

# Perinatal Fathers in the Context of the COVID-19 Pandemic and Beyond: Impacts and Implications

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## ABSTRACT

**Introduction:** The COVID-19 pandemic introduced unprecedented challenges for fathers during the perinatal period, impacting family dynamics, especially among vulnerable groups such as first-time fathers, low-income fathers, and immigrant fathers. This paper explores these effects and proposes strategies for healthcare professionals and community organisations to ensure inclusive, family-centred care. The review aims to enhance fathers' well-being and family resilience in both pandemic and post-pandemic contexts. **Methods:** A state-of-the-art review was conducted using MEDLINE, CINAHL, blogs, and advisory publications. A comprehensive literature search was performed, covering the period from March 2020 to March 2021, with an additional search extending to 2024. The review included 18 studies from the initial search period and 30 studies from the post-pandemic period. **Results:** Three specific themes emerged: fear of the virus, social isolation, and a mental health crisis. Fathers experienced significant anxiety about spreading COVID-19 to their partners and newborns, which increased stress during prenatal care and childbirth. Restrictions on hospital visits limited their involvement in the child birth process, leading to feelings of helplessness and disconnect during crucial bonding periods. Additionally, fathers faced heightened anxiety, depression, and role ambiguity due to caregiving and financial pressures exacerbated by the pandemic. These themes uniquely impacted perinatal fathers, affecting both paternal and maternal mental health and overall family well-being. **Recommendations:** The findings suggest several actions: customising training programs for healthcare professionals, promoting inclusive nursing practices, advocating for comprehensive parental leave policies, integrating telehealth services, and implementing father-centric interventions to enhance overall perinatal well-being. These recommendations are appropriate for the post-pandemic era as they address ongoing mental health challenges, ensure continuous support, and promote resilience in healthcare systems. These actions are essential to support perinatal fathers and their families in both current and future disruptions. **Conclusion:** The pandemic highlighted the need for personalised support for fathers to enhance their mental well-being and family welfare. Strategies such as customised training for healthcare professionals, inclusive nursing practices, comprehensive parental leave policies, and telehealth services are essential. These initiatives are crucial to ensure inclusive family-centred care, fostering fathers' well-being and family resilience in both pandemic and post-pandemic contexts. Immediate and sustained efforts are needed to support perinatal fathers and improve family resilience.

**Keywords:** *Childbirth; COVID-19; Fathers; Pregnancy; Mental Health; Post-birth; Pandemic*

## INTRODUCTION

Families have faced unprecedented hardship worldwide since the COVID-19 pandemic was declared in March 2020. The pandemic has disrupted family dynamics and presented unique challenges to families beyond borders. These challenges include difficulties in parental triaging, recurrent nasopharyngeal testing, use of personal protective equipment, fear of infection and transmission, physical proximity and separation, financial burden, and childcare commitments (Cavicchiolo *et al.*, 2020). Additionally, several factors have undermined

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the family-centred approach to healthcare during the pandemic, such as visitor restrictions, the cancellation of in-person antenatal and postnatal services, and the lack of parental support. Often, fathers have been excluded, causing physical and psychological difficulties for fathers, mothers, and babies alike.

COVID-19 can be considered a multi-demic because it has triggered the emergence of several related crises, such as epidemics of racism, gender-based violence, and information overload, all of which have exacerbated inequities in resource availability and accessibility (Khanlou *et al.*, 2020; Ahmad & Murad, 2020). During this period, families encountered specific challenges with childbirth, as fathers were often excluded from perinatal care, and mothers received minimal support. Mental health plays a crucial role in affecting the quality of perinatal care for both the mother and the infant (Roy & Roy, 2022).

The relevance of this study in 2024 remains high due to the ongoing impacts of the COVID-19 pandemic on perinatal health. Significant developments have highlighted the broader implications of the pandemic on fatherhood experiences, emphasizing the need to understand and support perinatal fathers' mental health and family dynamics. Changes in healthcare policies, increased awareness of paternal mental health, and shifts in family roles have all influenced perinatal fatherhood experiences. Therefore, this paper discusses the impact of COVID-19 on fathers' mental health and well-being, with implications for maternal and family well-being during the childbearing period in the post-pandemic era. This article aims to answer the following questions: (1) What are the impacts of the COVID-19 pandemic on fathers during the perinatal period? (2) What are the implications of the COVID-19 pandemic for parental mental health, perinatal education, nursing practice, and research in sustaining perinatal well-being during the post-pandemic period?

## **METHODOLOGY**

In this study, a state-of-the-art review approach is used to address current matters, in contrast to other combined retrospective and contemporary approaches (Grant & Booth, 2009). This approach is similar to a narrative review, allowing for a comprehensive examination of a topic by summarising and synthesising findings from various sources. However, a state-of-the-art review differs from other methods by offering unique insights into current issues, adding to the existing body of knowledge, and proposing research objectives for the future. This review addresses the current state of fathers' mental health and well-being to provide insights into the effects of the COVID-19 pandemic on paternal mental health during the childbearing period (Grant & Booth, 2009).

### **Search Strategy**

#### **The search strategy involved:**

The databases used for this research were MEDLINE and CINAHL, with additional sources including blogs and advisory publications. The keywords utilised in the search were fathers, COVID-19, pandemic, pregnancy, childbirth, postpartum childbearing, and perinatal. The initial search covered the period from March 2020 to March 2021, with an expanded search extending from 2021 to 2024.

### **Inclusion Criteria**

#### **Studies were included if they:**

1. Focused on fathers during the childbearing period (pregnancy, childbirth, postpartum).
2. Addressed the impact of COVID-19 on paternal mental health and well-being.

### **Study Selection**

After conducting a title search and abstract review, we identified 18 studies from the initial search period (March 2020 to March 2021) that met the inclusion criteria. Additionally, 30 studies from the expanded search (2021 to 2024) were included. These studies focus on the post-pandemic health of fathers during the perinatal period and the overall well-being of families.

## **RESULTS**

While the COVID-19 pandemic has been broadly concluded, pandemic-related challenges continue to

affect perinatal fathers. Lingering consequences encompass heightened levels of stress and anxiety, limited availability of support systems, challenges in mental well-being, shifts in the child birth process, and increased dependence on technology as a resource. From the analysis, the impact of COVID-19 on fathers can be understood through the following themes: (1) fear of COVID-19 and (2) social isolation. As a result, fathers may be vulnerable to mental health challenges and a (3) evolving mental health crisis manifested in physiological parameters, changes in self-concept, role ambiguity, and dependence on social support. This mental health crisis may negatively influence maternal mental health and the overall well-being of families during the childbearing period. The implications for nursing education, practice, and research are considered through strategies which emphasise evidence retrieved from the literature available across the databases. A summary of the articles discussed in this review is provided in table 1.

**Table 1: Review Table for Impact of COVID-19 on Fathers During and Post-Pandemic**

Authors	Methodology, Key Findings, and Recommendations
Ahmad & Murad (2020)	A survey-based study of 516 social media users in Iraqi Kurdistan. COVID-19 has contributed to the first social media infodemic. Collaboration is needed between media experts and health professionals to disseminate reliable health information.
American Psychological Association [APA] (2021)	A press release on the impact of pandemic disruptions on parents and families. Parents report notable impacts of COVID-19 pandemic on stress and negative mental health outcomes. Self-care practices and social connections are recommended for parents.
Andrews, Ayers & Williams (2022)	A qualitative interview study of 20 fathers. Fathers’ experiences of maternity restrictions and the father-baby relationship can be described in terms of impact on the paternal experience, impact on the father- baby relationship, observed impact on mothers, and fatherhood in the ‘new normal’. Fathers should be included in maternity services to improve parental well-being and infant bonding.
Avery & Park (2021)	A survey -based study of 500 parents in the United States. Parents with higher perceived knowledge sought information and felt better equipped to protect their families. Public health messaging should boost self-efficacy.
Bouchacourt <i>et al.</i> (2023)	A qualitative content analysis of web -based conversations. Fathers faced increased stress and challenges, exacerbating issues like work -life balance and mental health. Public health professionals can leverage social media to rapidly gather information on new fathers.
Cameron <i>et al.</i> (2023)	A framework analysis of a social media forum. Fathers have unmet support needs during the perinatal period, highlighting the importance of including fathers in perinatal care. Programs to support fathers during the perinatal transition are recommended.
Campbell-Yeo (2023)	A commentary on Andrews, Ayers, & Williams (2022). Fathers experienced persisting negative impacts of separation from their partner and infant during COVID -19 restrictions in the UK. Paternal involvement in maternity care should be prioritized during crises to improve outcomes for both parents.
Carroll <i>et al.</i> (2020)	A survey-based study of 254 Canadian families. The pandemic worsened stress and food security. More support is needed for stress management and food security programs.
Cavicchiolo <i>et al.</i> (2020)	An observational study and analysis of 6726 triage procedures and 954 nasopharyngeal swabs. Screening led to the identification of asymptomatic carriers, improving infection control and safeguarding vulnerable neonates during the pandemic. Universal screening in NICUs is strongly recommended.
Clifford, Rainey & Eggum (2024)	A systematic review of 26 studies. Parental postpartum depression negatively affects children’s language development. Early intervention is needed to support parental mental health.
Dachew, Heron & Alati (2023)	A study of parental depressive symptoms from the Avon Longitudinal Study of Parents and Children (ALSPAC). Parental depressive symptoms were associated with emotional and behavioural problem trajectories in children. Interventions for child mental health should target perinatal exposure to parental depressive symptoms.
Das & Hodkinson (2020)	A reflection piece on new fathers’ mental health difficulties. The gendered treatment of fathers has notable long term impacts on paternal mental health. The role of fathers as ‘peripheral supporters’ must be re-evaluated.
Dennis <i>et al.</i> (2022)	A longitudinal study of 3217 Canadian fathers. High rates of comorbid depression and anxiety were observed in fathers, driven by financial stress and lack of support. Screening and mental health interventions are recommended.
Deslauriers & Kiselica (2024)	An ecological interview -based study of 34 fathers. Young fathers face unique challenges influenced by social and environmental factors. Strengthening support systems is essential.
Erdei & Liu (2020)	A commentary using the stress contagion framework to describe the impact of stress on family well-being. NICU visit restrictions caused emotional distress. Psychological support is needed for parents during NICU stays.
Fisher <i>et al.</i> (2021)	A review article on paternal mental health. During the perinatal period, fathers are at heightened risk of depression and anxiety. Fathers must be considered in intervention research, clinical training, national policy, and the International Marcé Society for Perinatal Mental Health.

Geller <i>et al.</i> (2021)	A review article on tele-mental health in perinatal settings. Tele-mental health services have addressed pandemic-related restrictions and barriers to care that existed pre-pandemic. Tele-mental health is recommended as an additional option to support parental-infant attachment.
Goyal <i>et al.</i> (2023)	A cross-sectional study of 61 Asian fathers living in North America. Fathers reported high levels of depression and online racial discrimination. Preventive strategies for mental health in this population are necessary.
Schmid <i>et al.</i> (2023)	A survey-based study of mothers who experienced postpartum isolation during the COVID-19 pandemic. COVID-19 maternity restrictions disconnected fathers and increased maternal stress. Both parents should be essential in maternity care.
Higashio & Sasaki (2021)	A qualitative study comprised of semi-structured interviews with 15 Japanese fathers. Fathers faced significant mental health challenges and lacked educational support. Tailored programs for fathers are recommended.
Hwang <i>et al.</i> (2020)	A commentary on loneliness and isolation during COVID-19. Social isolation contributes to increased mental health risks, especially among vulnerable populations. Policies addressing social isolation are needed.
Iztayeva (2021)	An interview-based study of 30 single fathers. Custodial single fathers struggled to balance work and childcare during the pandemic. Targeted support is essential for their well-being.
Kelly <i>et al.</i> (2023)	An interview-based study of 15 fathers. Gay fathers via surrogacy faced heightened stress during COVID-19. Tailored mental health support is needed for this group.
Kurimay <i>et al.</i> (2022)	A report on telemedicine in perinatal mental health. Telemedicine was effective in delivering services during and after the pandemic. Continuing telemedicine integration is valuable.
Lambregtse-van den Berg & Quinlivan (2021)	A review of the psychological well-being of pregnant women and their partners. Both mothers and fathers showed increased depression and anxiety due to stress and caregiving during the pandemic. Mental health support is crucial.
Lista & Bresesti (2020)	A commentary on the concerns of neonatologists on fatherhood during the COVID-19 pandemic. The pandemic presents a barrier against the participation of fathers during the perinatal period. Active support for mothers and fathers from healthcare providers is recommended.
Marcell <i>et al.</i> (2022)	A survey-based study of 55 lower-income young fathers. High levels of COVID-19 stress affected mental health and preparedness for parenthood. Increased mental health support is recommended.
Mazza <i>et al.</i> (2022)	A systematic review of 204 articles on depressive symptoms in expecting fathers. Paternal depression is distinct from maternal depression, but occurs at lower rates. Further research is needed on the predictors of depression in fathers.
Merih, Karabulut & Sezer (2021)	An intervention-based study of online pregnancy training in 45 mother-father dyads. Online programs reduced anxiety in pregnant women and partners. Expanding virtual education is recommended during crises.
Mertens <i>et al.</i> (2020)	A survey-based study of 439 participants. Health anxiety, media exposure, and concern for loved ones predicted fear of COVID-19. Mental health interventions are needed for vulnerable groups.
Montez, Thomson, & Shabo, (2020)	A review article on paid family and medical leave policies during the COVID-19 pandemic. Paid family leave for fathers contributes to greater health equity. A national paid family and medical leave, including paid parental leave, is needed in light of the COVID-19 pandemic.
Mortazavi <i>et al.</i> (2023)	A cross-sectional study of 270 pregnant women and their partners. Fathers' fear of COVID-19 heightened their fear of childbirth, mediated by maternal fear. Addressing both parents' anxieties is essential.
Obikane <i>et al.</i> (2023)	A survey-based study of 473 prenatal fathers and 1246 postnatal fathers. Economic stress and partner support linked to higher paternal depression rates. Improved screening and support for fathers is essential.
Pasadino, DeMarco & Lampert (2020)	A report on virtual perinatal education. Virtual education helped maintain family engagement during COVID-19. Similar programs should continue post-pandemic.
Pereira <i>et al.</i> (2023)	A survey-based of 153 men and 187 women in Portugal. Both mothers and fathers exhibited elevated depressive symptoms. Tailored mental health interventions are needed for both parents.
Pinto & Figueiredo (2023)	A longitudinal study of 71 first-born infants and parents. Positive co-parenting before the pandemic improved infants' regulatory capacity during crises. Promotion of positive co-parenting is recommended to improve health outcomes among infants.
Poulos <i>et al.</i> (2024)	An interview-based study of 34 new or expectant fathers in the United States. Family-centered care was disrupted during COVID-19. Improved communication and involvement in prenatal care are recommended.
Prikhidko, Long & Wheaton (2020)	A survey-based study of 155 parents in the United States. Susceptibility to digital emotion contagion increased anxiety, stress, and burnout. Reducing exposure to harmful digital content is recommended.
Recto <i>et al.</i> (2020)	A literature review of the mental health needs of adolescent fathers. Adolescent fathers faced mental health challenges due to lack of support during the pandemic. Nursing interventions and community programs are needed.
Rice & Williams (2024)	A qualitative interview-based study with 70 participants who gave birth during the COVID-19 pandemic in Canada. COVID-19 restrictions increased maternal distress and disrupted mother-child interactions. The authors strongly recommend including both the gestational and non-gestational parent in perinatal care.
Smith, Pitter & Udoudo (2024)	An interview-based study of 10 fathers in Kingston, Jamaica. Fathers experienced feelings of empowerment during the birth experience. Policies are recommended to increase fathers' involvement during the perinatal period.

Sun <i>et al.</i> (2021)	A cross-sectional study of 1187 perinatal fathers in Wuhan, China. During the traffic restriction period of the, a declined risk of paternal perinatal depression was observed. Targeted prevention and control strategies are recommended to reduce depression in fathers.
Taubman-Ben-Ari & Ben-Yaakov (2020)	A survey-based study of 606 new parents. Personal resources such as self-control reduced stress, while those with fewer resources had higher anxiety. Enhancing personal resources can support well-being.
Taubman-Ben-Ari, Ben-Yaakov & Chasson (2021)	A survey-base study of 1591 parents. Both mothers and fathers are vulnerable to stress in light of the COVID - 19 pandemic. Strengthened meaning in life and relationships may help parents cope with stress.
Vogel (2011)	A commentary on paternal depression. Limited support is availability to fathers who experience depression during the perinatal period. Father-friendly approaches to perinatal care are recommended.
Yazdanpanahi <i>et al.</i> (2022)	A narrative review of paternal postnatal depression. Paternal depression rose during the pandemic. Improved screening and mental health support for fathers is essential.
Zipursky <i>et al.</i> (2021)	An ethics-based analysis on COVID - 19 vaccinations for pregnant and breastfeeding individuals. A shared decision-making process between patients and providers, balancing risks and benefits, is recommended.

### The Impacts of COVID-19 on Perinatal Fathers

The impact of COVID-19 on dads can be explained by two important themes: (1) dread of COVID-19 and (2) social isolation. These interconnected factors contribute to the increasing mental health crisis, as seen by fathers' susceptibility to mental health challenges. Childbearing fathers, including single, first-time, NICU, same-sex, and high-risk family fathers, encountered a variety of challenges. The combined effect of dread and isolation has serious mental health consequences for fathers, which affects mothers' well-being and overall family health. The following section discusses the impacts depicted in Figure 1.

#### Fear of COVID-19

The global spike in pandemic-related anxieties, fuelled by health anxiety, concern about loved ones, and media consumption (Mertens *et al.*, 2020), has exacerbated parents' psychological susceptibility, particularly during the transition to motherhood under COVID-19. New mothers were most affected by contagion worries and interrupted postnatal support systems, with delayed prenatal consultations potentially impacting maternal and child health outcomes (Schmid *et al.*, 2023; Mertens *et al.*, 2020). Fathers, despite wanting to support their partners, faced increased stress and anxiety, particularly when dealing with childbirth, balancing work, family duties, and financial pressures. (Taubman-Ben-Ari & Ben-Yaakov, 2020; Taubman-Ben-Ari, Ben-Yaakov & Chasson 2021; Mortazavi *et al.*, 2023).

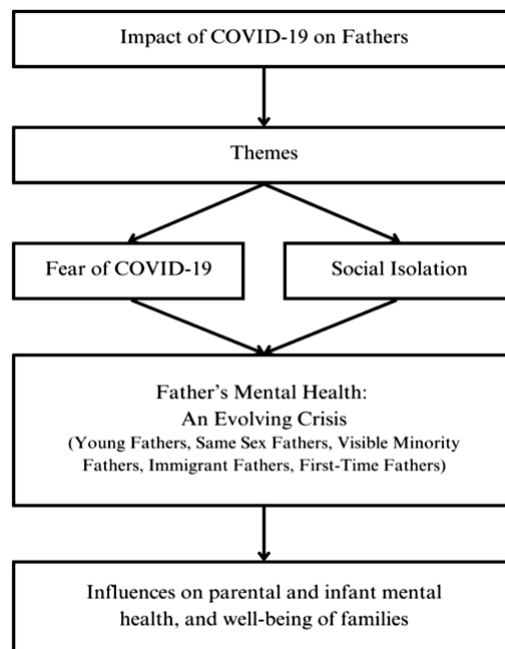


Figure 1: Impact of COVID-19 on Fathers

In addition to the difficulties faced by new moms and fathers, the pandemic disproportionately affected first-time, immigrant, minority, and same-sex fathers, exacerbating their stress and mental health issues (Recto *et al.*, 2020). Asian dads, in particular, reported greater depressive symptoms as a result of online racial discrimination (Goyal *et al.*, 2023), while teenage fathers and same-sex families had severe social and economic challenges (Recto *et al.*, 2020; Kelly *et al.*, 2023). These combined stressors reflected the diverse experiences of fathers from various socioeconomic backgrounds, with high-income fathers spending more time at home and shouldering increased parental responsibilities, and low-income fathers facing job losses or risks from in-person work (Lista & Bresesti, 2020; Marcell *et al.*, 2022). These pressures also influenced adoptive parents, resulting in maladaptive coping patterns (Carroll *et al.*, 2020).

Given the broad usage of media during the pandemic, its significance in informing and aggravating fears cannot be underestimated. This 'infodemic' (Ahmad & Murad, 2020) emphasised the necessity of providing fathers with consistent services to boost resilience and prevent burnout (Avery & Park, 2021; Prikhidko, Long & Wheaton, 2020). Additionally, studies have found that involving fathers in prenatal activities, such as assisting with childbirth, can lower stress and improve mental health outcomes, highlighting the importance of including them in maternal healthcare initiatives. (Smith, Pitter & Udoudo, 2024).

Along with the obstacles posed by stress and anxiety, vaccine reluctance has arisen as a major issue among reproductive families. Despite evidence confirming vaccine safety during pregnancy, many fathers reported concerns and reservations about vaccination (Zipursky *et al.*, 2021). This highlights the importance of shared decision-making, which enables families to align their vaccination decisions with their beliefs and priorities (Zipursky *et al.*, 2021).

Overall, the COVID-19 pandemic has introduced unprecedented challenges for parents, affecting their ability to support one another and their children due to heightened fears, healthcare disruptions, and economic strains. These various pressures underscore the importance of comprehensive support systems and targeted interventions to address the ongoing challenges faced by families, ensuring their mental and physical well-being during the pandemic and beyond (Stein & Bloomberg, 2021).

### **Social Isolation**

Social separation and isolation strategies implemented to reduce virus spread have exacerbated social isolation and loneliness, with major mental and physical health consequences for parents (Hwang *et al.*, 2020). Restrictions on maternity care, such as excluding partners from labour, have resulted in missed bonding opportunities and increased psychological discomfort (Campbell-Yeo, 2023; Rice & Williams, 2024). First-time fathers, in particular, struggle to navigate their duties due to isolation and stress associated with early involvement, infant care, and spousal support (Higashio & Sasaki, 2021).

The pandemic has limited fathers' access to appointments and births, resulting in increasing social isolation and difficulty bonding with their children. This isolation has also intensified fathers' difficulties in recognising and treating their mental health issues (Das & Hodkinson, 2020). Virtual alternatives such as telehealth and web-based platforms have shown potential in reducing isolation, providing support, and involving fathers in perinatal care, which is consistent with recommendations to incorporate fathers in global perinatal practices (Fisher *et al.*, 2021; Bouchacourt *et al.*, 2023). For divorced fathers, particularly those in nesting arrangements, confusing pandemic practices have resulted in disagreements about how to manage COVID-19 risks, affecting co-parenting relationships. Due to travel restrictions, single and immigrant fathers have encountered obstacles such as limited social support and access to extended family (Iztayeva, 2021).

A health equity issue in paternity leave has been observed, with pandemic relief initiatives like the CARES Act and CERB failing to appropriately support fathers, particularly those with racial and ethnic disparities (Montez, Thomson & Shabo, 2020). This has disproportionately impacted mothers. However, the

possibility of fathers working from home after the pandemic may improve family relations and baby bonding (Andrews, Ayers & Williams, 2022).

### **Fathers' Mental Health Crisis**

The COVID-19 pandemic has spurred a rise in mental health research, revealing significant challenges in healthcare, particularly mental health. The pandemic's effects have emphasised the need to address these challenges and promote well-being (Suryasa, Rodríguez-Gámez & Koldoris, 2022). Despite these difficulties, many fathers showed resilience and maintained firm commitments to their families (Deslauriers & Kiselica, 2024). COVID-19 policies, such as social distancing and stay-at-home orders, blurred work and home boundaries, reduced social connections, and resulted in fatigue. These factors negatively affected the mental well-being of both mothers and fathers (Avery & Park, 2021). The pandemic's widespread consequences have created a global crisis in paternal mental health.

Fathers experienced increased rates of peripartum anxiety and depressive symptoms during the pandemic (Goyal *et al.*, 2023; Higashio & Sasaki, 2021; Kelly *et al.*, 2023; Obikane *et al.*, 2023). Paternal depression, particularly during the perinatal period, can have long-term effects on children's language development (Clifford, Rainey & Eggum, 2024). In Japan, factors like fear of COVID-19, low family functionality, and intimate partner violence increased the risk of paternal depression, highlighting the need for interventions (Obikane *et al.*, 2023). Fathers also struggled with early parental roles, such as handling child crying and supporting partners (Higashio & Sasaki, 2021). Separation from partners and infants during the pandemic had adverse effects on fathers' mental health, particularly in the U.K. (Kelly *et al.*, 2023; Andrews, Ayers & Williams, 2022).

Prior to the pandemic, research focused mostly on female perinatal depression, but new studies show that men are also at an increased risk of depression during fatherhood. For example, during the pandemic, new moms in Portugal had higher depression rates than fathers, although both suffered increased depression relative to pre-pandemic levels (Pereira *et al.*, 2023). According to Dachew, Heron & Alati (2023), meta-analysis discovered a link between parental depression and subsequent depression in offspring, emphasising the necessity of family interventions.

The prevalence of paternal perinatal depression during the pandemic highlights an underrecognized mental health issue (Cameron, Sedov & Tomfohr-Madsen, 2016; Vogel, 2011). Fathers' anxiety and depression are often compounded by a lack of screening and are linked to maternal depression, affecting their ability to support partners during pregnancy and postpartum (Fisher *et al.*, 2021). Pre-pandemic paternal perinatal depression was estimated at 4% to 25%, with Cameron, Sedov & Tomfohr-Madsen, (2016) reporting 8.4%. The pandemic caused a significant rise, with 22.4% of fathers experiencing comorbid depression and anxiety in the first year postpartum (Dennis *et al.*, 2022). In Wuhan, China, paternal postpartum depression (PPD) peaked during the human-to-human transmission announcement of COVID-19, influenced by family income and smoking behaviours (Sun *et al.*, 2021). A systematic review by Mazza *et al.* (2022) validated paternal perinatal depression as a distinct clinical condition, underscoring its importance for family health.

The pandemic impact on parental mental health has been significant (Cameron *et al.*, 2023). Studies have shown increased rates of anxiety and depression in mothers during pregnancy and postpartum and highlighted the importance of addressing negative thoughts related to motherhood (Schmid *et al.*, 2023; Pereira *et al.*, 2023). Additionally, the exclusion of partners from childbirth has affected maternal mental health, emphasising the need for comprehensive perinatal care (Rice & Williams, 2024; Mortazavi *et al.*, 2023). Positive pre-pandemic co-parenting has been linked to mitigating infant regulatory issues during COVID-19 (Pinto & Figueiredo, 2023). Globally, fathers in the U.S. reported higher stress-related physical symptoms, sleep changes, and increased alcohol consumption. At the same time, no significant differences in

parental distress were observed between mothers and fathers in Israel (American Psychological Association [APA], 2021). In Canada, lockdown measures brought positive outcomes for some families, leading to more family time and healthier habits (Carroll *et al.*, 2020).

The COVID-19 pandemic has intensified fathers' risks of depression, anxiety, and role ambiguity, creating a mental health crisis that continues to unfold. Disrupted support systems and increased caregiving responsibilities worsened these issues. This silent epidemic, particularly affecting vulnerable fathers, calls for urgent mental health interventions to support fathers and improve family well-being. Comprehensive research and accessible interventions are needed to address the long-term effects on paternal mental health and its impact on maternal and infant health.

## DISCUSSION

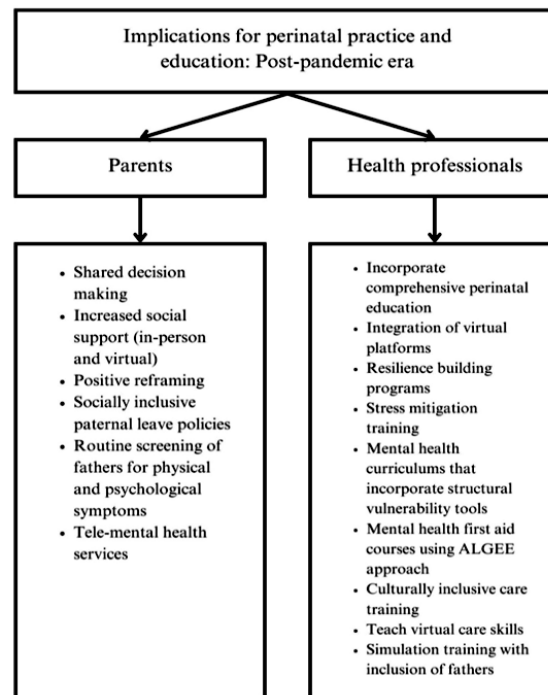
Overall, the COVID-19 pandemic has highlighted the vital role that fathers play in their families and communities as they work to provide support and stability during this difficult time. The COVID-19 pandemic has significantly affected fathers, with many expressing concerns about the threat of the virus to their family's well-being, finances, and employment status. Across families, fathers continued to work during the pandemic despite the risks of becoming infected with COVID-19, as providing for their families was their main priority. In addition, the pandemic has brought about many hardships for fathers, including increased stress, anxiety and uncertainty. Despite these challenges, many fathers have found strength in their families and remained hopeful, overcoming the novel challenges brought about by the pandemic. This resilience aligns with findings showing that fathers, despite challenges, maintained firm commitments to their families, particularly during the pandemic (Deslauriers & Kiselica, 2024).

Research has shown that the pandemic has had a unique impact on fathers, with many experiencing varied emotions related to their roles as parents and providers (Andrews, Ayers & Williams, 2022; Campbell-Yeo, 2023; Marcell *et al.*, 2022). In most instances, fathers had to adapt to new work arrangements, such as working from home or dealing with job loss, while supporting their families through the challenges of the pandemic. Nevertheless, fathers demonstrated their resilience and ability to overcome adversity. The paper highlights the impact of the COVID-19 pandemic on paternal mental health within the perinatal period. Preventing and addressing adverse mental health outcomes among fathers is critical, given its effects on long-term maternal and child mental health outcomes (Clifford, Rainey & Eggum, 2024).

Figure 2 illustrates the implications for perinatal practice and education in the post-pandemic era, emphasizing shared decision-making, social support, and inclusive policies for parents. It highlights the need for comprehensive education, stress management, and culturally inclusive training for health professionals. Nursing courses must include instruction on the pandemic's mental health impact on fathers. This should focus on comprehensive care for both parents, resolving COVID-19-related anxieties, reducing social isolation, and providing individualised assistance for fathers while taking cultural considerations into account (Marcell *et al.*, 2022). Training and mentoring programs should highlight the father's involvement in perinatal care (Erdei & Liu, 2020). According to research, professional and partner support improves father-infant bonding, especially for first-time fathers, highlighting the importance of targeted support in nursing training (Wells, Giannotti & Aronson, 2024). These aspects should be included in the perinatal nursing curriculum to improve fathers' well-being (Yazdanpanahi *et al.*, 2022).

Policy advocacy is essential for establishing a pro-fathering culture, including mental health and perinatal father assistance. This includes pushing for affordable health insurance and childcare laws for low-income and single men, as well as paid leave for fathers during childbirth (Andrews, Ayers & Williams, 2022). Policy changes should also prioritise personalised care for fathers' mental health during the postpartum period (Schobinger *et al.*, 2024).





**Figure 2: Implications for Perinatal Practice and Education: Post-Pandemic Era**

Promoting a pro-fathering culture in prenatal nursing requires stress management, greater father engagement during labour, and shared decision-making to prevent stress contagion (Erdei & Liu, 2020; Smith, Pitter & Udoudo, 2024). Virtual visits and personalised NICU restrictions can help reduce tension, while online training has proven effective in lowering anxiety for fathers and couples during the pandemic (Merih, Karabulut & Sezer, 2021). Virtual prenatal education programs should prioritise accessibility and address fathers' unique concerns, offering tailored support (Marcell *et al.*, 2022). Parenting apps like the Supportive Parenting App (SPA) boost fathers' knowledge, confidence, and self-efficacy, with lasting benefits beyond the pandemic (Shorey *et al.*, 2021; Avery & Park, 2021).

Perinatal nursing should focus on the father's mental health and provide support beyond standard mother care. Active listening and empathy are examples of therapeutic communication that help fathers create a secure space to express their emotions. Simple assistance from family, healthcare providers, and the community can aid in the early detection of paternal mental health problems. Given the prevalence of paternal depression and anxiety, routine Couvade syndrome screening is advised (Lambregtse-van den Berg & Quinlivan, 2021). Paternal mental illness can have long-term consequences for children's mental health and development, necessitating tailored services.

Integrating telehealth options for mental health support is crucial to meet the increased demand for counselling and emotional help for perinatal fathers (Shorey *et al.*, 2023). Healthcare professionals should assist fathers in finding coping strategies, considering the significant changes in healthcare delivery due to the shift towards telemedicine. While telemedicine has made healthcare more accessible, it also presents challenges that must be addressed, such as concerns about intimacy, treatability, and documentable care under current regulations (Kurimay *et al.*, 2022). The pandemic has necessitated revisiting existing paternal support practices and exploring alternative methods to address the disparity between fathers' needs and current support practices (Higashio & Sasaki, 2021; Kurimay *et al.*, 2022).

Incorporating mental health care into healthcare curricula is critical for improving structural competency, particularly understanding how social variables influence disenfranchised parents (Waite & Hassounh, 2021). To better support perinatal fathers, nurses should additionally receive Mental Health First

Aid (MHFA) training utilising the ALGEE technique (Poornaselvan, 2020). Tele-mental health services are advised for pregnant parents in NICUs (Geller *et al.*, 2021), and father-specific assessments should be utilised to identify mental health issues and give tailored care (Yazdanpanahi *et al.*, 2022). Fathers must actively participate in perinatal care as major contributors to family well-being.

### Limitations

The discussion points addressed in this article may have specific limitations in terms of generalizability. Only English-language studies are cited, and valuable insights published in other languages should be addressed in future research. The articles used were not systematically reviewed for quality due to limited evidence on fathers' mental health during the initial phases of COVID-19. Therefore, the quality of the evidence may be variable, and there may be a risk of bias in the selection of articles and the potential for overlooking necessary studies or conflicting evidence. Additionally, the information discussed is from published articles, blogs, and advisories during the initial phases of COVID-19 and the immediate post-pandemic phase, which may not replicate the complexity of real-life situations across the globe and cultures.

### CONCLUSION

The pandemic had notable impacts on the mental health of fathers and highlighted the need for personalised support to enhance their paternal well-being and positive family dynamics. Strategies such as customised training for healthcare professionals, inclusive nursing practices, comprehensive parental leave policies, and telehealth services are essential. These initiatives are crucial to support inclusive family-centred care, fostering fathers' mental well-being in both pandemic and post-pandemic contexts. Immediate and sustained efforts are needed to support perinatal fathers and improve family resilience, aligning with the study's objective to enhance family resilience and well-being in both current and future disruptions.

Future research should explore the long-term effects of these interventions on paternal mental health and family dynamics. There is a need for innovative, culturally sensitive programs adaptable to diverse healthcare settings. The potential of digital health tools and telehealth services should be further investigated, particularly for underserved communities. Policymakers should consider flexible, inclusive parental leave policies that align with the evolving roles of fathers in the post-pandemic era. Longitudinal studies should assess how these initiatives contribute to sustained family resilience and well-being, ensuring that fathers' needs are consistently met to foster healthier, more resilient families.

### Conflict of Interest

The authors declare that they have no competing interests.

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### REFERENCES

- Ahmad, A. R., & Murad, H. R. (2020). The impact of social media on panic during the COVID-19 pandemic in Iraqi Kurdistan: Online questionnaire study. *Journal of Medical Internet Research*, 22(5). <https://doi.org/10.2196/19556>
- American Psychological Association. (2021, March 11). Mothers — and fathers — report mental, physical health decalines: Stress in America 2021: One year later, a new wave of pandemic health concerns. <https://www.apa.org/news/press/releases/stress/2021/one-year-pandemic-stress-parents>. Accessed on 10<sup>th</sup> February, 2023.
- Andrews, K., Ayers, S., & Williams, L. R. (2022). The experience of fathers during the COVID-19 UK maternity care restrictions. *Midwifery*, 113, 103434. <https://doi.org/10.1016/j.midw.2022.103434>

- Avery, E. J., & Park, S. (2021). Perceived knowledge as [protective] power: Parents' protective efficacy, information-seeking, and scrutiny during COVID-19. *Health Communication, 36*(1), 81-88. <https://doi.org/10.1080/10410236.2020.1847438>
- Bouchacourt, L., Henson-Garcia, M., Sussman, K. L., Mandell, D., Wilcox, G., & Mackert, M. (2023). Web-based conversations regarding fathers before and during the COVID-19 pandemic: Qualitative content analysis. *JMIR Pediatrics and Parenting, 6*. <https://doi.org/10.2196/40371>
- Cameron, E. E., Sedov, I. D., & Tomfohr-Madsen, L. M. (2016). Prevalence of paternal depression in pregnancy and the postpartum: An updated meta-analysis. *Journal of Affective Disorders, 206*, 189-203. <https://doi.org/10.1016/j.jad.2016.07.044>
- Cameron, E. E., Simpson, K. M., Pierce, S. K., Penner, K. E., Beyak, A., Gomez, I., Bowes, J. M., Reynolds, K. A., Tomfohr-Madsen, & Roos, L. E. (2023). Paternal perinatal experiences during the COVID-19 pandemic: A framework analysis of the reddit forum predaddit. *International Journal of Environmental Research and Public Health, 20*(5). <https://doi.org/10.3390/ijerph20054408>
- Campbell-Yeo, M. (2023). Unintended consequences of restricting father presence during maternity care during the COVID-19 pandemic. *Evidence-Based Nursing, 26*(3), 109-109. <https://doi.org/10.1136/ebnurs-2022-103614>
- Carroll, N., Sadowski, A., Laila, A., Hruska, V., Nixon, M., Ma, D. W., Haines, J., & Guelph Family Health Study. (2020). The impact of COVID-19 on health behavior, stress, financial and food security among middle to high income Canadian families with young children. *Nutrients, 12*(8). <https://doi.org/10.3390/nu12082352>
- Cavicchiolo, M. E., Trevisanuto, D., Lolli, E., Mardegan, V., Saieva, A. M., Franchin, E., Plebani, M., Donato, D., & Baraldi, E. (2020). Universal screening of high-risk neonates, parents, and staff at a neonatal intensive care unit during the SARS-CoV-2 pandemic. *European Journal of Pediatrics, 179*, 1949-1955. <https://doi.org/10.1007/s00431-020-03765-7>
- Clifford, B. N., Rainey, V., & Eggum, N. D. (2024). Parental postpartum depression and children's receptive and expressive language during the first six years of life: A systematic review of depression timing, status, and chronicity. *Developmental Review, 71*, 101105. <https://doi.org/10.1016/j.dr.2023.101105>
- Dachew, B. A., Heron, J. E., & Alati, R. (2023). Parental depressive symptoms across the first three years of a child's life and emotional and behavioural problem trajectories in children and adolescents. *Journal of Psychiatric Research, 159*, 135-144. <https://doi.org/10.1016/j.jpsychires.2023.01.019>
- Das, R., & Hodkinson, P. (2020, June 22). Dad, distanced: The turbulence of new fatherhood amidst a pandemic. *Discover Society*. <https://archive.discover society.org/2020/06/22/dad-distanced-the-turbulence-of-new-fatherhood-amidst-a-pandemic/>. Accessed on 8<sup>th</sup> April, 2023.
- Dennis, C. L., Marini, F., Dol, J., Vigod, S. N., Grigoriadis, S., & Brown, H. K. (2022). Paternal prevalence and risk factors for comorbid depression and anxiety across the first 2 years postpartum: A nationwide Canadian cohort study. *Depression and Anxiety, 39*(3), 233-245. <https://doi.org/10.1002/da.23234>
- Deslauriers, J. M., & Kiselica, M. S. (2024). An ecological approach to understanding the paternal commitments of young fathers: From the pregnancy test to the child's first birthday. *Child and Adolescent Social Work Journal, 41*(2), 249-268. <https://doi.org/10.1007/s10560-022-00845-5>
- Erdei, C., & Liu, C. H. (2020). The downstream effects of COVID-19: a call for supporting family wellbeing in the NICU. *Journal of Perinatology, 40*(9), 1283-1285. <https://doi.org/10.1038/s41372-020-0745-7>
- Fisher, S. D., Cobo, J., Figueiredo, B., Fletcher, R., Garfield, C. F., Hanley, J., Ramchandani, P., & Singley, D. B. (2021). Expanding the international conversation with fathers' mental health: Toward an era of inclusion in perinatal research and practice. *Archives of Women's Mental Health, 24*(5), 841-848. <https://doi.org/10.1007/s00431-020-03765-7>

1007/s00737-021-01171-y

- Geller, P. A., Spiecker, N., Cole, J. C., Zajac, L., & Patterson, C. A. (2021). The rise of tele-mental health in perinatal settings. *Seminars in Perinatology*, *45*(5). <https://dx.doi.org/10.1016/j.semperi.2021.151431>
- Goyal, D., Dol, J., Huynh, J., Anand, S., & Dennis, C. L. (2023). Postpartum mental health and perceptions of discrimination among Asian fathers during the COVID-19 pandemic. *MCN: The American Journal of Maternal/Child Nursing*, *49*(2), 88–94. <https://doi.org/10.1097/NMC.0000000000000984>
- Grant, M. J., & Booth, A. (2009). A typology of reviews: An analysis of 14 review types and associated methodologies. *Health Information & Libraries Journal*, *26*(2), 91-108. <https://doi.org/10.1111/j.1471-1842.2009.00848.x>
- Higashio, K., & Sasaki, A. (2021). The paternal mental health, difficulties for fathers with children in early infancy, and their educational support needs. *Health*, *13*(8), 789-811. <https://doi.org/10.4236/health.2021.138061>
- Hwang, T. J., Rabheru, K., Peisah, C., Reichman, W., & Ikeda, M. (2020). Loneliness and social isolation during the COVID-19 pandemic. *International Psychogeriatrics*, *32*(10), 1217-1220. <https://doi.org/10.1017/S1041610220000988>
- Iztayeva, A. (2021). Custodial single fathers before and during the COVID-19 crisis: Work, care, and well-being. *Social Sciences*, *10*(3), 94. <https://doi.org/10.3390/socsci10030094>
- Kelly, H. K., Geller, S., Swami, V., Shenkman, G., Levy, S., & Ridge, D. (2023). A relational investigation of Israeli gay fathers' experiences of surrogacy, early parenthood, and mental health in the context of the COVID-19 pandemic. *PloS One*, *18*(2). <https://doi.org/10.1371/journal.pone.0282330>
- Khanlou, N., Ssawe, A., Zahraei, S., Connolly, J. A., Pashang, S., Bohr, Y., & Vazquez, L. M. (2020). Information sheet 16: Gender-based violence and the COVID-19 pandemic: Risk factors and systemic challenges. *York University*. <https://nkhanelou.info.yorku.ca/files/2020/07/Info-Sheet-on-GBV-and-COVID19-pandemic-Khanlou-et-al.22July2020.pdf?x68747>. Accessed on 20<sup>th</sup> February, 2023.
- Kurimay, T., Fenyves, T., Szederkényi, J., Mező, G., & Pelikán, A. (2022). The usefulness of telemedicine in perinatal mental health services during and after COVID-19 pandemic: Detailed experience of the team of together baby-mother-father unit in Budapest. *European Psychiatry*, *65*(S1), S20-S21. <https://doi.org/10.1192/j.eurpsy.2022.79>
- Lambregtse-van den Berg, M., & Quinlivan, J. (2021). Understanding psychological wellbeing in pregnant women in and outside COVID-19 and the importance of including fathers. *Journal of Psychosomatic Obstetrics & Gynecology*, *42*(2), 89-90. <https://doi.org/10.1080/0167482X.2021.1920183>
- Lista, G., & Bresesti, I. (2020). Fatherhood during the COVID-19 pandemic: An unexpected turnaround. *Early Human Development*, *144*. <https://doi.org/10.1016/j.earlhumdev.2020.105048>
- Marcell, A. V., Van Eck, K., Veira, O., Johnson, S., Nelson, T., Labrique, A., Skelton, S., & Gibson, D. (2022). 105. Perceived COVID-19-related stress & other impacts among lower income expectant young adult fathers. *The Journal of Adolescent Health*, *70*(4). <https://doi.org/10.1016/j.jadohealth.2022.01.200>
- Mazza, M., Kotzalidis, G. D., Avallone, C., Balocchi, M., Sessa, I., De Luca, I., Hirsch, D., Simonetti, A., Janiri, D., Loi, E., Marano, G., Albano, G., Fasulo, V., Borghi, S., Del Castillo, A. G., Serio, A. M., Monti, L., Chieffo, D., Angeletti, G., Janiri, L., & Sani, G. (2022). Depressive symptoms in expecting fathers: Is paternal perinatal depression a valid concept? A systematic review of evidence. *Journal of Personalized Medicine*, *12*(10). <https://doi.org/10.3390/jpm12101598>
- Merih, Y. D., Karabulut, O., & Sezer, A. (2021). Is online pregnant school training effective in reducing the anxiety

- of pregnant women and their partners during the COVID-19 pandemic?. *Bezmialem Science*, 9(S1), 13-25. <https://doi.org/10.14235/bas.galenos.2020.4718>
- Mertens, G., Gerritsen, L., Duijndam, S., Salemink, E., & Engelhard, I. M. (2020). Fear of the coronavirus (COVID-19): Predictors in an online study conducted in March 2020. *Journal of Anxiety Disorders*, 74. <https://doi.org/10.1016/j.janxdis.2020.102258>
- Montez, K., Thomson, S., & Shabo, V. (2020). An opportunity to promote health equity: National paid family and medical leave. *Pediatrics*, 146(3). <https://doi.org/10.1542/peds.2020-1122>
- Mortazavi, F., Nikbakht, R., Mehrabadi, M., & Shahhosseini, Z. (2023). A structural equation model analysis of the relationship between expectant fathers' fear of COVID-19 and their fear of childbirth: The mediating role of maternal fear of childbirth. *Midwifery*, 125. <https://doi.org/10.1016/j.midw.2023.103790>
- Obikane, E., Nishi, D., Morisaki, N., & Tabuchi, T. (2023). Risk factors of paternal perinatal depression during the COVID-19 pandemic in Japan. *Journal of Psychosomatic Obstetrics & Gynecology*, 44(1). <https://doi.org/10.1080/0167482X.2023.2245556>
- Pasadino, F., DeMarco, K., & Lampert, E. (2020). Connecting with families through virtual perinatal education during the COVID-19 pandemic. *MCN: The American Journal of Maternal/Child Nursing* 45(6), 364–370. <https://doi.org/10.1097/NMC.0000000000000665>
- Pereira, D., Macedo, A., Cabaços, C., Wildenberg, B., Madeira, N., & Pereira, A. T. (2023). Perinatal depressive symptoms in Portuguese new fathers and mothers during COVID-19 pandemic. *European Psychiatry*, 66(S1), S784-S785. <https://doi.org/10.1192/j.eurpsy.2023.1656>
- Pinto, T. M., & Figueiredo, B. (2023). Positive coparenting previous to the COVID-19 pandemic can buffer regulatory problems in infants facing the COVID-19 pandemic. *Infancy*, 28(6), 1067-1085. <https://doi.org/10.1111/infa.12561>
- Poornaselvan, C. (2020). Basic life support for mental health crisis: You can be a hero. *Indian Journal of Continuing Nursing Education*, 21(1), 12-16. [https://doi.org/10.4103/ijcn.ijcn\\_60\\_20](https://doi.org/10.4103/ijcn.ijcn_60_20)
- Poulos, N. S., Donovan, E. E., Mackert, M., & Mandell, D. J. (2024). Missed opportunities for prenatal family-centered care during the COVID-19 pandemic: A qualitative study. *Journal of Communication in Healthcare*, 17(1), 111-117. <https://doi.org/10.1080/17538068.2024.2313246>
- Prikhidko, A., Long, H., & Wheaton, M. G. (2020). The effect of concerns about COVID-19 on anxiety, stress, parental burnout, and emotion regulation: the role of susceptibility to digital emotion contagion. *Frontiers in Public Health*, 8. <https://dx.doi.org/10.3389/fpubh.2020.567250>
- Recto, P., Lesser, J., Moreno-Vasquez, A., Zapata Jr, J., & Zavala Idar, A. (2020). Supporting the mental health needs of adolescent fathers during COVID-19: Opportunities for nursing practice and community-based partnerships. *Issues in Mental Health Nursing*, 42(7), 702-705. <https://doi.org/10.1080/01612840.2020.1850951>
- Rice, K., & Williams, S. (2024). Partner exclusion from childbirth during COVID-19 in Canada: Implications for theory and policy. *Medical Anthropology*, 43(1), 5-16. <https://doi.org/10.1080/01459740.2023.2269467>
- Roy, J. G., & Roy, S. (2022). The Structural and Social Determinants of Reproductive Behavioural Health: A Brief Appraisal of Indian Scenario. *Malaysian Journal of Medical Research (MJMR)*, 6(3), 48-54. <https://doi.org/10.31674/mjmr.2022.v06i03.006>
- Schmid, S., Imthurn, B., Feki, A., Mathis, J., de Tejada, B. M., von Wolff, M., ... & Eggimann, T. (2023). Société Suisse de Gynécologie et d'Obstétrique (SGGG) Congress [Swiss Society of Gynecology and Obstetrics (SGGG) Congress]. *Gynecologic and Obstetric Investigation*, 88(1), 1-99. <https://doi.org/10.1159/000531140>

- Schobinger, E., Vanetti, M., Ramelet, A. S., & Horsch, A. (2024). First-time parents' perception of midwives' and other healthcare professionals' support behaviours: A qualitative study. *Midwifery*, *135*. <https://doi.org/10.1016/j.midw.2024.104028>
- Shorey, S., Law, E., Thilagamangai, Mathews, J., Lim, S. H., Shi, L., Chua, J. S., Du, R., Chan, Y. K., Tan, T. C., Chee, C., & Chong, Y. S. (2023). Evaluating the effectiveness of the supportive parenting app on parental outcomes: Randomized controlled trial. *Journal of Medical Internet Research*, *25*. <https://doi.org/10.2196/41859>
- Shorey, S., Tan, T. C., Thilagamangai, Mathews, J., Yu, C. Y., Lim, S. H., Shi, L., Ng, E. D., Chan, Y. H., Law, E., Chee, C., & Chong, Y. S. (2021). Development of a supportive parenting app to improve parent and infant outcomes in the perinatal period: Development study. *Journal of Medical Internet Research*, *23*(12). <https://doi.org/10.2196/27033>
- Smith, C., Pitter, C., & Udoudo, D. A. (2024). Fathers' experiences during delivery of their newborns: A content analysis. *International Journal of Community Based Nursing and Midwifery*, *12*(1), 23-31. <https://doi.org/10.30476/IJCBNM.2023.100009.2337>
- Stein, S., & Bloomberg, B. (2021). Low vaccination rate among pregnant people is causing a 'perfect storm', doctors warn. *Fortune*. <https://fortune.com/2021/08/24/pregnancy-covid-19-vaccination-rates/>. Accessed on 15<sup>th</sup> June, 2023.
- Sun, G. Q., Wang, Q., Wang, S. S., & Cheng, Y. (2021). Risk assessment of paternal depression in relation to partner delivery during COVID-19 pandemic in Wuhan, China. *BMC Psychiatry*, *21*, 1-8. <https://doi.org/10.1186/s12888-021-03325-9>
- Suryasa, I. W., Rodríguez-Gámez, M., & Koldoris, T. (2022). Post-pandemic health and its sustainability: Educational situation. *International Journal of Health Sciences*, *6*(1). <https://doi.org/10.53730/ijhs.v6n1.5949>
- Taubman-Ben-Ari, O., & Ben-Yaakov, O. (2020). Distress and apprehension among new parents during the COVID-19 pandemic: The contribution of personal resources. *American Journal of Orthopsychiatry*, *90*(6). <https://dx.doi.org/10.1037/ort0000497>
- Taubman-Ben-Ari, O., Ben-Yaakov, O., & Chasson, M. (2021). Parenting stress among new parents before and during the COVID-19 pandemic. *Child Abuse & Neglect*, *117*. <https://doi.org/10.1016/j.chiabu.2021.105080>
- Vogel, L. (2011). Paternal depression often unrecognized. *Canadian Medical Association Journal (CMAJ)*, *183*(18). <https://doi.org/10.1503/cmaj.109-4060>
- Waite, R., & Hassouneh, D. (2021). Structural competency in mental health nursing: Understanding and applying key concepts. *Archives of Psychiatric Nursing*, *35*(1), 73-79. <https://doi.org/10.1016/j.apnu.2020.09.013>
- Wells, M. B., Giannotti, M., & Aronson, O. (2024). Partner and professional support are associated with father-infant bonding: A cross-sectional analysis of mothers, midwives, and child health nurses' influence on primiparous and multiparous fathers of infants in Sweden. *Midwifery*, *136*. <https://doi.org/10.1016/j.midw.2024.104076>
- Yazdanpanahi, Z., Vizheh, M., Azizi, M., & Hajifoghaha, M. (2022). Paternal postnatal depression during COVID-19 pandemic: The role of health care providers. *Journal of Primary Care & Community Health*, *13*. <https://doi.org/10.1177/21501319221110421>
- Zipursky, J. S., Greenberg, R. A., Maxwell, C., & Bogler, T. (2021). Pregnancy, breastfeeding and the SARS-CoV-2 vaccine: An ethics-based framework for shared decision-making. *Canadian Medical Association Journal*, *193*(9), E312–E314. <https://doi.org/10.1503/cmaj.202833>