	0.061	-0.029	0.105	-0.075	0.051	-0.076	0.030
% of not or primary educated people	0.024	0.058	0.151	0.065	-0.011	0.049	-0.039	0.030
infant mortality rate	-0.052	0.049	0.048	0.054	-0.054	0.041	-0.095	0.029
youth employment rate	-0.186	0.059	-0.109	0.069	0.045	0.050	-0.107	0.033
<i>Level 2 variance components</i>								
random intercept	0.027	0.016	0.075	0.030	0.042	0.020	0.000	0.000
Covariance	0.009	0.021	-0.040	0.026	-0.064	0.034	0.000	0.000
chronic suffering	0.073	0.053	0.043	0.033	0.186	0.080	0.101	0.042

Figure 1. Level residuals and confidence intervals for SR and LABH models

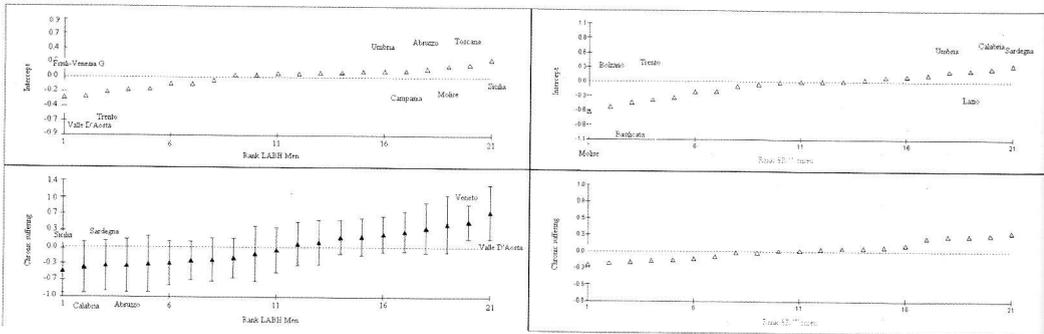
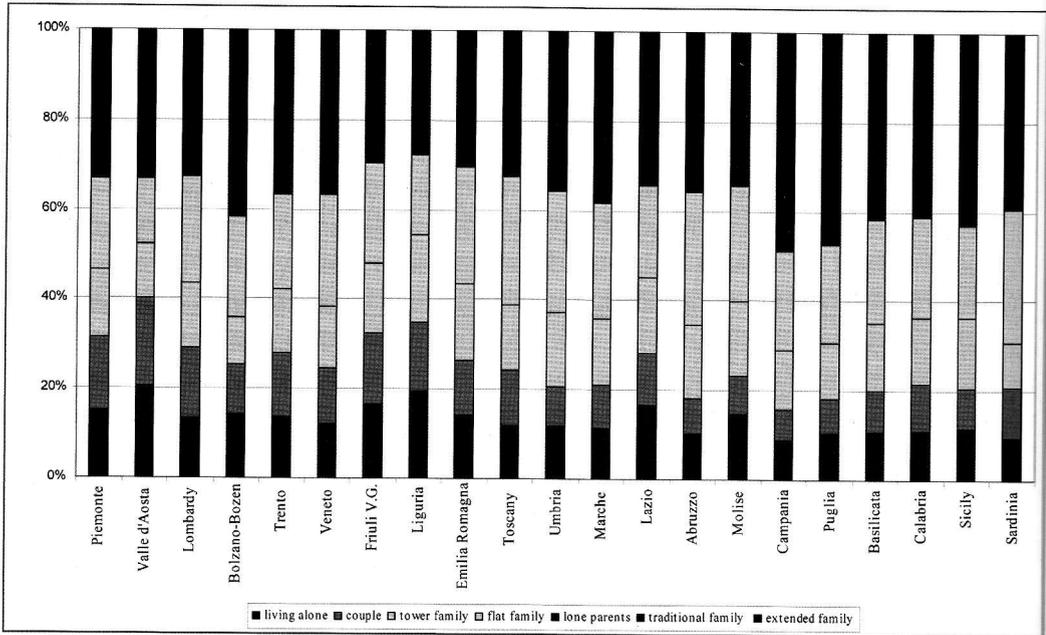


Figure 2. Sample distribution by household type and region



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