RESEARCH ARTICLE

Parenting in a Pandemic: Parental stress, anxiety and depression among parents during the government-initiated physical distancing measures following the first wave of COVID-19

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Abstract

Drawing on the tenets of family stress theory, the aim of this study is to examine parents' perceived stress, symptoms of anxiety, depression, and associated risk- and protective factors across demographic subgroups during in the first wave of the COVID-19 pandemic. Norwegian parents ($N = 2868$; 79.5% mothers) with >1 child under 18 years of age completed an online survey two weeks after the implementation of government-initiated distancing measures. The survey includes measures of COVID-related risk factors (parental stress, burnout, depression, anxiety, anger of parents towards children, difficulty working from home, and positive beliefs about worry) and protective factors (self-efficacy and social support). Mothers, parents living with more than one child, and parents with a psychiatric diagnosis reported greater levels of parental stress, more burnout, and more anger towards their children, as well as less social support. Almost 25% of the parents reported anxiety and depression that are clinically significant. Parents who followed distancing measures reported significantly higher distress. Anger of parents towards children explains 41% of the variation in parental stress. These findings indicate that parents have experienced symptoms of deteriorated mental health due to the COVID- 19 pandemic, including parental stress, anxiety, and depression. The study presents practical implications for meso- and macro-level policymaking and offers support to further the potential aims of public health and clinical interventions. Future studies to monitor long-term aversive mental health outcomes among parents are warranted.

KEYWORDS
anxiety, COVID-19, depression, parental stress, risk- and protective factors

1 | INTRODUCTION

When the coronavirus disease of 2019 (COVID-19) pandemic struck globally in 2020, everyday family life changed dramatically as the pandemic and measures to combat it wreaked havoc on millions of parents and families. The rapid onset of the pandemic quickly and radically changed many otherwise stable features of family life and functionality and imposed additional burdens and demands on parents. Hence, major concerns regarding the potentially deleterious effects of these increased family demands and

stressors on parents' well-being and mental health were addressed by medical practitioners and governmental agencies in the first wave of the COVID-19 outbreak (e.g., Phelps & Sperry, 2020; Wang et al., 2020).

Parents' experiences with everyday stress and demands pertaining to their role as parents are a well-documented phenomenon (e.g., Abidin, 1997; Deater-Deckard & Panneton, 2017; Östberg & Hagekull, 2000). Even under normal circumstances, many parents experience everyday stressors related to their role as parents and inadequate access to the resources necessary to meet the demands of parenthood (Crnic & Low, 2002; Deater-Deckard & Panneton, 2017). Parenting-related stress and associated risk factors that may impact parents' mental health, as well as protective factors that may buffer these mental health outcomes following a global pandemic, remain relatively unexplored areas in the stress literature. Until recently, little has been known of the tremendous impact extensive disease containment measures may have on parenting and family life during a global health crisis.

Family stress theory provides a theoretical lens through which to view the impact of these pandemic-related stressors on parents' mental health outcomes. According to family stress theory, the significant risk exposure that emerges from pervasive, rapidly changing, and unpredictable stressors that radically disrupt many otherwise stable features of family life, such as those prevalent during the COVID-19 pandemic, are particularly likely to place family equilibrium in jeopardy (Boss, 2002; Malia, 2006; Patterson, 2004). Based on the tenets of family stress theory, it can be argued that the scale and scope of the COVID-19 pandemic have generated pandemic-related stressors that have affected all levels of the family ecosystem. These levels have been subjected to a wide range of risk factors that affect individual family members and which, in turn, may affect the family unit in terms of family system outcomes and the community context to which families belong (Patterson, 2004). However, in addition to the emergence of risk factors, protective factors and capabilities may also emerge from similar levels of the family's ecosystem (Patterson, 2004), which will be addressed in detail in the following sections.

1.1 | COVID-19-related stressors and risk factors for parents' mental health outcomes

The government-initiated stay-at-home orders implemented during the first wave of the COVID-19 outbreak caused rapid and dramatic shifts in the parental roles. The sudden closure of schools and loss of domestic support and childcare facilities, which occurred abruptly in most countries, forced parents into new daily life routines in which they had to navigate the challenges of full-time childcare and homeschooling while simultaneously working from home (Petts et al., 2020). The challenges of transitioning to working from home seem to have been particularly stressful for parents, who struggled to maintain the boundary between work and domestic responsibilities (e.g., Yamamura & Tsutsui, 2021). Mothers have been especially

affected by these dramatic changes to work and family life as they are more likely to bear the burdens of the pandemic due to their disproportionate care work responsibilities (Collins et al., 2020; Petts et al., 2020).

Exposure to major and unpredictable stressful life events generally increases the risk of enhanced psychological distress for individuals in a parental role (Malia, 2006; Patterson, 2004). A rapidly growing body of research following the COVID-19 pandemic, as well as research from prior pandemics, confirms that the demands parents are exposed to during extensive disease-containment measures impose a wide range of risk factors that influence their mental health and well-being. Research on the mental health burdens of parents following prior pandemics (e.g., SARS, the H1N1 flu), has reported increased psychological problems among parents, including heightened anxiety, vigilance, excessive worry, and fear (Chan et al., 2007; Dodgson et al., 2010; Fong & Iarocci, 2020; King et al., 2018). Common sources of stress and anxiety for parents included increased levels of stress related to family, concerns over the health impacts on their children, and a lack of contact with those infected by the disease (King et al., 2018; Lau et al., 2005).

Time-sensitive studies on COVID-19-related stressors echoes these prior research findings and confirm the detrimental effects of the pandemic on parents' mental health and well-being. A nationwide poll reported that US parents experienced significantly higher levels of stress during the COVID-19 crisis than did non-parents, with nearly half of parents (46%) reporting their stress levels as high (APA, 2020). Moreover, clinically alarming levels of parental stress (Calvano et al., 2021; Marchetti et al., 2020) and a high prevalence of severe depression and anxiety (Lee et al., 2021), have been reported in several recent studies on parental distress during the COVID-19 pandemic. Deleterious psychological impacts of quarantine, which are generally reported to be wide-ranging and associated with a high prevalence of psychological symptoms and distress (e.g., Brooks et al., 2020; Ebrahimi et al., 2021), have also been found among quarantined parents following the COVID-19 pandemic (e.g., Calvano et al., 2021; Ozamiz-Etxebarria et al., 2020; Spinelli et al., 2020), as well as after prior pandemics (King et al., 2018; Sprang & Silman, 2013). Longitudinal studies also indicate that the pandemic had an immediate impact on parents' mental health, which did not return to pre-pandemic levels even after quarantine was lifted (Adams et al., 2021), indicating that the substantial burden and stress related to the pandemic may have long-term mental health consequences.

The well-documented relationship between parental stress and symptoms of depression and anxiety has, in general, been confirmed by a wide range of studies (e.g., Crugnola et al., 2016; Pripp et al., 2010; Rollè et al., 2017; Vismara et al., 2016). Parents who reported higher rates of caregiver burden during the early months of the COVID-19 pandemic also disclosed higher rates of anxiety and depression symptomology (Russell et al., 2020). Furthermore, increased COVID-19-related stressors and elevated anxiety and depression symptomatology have further been found to be associated with higher levels of parental stress (Brown et al., 2020).

The extent to which parents are vulnerable to COVID-19-related stressors may depend on a wide range of individual's demographic characteristics, including parental age, parental role, marital status, number of children in the household, as well as psychosocial factors such as prior psychological vulnerability and ability to cope adaptively despite acute stressors. Although few studies have investigated the relationship between parental age and stress levels during strict distancing measures, studies of self-reported stress generally indicate that stress tends to decrease with age and that younger people seem to be more affected by stressors than older people (Archer et al., 2015; Feizi et al., 2012). Recent studies from the early stages of the COVID-19 pandemic further indicate that the negative psychological impact of distancing measures seems to be more pronounced among young adults and that younger people experience more stress than older people (Kowal et al., 2020; Odriozola-González et al., 2020; but see; Wang et al., 2020).

Another consistent finding in recent studies is that mothers reported significantly higher stress levels, more parental burnout, and lower well-being, than their male counterparts (e.g., Cusinato et al., 2020; Kowal et al., 2020; Marchetti et al., 2020; Mousavi, 2020; Spinelli et al., 2020). Levels of perceived stress also seem to increase with the growing number of children at home during stay-at-home orders (Kowal et al., 2020). In contrast, being in an intimate relationship seems to play a protective role, allowing dyadic coping during the COVID-19 pandemic, as married or cohabiting individuals have reported lower levels of stress than single individuals (Kowal et al., 2020; Odriozola-González et al., 2020; but see; Tian et al., 2020).

A history of vulnerability, such as a preexisting psychiatric disorder, has been identified as a further risk factor for prolonged psychological problems after quarantine (Brooks et al., 2020) that can increase the risk connected to the overall stress burden of COVID-19. People with preexisting mental health problems might be particularly affected by social isolation and the loss of access to health care services, which might increase their vulnerability during home confinement (Asmundson et al., 2020; Holmes et al., 2020; Moreno et al., 2020). Exposure to rapid shifts and enhanced distress and burdens in the parental role as a function of the lockdown may also affect the way parents cope with pandemic-related stressors. While some coping strategies might serve protective functions by regulating the negative emotions associated with stress and reducing the negative consequences of the stressors, maladaptive coping behaviours may exacerbate the effects of stress (e.g., Seiffge-Krenke, 2000). For example, perceived COVID-19-related stress in parents (and their children) has been reported to be associated with maladaptive coping strategies (Achterberg et al., 2021). The development of maladaptive coping behaviours (e.g., worry and rumination) and positive metacognitive beliefs about worry (e.g., worrying helps me cope) seem to play a prominent role for the development of anxiety (Ryum et al., 2017) and may, in turn, become a risk factor in the management of psychosocial adjustment to psychological distress (e.g., Capobianco et al., 2020; Wells, 2009).

1.2 | Family system outcomes

Pandemic-related stressors that pose a significant risk to parents' mental health outcomes may, in time, materialize at different levels of family life and functionality. A cascade of risks, whereby one risk triggers others in a downward spiral, is often related to having too few resources available to meet demands (Boss, 2002; Patterson, 2004). Hence, family stress theory suggests that a cascading risk pattern may lead to the accumulation of stressors that threaten the stability and functionality of the family (Boss, 2002; Patterson, 2004). In the early phase of the COVID-19 pandemic, the question of whether prolonged social distancing, greater parental stress, or psychopathological symptoms potentially affect parental behaviour and family interplay has been highlighted as a major social concern (e.g., Wang et al., 2020). Higher levels of parental stress and burnout have, in general, been associated with higher levels of anger expression (Baruch-Feldman et al., 2002; De la Rubia et al., 2013; Lam, 1999; Muscatello et al., 2006). Parenting stress and anger expression have also been found to be strongly associated with abusive parenting and potential child abuse (Rodriguez & Green, 1997; Rodriguez & Richardson, 2007).

Studies that have addressed the risk of harsh and abusive parenting as a function of stress and exhaustion during the COVID-19 pandemic have reported that parents who experienced parental distress, and who had previously abused their children psychologically, were more likely to abuse their children psychologically during the pandemic (Lawson et al., 2020). Families characterized by higher levels of parental stress and job loss reported an increase in children witnessing domestic violence and verbal emotional abuse during the pandemic (Calvano et al., 2021). Moreover, higher levels of parental stress have been associated with the increased occurrence of harsh parenting (Chung et al., 2020). Parents have also reported more frequent negative interactions with their children due to the pandemic in terms of conflicts and increased hostility (Achterberg et al., 2021). Researchers have reported that children in areas that stayed home more were more likely to be both reported for and a confirmed victim of maltreatment, particularly neglect and that the prolonged stays at home promoted by the public health response to COVID-19 resulted in reductions in child maltreatment reports overall (Bullinger et al., 2021).

1.3 | Protective factors, capabilities, and coping resources

Despite the growing body of literature confirming the profound deleterious effects of COVID-19 on parental mental health and family system outcomes, some parents seem to cope successfully with the significant risks and have reported positive aspects of the pandemic related to personal or family life, including a slower pace of life and an increase in family time (Calvano et al., 2021; Koller et al., 2006; Lee et al., 2021).

From the perspective of family stress theory, families engage in active processes to balance family demands with family capabilities, as the latter interact with family values to arrive at a level of family adjustment or adaptation (Patterson, 2004). Hence, successfully navigating family demands can facilitate the process of adjustment and adaptation to family stress (e.g., Patterson, 2004). Successful coping strategies can be deployed to mitigate the detrimental effects of parenting stress, burnout, and psychopathology symptoms, which may affect the way emotional distress and worry are tackled.

Protective factors that are considered key resources for parental coping and resilience include self-efficacy and social support (Feeney & Collins, 2015; Moscardino et al., 2021; Ren et al., 2020). Recent studies have explored the effects of coping strategies and protective factors among parents during the COVID-19 pandemic. Parental self-efficacy and perceived social support may serve as powerful protective factors and buffers against parental stress and parents' ability to provide quality parenting-even when facing major challenges (Crnic & Ross, 2017; Raikes & Thompson, 2005). For example, recent research suggests that self-efficacy and social support have acted as protective factors that buffer the negative influence of stress and excessive anxiety among parents during the COVID-19 pandemic (Morelli et al., 2020; Oppermann et al., 2021; Ren et al., 2020).

Taken together, the available research on the COVID-19 pandemic, coupled with research on prior pandemics, point to the salient stressors and demands that parents have experienced because of the pandemic, as well as the risk factors related to enhanced parental distress and the protective factors that can buffer parents' ability to cope adaptively despite acute stressors (Feeney & Collins, 2015).

1.4 | Aims and hypotheses

The present cross-sectional study seeks to add to the literature on time-sensitive research investigating parents' immediate distress during the first wave of COVID-19 outbreaks, when the entire Norwegian population collectively experienced sudden and major changes in daily routines due to government-initiated distancing measures. Towards this objective, we examined levels of parental stress, anxiety, and depression symptomatology and associated risk and protective factors across demographic subgroups in a large sample of parents two weeks after the national implementation of distancing measures.

Guided by family stress theory research describing the risks regarding major changes in family demands and exposure to COVID-19 stressors (e.g., Boss, 2002; Patterson, 2004), we argue that the pandemic's early phase, which included pervasive, unpredictable stressors and disrupted daily routines that radically changed many stable features of everyday family life, led to high levels of distress among parents. According to the well-documented association between parental stress, depression, and anxiety (e.g., Crugnola et al., 2016; Hastings et al., 2006; Pripp et al., 2010; Rollè et al., 2017; Saisto et al., 2008; Vismara et al., 2016), we hypothesized that high

levels of parental stress would be accompanied by similarly high levels of anxiety and depression symptomatology (H1).

In addition to the evident wide-ranging psychological impacts of quarantine, including stress, depression, and burnout (e.g., Brooks et al., 2020), we hypothesized that parents who stayed at home intensively during the pandemic and predominantly followed distancing protocols would report higher levels of parental stress compared to parents who did not isolate in the same manner (H2).

Based on the literature on the impact of social distancing measures on parents' mental health during the ongoing and earlier health crises, we hypothesized that parental perceived stress and symptoms of stress and anxiety would differ across sociodemographic factor groups. Higher parental age, parental role (motherhood), a higher number of children, marital status (single parents) and preexisting psychiatric diagnoses were hypothesized to be associated with higher levels of parental perceived stress and more symptoms of anxiety and depression (H3).

Based on theorizing regarding risk, protective factors, and family stress adaptation (e.g., Malia, 2006; Patterson, 2004), we further hypothesized that sociodemographic factors (parental role, parental age, marital status, number of children, and preexisting psychiatric diagnoses), as well as COVID-19-related risk factors (burnout, anger with children, difficulty working from home, and positive worry beliefs) and protective factors (social support and self-efficacy), contribute to the level of parental stress during the COVID-19 lockdown (H4).

Finally, we hypothesized that greater parental stress would be associated with anxiety and depression over and above the influence of associated sociodemographic factors (H5).

2 | MATERIALS AND METHODS

2.1 | Participants and study design

A total of 2868 parents responded to the survey (described below), which was distributed to parents over 18 years of age with >1 child under 18 years of age. All participants resided within the borders of Norway and thus experienced the same government-initiated distancing measures, including isolation, quarantine, and the lockdown of schools and kindergartens. The data collection lasted seven days, from March 31 to 7 April 2020, which ensured that the physical distancing measures were upheld consistently for two weeks before and during the data collection period. Table 1 presents the descriptive information of the sample.

2.2 | Survey methods

The survey was first and predominantly disseminated through a Facebook Business algorithm to any adult parent residing in Norway over 18 years of age with >1 child under 18 years of age. This algorithm disseminated the survey to a random proportion of the adult

TABLE 1 Sample characteristics

Characteristic	n (%)
Parental role	
Mother	2281 (79.5)
Father	587 (20.5)
Parent age	
21–30	359 (12.5)
31–44	1728 (60.3)
45–64	768 (26.8)
65+	13 (0.5)
Marital status	
Married/cohabitating	2447 (85.2)
Single parent	421 (14.7)
Number of children	
1 child	2407 (83.9)
2 or more children	461 (16.1)
Pre-existing psychiatric diagnosis	
Yes	452 (15.7)
No	2416 (84.3)
Occupation	
Employed	2241 (78.1)
Unemployed	627 (21.9)

population available on Facebook (i.e., 85% of all adults in Norway, with an adult population of 3.6 million adults). The final number of individuals reached through this method was 174,885. In total, 70% of the participants included in this study were recruited using this random selection technique. To reach the residual 15% of adults who were not on Facebook, the survey was disseminated systematically through national, regional, and local platforms across the country, including via national news outlets, national television stations, and regional and local newspapers. Consequently, we estimate having reached the spectrum of the adult parent population using this wide dissemination technique. Data collection would ceased immediately if the government-initiated interventions were changed or, as actually occurred, when enough participants responded.

The survey involved voluntary participation, thus being susceptible to the over- and under-sampling of certain subgroups. To take the most conservative and accurate approach regarding inferring the adult population, all over- and underrepresented subgroups were assigned appropriate post-stratification weights that were proportionate to the distribution of each subgroup in the population. More weight was assigned to the underrepresented units and less weight to the overrepresented units. Gender, education, geographic region, and ethnic distribution proportionate to each ethnic group were weighted to represent their exact distributions and frequencies in the population. Figure 1 presents the precise distributions used to calculate these post-stratification weights. An iterative algorithm (i.e.,

raking ratio estimation) was used to avoid a circumstance in which the matching of the distribution of one factor unmatched the distribution of the others. This iterative algorithm post-stratifies factors by turn, leading to a converging set of weights for each factor that matches the population distribution. All main analyses (i.e., prevalence estimations and all three regression models) and estimates provided involve the use of this representative, weighted, and adjusted sample. Post-stratification weights were assigned using the R-package "survey."

Sensitivity analyses involving solely the participants were obtained through random selection. Approximately 70% of the subjects in the present study were randomly obtained, while the remaining 30% were contacted in a non-random manner. Consequently, we selected a random, post-stratified proportion (i.e., a subsample) of only those participants found using the random selection technique through the Facebook Business algorithm. This subsample was used for sensitivity analyses to further assess the robustness and replicability of the main results from the original sample. These sensitivity analyses were also conducted following the matching of the demographic subgroups to their exact distribution in Norway (e.g., parental role, education levels, marital status, and psychiatric diagnoses). The degree to which these sensitivity analyses involving randomly selected participants replicated the main findings will be reported. The results from sensitivity analyses involving only randomly obtained participants, with subgroups precisely matched to population parameters, revealed indifferent prevalence estimates for depression (22.6%) and anxiety (21.4%) compared to the full sample (25.3% and 24.2%, respectively), revealing nearly identical estimates as the main findings and providing further support for the robustness of the presented results. In addition, the main findings from the regression analysis were replicated in the sensitivity analysis.

This study is part of the Norwegian COVID-19 Mental Health and Adherence Project. Ethical approval for the study was granted by the Regional Committee for Medical and Health Research Ethics and the Norwegian Centre for Research Data. The preregistered protocol can be found at clinicaltrials.gov (Identifier: NCT04377074).

2.3 | Measures

2.3.1 | Demographics and COVID-19-specific questions

The demographic variables included parent age, gender, ethnicity, education, marital status, employment, and total number of children in the household. Additional COVID-19-related questions concerned working from home, whether parents had a current psychiatric diagnosis, and whether they were home with their children due to the closure of schools/kindergartens/workplaces. To measure adherence to the implemented distancing measures, individuals were asked to what extent they followed the measures by socially distancing themselves from public activity and peers for at least 10 out of 14 days.

Sample characteristics

Sex
- Female (79.51%)
- Male (20.49%)

Geographic region
- Eastern Norway (58.67%)
- Western Norway (27.92%)
- Mid-Norway (9.98%)
- Northern Norway (3.42%)

Education
- Did not complete Junior High School (0.03%)
- Completed Junior High School (2.58%)
- Completed High School (18.36%)
- Currently studying (4.92%)
- Completed University Degree (74.10%)

Ethnicity
- Native (94.59%)
- Non-native (Overall 5.41% across different subgroups)

Proportion of healthcare and social workers
- Health care workers (22.90%)
- Others (77.10%)

Population distribution used for the calculation of post-stratification weights

Sex
- Female (49.77%)
- Male (50.23%)

Geographic region:
- Eastern Norway (58.32%)
- Western Norway (20.28%)
- Mid-Norway (15.95%)
- Northern Norway (5.45%)

Education
- Did not complete Junior High School (0.10%)
- Completed Junior High School (25.30%)
- Completed High School (37.00%)
- Currently studying (6.70%)
- Completed University Degree (30.90%)

Ethnicity
- Native (85.59%)
- Non-native (Overall 14.10%, weights assigned precisely to each appropriate subgroup)

Proportion of healthcare and social workers
- Health care workers (12.70%)
- Others (87.30%)

FIGURE 1 Post-stratification weighting of participants

2.3.2 | Parental stress

Items from the Danish Parental Stress Scale (Danish PSS) were used to assess parental stress (Pondoppidan et al., 2018). The scale was developed as a short measure to determine perceived stress related to the parental role. The Danish PSS is divided into two subscales: the parental stress subscale and the parental satisfaction subscale. Three items from the parental stress subscale were chosen by a panel of clinical experts through a consensus process to avoid topological overlap and reduce the response burden on participants. Parents were asked to rate the following statements on a five-point Likert scale, which ranged from strongly disagree (1) to strongly agree (5): (1) "I feel overwhelmed by the responsibility of being a parent"; (2) "The major source of stress in my life is my child(ren)"; and (3) "I find it difficult to balance responsibilities because of my child(ren)." Higher scores indicated higher levels of parental stress (possible range 3–15). Cronbach's alpha was calculated to be 0.77 for the selected items. The parental satisfaction subscale was not applied in this study.

2.3.3 | Symptoms of depression

The Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001) was employed to measure depression. The PHQ-9 is routinely used to assess symptoms of depression under the diagnostic criteria for

major depressive disorder. It consists of nine items scored on a four-point Likert scale (0–3). Obtaining higher scores on the PHQ-9 indicates greater depression severity. A score of 10 or more is considered the cut-off associated with the presence of a depressive diagnosis (Kroenke et al., 2001). Cronbach's alpha was calculated to be 0.88 for this questionnaire.

2.3.4 | Symptoms of anxiety

The Generalized Anxiety Disorder 7 (GAD-7; Spitzer et al., 2006) assessment was used to measure anxiety. The GAD-7 is scored on a four-point Likert scale (0–3) and includes, for example, "Feeling nervous, anxious or on edge." The scores ranged from 0 to 21, and higher scores indicate greater anxiety severity. A commonly used cut-off to indicate an anxiety diagnosis is a score of eight or more. This cut-off for GAD-7 has been validated to determine the presence of an anxiety disorder (e.g., Johnson et al., 2019) and thus has been used in this work. Cronbach's alpha was calculated to be 0.88 for the GAD-7.

2.3.5 | Burnout

Burnout was measured by asking respondents if they, during the two past weeks, "have felt burned out or close to feeling burned out." The item was scored on a four-point Likert scale ranging from not at all

agree (0) to almost every day (4). Higher scores indicate greater burnout severity.

2.3.6 │ Positive metacognitive beliefs about worry

Positive metacognitive belief about worry was assessed using a single item from the Cognitive-Attentional Syndrome Questionnaire (CAS-1; Nordahl & Wells, 2009). CAS-1 consists of items aimed at measuring positive and negative metacognition and maladaptive coping strategies. For the scope of this study, one item designed to measure positive metacognition beliefs about worry was selected: "Worrying helps me cope." Respondents were asked to score this statement on an 11-point Likert scale ranging from do not at all agree (0) to strongly agree (11).

2.3.7 │ Anger towards Child(ren)

Anger towards child(ren) was measured by asking respondents if they "were angrier and more frustrated with their child(ren) than usual during the two past weeks." The item was scored on a five-point Likert scale ranging from do not at all agree (1) to strongly agree (5). Higher scores indicate more anger towards child(ren).

2.3.8 │ Difficulty working from home

The difficulty of working from home was measured by asking respondents to rate the following statement: "It is difficult for me to work from home." The item was scored on a four-point Likert scale ranging from do not at all agree (0) to almost every day (4). Higher scores indicate greater difficulty in working from home.

2.3.9 │ Self-efficacy

The General Self-Efficacy Scale (GSES; Schwarzer & Jerusalem, 1995), a 10-item scale, investigates an individual's beliefs regarding the ability to cope with a variety of difficult demands and daily hassles. It was used to examine self-efficacy. The two items included in the study (i.e., "I can always manage to solve difficult problems if I try hard enough" and "I am confident that I could deal efficiently with unexpected events") were scored on a four-point Likert scale from 0 (not at all true) to 4 (exactly true). Higher scores were associated with greater self-efficacy. The reliability analysis revealed a Cronbach's alpha of 0.68 for the selected items.

2.3.10 │ Social support

Social support was investigated by asking respondents to rate the following statement: "I have received sufficient social support of immediate people in close relationships." The item was scored on a four-point Likert scale ranging from do not at all agree (0) to almost every day (4). Thus, higher scores indicate greater social support.

2.4 │ Statistical analysis

Data obtained from the survey were subjected to analysis using the RStudio software (Version 1.2.5042). The significance was set at $p < 0.001$. Descriptive statistics, mean levels of parental stress, and prevalence rates for depression and anxiety across the subgroups (i.e., parental role, marital status, number of children, preexisting psychiatric diagnosis, education level, and occupation) were computed. A series of multivariate analyses of variance (MANOVAs) were performed to test whether demographics (i.e., parental role, age, number of children, and preexisting psychiatric diagnoses) were associated with higher levels of parental stress and symptoms of anxiety and depression (H1). MANOVAs were computed with parental stress, anxiety, and depression as the dependent variables and the subgroups (parental role and age, marital status, number of children, and preexisting psychiatric diagnoses) as the independent variable. The mean levels of parental stress and symptoms of depression and anxiety were further calculated using independent sample t-tests for parents who reported that they were home with their children and predominantly followed the distancing protocols compared to parents who did not isolate in the same manner (H2).

Hierarchical multiple regression analyses were conducted to test the variables associated with parental stress. In this type of analysis variables are added to the model in separate steps, with the aim of controlling for specific variables. In the first regression model for the variables predicting parental stress, the predictors were entered in two steps. First, demographic characteristics (i.e., parental role and age, preexisting psychiatric diagnosis, marital status, and number of children in the household) were computed, followed by risk factors (i.e., burnout, positive worry beliefs, anger at the child, and difficulty working from home) and protective factors (social support and self-efficacy) (H3). In the second and third regression models for the variables predicting symptoms of depression and anxiety, the variables were entered in two steps. First, the preexisting demographic characteristics (i.e., parental role and age, preexisting diagnosis, marital status, and number of children in the household) were computed. During step two, parental stress was entered as a risk factor in the regression models (H4). In the regression analyses, multicollinearity and other assumptions were checked. It was verified whether the multicollinearity assumption was violated, that is, if VIF < 5 and tolerance >0.2 (Hocking, 2013). Given the large sample size, a more conservative significance criterion of 0.01 was predefined. Furthermore, a partial correlation was reported, which measured the strength of the relationship between two continuous variables while controlling for other variables. Thus, the partial correlation makes it possible to investigate the variables' relative strengths.

3 | RESULTS

3.1 | Sample characteristics

The sample (N = 2868) consisted of parents aged 21–83 (M = 40 years, SD = 8.3), with most being mothers (79.5%) and married/cohabitating parents (85.2%). Detailed sample characteristics are reported in Table 1. A portion (16%, n = 452) of the parents reported having a preexisting psychiatric diagnosis, which reflects the lower end of the known rate of psychiatric disorders in the adult population of Norway, which is 16% –25% (Norwegian Institute of Public Health, 2016).

3.2 | Level of parental stress and prevalence of depression and anxiety

The mean levels of parental stress for the total sample and across subgroups in the sample are presented in Table 2. The reported prevalence above the standardized cut-off levels for the total sample was 25.3% for depression and 24.2% for anxiety. Symptoms of depression (M = 6.48, SD = 5.21) and anxiety (M = 5.24, SD = 4.35) above the diagnostic cut-off are further shown in Table 3.

Parents who reported being home with their children and predominantly following confinement measures by socially distancing from public activity and peers at least 10 out of 14 days presented significantly higher levels of parental stress (M = 7.24, SD = 3.18) compared to parents who did not isolate in the same manner (M = 6.55, SD = 2.95), (t(2863) = −4.83, p < 0.001). A similar pattern was found for both depression and anxiety. The percentage of parents meeting the diagnostic cut-off (%) for depression was higher for those who reported that they were home with their children and predominantly followed the distancing protocols (29%) compared to those who did not isolate in the same manner (13%), (t(2863) = −6.37, p < 0.001). Similarly, the percentage of parents who met the diagnostic cut-off (%) for anxiety was higher for those who reported they were home with

TABLE 2 Level of parental stress across subgroups

	M (SD)
Total sample	6.86 (3.11)
Parental role	
Mother	7.2 (3.2)
Father	6.3 (2.9)
Parent age	
21–30	7.4 (3.1)
31–44	7.3 (3.1)
45–64	5.7 (2.8)
65+	5.2 (2.6)
Marital status	
Married/cohabitating	6.88 (3.15)
Single parent	6.88 (3.15)
Number of children	
1 child	6.99 (3.13)
2 or more children	7.63 (3.19)
Pre-existing psychiatric diagnosis	
Yes	7.7 (3.4)
No	6.7 (3.1)
Occupation	
Employed	7.12 (3.11)
Unemployed	6.77 (3.27)

Note: Effect sizes are calculated based on Cohen's d.

TABLE 3 Prevalence of depression- and anxiety symptoms above diagnostic cutoff across subgroups

	n (%)	n (%) PHQ-9	n (%) GAD-7
Total sample	2868	659 (25.3*)	667 (24.2*)
Parental role			
Mother	2281 (79.5)	519 (36.3*)	480 (34.0*)
Father	587 (20.5)	209 (14.5*)	210 (14.6*)
Parent age			
21–30	359 (12.5)	123 (38.5*)	122 (37.6*)
31–44	1728 (60.3)	420 (26.5*)	434 (25.9*)
45–64	768 (26.8)	115 (16.8*)	111 (14.3*)
65+	13 (0.5)	1 (8.6*)	0 (0.0*)
Marital status			
Married/cohabitating	2447 (85.3)	509 (21.9*)	532 (21.9*)
Single parent	421 (14.7)	150 (37.5*)	135 (32.0*)
Number of children			
1 child	2407 (83.9)	566 (26.3*)	571 (25.1*)
2 or more children	461 (16.1)	93 (19.8*)	96 (18.2*)
Pre-existing psychiatric diagnosis			
Yes	548 (15.7)	338 (61.7*)	312 (57.0*)
No	2317 (84.3)	390 (16.8*)	378 (16.3*)
Occupation			
Employed	2090 (72.8)	363 (17.4*)	383 (18.3*)
Unemployed	775 (27.2)	365 (47.1*)	307 (40.0*)

Note: *All highlighted prevalence statistics are based on the weighted and representative sample adjusting the proportions in the subgroups to their known proportions in the population.

Abbreviations: GAD-7, The Generalized Anxiety Disorder 7; PHQ-9, The Patient Health Questionnaire.

their children and predominantly followed the distancing protocols (27%) than for those who did not isolate in the same manner (15%), ($t(2863) = -6.31$, $p < 0.001$).

3.3 | Parental stress, anxiety, and depression across age groups

The MANOVA performed on the distinction between levels of parental stress, anxiety, and depression in the age groups in the sample displayed a statistically significant difference in parental stress, anxiety, and depression across the age groups ($F_{(3, 2861)} = 22.40$, $p < 0.001$; Wilks's $\Delta = 0.93$, partial $\eta^2 = 0.023$). The follow-up ANOVA revealed that the parents in the four age groups varied significantly in terms of all three measures: depression ($F_{(1, 2864)} = 25.35$, $p < 0.001$), anxiety ($F_{(1, 2866)} = 26.96$, $p < 0.001$), and levels of parental stress ($F_{(1, 2866)} = 54.05$, $p < 0.001$).

3.4 | Parental stress, anxiety, depression and parental role

The next MANOVA, performed on the divergence between the levels of parental stress, anxiety, and depression in the parental role, showed a statistically significant difference in parental stress, anxiety, and depression symptomatology among mothers and fathers ($F_{(3, 2861)} = 31.55$, $p < 0.001$; Wilks's $\Delta = 0.968$, partial $\eta^2 = 0.032$). As expected, the follow-up analysis of variance (ANOVA) revealed that the mothers and fathers differed significantly in all three measures. The mothers reported significantly higher levels of parental stress ($F_{(1, 2866)} = 34.95$, $p < 0.001$), and more symptoms of anxiety ($F_{(1, 2866)} = 81.73$, $p < 0.001$) and depression ($F_{(1, 2866)} = 70.83$, $p < 0.001$) than did fathers.

3.5 | Parental stress, depression and anxiety, number of children and marital status

A third MANOVA revealed a statistically significant difference in the parental stress, anxiety, and depression among parents who lived with more than one child compared to parents who lived with one child ($F_{(3, 2861)} = 9.15$, $p < 0.001$; Wilks's $\Delta = 0.99$, partial $\eta^2 = 0.009$). The parents who lived with more than one child differed significantly in terms of the levels of parental stress experienced ($F_{(1, 2866)} = 15.96$, $p < 0.001$), but not regarding symptoms of anxiety and depression. A fourth MANOVA revealed a statistically significant difference in the levels of parental stress, anxiety, and depression among married/cohabitating parents compared to single parents ($F_{(3, 2864)} = 24.18$, $p < 0.001$; Wilks's $\Delta = 0.97$, partial $\eta^2 = 0.025$). In addition, single parents reported significantly more symptoms of depression ($F_{(1, 2866)} = 51.97$, $p < 0.001$) and anxiety ($F_{(1, 2866)} = 25.09$, $p < 0.001$), but not higher levels of parental stress.

3.6 | Parental stress, depression, anxiety and preexisting psychiatric diagnoses

The next MANOVA yielded a statistically significant difference in levels of parental stress, anxiety, and depression among parents with preexisting psychiatric diagnoses compared to those who did not report preexisting diagnoses ($F_{(3, 2864)} = 224.26$, $p < 0.001$; Wilks's $\Delta = 0.810$, partial $\eta^2 = 0.190$). As expected, the follow-up ANOVA revealed that the parents from the two groups differed significantly with respect to all three measures: symptoms of depression ($F_{(1, 2866)} = 628.41$, $p < 0.001$) and anxiety ($F_{(1, 2866)} = 475.76$, $p < 0.001$), and levels of parental stress ($F_{(1, 2866)} = 29.26$, $p < 0.001$).

3.7 | Variables associated with parental stress, anxiety, and depression

The correlations between the measures can be found in Table 4. The first hierarchical multiple regression model, as shown in Table 5, revealed that the most important variable associated with parental stress was parental age, which explained 21% of the variation in parental stress. Preexisting psychiatric diagnoses also contributed significantly to the regression model, accounting for 12% of the variation in parental stress. Finally, the number of children explained an additional 11% of the variation in parental stress. Neither parental role (mother vs. father) nor marital status (married/cohabitating vs. single parents) were found to be significant variables associated with parental stress. Moreover, 31.7% of the parental population reported that they were angrier and more frustrated with their child(ren) than usual during the social distancing period. The most important predictor of parental stress, added at step two, was the anger towards the child, which uniquely explained 41% of the variation in parental stress. Nearly one-fourth (24%) of the parents reported that they have felt burned or close to feeling burned more than half the days during the social distancing period. Burnout explained 11% of the variation in parental stress. Similarly, social support explained an additional 11% of the variation in parental stress. Together, the three independent variables accounted for 63% of the variance in parental stress. Contrary to our hypothesis, self-efficacy as a protective factor and positive metacognitive beliefs (i.e., worrying helps me cope) as a risk factor, were not associated with parental stress. The hierarchical multiple regression conducted with depression and anxiety symptoms as the dependent variable, parental role and age, preexisting psychiatric diagnosis, number of children, and marital status were entered at step one of the regressions. Parental stress was entered as a risk factor during step two. As shown in Table 6, the hierarchical multiple regression model revealed that at step one, the most important variable associated with symptoms of anxiety was the preexisting psychiatric diagnosis, which explained 39% of the variation in the symptoms of anxiety. Parental role (mother vs. father) also contributed significantly to the regression model, accounting for 17% of the variation in the symptoms of anxiety. Finally, parental age explained an additional 16% of the variation in symptoms of anxiety.

TABLE 4 Pearson correlation matrix of key variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Parental stress	1								
2. PHQ-9	0.368**	1							
3. GAD-7	0.336**	0.775**	1						
4. Positive worry beliefs	0.058**	0.116**	0.147**	1					
5. Burnout	0.392**	0.680**	0.595**	0.076**	1				
6. Angry at child	0.591**	0.340**	0.345**	0.014**	0.342**	1			
7. Difficulty working from home	0.298**	0.159**	0.149**	0.062**	0.216**	0.258**	1		
8. Social support	−0.282**	−0.339**	0.634**	−0.016**	0.720**	−0.216**	−0.079**	1	
9. Self efficacy	−0.194**	−0.332**	−0.341**	−0.100*	−0.229**	−0.156**	- 0.041**	0–235**	1

Note: **$p < 0.01$.

Abbreviations: GAD-7, The Generalized Anxiety Disorder 7; PHQ-9, The Patient Health Questionnaire.

TABLE 5 Summary of hierarchical regression analysis for variables predicting parental stress

Variable	B	SE	p	sr²	R²
Step 1					0.08
Parental role (mother/father)	−0.17	0.18	0.32	0.03	
Parental age	−0.07	0.01	<0.001	0.21	
Pre-existing psychiatric diagnosis	0.93	0.26	<0.001	0.12	
Number of children	0.45	0.12	<0.001	0.11	
Marital status	−0.09	0.25	0.72	0.01	
Step 2					0.39
Positive worry beliefs	0.02	0.05	0.64	0.01	
Burnout	0.48	0.10	<0.001	0.11	
Angry at child	1.06	0.07	<0.001	0.41	
Difficult to work from home	0.11	0.06	0.05	0.06	
Social support	−0.32	0.08	<0.001	0.11	
Self-efficacy	−0.11	0.07	0.12	0.04	

Note: All reported statistics are based on the weighted and representative sample.

Together, the three independent variables accounted for 72% of the variance in the symptoms of anxiety. Number of children and marital status were not found to be significant variables connected with symptoms of anxiety.

A similar trend was revealed for the symptoms of depression, where the hierarchical multiple regression revealed that at step one, the most important variable associated with the symptoms of depression was a preexisting psychiatric diagnosis, which explained 38% of the variation in depression symptoms. Parental role (mother vs. father) also contributed significantly to the regression model, accounting for 16% of the variation in the symptoms of anxiety. Parental age explained an additional 18% of the variation in the symptoms of anxiety. Number of children and marital status were not found to be significant regarding symptoms of anxiety. Together, the

three independent variables (preexisting psychiatric diagnosis, parental role, and parental age) accounted for 72% of the variance in symptoms of both anxiety and depression.

4 | DISCUSSION

The present study adds to the literature on time-sensitive studies on parental perceived distress among a large sample of parents in the first wave of the COVID-19 pandemic, when the entire population collectively experienced sudden, radical changes in daily routines due to strict distancing measures. Overall, our findings are consistent with recent research that has reported that many parents have experienced deteriorating mental health due to the pandemic, including stress, anxiety, and depression (Adams et al., 2021; Calvano et al., 2021; Marchetti et al., 2020). The tendency for greater parental stress to be linked with more depression and anxiety is in line with the existing literature, which, regardless of the pandemic, points towards a relationship between parental stress and symptoms of depression and anxiety (e.g., Crugnola et al., 2016; Pripp et al., 2010; Rollè et al., 2017; Vismara et al., 2016). Additionally, similar studies as the present one have reported a significant association between COVID-19-related stressors, parental stress, anxiety, and depression (e.g., Brown et al., 2020; Russell et al., 2020; Spinelli et al., 2020).

Furthermore, the expectation that parents who predominantly followed the distancing protocols were more affected by psychological distress is in line with recent research, which shows that quarantine is generally associated with a high prevalence of psychological distress (Brooks et al., 2020; Ebrahimi et al., 2021; Zhao et al., 2020), particularly among quarantined parents (Brown et al., 2020; Calvano et al., 2021; Spinelli et al., 2020).

Despite our findings indicating that the profound effects of distancing interventions on mental health problems seem to affect mothers more than fathers, parental role was not a significant predictor of parental stress, which is contrary to findings reported in comparable studies (e.g., Marchetti et al., 2020; Spinelli et al., 2020;

TABLE 6 Summary of hierarchical regression analysis for variables predicting depression and anxiety

Variable	B	SE	p	sr²	R²
PHQ-9					
Step 1					0.27
Parental role (mother/father)	−1.84	0.31	<0.001	0.17	
Parental age	−0.09	0.02	<0.001	0.16	
Pre-existing psychiatric diagnosis	5.49	0.46	<0.001	0.39	
Number of children	−0.39	0.18	0.03	0.06	
Marital status	−1.07	0.45	0.02	0.08	
Step 2					0.35
Parental stress	0.51	0.05	<0.001	0.30	
GAD-7					
Step 1					0.25
Parental role (mother/father)	−1.43	0.25	<0.001	0.16	
Parental age	−0.09	0.01	<0.001	0.18	
Pre-existing psychiatric diagnosis	4.32	0.37	<0.001	0.38	
Number of children	−0.22	0.14	0.12	0.04	
Marital status	−0.29	0.37	0.43	0.03	
Step 2					0.32
Parental stress	0.39	0.04	<0.001	0.28	

Note: All reported statistics are based on the weighted and representative sample.

Mousavi, 2020; but see; Russell et al., 2020). Furthermore, our findings regarding parental role were not in line with most of the existing literature, which indicates that mothers are more vulnerable to stress in life situations associated with increased levels of parenting stress (e.g., Hildingsson & Thomas, 2014; Skari et al., 2006) and that mothers often experience more stress than fathers when attempting to balance employment and domestic activities such as caregiving responsibilities (Powell & Craig, 2015). Hence, the differences regarding gender differences in parental roles and parental distress, in the findings of recent COVID-related studies, as well as in the existing research literature, indicate that gender gaps differ according to cultural distinctions.

The most important predictor of parental stress was parental age, which explained 21% of the variation in parental stress. Contrary to our expectations, younger parents (ages 21–44) reported significantly higher levels of parental stress. The highest levels of anxiety and depression symptoms were found among the youngest parents (ages 21–30), with 37% of them reporting symptoms above the cut-off points for anxiety, and 38% for depression. These findings may reflect a general vulnerability among younger parents, who have less experience with parenting combined with the increased burden of having younger children to care for. Our study's findings corroborate those of Marchetti and colleagues (2020), who found that greater parenting-related exhaustion was associated with having younger children. In addition, this finding related to young parents is also supported by research suggesting that being younger is more associated with postnatal depression (Leigh & Milgrom, 2008; Rubertsson

et al., 2003). This tendency regarding age differences was accompanied by the finding that parents who lived with more than one child in the household reported experiencing more parental stress. In addition, the number of children explained an additional 11% of the variation in parental stress. However, a similar tendency was not found for anxiety and depression, suggesting that parents with multiple children may be more vulnerable to parental stress than to anxiety and depression. Furthermore, our findings revealed that single parents reported significantly more depression and anxiety compared to married/cohabitating parents. This finding may reflect the mental health struggles that single parents may experience in general due to loneliness, financial hardships, unemployment, childcare responsibilities, and lack of social support (Crosier et al., 2007), but also due to mental health problems concerning the ongoing pandemic, where single parents may have found that their support systems, including daycare centres, and schools, and social support from key resources, collapsed during the lockdown. In the current study, social support, considered a key resource for parental coping and resilience regardless of marital status, explained 11% of the variation in the levels of parental stress. This finding is in line with the literature suggesting that social support affects personal resources necessary for coping adaptively to parental stress (Moreno et al., 2020; Moscardino et al., 2021) and has been found to be a protective factor against excessive distress among parents during the COVID-19 pandemic (Ren et al., 2020). Contrary to our hypothesis, self-efficacy was, however, not found to be a significant predictor of parental stress, which is not consistent with research indicating that

self-efficacy may serve as a powerful protective buffer against parental distress and parents' ability to provide quality parenting, even when facing major challenges (e.g., Crnic & Ross, 2017; Raikes & Thompson, 2005). Contrary to what has previously been reported in studies that point towards a relationship between stress, coping styles, and symptomatology in general (e.g., Garnefski et al., 2003; Seiffge-Krenke, 2000) and positive metacognitive beliefs and symptomatology in particular (e.g., Capobianco et al., 2020; Ryum et al., 2017; Wells, 2009), positive metacognitive beliefs about worry (i.e., worrying helps me cope) were not a significant predictor of parental distress. Although, studies have reported a significant association between negative coping strategies and parental stress during the COVID-19 lockdown (Achterberg et al., 2021), our findings could indicate that positive beliefs about worry may not be a risk factor for COVID-19-related parental stress.

The robust finding that parents with a preexisting psychiatric diagnosis reported significantly higher parental stress, accompanied by the tendency that preexisting psychiatric diagnoses explained much of the variation in parental stress, anxiety, and depression symptomatology, strongly suggests that people with preexisting mental health conditions may be particularly affected by stressors associated with the COVID-19 lockdown. This tendency aligns with the findings that people with pre-existing mental health problems might be particularly affected by isolation and the loss of access to mental health support, which might increase their vulnerability during the COVID-19 lockdown (Asmundson et al., 2020; Holmes et al., 2020; Moreno et al., 2020). Our finding is also comparable with that of studies indicating that parents with preexisting psychiatric diagnoses, such as a depression and anxiety, are at greater risk of experiencing parental stress, which may, in turn, result in depression and anxiety (e.g., Crugnola et al., 2016; Vismara et al., 2016).

The most important predictor of parental stress was anger at the child, which uniquely explained 41% of the variation in parental stress. Approximately one-third of the participants in the current study reported that they were angrier towards their child(ren) than usual during the lockdown period. Based on the tenets of family stress theory, these findings may indicate that the accumulating sources of stress that have affected the parents may, in turn, have triggered a cascade of risks that affect the stability and functionality of the family life (Patterson, 2004). Increased burdens on parents due to home confinement may have led to more anger expression and perceived burnout, significantly associated with parental stress, which, in turn, is significantly associated with depression and anxiety symptoms. These findings stem from a considerable body of literature indicating that anger and parental stress are strongly interrelated (Rodriguez & Richardson, 2007) and that higher levels of burnout are associated with higher levels of anger expression (Baruch-Feldman et al., 2002; De la Rubia et al., 2013; Muscatello et al., 2006). During the pandemic, experts have been extensively concerned about the well-being of children, given the acute awareness of parents' and caregivers' distress and burden (e.g., Cluver et al., 2020; Liu et al., 2020; Reupert & Maybery, 2016). The

stress experienced by adults is often mirrored in children and children look to parents and significant adults for how to manage their emotions following a disaster (Lazarus et al., 2002). Given the adverse outcomes of these disorders for children (Lieb et al., 2002; Mufson et al., 1992; Weissman et al., 1984), this may be a cause for concern that will be important to monitor in the forthcoming post-pandemic period.

The COVID-19 pandemic has historically provided rare opportunities for studying mental health responses among population subgroups, including parents. These opportunities also present possibilities for improving mental health services specifically aimed at the well-being and mental health of parents and families. Studies that provide timely data regarding parental distress over the initial course of the COVID-19 pandemic, such as the current one, present various practical implications for both meso- and macro-level policymaking and offer support for potential aims of public health and clinical interventions. Informative research on the mental health implications of the current mitigation strategies for parents and families is urgently needed to allow policymakers to evaluate the impact of the same and, subsequently, make informed decisions aimed at reducing viral transmission and protecting the vulnerable while shielding parents and children against adverse mental health outcomes. The high level of reported parental distress among isolated parents in the current study, considered together with the findings of other recent studies on parenting-related stress during the COVID-19 lockdown, strongly suggests that public health professionals conducting post-pandemic surveillance for mental health responses should consider identifying mental health problems in parents and their children. An evaluation of parental stress and psychopathology levels could further support a fundamental understanding of what parents are struggling with during the pandemic to inform the development of interventions aimed at reducing consequent increases in parental stress and mental health responses. Moreover, the association between parental stress and anger documented in the literature, which is further associated with the increased risk of child abuse and neglect, highlights the need for health care providers to integrate children's welfare into future risk reduction and preparedness as they strengthen parents and families by providing them with support resources. Since pandemics represent a unique social crisis and do not involve congregate sites for prolonged support and recovery, they require specific response strategies to provide for the mental health needs of parents and their children. Hence, the most effective intervention and prevention programs facilitate development in parental coping skills, along with reductions in parenting stress. Virtual support, including online or phone counselling, text support, and online support groups, may be developed in situations where face-to-face services are limited.

In conclusion, the present study supports the notion that mental health problems may be accumulating because of the pandemic, with the isolation, the work burden on parents, and the stress potentially caused by loss of income and employment revealed to be associated with increased mental health problems. However, beyond the short-term impacts revealed by the present study, there remains an urgent

need for future studies to monitor long-term aversive mental health outcomes among parents and children.

4.1 | Strengths and weaknesses of this study

The current study captured time-sensitive information regarding the detrimental effects of distancing protocols on parental distress and explored the relationship between parental stress and multi-domain factors during the COVID-19 lockdown in a large and random sample.

Similar protocols are applied globally, making the study's findings generalizable across cultures employing similar protocols. Another strength of the present study is its large and random sample of parents experiencing identical government-initiated interventions across the measurement period. No further information was given concerning the modification of these strategies to control for expectation effects. The lack of pre-pandemic baseline measures from the sample and the study's cross-sectional nature impairs our ability to draw causal conclusions based on the results. This issue may be solved in future research by investigating parental stress across multiple time periods. The study may also benefit from including parents' experiences with positive outcomes related to family life and coping strategies.

Some variables—namely, burnout, social support, and anger aimed at child(ren)—were measured based on non-validated single items. Parental stress and self-efficacy were measured on the basis of selected items from the Danish PSS and the GSES, which is considered a limitation of the study in the context of reporting levels of parental stress across subgroups. Although a full set of items would capture specific constructs more effectively, single items are useful for capturing specific constructs without compromising practical constraints, including survey length and respondent burden, which, again, may compromise sample size. As with all online survey studies, social desirability and response biases are considered as study limitations. Moreover, since it was an online survey study, we may not have reached parents without Internet access or reached mainly those who were technologically savvy.

CONFLICT OF INTEREST
All authors declare that they have no conflicts of interest.

DATA AVAILABILITY STATEMENT
The ethical approval granted by the Regional Committees for Medical and Health Research Ethics in Norway and in accordance to the information given to the participants in the informed consent form regarding the use of data, does not allow the authors to submit the data to a public repository. In line with the ethical approval, the data are to be kept at a secure server only accessible by the authors of this study. The data are stored at the TSD-system, which is part of the long-term storage facility at the University of Oslo. Data will be stored at least five years in accordance to the ethical approval granted by the Regional Committees for Medical and Health Research Ethics in Norway. Access to the data can be granted following ethical approval of suggested project plan for the use of data from NSD and REK. Such requests are to be sent to Associate Professor, Miriam S. Johnson, Faculty of Health Sciences, Oslo Metropolitan University, email: mirsin@oslomet.no, Associate Professor, Sverre Urnes Johnson, Department of Psychology, University of Oslo, Email: s.u.johnson@psykologi.uio.no, or to psychologist Omid V. Ebrahimi, Email: omid.ebrahimi@psykologi.uio.no.

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