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ORIGINAL ARTICLE

Health status and fertility intentions among migrants

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Abstract

The role of health has never entered the debate about migrant fertility. The main goal of this work was to explore, for the first time, the relationship between health and fertility intentions among migrants by gender, duration of stay and parity. Three health measures were considered: self-rated health, the presence of chronic illnesses and mental health. We compiled data from the Italian survey "Social Condition and Integration of Foreign Citizens" and employed generalized ordered logistic models to test the relationship between health and fertility intentions among migrants. Our findings show that poor health negatively affects migrants' fertility intentions, net of a wide array of control variables (including employment and reason for migration). This is especially true among long-term migrant women, and, among the latter, the effect is strongest when chronic illnesses and mental health are considered. We encourage future research to consider health in the demographic debate about migrant fertility.

INTRODUCTION

Migrants' fertility has always been a prominent topic in demographic research. Interest in this topic was renewed recently in the European context mainly due to two trends: the persistence of low-fertility regimes in most

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European countries, which started during the early 1990s (Kohler et al., 2002) and has continued in the aftermath of the Great Recession (Dantis & Rizzi, 2020; Matysiak et al., 2021); on the other hand, during the same years, a sharp increase was seen in the number of migrants in Europe (from 50 million in 1990 to 82 million in 2019; United Nations, 2019). In this scenario of widespread low birth rates, the contribution to the total fertility provided by migrants became a topic of primary interest. During the last decades, births to immigrant women contributed considerably to the total number of births, representing more than 10% of all births in several European countries (Sobotka, 2008). Nonetheless, recent data from several European countries suggest that migrants' fertility rates are decreasing (Eurostat, 2020). A limited number of macro-level studies addressing this issue concluded that the decrease in migrant fertility rates is mostly due to changes in the composition of migration flows, with an increasing share of migrants coming from low-fertility countries (Gonzalez-Ferrer et al., 2017), or decreasing fertility rates in migrants' country of origin (Tønnessen, 2019).

Overall, micro-level research on migrants' fertility and fertility intentions has produced a large body of theories (see Kulu, 2005 for a review) and empirical findings addressing childbearing behaviours after migration. The main determinants of migrants' fertility were found in their migratory background and among the most common demographic and socio-economic characteristics (age, education, employment) (Adserà & Ferrer, 2014; Andersson & Scott, 2007). Conversely, health status has never entered the debate about the determinants of migrant fertility. The relationship between individual health status and fertility has rarely been addressed in demographic research (e.g. Barclay & Kolk, 2020), especially in developed countries characterized by high health standards. For these countries, evidence that health problems may hamper fertility is mostly limited to the medical field. Not only are studies about the relationship between health and fertility scarce, to our knowledge no specific study has focused on migrant subgroups.

Typically, migrants' health status is better than natives' in high-income countries (e.g. Wallace et al., 2019) because of selection hypotheses (Lee, 1966; McDonald & Kennedy, 2004), cultural factors (Lee et al., 2013) and migrant healthy behaviours (Razum et al., 2000). Nonetheless, recent studies show that migrants' health tends to worsen as the duration of stay in the host country increases (Loi & Hale, 2019), and this is especially true among women because of different demographic and social process that characterize men and women before, during and after migration (Trappolini & Giudici, 2021). Women may experience higher discrimination than men due to their double vulnerability both as women and as migrants, which may result in poorer health status in the long term (Antecol & Bedard, 2006; Hamel & Moisy, 2015).

With this work, we aim to overcome the lack of research about the relationship between health conditions and migrants' fertility. More specifically, we advance the hypothesis that health may influence migrants' fertility, especially as their duration of stay in the host country increases. To do so, we consider three different health indicators – self-rated health (SRH), chronic illnesses and mental health – and analyse their relationship with migrants' fertility intentions. We chose Italy as the study setting because it represents an intriguing case study. Specifically, Italy has among the lowest fertility levels in Europe and has been increasingly involved in the European migration dynamics, becoming one of the main European destination countries. The decision of investigating fertility intentions rather than fertility realization is partially data-driven because analysing the relationship between health status and fertility outcomes of migrants would require high-quality longitudinal data, which are not available for Italy as well as several European countries. Nevertheless, fertility intentions provide a timely measure of the future fertility behaviour, as they change without delay in response to external factors (Rindfuss et al., 1988; Schoen et al., 1999).

LITERATURE REVIEW

The determinants of migrant fertility (intentions)

Existing perspectives about migrants' fertility behaviour have shed light on the importance of migrants' country of origin, length of stay in the host country and reason for migration as predictive factors of migrants' fertility

patterns in the destination country (for a review, see e.g. Kulu, 2005; Milewski, 2010). Migrants' country of origin is considered a proxy of their values and cultural heritage that is likely to shape not only migrant fertility (Andersson & Scott, 2007; Bijwaard, 2010) but also migrants' fertility intentions (De Valk, 2013; Mussino et al., 2021) and ideal family size (Mussino & Ortensi, 2018). The length of stay is one of the main determinants of reproductive behaviour, as it was shown that migrants' fertility usually peaks right after migration and then tends to decrease as the duration of stay in the host country increases (Alderotti et al., 2019; Milewski, 2010). Regarding the reason for migration, evidence shows that individuals who migrated for family reasons (e.g. reunification between partners) might be more likely to have a child right after migration, whereas individuals who migrated for working reasons might need more time to adjust and thus decide to have a child later (Impicciatore et al., 2020; Mussino & Strozza, 2012; Schoorl, 1990).

In addition to the above-mentioned main predictors of migrant fertility, educational attainment and participation in the labour market are especially important because they reflect socio-economic conditions (e.g. Giannantoni & Gabrielli, 2015). Working conditions in the country of destination must be considered independently from educational attainment since underqualified employment is frequent among migrants, especially in Southern European labour markets (Guetto, 2018; Reyneri & Fullin, 2011). However, demographic literature provides mixed and highly context-dependent evidence on the direction and magnitude of the employment/fertility link among migrants (Andersson, 2000 for Sweden; Wood & Neels, 2017 for Belgium; Alderotti et al., 2019 for Italy).

The literature cited so far concerns migrants' fertility behaviours. Research on migrants' fertility intentions has only been addressed in a small number of studies (e.g. Carlsson, 2018; Mussino et al., 2021). Most of these studies address very specific cases (e.g. Zhou & Guo, 2020), whereas others analyse intended family size instead of short-term fertility intentions (Hartnett, 2014). However, since the timing of childbirth and the number of children are found to be strongly related to short-term fertility intentions (Ajzen & Klobas, 2013; Régnier-Loilier et al., 2011), analysing the determinants of fertility intentions among migrants may provide interesting insights into such processes (De Valk, 2013).

Overall, the debate on migrants' fertility has addressed a wide array of factors as potential determinants of childbearing, but individual health status – which has been intensively studied among migrant subpopulations – has never entered the debate.

Migrants' health

Migrants' health is a relevant research topic in demography per se. In high-income host countries, the most enduring finding is that, upon arrival, migrants generally are in better health than the non-migrant population. This phenomenon has been investigated using different health outcomes including – but not limited to – SRH, chronic illnesses and mental health (Aglipay et al., 2013; McDonald & Kennedy, 2004; Newbold, 2006; Trappolini & Giudici, 2021).

Explanations about migrants' health advantage are based on the fact that international migrants are not a random sample from their home countries but rather a selected group. Selection processes are explained by the *healthy migrant effect* and the *salmon bias* hypotheses. According to the first one, migrants who migrate for educational or working reasons are *positively selected*, which means they are in better physical and psychological health than their counterparts (Chiswick et al., 2008; Suciu & Florea, 2017). The salmon bias hypothesis suggests that unhealthy migrants tend to return to their origin country (Domnich et al., 2012; Razum et al., 2006).

One of the main characteristics associated with health differences among migrants is gender, with women faring worse than men (Cooper, 2002; Gerritsen & Devillé, 2009; Trappolini & Giudici, 2021). Llácer et al. (2007) was one of the first studies to stress the need to integrate a gender perspective to understand migrant health in epidemiological studies, which, in turn, involves recognition of different male and female experiences and behaviours.

As argued by Rohlfs et al. (2000), such differences are the result of different roles, tasks and responsibilities that men and women have in terms of social structure, which can also influence health risks. Besides, the different selection process before migration should be considered, with migrant women arriving for family reunification being less selected on health than their male counterpart (Khlat & Guillot, 2017). Gender differences in health persist also when mental health is considered. Among various migrant groups, women were found to be more likely to report mental health problems than their male counterparts (Hollander et al., 2011; Jang et al., 2011).

The length of time migrants reside in the host country is another determinant of their health status: the longer they stay, the more their health status will resemble that of the native population (Domnich et al., 2012; Khlat & Darmon, 2003; Loi & Hale, 2019; Trappolini & Giudici, 2021). This pattern has been explained mainly by the acculturation and assimilation hypotheses: new living and working conditions, assimilation of new beliefs, unhealthy behaviours and a persistent low socio-economic status may negatively affect migrants' health (*exhausted migrant effect*; Bollini & Siem, 1995; Jasso et al., 2004; Khlat & Guillot, 2017). Moreover, women tend to lose their health advantage at a faster rate than men (Antecol & Bedard, 2006; Hamel & Moisy, 2015; Ichou & Wallace, 2019; Trappolini & Giudici, 2021; Warner & Brown, 2011). A longer stay in the destination country is also related to a worsening in migrants' mental health (Alegría et al., 2007 and Cook et al., 2009 for the US; Aglipay et al., 2013 for Canada; Rivera et al., 2016 for Spain).

Health and fertility

In medical literature, evidence suggests that people with health problems tend to desire (Cvancarova et al., 2009; McGrath et al., 1999) and to have (Chen et al., 2001; Langeveld et al., 2002) fewer children than healthy people. The channels through which health may affect fertility are widely explored. First, treating a health problem may lead to infertility issues (Dow & Kuhn, 2004). Among women, the physical dimension is particularly relevant in the relationship between health and fertility because women carry the physical burden of pregnancy. Women might be concerned about the possible effects of pregnancy/motherhood on the course of their illness or disease and the well-being of their child (Dow & Kuhn, 2004; Fair et al., 2000; Langeveld et al., 2002). Women might also be worried that their health issues can make pregnancy more difficult or cause complications (Drew, 2002) or they could transmit their problem to the baby (Katz, 2006). However, the physical dimension is important for men's health and fertility as well. For example, BMI and physical fitness affect men's sexual function and sperm quality (Cheng & Ng, 2007; Hammoud et al., 2008). Between both genders, obesity negatively affects the ability to conceive and is related to sub-fecundity (Ramlau-Hansen et al., 2007; Chamber and Anderson 2015). Besides, poor physical health – and the ensuing physical limitations – might affect fertility by compromising the future parents' ability to take care of the child (Katz, 2006; McDonald, 2002). Finally, the scant evidence available about the relationship between mental health and fertility suggests that people with mental health problems tend to have fewer children (McGrath et al., 1999) and report infertility issues more often (Bhongade et al., 2015) compared with people with good mental health.

The relationship between health and fertility has been largely disregarded in the demographic literature. This is especially the case of middle- and high-income countries, where health standards are relatively high, and health is not considered among the main drivers of fertility intentions and behaviours. However, health problems may influence fertility not only directly through the channels suggested by the medical literature but also indirectly. For example, it was shown that poor health reduces the ability to work and has negative effects on labour force participation and wages in developed countries (e.g. Currie & Madrian, 1999), which could affect fertility (Alderotti et al., 2021). Or again, health issues may jeopardize one's chance to enter a stable union, and never partnering is one of the main pathways to childlessness in developed countries (Mynarska et al., 2015; Tocchioni, 2018). Among the few non-medical studies that relate individual health status to fertility, Holton et al. (2011) analysed childbearing expectations and outcomes of a sample of Australian women and found that health problems were identified as a prominent factor

affecting childbearing, often preventing women from achieving their ideal childbearing outcomes. Frisco and Weden (2013) found a similar result when they analysed a sample of American women and found that those who were obese in their 20s were more likely to underachieve their fertility intentions. Barclay and Kolk (2020) focused on men's health and fertility in Sweden and found a strong relationship between a set of anthropometric measures (BMI, physical fitness and height) and total fertility, which persisted after controlling for education and income. To the best of our knowledge, no study has explored the health/fertility link among migrant subpopulations.

RESEARCH HYPOTHESES

The main goal of this work was to explore the relationship between health status and fertility intentions among migrants in Italy by considering three different health measures: SRH, chronic illnesses and mental health. We conducted separate analyses for each health outcome. Following the literature on migrants' health, we stratified the analyses across the two key dimensions of gender and duration of stay. Because migrant women tend to have worse health status than migrant men – who are generally more strongly selected on health than their female counterparts – and because women carry the physical burden of pregnancy, we expected to find a stronger negative relationship between health and fertility intentions among women than among men (H1). In light of the evidence showing that migrants' health status tends to worsen as the duration of stay in the destination country increases, we also expected that poor health hampers fertility intentions for long-term migrants more than for recently arrived migrants (H2). Finally, informed by the literature on the fact that positive fertility intentions tend to decrease at higher parities (e.g. Meggiolaro, 2010; Thomson, 1997), we further stratified the analysis and ran separate models on childless individuals and those who already have at least one child. On the one hand, one could expect poor health to be particularly detrimental for childless individuals' fertility intentions because parents may be somehow positively selected on health (e.g. they do not have congenital infertility issues). On the other hand, people who already have at least one child may be more prone to desist from having another child in case of health problems. For these reasons, we did not have any clear expectation on how the relationship between health and fertility changes between childless and parents (H3).

DATA AND METHODS

Data set and variables

We studied the relationship between migrant men's and women's health and fertility intentions in Italy using the first (and so far unique) national survey, Social Condition and Integration of Foreign Citizens (SCIF), conducted by the Italian National Institute of Statistics in 2011–2012. This survey includes only families with at least one foreign member. It is the most up-to-date survey on foreign-born individuals. For this study, we selected only foreign-born men and women aged 15–39 years at the time of the interview, obtaining samples of 4,220 men and 5,188 women.

The dependent variable is the intention to have a/another child in the next 3 years. The possible answers are "definitely not", "probably not", "do not know", "probably yes" and "definitely yes". Individuals who answered "do not know" were excluded from the analysis.

We analysed multiple health outcomes: SRH, chronic illnesses and mental health. SRH was derived from a single question (i.e. "How is your health in general?") with five possible answers "very good", "good", "fair", "bad" and "very bad". For our analyses, we used a dichotomous variable, by coding "very good" or "good" as 0 and all other answers as 1. The presence of chronic illnesses was detected through the following question: "Do you have any chronic illness or any longstanding (i.e. since at least 6 months) health problem?" We treated chronic illnesses as a dichotomous variable: 0 "no chronic illnesses" and 1 otherwise. Finally, information about mental health was

included in the Mental Health Index (MHI, see e.g. Ware & Gandek, 1994). Possible scores on the MHI vary between 0 and 100, with a higher score indicating better mental health. Mental health was set at 0 if the respondent had an MHI score higher than 65 (corresponding to the third quartile of MHI distribution).

We studied multiple health outcomes to capture different health aspects and better analyse migrants' health profile. SRH should capture the general perceptions of individuals' health in the short term, whereas chronic illnesses and mental health should capture health problems in the long term. It should also be noted that SRH is widely used in different studies as a good predictor of morbidity, use of healthcare services and mortality (e.g. Chandola & Jenkinson, 2000; Jylhä, 2009), even if recently some authors (Assari et al., 2016; Woo & Zajacova, 2017) argued that caution is necessary when using SRH to estimate racial and ethnic health differences, because individuals from different migrant groups may evaluate their health differently.

Among the other main explanatory variables, we included time since migration. We distinguished recent migrants who migrated less than 7 years before the interview and long-term migrants who migrated at least 7 years before the interview. The choice of 7 years as a threshold to distinguish between recent and long-term migrants generates subsamples large enough for our analysis, and it has already been done in previous literature (e.g. Hervitz, 1985; Trappolini & Giudici, 2021). Information about the country of birth was reported by groups of countries. Accordingly, we opted for categorization into four groups that accounted as much as possible for the heterogeneity among countries of origin and for the small sample sizes of some migrant groups. The first category included migrants born in Romania, Poland and other countries of Central and Eastern Europe that are not in the European Union; the second group included migrants from Africa; the third group included Asia and South America and the last group included North America, Oceania and the remaining European countries. Concerning the cause of migration, respondents could indicate more than one reason for migration. Accordingly, we had to make assumptions to define their main migration reason. First, if the respondent reported "affective reasons" for migration, we assumed that he/she has a close relative in Italy, and thus the main reason for migration is set to "family reunification", regardless of other possible reasons indicated by the respondents. Second, we set the main reason for migration to "economic/working reasons" if the respondent did not select "affective reasons" but selected at least one among the following: "to find a job", "make more money", "improve life quality". The last and third category was a residual category, including all other migration reasons (i.e. "study", "war", "persecutions", "to make new experiences", "it was not my choice", "other").

We also controlled our estimates for an additional set of variables: age in classes of years (1 "15–24", 2 "25–29", 3 "30–34", 4 "35–39"), civil status (1 "not married, separated/divorced or widow", 2 "married"), educational level (1 "primary or lower secondary education", 2 "upper secondary or tertiary education") and employment status (1 "employed", 2 "unemployed", 3 "inactive"). Descriptive statistics are provided in Table A1 in the Appendix S1).

Modelling strategy

We modelled the relationship between health and fertility intentions using generalized ordered logit models (McCullagh & Nelder, 1989; Peterson & Harrel, 1990). The generalized ordered logit (hereafter, gologit) was preferred over the classic ordered logit because the proportional odds assumption was often violated in our data. Instead of switching to the multinomial logistic model, which is notably less parsimonious and difficult to interpret, and which does not use information about the ordering of categories, we opted for the gologit model with partial proportional odds. With the partial proportional odds model, the parallel-lines constraint is relaxed only for those variables where it is not justified (see Williams, 2016). For the analyses, we used STATA16 and the package *gologit2* (Williams, 2006). For ease of interpretation, we reported average marginal effects (AMEs).

We ran gologit models to test the effect of SRH, chronic illnesses and mental health on migrants' short-term fertility intentions. Among the three health outcomes analysed, moderately strong positive pairwise correlations were found, varying between 0.11 and 0.29. This suggests that the three indicators belong to the same sphere

of health; nevertheless, room remains for a separate investigation. We performed separate analyses by gender, duration of stay and parity.

RESULTS

Health and fertility intentions

In this paragraph, we focus on the relationship between health and fertility intentions. Thus, we only report the results about the effect of each of the three measures of health on fertility intentions, specifically for each subgroup analysed. For ease of interpretation, average marginal effects (hereafter, AME) are reported. Tables 1 and 2 show the AMEs of reporting poor SRH/chronic illnesses/poor mental health on the probability of giving a specific answer to the question about fertility intentions among men and women.

In general, we found that migrants with worse SRH, chronic illnesses or poor mental health are more likely to give a negative answer to the question about their short-term fertility intentions and less likely to give a positive answer compared to those reporting good SRH, no chronic illnesses or good mental health. Although a few exceptions to this pattern were found (e.g. childless men who migrated recently), they are not significant. More specifically, regarding men, we found the relationship between health and fertility intention is particularly important among recent migrants who already have at least one child. For example, among the latter, those who report poor SRH are 13.8% more likely to say that they definitely do not intend to have another child in the next

TABLE 1 Generalized ordered logistic model for fertility intentions: men. Average marginal effects are reported

	Recent		Long term	
	Childless	**Parents**	**Childless**	**Parents**
Self-rated health *(ref. good)*	*(n=947)*	*(n=335)*	*(n=1,099)*	*(n=1,009)*
Definitely not	−0.036	0.138*	0.059	0.019
Probably not	−0.015	0.022***	0.012*	0.002
Probably yes	−0.002	−0.083*	−0.011	−0.008
Definitely yes	0.053	−0.077**	−0.059	−0.013
Chronic illnesses *(ref. none)*	*(n=942)*	*(n=332)*	*(n=1,098)*	*(n=1,009)*
Definitely not	−0.041	0.113	0.007	−0.041
Probably not	−0.017	0.015**	0.002	−0.006
Probably yes	−0.003	−0.064	−0.001	0.016
Definitely yes	0.061	−0.065	−0.008	0.031
Mental health *(ref. good)*	*(n=927)*	*(n=328)*	*(n=1,087)*	*(n=992)*
Definitely not	0.013	0.058	0.025	0.021
Probably not	0.005	0.012	0.006	0.002
Probably yes	−0.001	−0.032	−0.003	−0.009
Definitely yes	−0.017	−0.038	−0.027	−0.014

Note:: The models control for age, civil status, educational level, employment status, country of origin and reason for migration.

*$p<0.10$; **$p<0.05$; ***$p<0.01$.

Source: Authors' elaboration on SCIF data.

TABLE 2 Generalized ordered logistic model for fertility intentions: women. Average marginal effects are reported

	Recent		Long term	
	Childless	**Parents**	**Childless**	**Parents**
Self-rated health *(ref. good)*	*(n=931)*	*(n=931)*	*(n=916)*	*(n=1,567)*
Definitely not	0.016	0.081*	0.134**	−0.003
Probably not	0.004	0.006**	−0.001	0.001
Probably yes	0.004	−0.034	−0.127**	0.001
Definitely yes	−0.024	−0.052**	−0.006	0.002
Chronic illnesses *(ref. none)*	*(n=925)*	*(n=925)*	*(n=914)*	*(n=1,559)*
Definitely not	0.110*	0.033	0.098**	0.075**
Probably not	0.081*	0.003	0.020**	−0.011
Probably yes	−0.160***	−0.013	−0.026	−0.032*
Definitely yes	−0.031	−0.023	−0.092***	−0.031**
Mental health *(ref. good)*	*(n=918)*	*(n=919)*	*(n=903)*	*(n=1,546)*
Definitely not	0.023	0.032	−0.044	0.065**
Probably not	0.006	0.003	0.090***	−0.009*
Probably yes	0.006	−0.012	0.015	−0.028**
Definitely yes	−0.036	−0.023	−0.061*	−0.029**

Note:: The models control for age, civil status, educational level, employment status, country of origin and reason for migration.

*$p<0.10$; **$p<0.05$; ***$p<0.01$.

Source: Authors' elaboration on SCIF data.

3 years and 7.7% less likely to definitely intend to have a child than those who report good SRH. Similarly, recent male migrants with at least one child and reporting a chronic illness are 1.5% more likely to answer "probably not" compared with their healthy counterparts. Some evidence also suggests that health plays a role in long-term male migrants' intention to have their first child; for example, those reporting poor SRH are 1.2% more likely to say that they probably will not have a child and 5.9% more likely to say that they will definitely not have a child when compared with long-term male migrants with good SRH. Conversely, no significant result was detected regarding the relationship between mental health and men's fertility intentions.

Our results suggest that the link between health and fertility is stronger among women. For example, among recent migrants, childless women are more likely to say that they do not intend to have their first child if they have a chronic illness (both definitely and probably, by 11% and 8.1% respectively) compared with childless women without chronic illnesses. Among recent female migrants who already have at least one child, those who report poor SRH are 8.1% more likely to answer "definitely not" and 5.2% less likely to answer "definitely yes" in comparison with those who report good SRH. Health problems are especially detrimental to long-term female migrants' fertility intentions. Those who report poor SRH are 13.4% more likely to say they definitely do not intend to have their first child in the next 3 years compared with those who report good SRH. Further, the presence of chronic illnesses is related to higher probabilities of negative fertility intentions and lower probabilities of positive fertility intentions among childless long-term migrants and those who have at least one child. Finally, among long-term female migrants, childless women with poor mental health have a lower probability of answering "definitely yes" and a higher probability of answering "probably not" to the question about fertility intentions compared with those with good mental health (by 6.1% and 9% respectively). Similarly, long-term female migrants with at least one child

and poor mental health are 6.5% more likely to "definitely not" intend to have another child and 2.9% less likely to say that they definitely do compared with long-term migrant mothers with good mental health.

Other factors

For ease of interpretation, the relationships between all control variables and migrants' fertility intentions were not mentioned in the previous paragraph, but they will be briefly discussed here. Results concerning the relationship between control variables and fertility intentions add little to the chief discussion of this study, as they all follow the expectations based on the previous literature. For these reasons, full models are reported in Tables A2-A3 in the Appendix S1. We only reported full models with SRH as the main predictor in the appendix. The other two sets of models (about chronic illnesses and mental health respectively) are virtually identical to the ones reported, and are available upon request.

Fertility intentions are most positive in the central age groups (i.e. 25–34 years) among men and childless women. Unsurprisingly, married men and women are the most likely to definitely intend to have a(nother) child, especially among those who are childless, and highly educated migrants tend to have more positive fertility intentions. Our results suggest that unemployment and inactivity seriously hamper fertility intentions among men, whereas the relationship between employment and fertility intentions is weaker among women, and some evidence indicates that inactive women are more likely to intend to have a(nother) child than employed women. The variable about origin country did not show a particular pattern, except for African men, who are, on average, more likely to have positive fertility intentions, especially if childless. Finally, we found that, among men, childless long-term migrants who migrated for family reunification or economic/working reasons are more likely to intend to have a child than those who migrated for other reasons. The same relationship was seen among childless women who migrated recently. Conversely, long-term female migrants who already have at least one child are less likely to definitely intend to have a child.

DISCUSSION

Migrants' contribution to fertility in Western countries has become of particular interest because of the persistently low-fertility levels of the native populations and increasingly high migration flows. Demographers have studied the determinants of migrant fertility, analysing a wide range of factors that were correlated with childbearing, but health has never entered the debate. Taking Italy as a case study, we addressed the lack of studies about health and fertility among migrants by looking, for the first time, at the relationship between different health outcomes and fertility intentions.

Our results unequivocally indicate that health status plays some role in shaping migrants' fertility intentions. We found a stronger association between poor health and fertility intentions among women than among men in the three health dimensions analysed. This finding may be because women carry the physical burden of pregnancy, which is in line with the medical literature stressing the importance of health for women's fertility (Dow & Kuhn, 2004; Katz, 2006). On the other hand, the scant evidence found among men (especially for mental health) suggests that their migration status is more dependent on health than it is for women; consequently, most men with health problems severe enough to prevent childbearing do not migrate at all (Chiswick et al., 2008). This supports our first hypothesis of a stronger negative relationship between health and fertility among women (H1). Our hypothesis of a stronger relationship between health and fertility among long-term migrants (H2) is partially confirmed. We found that the presence of chronic illnesses and poor mental health are especially detrimental for long-term female migrants' fertility intentions, whereas no duration-specific pattern emerges among men. This finding is supported by the literature showing that migrant health worsens as the duration of stay in the

destination country increases (e.g. Domnich et al., 2012; Loi & Hale, 2019; Trappolini & Giudici, 2021), especially among women (Antecol & Bedard, 2006; Ichou & Wallace, 2019; Trappolini & Giudici, 2021). Such a pattern is particularly evident when mental health is considered: no association between mental health and fertility intentions was found among recent migrants, while such a relationship is strong among long-term female migrants. This is in accordance with previous studies showing how migrants' mental health tends to worsen as their duration of stay in the host country increases (Aglipay et al., 2013; Alegría et al., 2017; Cook et al., 2009). However, we did find evidence that poor health is related to negative fertility intentions also among recent migrants. This was not unexpected since migrant fertility tends to peak right after migration (e.g. Mussino & Strozza, 2012). Finally, no clear difference in the relationship between health and fertility intentions was found according to parity (H3). We surmise that, regardless of the health measure considered, poor health conditions may negatively affect migrants' fertility intentions for any birth order.

This study makes two important contributions to the literature. First, our finding of a non-negligible negative effect of poor health on fertility intentions among migrants is robust, as we examined different specifications of health. This suggests that health is an important dimension to consider when studying fertility dynamics of migrants, as different dimensions of health can play independent, non-overlapping roles in subgroups of the migrant populations. Second, the relationship between health and fertility intentions persists after controlling for a wide range of control variables that possibly mediate the effect of health on fertility, such as civil and occupational status and the reason for migration. Consequently, the negative effect of poor health on fertility intentions that we identified in our study can likely be interpreted as a direct effect.

The study presents a set of limitations, of which most are data-driven. First, the relatively small sample size did not allow any investigation of the health/fertility nexus by country of origin or by reason for migration. Furthermore, we acknowledge the limits imposed by the cross-sectional nature of the survey, which only allows investigation of the relationship between health and fertility intentions at a given moment without considering if health status and fertility intentions have changed over time. However, we argue that the evidence provided by this study at least supports the existence of a nexus between migrants' health and fertility intentions, which may likely translate into a non-negligible negative effect of poor health on migrants' actual fertility.

This study sheds light, for the first time, on the importance of considering health among the determinants of migrants' fertility. In contemporary Europe, most countries are struggling to raise their fertility rates, and migrants' contribution to fertility is considered essential. Providing migrants with the health protection they need (e.g. by reducing access barriers to health services) and improving their living and working conditions might be a prerequisite to allow them to maintain (and to actually realize) their fertility intentions, contributing to raise national fertility levels. This might also be the case of countries, such as Italy, where equity remains a fundamental principle of the health system (see MIPEX health index, IOM, 2016) but disparities in the use of health services persist (Trappolini et al., 2020).

More in-depth research is required to better grasp the nuances and complexities behind this relationship. Specifically, employing panel data to study behaviours rather than intentions and testing the health/fertility nexus in other contexts may prove particularly fruitful.

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PEER REVIEW

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the Italian National Institute of Statistics (ISTAT). Restrictions apply to the availability of these data, which were used under license for this study. Data are available at https://www.istat.it/it/dati-analisi-e-prodotti/microdati with the permission of ISTAT.

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SUPPORTING INFORMATION

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