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Desire for parenthood at the time of COVID-19 pandemic: an insight into the Italian situation

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ABSTRACT

Purpose: To evaluate the impact of the COVID-19 pandemic lifestyle change on couples of reproductive age and on their desire for parenthood.

Materials and methods: A quantitative correlational research study, based on a web survey, was conducted among Italian men and women in heterosexual stable relationships, aged between 18 and 46 years. The self-administered Italian version questionnaire was created using Google Forms and posted on chats and social networks. The mood of participants before and during the quarantine was assessed using a scale from 1 to 10 (1 = no wellbeing; 10 = total wellbeing). Couples' quality of life and their reproductive desire were evaluated.

Results: 1482 respondents were included: 944 women (63.7%) and 538 men (36.3%). A significant trend toward reduced mean wellbeing scores during the quarantine, compared to before, was found ($p < .01$). From 18.1% participants who were planning to have a child before the pandemic, 37.3% abandoned the intention, related to worries of future economic difficulties (58%) and consequences on pregnancy (58%). Of 81.9% who did not intend to conceive, 11.5% revealed a desire for parenthood during quarantine than before ($p < .01$), related to will for change (50%) and need for positivity (40%). 4.3% of these actually tried to get pregnant. Stratifying by age, a trend toward older ages was found in the desire for parenthood before and during the COVID-19 pandemic ($p < .05$).

Conclusions: COVID-19 pandemic is impacting on the desire for parenthood. It is unknown whether these findings will result in a substantial modification of birth rate in the near future.

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COVID-19; pandemic; parenthood; reproduction; quarantine

Introduction

The first months of 2020 have seen a rapid spread of infection from a new type of Coronavirus, named COVID-19. The first country to become infected with COVID-19 has been China with a total number of about 80,000 cases, followed by Italy, to date, that counts, more than 90,000 infected people. On the 9th of March 2020, the government of Italy imposed a national quarantine, restricting the movements of the population, except for serious necessities, work, and health-related issues, with the attempt of controlling the fast growing viral dissemination. On 11th of March 2020, COVID-19 has been declared a pandemic by the World Health Organization (WHO) [1]. Only a few categories of workers have been spared from the

quarantine, meaning that the Italian population has been forced to an homebound isolation without precedents.

These exceptional war-like measures induced a climate of fear and insecurity of the present but, especially, for the future [2].

This has obviously impacted people's lifestyle and sometimes modified their quality of life. Containment measures can result in behavior anxiety, fear and panic. These feelings of negativity can lead to the onset or exacerbation of adaptation disorders and depression [3] with important modifications of sexual health and couple stability [4].

On the other hand, it has been demonstrated that working stress and the bustle of everyday life can be potent sexual inhibitors [5]. However, the possibility of

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sharing more and better time with a love partner could positively influence the quantity and level of intimacy.

As far as pregnancy research, some important acquisitions regarding the effects of COVID-19 on gestation must be taken into consideration. Intrauterine vertical transmission of the virus from the mother to the fetus during pregnancy is a described risk [6]. However, experts currently believe that the fetus is unlikely to be exposed during intrauterine life and that transmission is more likely to occur after birth [7]. To date, pregnant women have not been shown to be more susceptible to COVID-19 infection than the general population [8]. Nevertheless, pregnancy must be considered a risk factor for the increase in disease and deaths from influenza epidemics [9]. A huge effort has been made to sensitize the population of pregnant women to respect the terms of home isolation. Presumably, the daily share of information by the media might have created unexpected fears in couples. Uncertainty and anxiety can therefore contrast the desire for something beautiful that could add some positivity to a dark period. Since it is fundamental to analyze the effects of pandemic on demography, it will be important to look at the consequences of COVID-19 not only on deaths but also on births.

The aim of this study is to evaluate the impact of the COVID-19 pandemic lifestyle change on couples of reproductive age and on their desire for parenthood.

Materials and methods

We performed a quantitative correlational research study design in a sample of couples of reproductive age in Italy, using a web-based survey. The survey was conducted in Italian language according to the Checklist for Reporting Results of Internet E-Surveys [10].

The Italian version of the questionnaire was created online using Google Forms and posted on chats through free communicating apps (WhatsApp), and social networks (Instagram and Facebook), three weeks after the beginning of the lockdown. The probability sample is considered demographically representative of the whole population. An information sheet as the first page of the online survey was set, with participants required to check a box to indicate consent before accessing the survey. All the potential participants were fully informed about the study, extent of privacy, anonymity and confidentiality, possible risks and benefits, the voluntary nature of participating, and the lack of negative consequences in case of decline. All the people included gave their consent to

participate, according to ethical principles of the Declaration of Helsinki. The ethical issues associated with the online survey complied with the American Educational Research Association's (AERA) guidelines [11]. The self-administered questions were designed to assess the impact of COVID-19-related control measures, due to the Italian lockdown, on couples' quality of life, as well as on their reproductive desire.

The questionnaires were randomly released in the general population, with a specific target for those who met the inclusion criteria, described in the first page of the survey. Criteria for recruitment were: male and female aged between 18 and 46 years, heterosexual couples, stable relationships for at least twelve months. Exclusion criteria were: couples whose women were pregnant, people with a well-known history of infertility, homosexual orientation. COVID-19 positive people were excluded from the survey.

Basic demographic data were recorded: gender, age range and level of education. Information about the relationship status and the average time spent per day with the partner at home were collected. The mean number of previous children was noted.

Socio-economic issues were investigated, including the need to leave home for work commitments and the mean difference of monthly profits compared to before the pandemic.

The mood of participants before the beginning of the COVID-19 pandemic and during the quarantine period was assessed, using a scale from 1 to 10 (1 = no wellbeing; 10 = total wellbeing).

The recruitment process is outlined in [Figure 1](#). Desire for parenthood was evaluated before the start and during the pandemic, in order to analyze whether there were any changes due to the quarantine and why they occurred. Specifically, participants who were planning to have a child before the pandemic were asked whether they continued to try to conceive or decided to temporarily give up on the intention. Accordingly, they were asked to give the reasons why the changes might have occurred, being able to choose more than one option in the answers. Moreover, we asked each respondent if he/she took the decision by mutual agreement with the partner or against his/her will. Couples who continued to try to get pregnant were asked if the pandemic-related concerns had affected couple sexuality, reducing the number of sexual intercourses. Otherwise, we asked to those who did not intend to have a child before the pandemic whether they started to feel a desire for parenthood during the quarantine and, if so, which were the reasons that led them to consider it.

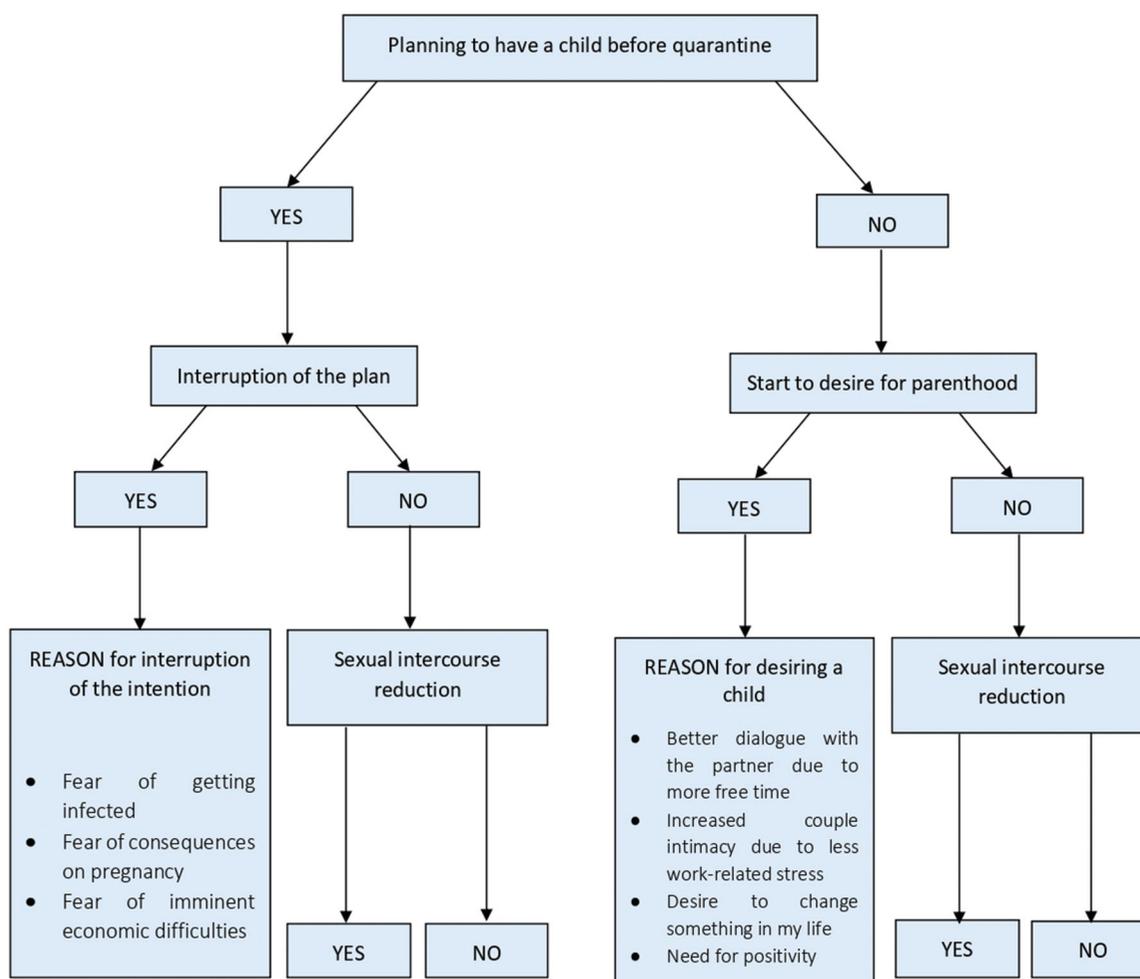


Figure 1. Flow-chart of the survey.

Furthermore, participants were asked if they actually tried to conceive a child during this period. Finally, people who did not have the desire for parenting, neither before nor during the pandemic, were asked if they experienced a reduction of couple sexual activity. The evaluation of different outcomes between genders was assessed. Desire for parenthood domains were also analyzed stratifying the study population into age groups.

Statistical analysis

The qualitative data was tested using the chi-square test or Fisher's exact test where appropriate, while the continuous variables, presented as median (interquartile range [IQR]), were tested using Mann-Whitney *U*-Test or Student *t* test according to their distribution (according to the Kolmogorov-Smirnov test). Spearman's correlation has been applied to test association between variables. For all statistical comparison, significance was considered as $p < .05$. All

collected data were evaluated with Statistical Package for Statistical Sciences (SPSS, Version 25.0), IBM, Chicago, IL, USA).

Results

The study included a total of 1482 respondents: 944 women (63.7%) and 538 men (36.3%). The baseline demographic and socio-economic features were described in Table 1. The most represented age group was between 31 and 46 years (65.6%). The majority of the study population had a high level of education (63.8% were graduated). A total of 966 (65.2%) spent more than 12 h a day at home with the partner. 1026 participants (69.2%) stopped going outside for work reasons and 302 (20.4%) reported more than a 50% reduction in the monthly profits. However, 802 (54.1%) referred no changes in the monthly salary. The level of mood and wellbeing before and during the COVID-19 pandemic period is shown in Figure 2. A significant trend toward reduced mean scores during

the quarantine period, compared to before, was found [6.0 (IQR: 4.0–7.0) vs. 7.0 (IQR: 6.0–8.0), respectively; $p < .01$].

Table 1. Demographic and socio-economic data of participants ($n = 1482$).

Parameter	Value, n (%)
Gender	
Male	538 (36.30)
Female	944 (63.70)
Age range (years)	
18–25	120 (8.10)
26–30	390 (26.32)
31–35	458 (30.90)
36–40	304 (20.51)
41–46	210 (14.17)
Level of education	
Middle school	92 (6.21)
High school	444 (29.96)
Graduation	946 (63.83)
Previous children, n	
0	898 (60.59)
1	284 (19.16)
2	248 (16.73)
>2	52 (3.51)
Quarantine at home with the partner	
Yes	1132 (76.38)
No	350 (23.62)
Time spent with the partner at home (hours)	
0	286 (19.30)
<12	230 (15.52)
>12	270 (18.22)
>18	118 (7.96)
24	578 (39.00)
Active work outside during quarantine	
Yes	456 (30.77)
No	1026 (69.23)
Reduction of monthly profits during quarantine	
Unchanged	802 (54.12)
1–30% less	218 (14.71)
31–50% less	160 (10.80)
51–70% less	80 (5.40)
71–100% less	222 (14.98)

Most of the respondents had ≤ 1 child (79.8%). Overall, from 268 participants (18.1%) who were planning to have a child before the pandemic, 100 (37.3%) abandoned the intention (Table 2). The main reasons that led people to this decision included worries related to future economic difficulties (58%) and consequences on pregnancy (58%). In those who pursued with the plan, no sexual intercourse reduction was reported in the majority (83.3%), without significant differences between male and female ($p = .20$). As shown in Table 3, desire for parenthood before the COVID-19 pandemic did not differ significantly between genders ($p = .06$).

Of the 1214 (81.9%) who did not intend to conceive, 140 (11.5%) revealed a desire for parenthood during quarantine than before ($p < .01$) (Table 4). Specifically, the wish was mainly expressed by the female group ($p = .03$). In most cases, the respondents referred the will for change (50%) and the need for positivity (40%) to be the main reasons of this intention. However, only 6/140 (4.3%) effectively tried to get pregnant in this period. Seven hundred twelve respondents (66.3%) who did not experience the desire for parenting before the pandemic nor during, reported no reduction in sexual intercourses, with no significant differences among genders ($p = .40$) (Table 5). Stratifying the study population by age (Table 6), a trend toward older ages was found in the desire for parenthood before the COVID-19 pandemic ($p = .02$). Moreover, the age groups between 26 and 35 years old started to feel the desire for parenthood during quarantine more frequently, compared to the other ages groups ($p = .01$).

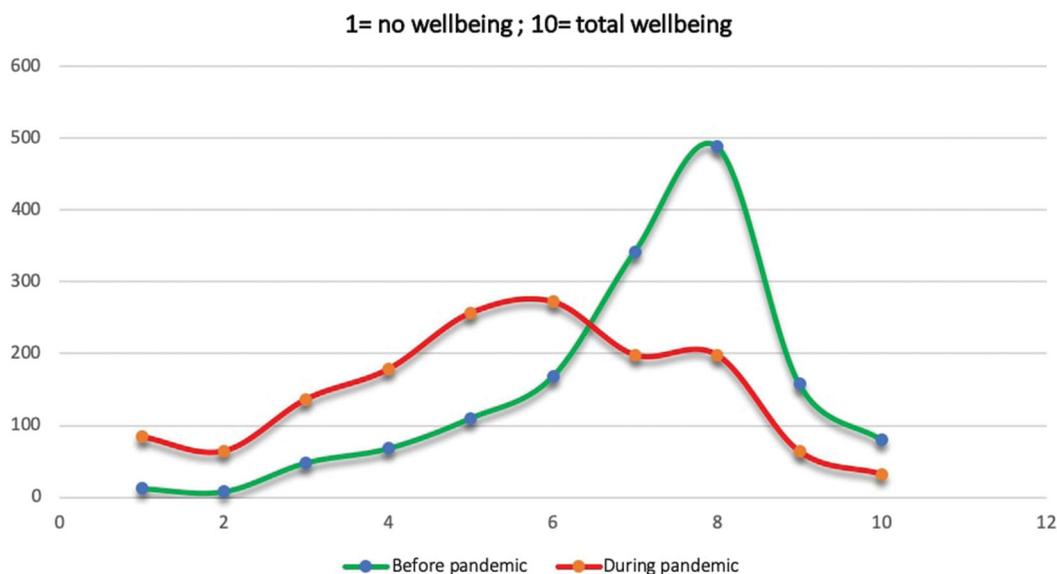


Figure 2. Distribution of well-being scores before and during Covid-19 pandemic.

Table 2. Desire for parenthood before the COVID-19 pandemic.

	Value, n (%)
Question: Desire for parenting (n = 1482)	
Planning to have a child	
Yes	268 (18.08)
No	1214 (81.92)
Question: Intention of participants who were planning to have a child (n = 268)	
Interruption of the intention to conceive	
Yes	100 (37.31)
No	168 (62.69)
Question: Reason for interruption of the intention to conceive (n = 100)	
Fear of getting infected	28 (28.00)
Fear of consequences on pregnancy	58 (58.00)
Fear of imminent economic difficulties	58 (58.00)
Question: Agreement on the decision (n = 100)	
Yes, both agree on interruption	82 (82.00)
No, I want to interrupt but the partner wants to continue	10 (10.00)
No, I want to continue but the partner wants to interrupt	8 (8.00)
Question: Sexual intercourse reduction during search for pregnancy (n = 168)	
Sexual intercourse reduction	
Yes	28 (16.67)
No	140 (83.33)

Table 3. Desire for parenthood before the COVID-19 pandemic between genders.

	Value, n (%)		p-Value
	Male	Female	
Question: Desire for parenting (n = 1482)			
Planning to have a child			.06
Yes	78 (14.50)	190 (20.13)	
No	460 (85.50)	754 (79.87)	
Question: Intention of participants who were planning to have a child (n = 268)			
Interruption of the intention to conceive			.86
Yes	30 (5.58)	120 (12.71)	
No	48 (8.92)	70 (7.42)	
Question: Sexual intercourse reduction during search for pregnancy (n = 168)			
Sexual intercourse reduction			.20
Yes	4 (8.33)	24 (20.0)	
No	44 (91.67)	96 (80.0)	

Table 4. Desire for parenthood during the COVID-19 pandemic.

	Value, n (%)
Question: Start to desire for parenting (n = 1214)	
Planning to have a child	
Yes	140 (11.53)
No	1074 (88.47)
Question: Reasons for desiring a child (n = 140)	
Better dialog with the partner due to more free time	36 (25.71)
Increased couple intimacy due to less work-related stress	26 (18.57)
Desire to change something in my life	70 (50.00)
Need for positivity	56 (40.00)
Question: Attempt to concretely conceive a child (n = 140)	
Attempt	
Yes	6 (4.29)
No	134 (95.71)
Question: Sexual intercourse reduction in couples not searching for pregnancy (n = 1074)	
Sexual intercourse reduction	
Yes	362 (33.71)
No	712 (66.29)

Discussion

COVID-19 is a wide diffusion infection, declared as a global pandemic by WHO. The rapid rise of the viral spread has overthrown all the industrialized countries that are less used to face sanitary emergencies. Mortality rates are concerning. Among Chinese patients, 2873 deaths occurred, equivalent to a

mortality rate of 3–6% [12]. To date, Italy reports more than 90,000 infected people, with almost 12,500 deaths. Containment measures have become crucial to restrict viral contagion that proves to be extremely rapid and easy through droplets particles. Therefore, people were experiencing for the first time a lockdown at their home. The impact of the quarantine on

Table 5. Desire for parenthood during the COVID-19 pandemic between genders.

	Value, <i>n</i> (%)		<i>p</i> -Value
	Male	Female	
Question: Start to desire for parenting (<i>n</i> = 1214)			
Planning to have a child			.03*
Yes	34 (6.32)	106 (11.23)	
No	504 (93.68)	838 (88.77)	
Question: Attempt to concretely conceive a child (<i>n</i> = 140)			.14
Attempt			
Yes	2 (5.88)	4 (3.77)	
No	32 (94.12)	102 (96.23)	
Question: Sexual intercourse reduction in couples not searching for pregnancy (<i>n</i> = 1074)			.40
Sexual intercourse reduction			
Yes	134 (31.46)	420 (64.81)	
No	292 (68.54)	228 (35.19)	

*Statistical significance.

Table 6. Desire for parenthood comparing the age groups.

Question	Age range (years)					<i>p</i> -Value
	18–25	26–30	31–35	36–40	41–46	
Planning to have a child before quarantine (<i>n</i> = 1482)						.02*
Yes	6 (5.0)	56 (14.36)	100 (21.83)	76 (25.0)	30 (14.29)	
No	114 (95.0)	334 (85.64)	358 (78.17)	228 (75.0)	180 (85.71)	
Interruption of the intention to conceive (<i>n</i> = 268)						.62
Yes	2 (33.33)	26 (46.43)	30 (30.0)	32 (42.11)	10 (33.33)	
No	4 (66.67)	30 (53.57)	70 (70.0)	44 (57.89)	20 (66.67)	
Start to desire for parenthood during quarantine (<i>n</i> = 1214)						.01*
Yes	8 (7.02)	58 (17.37)	50 (13.97)	22 (9.65)	2 (1.11)	
No	106 (92.98)	276 (82.63)	308 (86.03)	206 (90.35)	178 (98.89)	

*Statistical significance.

general population perception of their stability and peacefulness is alarming. In our study sample, the majority of participants gave significantly higher total scores to their mental wellbeing before the pandemic, while a flatter distribution curve on the lowest scores was reported in the answers referred to the COVID-19 period.

On these bases, we aimed to evaluate if pandemic-related concerns and worries are affecting the desire for parenthood in couples who were already planning to have a child or if quarantine is influencing the start of the reproductive desire.

The majority of our population (65.6%) has a mean age higher than 30 years. This sample reflects the most common age range during which the majority of Italian couples try to conceive, according to the national data. Specifically, the Italian National Institute of Statistics (ISTAT) reports that Italian women have a mean age of 31.2 years at the first child, while the mean paternal age is 35.5 years [13].

Experts estimated that COVID-19 will have major consequences on the world economy, as it will lower global Gross Domestic Product (GDP) growth by one-half a percentage point for 2020 [14].

Accordingly, in our study, although almost half of the people referred no interruption in their job activity and no variations of salaries, probably due to the

“smart working” adapting strategy, over 40% of participants reported a worrying reduction of monthly profits. Remarkably, the fear of imminent and future economic instabilities led those who were searching for a pregnancy to stop their intention in 58% of cases. To strengthen our results, the existing literature shows how strong may be the impact of insufficient income on the responsibility of conceiving [15].

To the best of our knowledge, this is the first study that investigates the desire for parenthood in people of reproductive age with stable relationships at the time of COVID-19.

Interestingly, a large amount (37.3%) of couples who were planning to have a child, decided to interrupt the pursuit during the quarantine.

Our data showed that another possible reason why the interruption occurred is the lack of knowledge of the viral effects on pregnancy outcomes. Although the current available data about COVID-19 are still partial and incomplete, a look at the past helps to prospect the consequences of the Coronavirus infection in pregnancy. Since most Coronavirus human infections are asymptomatic or paucisymptomatic, in the last twenty years we have witnessed two serious epidemics: the severe acute respiratory syndrome coronavirus (SARS-CoV) and the Middle East coronavirus syndrome (MERS-CoV). During these periods, a peak of about a

third of infected pregnant women died because of the disease [16,17]. The cardiorespiratory and immune systems of pregnant women change substantially, as the susceptibility to serious infections and hypoxic impairment increases [18].

The early literature data evidences that, during the third semester, the SARS-CoV-2 does not have the ability to overcome the placental barrier. A recent study reported 10% of cases with intrauterine growth restriction (IUGR) and 39% of premature birth. Since the uncertainty is mostly about the impact on embryogenesis and the first trimester, the only data we have is that the abortion has been reported in about 2% of cases. However, there is also a concern about the possible effects of maternal fever on fetal development [19].

Fear of consequences on pregnancy in addition to the economic impact on families are probably the reasons why almost the whole group of couples who unexpectedly started to express a desire for parenthood during quarantine did not translate this dream into a concrete attempt [20].

Overall, in our sample, sexual life and desire for parenthood have been influenced by the awareness of living during a dangerous pandemic. However, an important aspect should be highlighted: the couples who were already involved in childbearing attempts and continue in this project are more than 60%. As a demonstration of the pursuit, these couples did not report a reduction in the number of sexual intercourse. This result might be explained by the fear that couple infertility could occur in the future, since the anxiety of wasting time outweighs the worries of the infection consequences. Actually, in our sample, the majority of couples who were planning to have a child before the pandemic belong to older age groups.

Although illness and quarantine have had a major impact on conception, pregnancy and birth, as reported in previous epidemic diseases, it is uncertain if COVID-19 will influence birth rates, leading to a decline of global natality. Curiously, our results revealed that about 12% of people (predominantly female) started to desire a child during the quarantine.

On this basis, as a result of high-mortality events, the fear and trauma of loss have demonstrated to motivate higher fertility, after an initial births decline [21,22]. Accordingly, our Italian insight reflects that the sense of existential insecurity probably will justify higher fertility in the future of COVID-19 pandemic. It will be interesting to see if in Italy, one of the

countries with highest longevity and lowest birth rates is expected later a change in trend.

The lack of use of validated questionnaires represents a possible limitation of the study. However, the absence of a specific questionnaire that underlines the importance of the quarantine impact needs the creation of specific-adapted questions.

Conclusion

Although COVID-19-related concerns are negatively impacting on people's wellbeing, a considerable amount of couples who were planning for childbearing before the pandemic, continue in their attempt. In addition, some couples started to express their reproductive desire exactly during the quarantine. However, it should not be underestimated that the fear of economic difficulties and the lack of knowledge about the viral consequences on pregnancy is leading to the interruption of the research for parenthood in a sample of couples. It is unknown whether these findings will result in a substantial modification of birth rate in the near future.

Author contributions

E.M., G.C.: conception and design, drafting the article, acquisition of data. A.C., G.P., G.I.R.: analysis and interpretation of data. M.E.C., A.M., A.N., M.C.: critical revision. All of the coauthors interpreted the data and participated in finalizing the article. All of the co-authors approved the final version of the article.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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