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ARTICLE

Father–child bonding and mental health in gay fathers using cross-border surrogacy during the COVID-19 pandemic

BIOGRAPHY

Nicola Carone is a psychoanalytic psychotherapist and Assistant Professor of Developmental Psychology at the University of Pavia. He is also a member of the team conducting the National Longitudinal Lesbian Family Study, led by Dr Gartrell. His main research interests include parenting, attachment and child development in LGBTQ+ parent families formed through assisted reproduction.

Nicola Carone[1,*], Demetria Manzi[1], Lavinia Barone[1], Vittorio Lingiardi[2], Roberto Baiocco[3], Henny M.W. Bos[4]

KEY MESSAGE

During the pandemic, COVID-19 has resulted in poorer father–child bonding and increased mental health difficulties among fathers who had or were having a child through cross-border surrogacy. Further insight into these experiences will be useful for developing international guidelines for cross-border reproductive services.

ABSTRACT

Research question: What are the psychological implications of the COVID-19 pandemic for father–child bonding and mental health among Italian gay fathers pursuing surrogacy in the USA or Canada?

Design: Between 20 March and 29 July 2020, this cross-sectional case–control study collected data on father–child bonding quality, depression, anxiety and somatization in 30 Italian gay fathers (n=15 families) who were having or successfully had a child through cross-border surrogacy during the COVID-19 pandemic. These fathers were compared with a sociodemographically similar group of 50 Italian gay fathers (n=25 families) who had children through cross-border surrogacy prior to the pandemic.

Results: Although father–child bonding quality and the mental health symptoms of fathers scored below the clinical cut-off points in both groups, fathers who had or were having a child during the COVID-19 pandemic reported poorer father–child bonding (estimate 3.04, SE 1.47, P=0.044) and more depressive (estimate –1.47, SE 0.49, P=0.005), anxious (estimate –1.96, SE 0.55, P<0.001) and somatic symptoms (estimate –2.48, SE 0.52, P<0.001).

Conclusions: The findings call for the development of international guidelines for cross-border surrogacy and underline the need for tailored and ongoing psychological and legal support for intended gay fathers to ease their strain and anxiety related to having a child through cross-border surrogacy during the COVID-19 pandemic.

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KEYWORDS
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INTRODUCTION

In recent years, Italy has seen a rise in the number of intended gay fathers travelling abroad to access surrogacy, due to a domestic ban on this practice (i.e. Law 40/2004, applicable to all Italians). This makes their journey to parenthood especially challenging, in both emotional and practical terms (*Carone et al., 2017a*). Cross-border surrogacy requires Italian intended gay fathers to make significant expenditures in money (with respect to, for example, travel costs and legal expenses) and time (with respect to, for example, travelling to the gestational carrier's home country several times throughout the pregnancy). Furthermore, due to the geographical distance involved, intended gay fathers are typically limited in the extent to which they can maintain an ongoing physical presence with the fetus during the pregnancy.

After the birth, in accordance with the laws of the country in which the surrogacy is practised, the newborn is granted citizenship and both gay fathers are recognized on the birth certificate. Upon return to Italy, however, only one father can register the child as his own (i.e. the 'legal father', who is typically the genetic father), while the mother is listed as 'unknown'. The non-legal father must then apply for a step-parent adoption or request registration of the foreign birth certificate. Neither of these processes are straightforward or predetermined; rather, decisions are made on a case-by-case basis by the national authorities. This scenario is intertwined with the wider negative societal attitudes towards gay fatherhood and assisted conception (*Ioverno et al., 2018*), as well as the slower recognition of civil rights for sexual minorities in Italy, relative to other European countries (*ILGA-Europe, 2020*).

It is common for Italian intended gay fathers to travel to one of several Canadian provinces (e.g. British Columbia, Alberta, Ontario) or US states (e.g. California, Nevada, Connecticut) (*Carone et al., 2017a*, *2018a*; *Yee et al., 2019*), where surrogacy services are offered to foreign intended parents, regardless of their sexual orientation, gender identity, marital status or permanent residence (*Assisted Human Reproduction Act, 2004*; *Perkins et al., 2016*). In recent years, several destinations that were previously popular for cross-border surrogacy, including Cambodia, India, Mexico, Nepal and Thailand, have prohibited gestational surrogacy for non-residents and/or raised ethical concerns about the practice (e.g. the potential exploitation of economically disadvantaged and racially marginalized women and the lack of direct contact between intended gay fathers and the gestational carrier; *Yee et al., 2019*).

It is impossible to know the precise number and the sociodemographic characteristics of intended gay fathers who travel internationally to access surrogacy services each year, because there is no systematic collection of global data on reproductive travel. Also, unlike the USA, Canada has no public health agency mandated to collect and publish assisted reproduction information, and most Canadian provinces (with the exception of British Columbia) do not make parentage information about children born though surrogacy publicly available (*White, 2017*). However, current data indicate that, between 2009 and 2013 in the USA, approximately 10.5% of all gestational surrogacy cycles were for same-sex male couples and single men (*Perkins et al., 2016*). Similarly, data collected by the Canadian Fertility and Andrology Society's Canadian Assisted Reproduction Technology Register (CARTR) show that, in 2015, same-sex male couples and single men comprised 21% of all intended parents (*White, 2017*). A significant increase in the use of gestational surrogacy in Canada over recent years has also been suggested by studies conducted with both Canadian and international intended gay fathers (*Carone et al., 2017a*, *2017b*; *Fantus, 2020*, *2021*; *Fantus and Newman, 2019*; *Hemalal et al., 2021*).

Following the global spread of COVID-19, the USA and Canada issued travel bans (as of 13 and 18 March 2020, respectively) preventing anyone who was not a US/Canadian citizen or permanent resident from entering these nations. A few days before, on 9 March 2020, the Italian government imposed a national lockdown, restricting the movement of the population except for necessity, work and health. Although global travel restrictions and quarantine rules have varied throughout 2020 (and indeed 2021) according to the evolution of the pandemic, Italian intended gay fathers who were having children through cross-border surrogacy between March and July 2020 (the timeframe of the present study) were faced with the prospect of missing the birth of their baby due to closure of the US and Canadian borders. Even when international travel was permitted, intended fathers were often forced to quarantine upon arrival, delaying their journey to their newborn baby.

Similarly, intended fathers who were already in the USA or Canada for the birth of their child when the travel restrictions entered into force experienced problems obtaining travel documentation to allow them to return home with their newborn. US and Canadian authorities only granted passports for reasons of 'life or death' or 'essential services' (*Men Having Babies, 2020a*). Although surrogacy birth might reasonably be considered an essential service, accounts from surrogacy agencies and practices indicate that this was decided on a case-by-case basis, leaving intended gay fathers in a position of uncertainty (*Men Having Babies, 2020a*). Against this backdrop, several international associations of surrogacy families (e.g. Men Having Babies, NELFA) and reproductive medicine associations (e.g. American Society for Reproductive Medicine, National Infertility Association) urgently called upon authorities and policymakers to exclude expectant surrogacy parents from the COVID-19 travel ban and to issue emergency passports to newborns (*Men Having Babies, 2020b*). Whether, and to what extent, the COVID-19 pandemic and its associated travel restrictions and quarantine rules have affected the quality of father–child bonding and the mental health of gay fathers is currently unknown.

There is a lack of research into the experiences and mental health of intended gay fathers through cross-border surrogacy during the perinatal period (*Berkowitz, 2020*; *Norton et al., 2013*). The few studies conducted thus far have shown that physical distance from the developing fetus may result in feelings of frustration and anxiety in fathers throughout the surrogacy process (*Carone et al., 2017a*; *Riggs et al., 2015*; *Rubio et al., 2020*; *Smietana, 2017*; *Ziv and Freund-Eschar, 2015*). These findings align with evidence from heterosexual fathers through unassisted conception indicating that, although men's experience of pregnancy

may only be vicarious, it nonetheless represents a salient psychological life event (*Genesoni and Tallandini, 2009*). Also, previous research indicates that pregnancy and childbirth can be accompanied by great joy and a high degree of paternal involvement, or by uncertainty and anxiety (*Werner-Bierwisch et al., 2018*). In the absence of physical developments and an internal sense of the fetus, heterosexual fathers through unassisted conception have been found to experience ambivalence and disorientation in the perinatal period (*Genesoni and Tallandini, 2009*), which they may express through moodiness, irritability, anxiety (*Leach et al., 2016*; *Wee et al., 2015*), fear of childbirth (*Philpott et al., 2017*), low self-confidence (*Reck et al., 2012*), increased fatigue (*Taylor and Johnson, 2013*), and impaired father–baby interactions (*Bögels and Phares, 2008*).

Although intended gay fathers usually report frequent and positive contact with their gestational carrier during pregnancy (*Blake et al., 2016*; *Carone et al., 2018a*) and specify that their anxieties diminish upon receiving ultrasounds of their developing fetus by email or speaking with their gestational carrier about medical examinations (*Carone et al., 2017a*; *Smietana, 2017*), research with heterosexual fathers through unassisted conception suggests that men's participation in labour and delivery is important for strengthening their parental role (*Baldwin et al., 2019*; *Condon et al., 2004*; *Coutinho et al., 2016*). In the case of Italian intended gay fathers pursuing cross-border surrogacy in the USA and Canada during the COVID-19 pandemic, the strict international travel restrictions and quarantine norms were likely to have represented a further burden, on top of the fathers' already excruciating wait to meet their child and uncertainty about when they would be allowed to take their child home.

The main aim of the present case–control study was to gather data on the implications of the COVID-19 pandemic for father–child bonding and the mental health of Italian gay fathers who were having or had a child through cross-border surrogacy during March–July 2020, when US and Canadian borders were closed and/or the process of obtaining the child's birth certificate and passport took much longer (e.g. estimates for a standard passport application in the USA at that time ranged from 8 to 12 weeks). Based on previous research (*Carone et al., 2017a*; *Ziv and Freund-Eschar, 2015*) and the literature with heterosexual expectant fathers through unassisted conception (e.g. *Genesoni and Tallandini, 2009*), it was hypothesized that gay fathers through cross-border surrogacy during the pandemic would report poorer father–child bonding and more severe mental health symptoms, relative to a sociodemographically similar group of gay fathers who had a child through cross-border surrogacy prior to the COVID-19 pandemic.

MATERIALS AND METHODS

Participants

Thirty Italian gay fathers (n=15 families) who were having or had a child through cross-border surrogacy during the COVID-19 pandemic participated. Fathers were included in the study on the basis that they: (i) self-identified as both cisgender and gay; (ii) resided in Italy at the time of the COVID-19 pandemic; and (iii) were having or had a child through cross-border surrogacy in a planned gay father family between March and July 2020 (i.e. within the context of international travel restrictions and/or difficulties obtaining the child's birth certificate and passport, due to the pandemic). Given the great variation in quarantine rules, travel restrictions and application procedures for children's birth certificates and passports across the USA and Canada throughout the pandemic, for definitive inclusion in the study, fathers were asked to confirm that they had been prevented from travelling to the USA or Canada (due to restrictions) and/or from returning to Italy after their child's birth (because the child's birth certificate and passport had not been issued by the local government offices). Data from a sociodemographically similar group of 50 Italian gay fathers through cross-border surrogacy (n=25 families), recruited between 2018 and 2019 (i.e. prior to the COVID-19 pandemic) for a larger study on the transition to surrogacy fatherhood in Italian gay men, were included as a control group. The final sample was comprised of 80 gay fathers through cross-border surrogacy (n=40 families). TABLE 1 shows the sociodemographic characteristics of the participants in detail.

Procedure

The STROBE case–control reporting guidelines were followed (*von Elm et al., 2007*). Non-probability sampling was employed due to the exploratory nature of this cross-sectional case–control study and the challenges in recruiting from a relatively small population. Participants were recruited through different sources: (i) the listserv of 'Rainbow Families' (the main association of same-sex parents in Italy), which distributed a study flyer to its members (n=8 families); (ii) lawyers assisting families in the surrogacy process (n=2 families); and (iii) word-of-mouth from participating fathers (n=5 families). Families who were interested in taking part emailed the principal researcher (NC), who then emailed them a Microsoft Word document containing an informed consent form that included a detailed description of the study procedure. Once participants had read, signed and returned this form to the principal researcher, they were sent a second email containing the questionnaire battery, which they were asked to email back within 1 week. Participants were permitted to abandon the questionnaires and withdraw from the study at any point; however, no missing data occurred. Data were collected between 20 March and 29 July 2020.

Measures

In each family, both fathers completed the questionnaires, which were designed to assess the following variables.

Sociodemographic characteristics

Closed-ended questions were used to collect data on fathers' age, gender, sexual orientation, country of residence, annual household income, education and employment, as well as the number, gender, age and method of conception of any child(ren), the country where the surrogacy had taken (was taking) place, and the (expected) birth date of the target child.

Father–child bonding

The Paternal Antenatal Attachment Scale (PAAS; *Condon, 1993*; *Della Vedova and Burro, 2017*) was used to assess fathers' bonding with the fetus (in the case of expectant fathers) or the baby (if born) during the previous 2 weeks on a 5-point Likert scale (1–5), with higher scores reflecting both greater quality and greater strength of father–child bonding. The original scale was composed of 16 items and the mean item score for

TABLE 1 DESCRIPTIVE STATISTICS OF SOCIODEMOGRAPHIC CHARACTERISTICS AND STUDY MEASURES

	Gay father families during the COVID-19 pandemic (*n*=15)	**Gay father families prior to the COVID-19 pandemic (*n*=25)**	
Family characteristics (*n*=40)	***n* (%)**	***n* (%)**	***P*-value (Fisher's exact test)**
Was the child already born at the time of data collection?			1.00
Yes	7 (46.7)	13 (52.0)	
No	8 (53.3)	12 (48.0)	
Child gender			0.515
Male	9 (60.0)	11 (44.0)	
Female	6 (40.0)	14 (56.0)	
Number of children			0.920
0	7 (46.7)	10 (40.0)	
1	4 (26.7)	8 (32.0)	
2 or more	4 (26.7)	7 (28.0)	
Surrogacy arrangement (gestational)	15 (100)	25 (100)	1.00
Where surrogacy was undertaken			0.715
USA	*12 (80.0)*	*18 (72.0)*	
California	6 (50.0)	11 (61.1)	
Maryland	2 (16.7)	2 (11.1)	
Oregon	1 (8.3)	1 (5.5)	
Connecticut	1 (8.3)	2 (11.1)	
New Jersey	1 (8.3)	1 (5.5)	
Nevada	1 (8.3)	1 (5.5)	
Canada	3 (20.0)	7 (28.0)	
British Columbia	2 (66.7)	3 (42.9)	
Ontario	1 (33.3)	4 (57.1)	
	M (SD)	M (SD)	F (df)
Annual household income (euros)	112,366.67 (50,189.80)	115,280.00 (50,791.51)	0.06 (1.78)
	Gay fathers during the COVID-19 pandemic (*n*=30)	Gay fathers prior to the COVID-19 pandemic (*n*=50)	
Individual characteristics (*n*=80)	*n* (%)	*n* (%)	*P*-value (Fisher's exact test)
Father ethnicity (Caucasian)	30 (100)	50 (100)	1.00
Father education			0.426
Undergraduate degree	4 (13.3)	11 (22.0)	
Master's degree	16 (53.3)	19 (38.0)	
Postdoctoral degree	10 (33.3)	20 (40.0)	
	M (SD)	M (SD)	F (df)
Father age (years)	38.40 (6.28)	38.02 (6.78)	0.06 (1.78)
Father–child bonding	3.32 (0.65)	3.73 (0.67)	N/A
Father depression	6.13 (4.16)	3.14 (2.99)	N/A
Father somatization	7.93 (4.63)	3.08 (3.26)	N/A
Father anxiety	7.73 (5.04)	3.72 (3.05)	N/A
Social support	6.23 (0.54)	6.37 (0.40)	N/A
Life events	5.33 (3.34)	3.74 (2.80)	N/A

Note: Percentages may not equal 100 due to rounding.

the Italian validation sample was 4.00; however, the present study excluded one item (item 15, 'Frequent/infrequent palpation of fetus'), as it did not apply to the sample characteristics. In the present study, Cronbach's alpha was 0.81.

Fathers' mental health

Mental health was assessed according to the extent to which fathers had experienced several depressive, somatic and anxious symptoms over the previous 2 weeks.

Depression. Depressive symptoms (e.g. 'Little interest or pleasure in doing things', 'Poor appetite or overeating') were assessed using the 9-item Patient Health Questionnaire (PHQ-9; *Rizzo et al., 2000*; *Spitzer et al., 1999*), scored from 0 (not at all) to 3 (nearly every day), with total scores ranging from 0 to 27 (*Kroenke et al., 2001*, *2003*). According to *Kroenke et al. (2001)*, a PHQ-9 score ≥10 has a sensitivity of 88% and a specificity of 88% in detecting major depressive disorder. In the present study, Cronbach's alpha was 0.79.

Somatization. Tendency for somatization (e.g. 'stomach pain', 'shortness of breath') was assessed using the 15-item Patient Health Questionnaire (PHQ-15) (*Kroenke et al., 2002*), scored as 0 (not bothered at all), 1 (bothered a little) or 2 (bothered a lot), with total scores ranging from 0 to 30 and scores of ≥5, ≥10, ≥15 representing low, moderate and severe levels of somatization, respectively. In the present study, Cronbach's alpha was 0.83.

Anxiety. Anxiety symptoms (e.g. 'Feeling nervous, anxious, or on edge', 'Not being able to stop or control worrying') were assessed using the 7-item General Anxiety Disorder scale (GAD-7; *Spitzer et al., 2006*), scored from 0 (not at all) to 3 (nearly every day), with total scores ranging from 0 to 21. According to *Kroenke et al. (2007)*, a GAD-7 score ≥8 has a sensitivity of 92% and a specificity of 76% in detecting GAD. In the present study, Cronbach's alpha was 0.81.

Social support

As a control variable, the 12-item Multidimensional Scale of Perceived Social Support (MSPSS; *Prezza and Santinello, 2002*; *Zimet et al., 1988*) was used to measure fathers' perceived social support from three sources (i.e. family, friends, a significant other) on a 7-point Likert scale (1–7), with higher scores indicating greater social support. In the present study, Cronbach's alpha was 0.90.

Life events

As a further control variable, fathers completed the Life Events Inventory (*Abidin, 2012*) to report which of a list of 19 stressful events (e.g. financial problems, interpersonal conflicts, illnesses, deaths, job-related difficulties) had occurred over the previous 12 months ('no' = 0; 'yes' = 1). A total score was produced by the sum of the number of events that had occurred.

Data analysis

All analyses were performed using the statistical software R (*R Core Team, 2019*). The threshold for statistical significance was $P<0.05$. For descriptive purposes, frequencies, means, SD, associations among variables and comparisons between the two father groups on the level of social support and the number of stressful events during the previous 12 months were run. To test whether differences existed in father–child bonding and mental health (i.e. depression, somatization, anxiety) among fathers who had conceived during the COVID-19 pandemic and those who had conceived before, four mixed-effects models (lme4 R package) were used to control for the non-independent data structure (i.e. two fathers reporting in the same family). Social support and stressful events were included as covariates.

RESULTS

Preliminary analysis

Fisher's exact tests (for frequencies) and analyses of variance (for means) indicated that the two father groups did not differ significantly on any of the

TABLE 2 ASSOCIATIONS BETWEEN SOCIODEMOGRAPHIC CHARACTERISTICS, FATHER–CHILD BONDING, MENTAL HEALTH, SOCIAL SUPPORT AND STRESSFUL EVENTS

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	M	SD
1. Father age	1.00										38.16	6.56
2. Father education	0.14	1.00									/	/
3. Annual household income	0.19	0.33[b]	1.00								114,187.50	50,267.60
4. Number of children	0.27[a]	0.09	0.22[c]	1.00							0.85	0.83
5. Father–child bonding	0.03	−0.07	0.16	0.07	1.00						3.58	0.69
6. Father depression	−0.10	0.06	−0.18	−0.13	−0.24[e]	1.00					4.26	3.74
7. Father somatization	0.13	0.03	−0.12	0.02	−0.27[f]	0.45***	1.00				4.90	4.48
8. Father anxiety	−0.17	−0.01	−0.29[d]	−0.10	−0.23[g]	0.55***	0.46***	1.00			5.23	4.35
9. Social support	−0.04	0.11	0.13	0.11	0.18	−0.19	−0.29[h]	−0.26[i]	1.00		6.32	0.46
10. Stressful events	−0.02	0.12	−0.16	−0.01	−0.11	−0.11	0.02	0.02	0.04	1.00	4.34	3.09

[a] $P=0.016$.
[b] $P=0.003$.
[c] $P=0.046$.
[d] $P=0.008$.
[e] $P=0.032$.
[f] $P=0.014$.
[g] $P=0.045$.
[h] $P=0.009$.
[i] $P=0.021$.
*** $P<0.001$; /, Not applicable

TABLE 3 IMPACT OF THE COVID-19 PANDEMIC ON FATHER–CHILD BONDING AND FATHERS' MENTAL HEALTH

	Father–child bonding			Father depression			Father somatization			Father anxiety		
	Estimate (SE)	CI [2.5%, 97.5%]	*P*-value	Estimate (SE)	CI [2.5%, 97.5%]	*P*-value	Estimate (SE)	CI [2.5%, 97.5%]	*P*-value	Estimate (SE)	CI [2.5%, 97.5%]	*P*-value
Fixed effects												
Intercept	40.85 (15.45)	10.20, 73.43	0.010	16.21 (5.53)	4.89, 25.66	0.004	19.61 (5.92)	7.70, 31.10	0.001	17.22 (6.06)	4.91, 30.96	0.006
Father group[a]	3.04 (1.47)	0.02, 5.84	0.044	–1.47 (0.49)	–2.57, –0.50	0.005	–2.48 (0.52)	–3.53, –1.55	<0.001	–1.96 (0.55)	–3.06, –0.89	<0.001
Social support	0.15 (0.20)	–0.27, 0.56	0.458	–0.15 (0.07)	–0.27, <0.01	0.046	–0.17 (0.08)	–0.32, –0.02	0.029	–0.15 (0.08)	–0.31, 0.01	0.068
Stressful events	0.16 (0.36)	–0.63, 0.87	0.662	–0.12 (0.13)	–0.39, 0.18	0.358	–0.25 (0.14)	–0.54, 0.02	0.080	–0.10 (0.14)	–0.38, 0.19	0.485
Random effects	SD	Variance	*P*-value	SD	Variance	*P*-value	SD	Variance	*P*-value	SD	Variance	*P*-value
Intercept	7.13	50.90	0.001	2.16	4.68	0.016	2.28	5.22	0.016	2.56	6.56	0.004
Residual	7.15	51.06		2.74	7.50		2.94	8.65		2.90	8.44	
R^2 conditional	0.54			0.50			0.58			0.57		

[a] Father group was coded as –1 = gay fathers during the COVID-19 pandemic; 1 = gay fathers prior to the COVID-19 pandemic. Greater scores on the variables indicated greater father–child bonding, depression, somatization, anxiety and social support, and more stressful events.

sociodemographic variables considered (TABLE 1). Specifically, gay fathers who were having or had a child during the COVID-19 pandemic and gay fathers who had a child prior to the pandemic were not statistically different in terms of the proportion of those whose child had already been born at the time of data collection, child gender, number of children, surrogacy arrangement, ethnicity and educational attainment; they also reported similar age and annual household income. TABLE 2 displays the associations between the sociodemographic characteristics and outcome variables, as well as the means and SD. Regarding covariates, two preliminary mixed models showed that the two father groups did not differ on the level of social support, estimate 1.73, SE 1.53, P=0.266, or the number of stressful events during the previous 12 months, estimate –1.59, SE 0.82, P=0.059.

Impact of the COVID-19 pandemic on father–child bonding and the mental health of fathers

Four mixed-effects models (one for each outcome) were run to examine the impact of the COVID-19 pandemic on father–child bonding and fathers' depression, somatization and anxiety, controlling for the level of social support and the number of stressful events during the previous 12 months. Overall, the four models explained 54%, 50%, 58% and 57% of the variance, respectively. Although both groups scored below the clinical cut-off points for each variable (as indicated in the Measures section), the findings indicated that gay fathers who were having or had a child during the COVID-19 pandemic reported a lower quality of father–child bonding (estimate 3.04, SE 1.47, P=0.044) and more severe depression (estimate –1.47, SE 0.49, P=0.005), somatization (estimate –2.48, SE 0.52, P<0.001) and anxiety (estimate –1.96, SE 0.55, P<0.001), relative to gay fathers who had a child prior to the pandemic. TABLE 3 shows the complete statistics.

DISCUSSION

The present case–control study provides the first data on the psychological implications of the COVID-19 travel restrictions on the quality of father–child bonding and mental health among gay fathers through cross-border surrogacy. As postulated, fathers who were having or had a child during the pandemic reported poorer father–child bonding and more severe depressive, somatic and anxious symptoms relative to a sociodemographically similar group of gay fathers through cross-border surrogacy whose child was born prior to the COVID-19 pandemic. As a premise, it should be noted that scores of father–child bonding and fathers' mental health were below the clinical cut-off points in both groups (*Della Vedova and Burro, 2017*; *Kroenke et al., 2001*, *2002*, *2007*). Nonetheless, the findings align with previous research with heterosexual fathers through unassisted conception, indicating that fathers who experience contextual stress often report a poorer emotional connection with their baby and increased depression, somatization and anxiety relative to those who are not exposed to such stress (*Dayton et al., 2020*).

It may be argued that these outcomes should be expected in cross-border surrogacy arrangements, as such arrangements typically prevent intended fathers from engaging in daily interaction with the developing fetus and probably result in them experiencing a lack of control over the pregnancy (*Carone et al., 2017a*; *Ziv and Freund-Eschar, 2015*). However, this critique cannot be levelled against the present study, as the inclusion of the control group enabled us to examine the unique (detrimental) role played by the COVID-19 pandemic (and its associated travel restrictions and delays in processing children's birth certificates and passports) on all of the father outcomes considered. Also, while disruptions to parent–child bonding and parental mental health difficulties may arise when parents experience traumatic interference, such as a sudden death or illness, job-related difficulty or physical stress (*Dayton et al., 2020*), the present study controlled for the effect of potential stressful events over the previous 12 months. In view of this, it cannot be said that the findings were influenced by any effect of the above-mentioned stressors.

It is relevant that there is evidence that the quality of the perinatal bond of fathers relates to the quality of the father–child relationship during (at least) the first two postnatal years (*de Cock et al., 2016*), as well as to child outcomes (*Dayton et al., 2020*) and the quality of fathers' postnatal parenting behaviours (*Hjelmstedt and Collins, 2008*). In this light, the present findings provide critical insight for gay fathers, psychological counsellors, reproductive medicine

practitioners and policymakers, because they emphasize that the disruption caused by the COVID-19 pandemic, as well as fathers' uncertainty over whether they will be present at their baby's birth or able to return with their newborn to their home country when desired, may add to the already stressful situation represented by the 9-month period of distance from the fetus, which characterizes all cross-border surrogacy arrangements. However, future studies should follow these families longitudinally, to examine whether the poorer father–child bond and mental health in gay fathers who were having or had a child during the COVID-19 pandemic merely reflect temporary adaptations to the emergency situation or more stable negative outcomes that may persist over time.

Several limitations of the present study should be acknowledged when interpreting the findings. First, the study relied exclusively on self-report measures, which are greatly sensitive to self-presentation biases, particularly in the case of stigmatized social groups, such as gay fathers. Second, the small sample size prevented both the generalizability of the findings and a separate analysis of expectant fathers and fathers who had a child during the COVID-19 pandemic. Also, potential differences due to different regulatory environments regarding surrogacy arrangements and COVID-19 restrictions throughout the USA and Canada could not be considered. Third, it cannot be excluded that, due to the stressful and burdensome circumstances, in combination with the lack of participant compensation, the study attracted resilient fathers who were well-equipped to navigate the challenges of cross-border surrogacy. Fourth, while recruitment through Rainbow Families was fundamental to reach as many families as possible (given the niche sample and challenges relating to COVID-19), it might have resulted in a fairly homogeneous group of fathers. Fifth, no data were collected about potential challenges experienced by intended gay fathers conceiving through surrogacy prior to the COVID-19 pandemic; therefore, it was not possible to control for further stressors in their transition to parenthood, which were not assessed by the Life Events Inventory (*Abidin, 2012*; e.g. financial problems, interpersonal conflicts, illnesses, deaths, job-related difficulties). It is also worth noting that the two father groups might have differed on a number of other factors related to COVID-19 (e.g. social isolation, access to primary care, changes to care arrangements, difficult working patterns), which it was not possible to measure in both groups. Finally, the cross-sectional study design prevented any causal inferences from being drawn.

Notwithstanding these limitations, the present study expanded on the scant, but emerging, literature on the psychological well-being of gay fathers through surrogacy and the quality of their relationships with their children (*Carneiro et al., 2017*; *Carone et al., 2018b*, *2020*, *2021*; *Erez and Shenkman, 2016*; *Shenkman and Shmotkin, 2020*; *Shenkman et al., 2020*; *van Rijn-van Gelderen et al., 2018*). Importantly, the findings add to the literature on the emotional journey of fathers during the perinatal period, facilitating the design and implementation of services to support the early father–child relationship (*Dayton et al., 2020*).

In terms of practical implications, the findings may encourage policymakers to address the concerns expressed by a number of associations and professionals in a letter dated 2 April 2020 to the United States Senate Committee on the Judiciary, in relation to cross-border surrogacy restrictions during the COVID-19 pandemic (*Men Having Babies, 2020b*). Specifically, while Canada has since allowed prospective surrogacy parents into the country well in advance of the child's birth (recognizing that travel for the birth of a surrogacy child is essential and that issuing passports for the newborns should fall under the category of a 'life-or-death situation'), in the USA, the surrogacy process continues to be beset by chaos due to entry bans, scarce transportation and the closure of governmental offices responsible for birth certificates and passports.

Under these circumstances, babies, intended parents and gestational carriers are susceptible and exposed to mental, health and financial hardships. Babies may require the appointment of emergency guardians (or even foster families) until their parents arrive in the USA; as a result, gestational carriers may be asked to make healthcare decisions and to take responsibility for the child's care and expenses, even though it is their legal right to avoid this responsibility. Meanwhile, parents may face the challenge of arranging last-minute transportation and managing quarantine requirements before they can meet their child; even after they do so, they may be unable to secure a passport for their child to return home and may risk overstaying their visas. While the impact of such circumstances for the health of gestational carriers and babies is currently unknown, the present findings show the extent to which they are affecting gay fathers.

Outside of the current circumstances of the COVID-19 pandemic, intended gay fathers already experience significant challenges in building a family (*Berkowitz, 2020*; *Blake et al., 2017*; *Hemalal et al., 2021*). In most countries, including Italy, they have no access to domestic surrogacy or other planned parenting options, including adoption (*Norton et al., 2013*). Also, until COVID-19 ends (at the time of writing this article [January 2021], vaccines have just begun to be distributed worldwide), prospective fathers will probably continue to face the above-mentioned hardships and challenges in their pursuit of cross-border surrogacy. The present findings are therefore extremely timely and call for the development of international guidelines for cross-border reproductive (in general) and surrogacy (in particular) services that respond to the needs of intended parents; these guidelines are urgently needed to harmonize the rules issued by individual nations (*Gamble, 2020*). Such harmonization would reduce, for example, the hardships faced by gay fathers through cross-border surrogacy when returning to Italy, where only one father can be listed as the legal father, contrary to the indication on foreign (e.g. US, Canadian) birth certificates. Also, international surrogacy guidelines are critically needed to streamline procedures for releasing newborns' birth certificates and passports, particularly in cases where access to or exit from the country where the surrogacy was conducted is temporarily complicated, as in the current situation with COVID-19. Finally, the findings emphasize the need for tailored and ongoing psychological and legal support for intended gay fathers to ease their strain and anxiety related to having a child through cross-border surrogacy during the COVID-19 pandemic.

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