



# Prayer and meditation practices in the early COVID-19 pandemic: A nationwide survey among Danish pregnant women. The COVIDPregDK study

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## ARTICLE INFO

### Article history:

Received 9 March 2022

Revised 17 April 2023

Accepted 6 May 2023

### Keywords:

Pregnancy

Covid-19

Existential meaning

Prayer

Meditation

## ABSTRACT

**Background:** The emergence of the COVID-19 pandemic and the derived changes in maternity care have created stress and anxiety among pregnant women in different parts of the world. In times of stress and crisis, spirituality, including spiritual and religious practices, may increase.

**Objective:** To describe if the COVID-19 pandemic influenced pregnant women's considerations and practices of existential meaning-making and to investigate such considerations and practices during the early pandemic in a large nationwide sample.

**Methods:** We used survey data from a nationwide cross-sectional study sent to all registered pregnant women in Denmark during April and May 2020. We used questions from four core items on prayer and meditation practices.

**Results:** A total of 30,995 women were invited, of whom 16,380 participated (53%). Among respondents, we found that 44% considered themselves believers, 29% confirmed a specific form of prayer, and 18% confirmed a specific form of meditation. In addition, most respondents (88%) reported that the COVID-19 pandemic had not influenced their responses.

**Conclusion:** In a nationwide Danish cohort of pregnant women, existential meaning-making considerations and practices were not changed due to the COVID-19 pandemic. Nearly one in two study participants described themselves as believers, and many practised prayer and/or meditation.

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## Introduction

The emergence of the coronavirus disease (COVID-19) has resulted in one of the most significant public health threats in recent times (Arshad Ali et al., 2020; Cousins, 2020; Douglas et al., 2020). Our health is affected physically and mentally by COVID-19 and de-

rived control measures (Pfefferbaum and North, 2020; Rajkumar, 2020; Schrøder et al., 2021). In addition, spiritual and existential issues were apparent for particular groups of patients, leading to some healthcare professionals increasing spiritual care to provide more holistic healthcare for those threatened by COVID-19 (Chirico and Nucera, 2020; Ferrell et al., 2020; Roman et al., 2020; Tan et al., 2021). Holistic care is particularly relevant for women and girls as the pandemic has negatively impacted this specific group in relation to sexual and reproductive rights and healthcare (Cousins, 2020; Del Castillo and Del Castillo, 2020; Roesch et al., 2020). In a review of 94 publications, Frisch and Rabinowitsch reported that holistic care described “whole person care”, acknowl-

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edging relations between body-mind-spirit (Frisch and Rabinowitsch, 2019). Holistic care includes existential and spiritual aspects of life. According to the WHO and the Danish National Institute of Public Health, existential and/or spiritual considerations and practices are important components of health, particularly good mental health (Health, 2016; Koushede, 2015; Manuila, 1991). However, only one study has explored pregnant women's perspectives of the existential and spiritual impact of the pandemic (Wheeler et al., 2021).

During the first wave of the COVID-19 pandemic (spring 2020), pregnant women worldwide experienced ongoing and constant updates of recommendations and restrictions related to a potential risk of severe disease associated with pregnancy, place of birth, and partner attendance (Zaigham and Andersson, 2020). For example, in Denmark, partner attendance at antenatal visits was not allowed and was only allowed at birth if the partner had no symptoms and a negative test for COVID-19 (Sundhedsstyrelsen, 2020). Despite variations in precaution initiatives across the globe, the pandemic caused fear and stress among pregnant women worldwide (Bailey and Nightingale, 2020; Rashidi Fakari and Simbar, 2020; Schrøder et al., 2021; Severinsen et al., 2021; Zheng et al., 2020).

Transitioning to motherhood has been identified as a period of pivotal importance that may actualize existential life questions (Crowther et al., 2020; Prinds et al., 2014a). Existential meaning-making considerations and practices have also been reported in Denmark, a highly secular culture: Considerations of meaning and purpose in life have been found to intensify during the transition to motherhood (Prinds et al., 2014b). Furthermore, 65% reported prayer and/or meditation moments in a survey of first-time mothers (6–12 months post-partum) (Prinds et al., 2016). We hypothesize that existential meaning-making considerations and practices, such as prayer or meditation, may have increased during the pandemic. We aimed to describe if pregnant women considered the COVID-19 pandemic to have influenced their existential meaning-making considerations and practises and to investigate such considerations and practices during the early pandemic from a nationwide sample.

## Methods

We conducted a nationwide cross-sectional study using survey data collected from April 24 to May 24, 2020, from all registered pregnant women in Denmark (CovidPregDK study) (Stokholm et al., 2021). The survey design was deemed appropriate, with individual contact essential to obtain knowledge on existential meaning-making practices at an individual level. We used data to describe considerations and practices related to existential meaning-making in pregnancy during the first wave of the COVID-19 pandemic and stratified by parity.

### Study population and material

Using the Danish National Patient Registry, we identified all registered pregnant women and birthing people in Denmark. Therefore, in this paper, we refer to women and birthing people when reporting on methods, findings and analysis from our study. The patient registry is a nationwide hospital register which contains information on all in- and outpatient hospital contacts in Denmark since 1995 (Schmidt et al., 2015). It also holds all associated diagnoses according to the International Classification of Diseases system, version 10, including information on all contacts related to pregnancies and childbirth. Due to the Danish tax-funded health care system, maternity care services are free. Therefore, women were invited to participate in the study if they were registered with an ongoing pregnancy based on a pregnancy-related

nuchal translucency scan with no following registration of miscarriage, induced abortion or childbirth before data extraction. The study population was identified and extracted on April 24, 2020, by the Danish Health Authorities.

During March 2020 we designed a questionnaire to address the COVID-19 pandemic in relation to pregnancy and childbirth (Stokholm et al., 2021). In short, the questionnaire contained 132 questions, including 11 test batteries, focusing on how the pandemic affected pregnant women's mental health and concerns. Questions addressed demographics, general health, COVID-19 symptoms and testing, and mental well-being, including anxiety and stress. The questionnaire is available as supplementary information (online Appendix 1). Most batteries were based on validated scales or constructed specifically to address pregnancy and childbirth-related worries during the pandemic's first wave. For the present study, the questionnaire included four items related to prayer and meditation, the meaning and purpose of life, and whether one understands oneself as a believer. The first three items were developed from the European Value Survey (2008) and have been used previously in other studies with new mothers (Eklund et al., 2020; EVS, 2021; Prinds et al., 2016). The fourth item was specifically developed for this study to investigate how responses related to the COVID-19 pandemic. The study was named the COVIDPregDK study, and the questionnaire and data collection are fully described elsewhere, including the pilot testing where the questionnaire completion time was reported as 15–20 min (Stokholm et al., 2021).

Pregnant women were invited to participate by e-mail sent on April 24, 2020. We used a nationwide mailing system that allows contacts to Danish citizens based on a unique personal identification number assigned to all inhabitants at birth or first immigration (Thygesen et al., 2011). A link to the web-based questionnaire was included in the invitation.

A total of 30,009 pregnant women were invited to participate. If an invited woman did not reply within two weeks, she received a reminder with a new link to the survey. The survey was closed on May 24, 2020. For this particular study, women were included if they had replied to the core items described below.

### Core items

The three most commonly used core items in the value surveys were used in this study (EVS, 2021; Frederiksen, 2019). Firstly, thinking of meaning and purpose in life were addressed in one item, "Do you think of meaning and purpose in life?" and could be answered on a 10-point Likert scale with 1 meaning "no, never" and 10 meaning "yes, often" (EVS, 2021; Frederiksen, 2019; Jebb et al., 2021). Similarly, with the previous use of this item, we chose to dichotomise replies (0–5, 6–10) (Prinds et al., 2014b). Secondly, one item addressed whether respondents saw themselves as believers or not. Thirdly, prayer and meditation practices were addressed in one item, "Do you take some moments of prayer, meditation or contemplation or something like that?" If yes, the respondents were asked which forms of prayer or meditation they practised (Table 1). They could choose between nine different possibilities, whereof five described praying, two described meditation and one was unspecific (multiple replies were possible). Lastly, one item addressed whether respondents considered their responses affected by the COVID-19 pandemic. This item could be answered on a 10-point Likert scale, with 1 meaning "not at all" and 10 meaning "everything".

The application of the four core items was theoretically founded on the concept of existential meaning-making, particularly the Meaning Making Matrix framework developed by la Cour and Hvidt in 2010 (Fig. 1). The concept, as well as the framework, have been used specifically in other studies in health and maternity

# Meaning Making Matrix (MMM)

		Dimensions		
Domains		Knowing	Doing	Being
	Secular			
	Spiritual			
	Religious			

la Cour, P., & Hvidt, N. C. (2010). Research on Meaning-Making and Health in Secular Society. *Social Science & Medicine*, Volume 71, 1292-1129.

Fig. 1. Meaning Making Matrix (copied with permission from authors).

Table 1

Core items.

Existential meaning-making items
Do you take some moments of prayer, meditation or contemplation or something like that? (no/yes)If yes, please explain how you understand prayer or meditation using the phrases below:
<ul style="list-style-type: none"><li>• Prayer in church or at other religious gatherings</li><li>• Prayer as an inner dialog addressed to God</li><li>• Prayer as an inner dialog addressed to 'something greater than myself</li><li>• Prayer as a physical act, e.g. kneeling, folding your hands</li><li>• Prayer as music, e.g. hymns, spirituals</li><li>• Meditation as a physical activity</li><li>• Meditation as a spiritual activity</li><li>• Meditation as a means to maintaining or achieving good mental health</li><li>• Something else, please state what:</li></ul>
Do you think about meaning and purpose in life? (10-point Likert scale)
Independently of whether you go to church or not,would you say you are a...
<ul style="list-style-type: none"><li>• Believer</li><li>• Non-believer</li><li>• Convinced atheist</li><li>• Don't know</li></ul>
How much has the COVID-19 pandemic impacted your answers? (10-point Likert scale)

sciences (Ahmadi et al., 2022; Hansen et al., 2020; Kjørven Haug et al., 2016; Prinds et al., 2018)

Existential is the overarching concept covering the secular, spiritual and religious existential orientations, resources and meaning-making in human life (la Cour and Hvidt, 2010). La Cour and Hvidt proposed coupling the three domains: *knowing, doing and being* to three dimensions of existential meaning-making (*secular, spiritual and religious*) within the Meaning Making Matrix (MMM), to explore the consistency between the concepts of cognition, practice and importance.

In this study, the item on meaning and purpose of life was related to secular meaning-making, whilst the items on prayer and meditation and being a believer or not related to religious and spiritual meaning-making (Fig. 2).

## Covariates

We retrieved background information on age (continuous and categorical), parity (0/≥1+), gestational age by trimester, co-habitant status (alone/alone with children/family), and education (short-, medium-, or long higher education, other) from the COVIDPregDK survey.

## Patient involvement

The face validity of the questionnaire was tested by a panel of six pregnant women (gestational age range between 6 – 38 pregnancy weeks) who gave feedback during and after the development of the questionnaire, resulting in a clarification of questions and a more user-friendly layout.

## Statistical analysis

Demographics and baseline data of the study population were described by medians with interquartile ranges (IQR) for continuous data and frequencies for categorical data. To illustrate the distribution of answers to each question, we tabulated each reply and presented them as plotted figures with information on frequencies. We performed the descriptive analyses stratified by parity to examine if answers differed between nulliparous (0) and multiparous women (1+). Tests for difference were performed using the chi-2 test with a p-value of ≤0.05 considered statistically significant.

## Ethics

The women consented to the study by filling the questionnaire. The study was approved by the Danish National Health Authority and registered in the regional record of research projects (Journal number 20/17416) from the Region of Southern Denmark. Permission to extract and contact the study population was also granted by the Danish Health Authorities (FSEID-00004910). All data was handled and stored according to Danish Law on a secure server at Open Patient data Explorative Network, Odense University Hospital, Odense, Denmark (OPEN, 2019).

	Knowing	Doing	Being
Secular	Thinking about meaning and purpose in life	Prayer or meditation practices	Thinking about meaning and purpose in life
Spiritual	Understanding oneself as believer or not	Prayer or meditation practices	Understanding oneself as believer or not
Religious	Understanding oneself as believer or not	Prayer or meditation practices	Understanding oneself as believer or not

Fig. 2. Core items applied in the Meaning-Making Matrix.

## Results

A total of 17,995 of 30,009 pregnant women filled the questionnaire. Of these, there were 1848 who did not reply to the relevant questions for this study, resulting in 16,380 women (53%) included in this study. Most participating women were in their late twenties/early thirties, and half were multiparous (52%) (Table 2). The vast majority were in their pregnancy's second (50%) or third (49%) trimester. In addition, most women were in a relationship (96%).

### Impact of COVID-19 pandemic on answers

Respondents reported that the COVID-19 pandemic did not impact their responses much, with 66% (nulliparous women; 67%,

multiparous women; 66%) of respondents reporting that their answers were not impacted in any way by the ongoing pandemic (Likert scale score 1) (Supplementary figure). When dichotomised, 88% scored  $\leq 5$ , and 8% had scores  $> 5$ . The difference between nulli- and multiparous women was small (scores  $\leq 5$  88% and 87%, respectively) but reached statistical significance ( $p < 0.05$ ).

### Existential meaning-making – meaning and purpose in life

In general, responses on existential meaning-making were evenly distributed over the 10-point Likert scale, and when dichotomised, 51% scored from 1 to 5, indicating thoughts about meaning and purpose in life were present to a lower extent or not at all, whereas almost half of the respondents (46%) marked scores above 5, indicating that they had thoughts about meaning and purpose in life to some or to a high extent (Fig. 3). We found no statistical difference in reply between nulliparous and multiparous women ( $p = 0.17$ ).

### Existential meaning-making – believers or not

Regarding considerations of being a believer, 44% regarded themselves as believers, and 30% as non-believers (Fig. 4). Seven percent of women were convinced atheists, and 19% did not know. Differences between nulli- and multiparous were small although statistically significant ( $p < 0.05$ ).

### Existential meaning-making – prayer and meditation practices

Regarding prayer and meditation, 41% reported taking some moments to pray and/or meditate, and 56% did not. Among women practicing prayer and/or meditation ( $n = 6719$ ), 70% practised some form of prayer, and 45% some form of meditation. These findings are equivalent to 29%, and 18% among all respondents, irrespective of whether they prayed or meditated (Fig. 5).

Overall, more nulliparous (22%) than multiparous women (15%) reported meditating ( $p < 0.05$ ). The most common form of prayer was, "Prayer as an inner dialog addressed to God" followed by "Prayer as an inner dialog addressed to 'something greater than myself'" (Fig. 6). "Meditation as a means to maintaining or achieving good mental health" was the most common form for meditation.

**Table 2**  
Baseline characteristics of the study population (COVIDPregDK study).

	All
Total (N)	16,380
Age (median)	31.0(28.0;34.0)
<20	35(0.2)
20–29	6628(40.5)
30–39	9089(55.5)
40+	628(3.8)
Parity	
Nulliparous	7913(48.3)
Multiparous	8467(51.7)
Gestational age	
First trimester (0–12+6)	78(0.5)
Second trimester (13–27+6)	8244(50.6)
Third trimester (+28)	7985(49.0)
Cohabitant	
Alone	388(2.4)
Alone with children	245(1.5)
Living with a partner	15,747(96.1)
Education	
Short cycle higher education	1210(7.4)
Medium cycle education	5725(35.0)
Long education	5204(31.8)
Other	4241(25.9)

## Do you think about meaning and purpose in life?

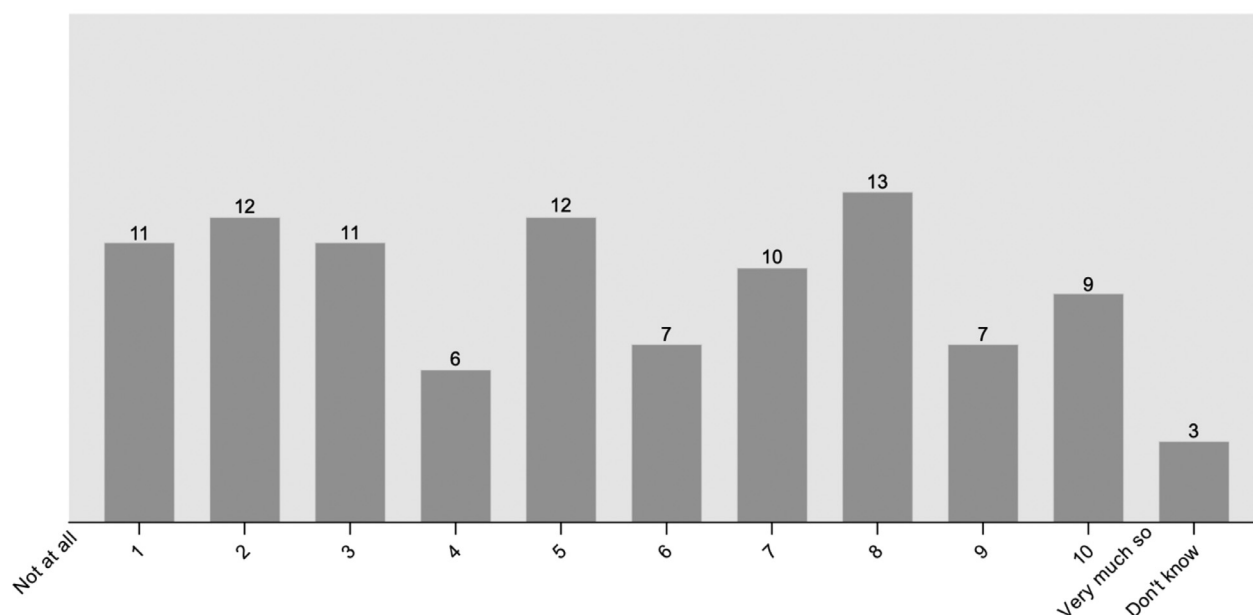


Fig. 3. Thinking of meaning and purpose in life responses, overall, nulli- and multiparous in the COVIDPregDK study. Frequencies listed in percentages ( $n = 16,380$ ).

## Independently of whether you go to church or not, would you say you are a...

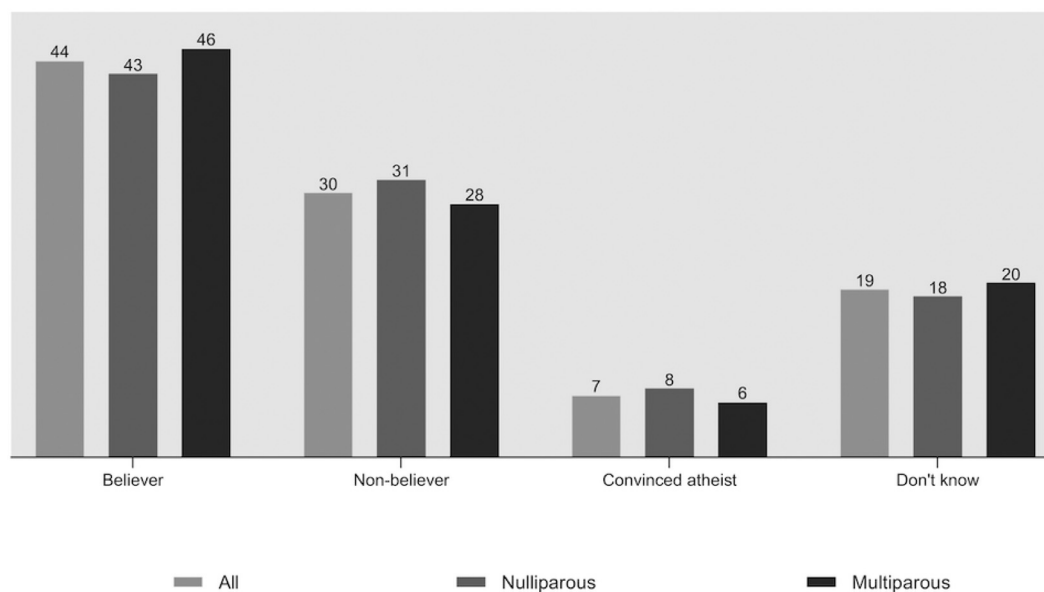


Fig. 4. Believer or not responses, overall, nulli- and multiparous in the COVIDPregDK study. Frequencies listed in percentages ( $n = 16,380$ ).

## Discussion

### Main findings

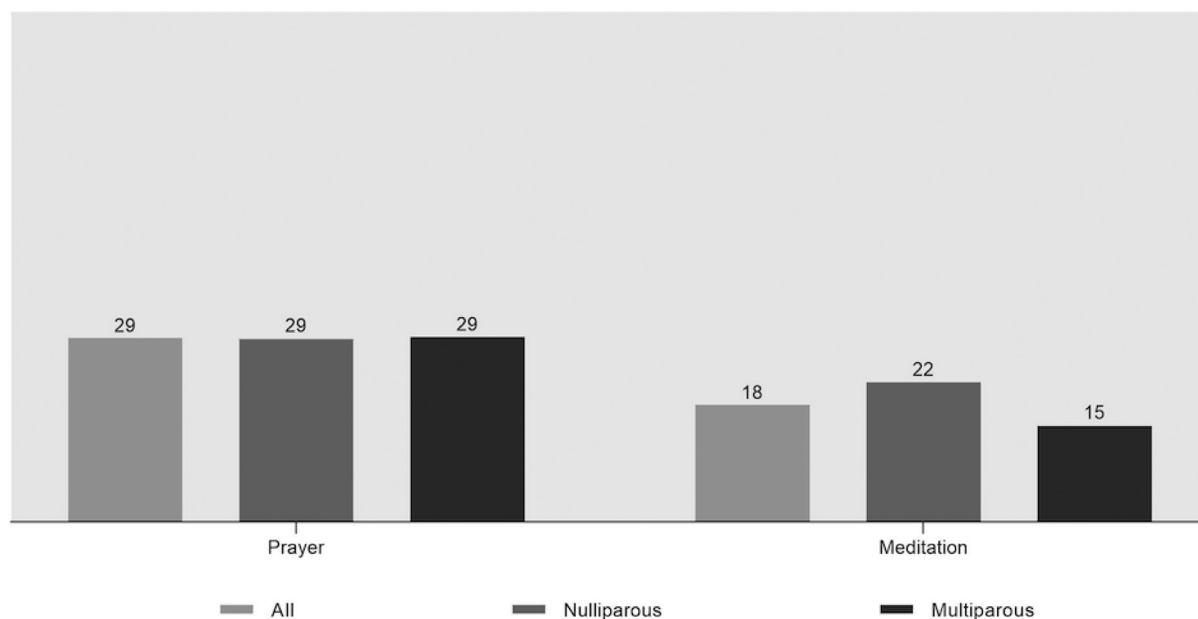
In this large study reporting Danish pregnant women's prayer and meditation practices during the early days of the COVID-19 pandemic, most respondents reported that COVID-19 did not impact their answers. Nearly half of the 16,380 participating women indicated thinking about meaning and purpose in life. Further, 44% of the women described themselves as believers, and 41% practiced prayer or meditation. From the study population, 29% described a

specific form of prayer, and 18% described a specific form of meditation.

### Interpretations – impact of COVID-19 on answers

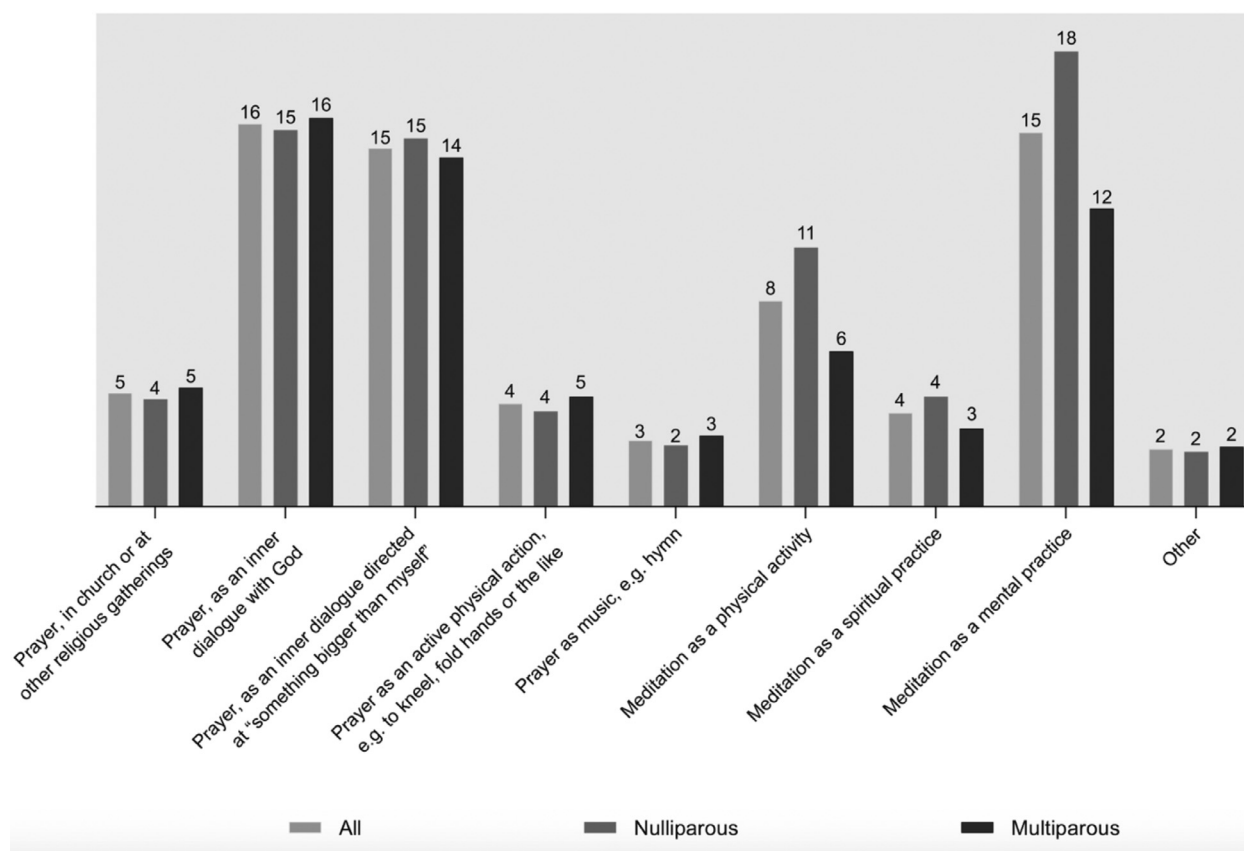
Surprisingly, most respondents (88%) reported that the first wave of the COVID-19 pandemic did not impact their answers. This contrasts with other studies that point to how crises and the pandemic could potentially actualize existential meaning-making considerations and practices (Chirico and Nucera, 2020; Ferrell et al., 2020). However, this study's results support secularization theories,

### Answered yes to a form of...



**Fig. 5.** Distribution of replies among participants answering yes to a form of prayer and/or meditation practices in the COVIDPregDK study (more than one affirmative reply possible) ( $n = 16,380$ ). Don't know responses are not shown (3%).

### Forms of prayer or meditation



**Fig. 6.** Frequencies of preferred forms of prayer and/or meditation practices in the COVIDPregDK study, overall and by nulli- and multiparous ( $n = 16,380$ ).



describing the low degree of religiosity in societies with a high degree of social welfare. According to some secularization theories, confidence in the state in these societies is usually high. For example, in Denmark, the state is held responsible for the daily welfare of the population (free and equal access to health care access), and accordingly, confidence in a higher power diminishes (Andersen and Luchau, 2011; Iversen, 2012). During the COVID-19 pandemic, confidence in the state remained high, thereby reducing people's experiences of crises and new orientations in existential meaning-making.

#### *Interpretations – thinking of meaning and purpose in life*

Thinking of meaning and purpose in life to a great or some extent was confirmed by 46% of the study population, which is lower than in a previous Danish study of first-time mothers, where 75% described meaning and purpose in life, altering during the transition to motherhood (Prinds et al., 2014b). In that study, data was collected 6–18 months post-partum. Thus, the experience of being a mother had matured in contrast to this study, which was conducted with pregnant mothers, for whom the motherhood transition might still have been evolving. According to the psychiatrist Daniel Stern, motherhood transition is a process leading to continuous change in life navigation, and being pregnant and carrying the child inside the body is different to being a new mother and being able to see and hold your child (Stern and Bruschiweiler-Stern, 1998). Therefore, considerations of the meaning in life might first emerge when the child is born, which may have been reflected in the survey results. Accordingly, considerations about the meaning and purpose of life were present but did not increase due to the pandemic.

#### *Interpretations – believing or not*

Only 44% of the pregnant women in this study reported being 'a believer', markedly fewer than the latest Danish national Value Survey from 2017, where 60% considered themselves believers. However, the Value Survey is a random sample of Danish adults, including sick and older adults, who usually score higher concerning belief in God (Andersen et al., 2019).

We found that seven percent of respondents considered themselves to be atheists. According to analyses in the Value Survey from 2017, 21% were found to be irreligious. The term irreligious was used in the Value Survey to include respondents who did not believe in either a personal God or a higher or divine power (Andersen et al., 2019). According to the Value Survey, more men than women, and younger compared to older respondents were categorized as irreligious. The differences in atheist/irreligious rates between participants in this survey and the national Value Survey might therefore be related to sex, age, and life circumstances. This is supported by an earlier study among new mothers, where 56% indicated they were believers (Prinds et al., 2016).

#### *Interpretations – prayer and/or meditation practices*

Overall, 41% confirmed to pray and/or meditate: 29% specifically confirmed one or more of five prayer practices and 18% at least one of three specific meditation practices. Surprisingly many pregnant women in the secular society of Denmark have active prayer and/or meditation practices. In contrast, there were fewer compared to a previous study of Danish first-time mothers in which 65% confirmed that they prayed and/or meditated (Prinds et al., 2016). The lower number of women reporting prayer practices in this study may relate to the process of motherhood transition, as

mentioned above. Practices of prayer and meditation may be different when the child is born compared to the period in which a woman is pregnant. Moreover, the framing of the studies and the survey constructions were different as the previous study focused specifically on existential meaning-making whereas this study had an overall broader scope which may have influenced the selection into the study.

The most frequent replies among the various forms of prayer were responses that were similar to a previous study of first-time mothers. The item 'Prayer as an inner dialog addressed to God' seems closely related to a transcendent dimension, more specifically, a transcendent relationship with a personalized God. Neuroscientific research suggests that improvised prayer is comparable to interpersonal interaction (Schjoedt et al., 2009). In prayer, the relation to God may be of higher importance than what is gained through meditation practices, often characterized as contemplation within oneself (Wachholtz and Pargament, 2005). However, praying to 'something greater than myself' was also prominent among responses, so there seems to be a combination of highly individualistic and more conventional direct ways of practicing prayer among respondents. These observations match sociological research demonstrating the importance of religious values for many Danish people in an individualized and non-traditional way (Andersen and Luchau, 2011).

We found meditation to be more frequent among nulliparas than multiparas. Meditative practices such as yoga and mindfulness have become more widespread and are often considered a pathway to obtaining good mental health or a health-promoting activity during pregnancy (Campbell and Nolan, 2019; Krusche et al., 2018; Kwon et al., 2020). We hypothesize that there may be more time for meditation in first-time pregnancies compared to later pregnancies.

#### *Implications*

We reported existential and spiritual characteristics in a national cohort of pregnant women during the early stages of the COVID-19 pandemic and found existential and spiritual considerations to be frequent, irrespective of the pandemic. We acknowledge that the interpretative discussion also applies to birthing people, although most of the empirical studies referred, exclusively include women. We believe our findings applies to all birthing people. Addressing existential and spiritual considerations could be included in maternity care services in recognition of how the transition to motherhood may change life at a profoundly existential level (Boyle et al., 2017; Crowther and Hall, 2017; Prinds et al., 2021). Moreover, if existential meaning-making considerations and practices are important components of good mental health, there should be a focus on further research and clinical practice (Health, 2016; Koushede, 2015). Finally, future research should explore existential and spiritual aspects of motherhood (and partnership) transition and its relation to physical and mental health, including educational initiatives among healthcare professionals.

#### *Strengths and limitations*

This is the first population-based study to explore pregnant women's considerations and practices related to existential meaning-making, such as meaning in life and prayer and meditation practices in the early COVID-19 pandemic. The main strength is the nationwide approach with contact via e-mail to all pregnant women in Denmark identified in the National Patient Registry, which is considered to be of high validity and completeness (Schmidt et al., 2015). This approach enabled a large sample size potentially representing all pregnant women in Denmark in the early pandemic. Although we cannot rule out selection bias, a

proportion (90%) of the women participating in the questionnaire survey, also responded to the specific questions about existential meaning-making.

## Conclusion

During the first wave of the COVID-19 pandemic, the vast majority of pregnant women who replied to the COVIDPregDK survey reported that considerations about prayer/meditation and the meaning in life were unchanged by the pandemic. Overall, disregarding parity, considerations on meaning in life were considerable, and nearly half the study population described themselves as believers. Many practised various forms of prayer or meditation. Accordingly, even in secular countries like Denmark, pregnant women appear to have considerations and practices of existential or spiritual nature.

## Ethical approval statement

The study was approved by the Danish National Health Authority and registered on the regional record of research projects (Journal number 20/17,416) in the Region of Southern Denmark. Permission to extract and contact the study population was also granted by the Danish Health Authorities (FSEID-00,004,910).

## Funding sources

We were funded solely by our universities, university colleges, The Danish Ministry of Health and the Region South Denmark.

## Declaration of Competing Interest

None of the authors have financial or other conflicts of interests related to the subject of this study.

## CRediT authorship contribution statement

**Christina Prinds:** Conceptualization, Methodology, Validation, Resources, Visualization, Writing – original draft, Writing – review & editing. **Niels Christian Hvidt:** Conceptualization, Methodology, Investigation, Writing – original draft, Writing – review & editing. **Katja Schrøder:** Conceptualization, Methodology, Investigation, Writing – review & editing. **Lonny Stokholm:** Methodology, Investigation, Resources, Data curation, Writing – review & editing. **Katrine Hass Rubin:** Conceptualization, Methodology, Investigation, Resources, Writing – review & editing. **Ellen A Nohr:** Conceptualization, Methodology, Investigation, Resources, Formal analysis, Writing – review & editing. **Lone K Petersen:** Conceptualization, Methodology, Investigation, Resources, Writing – review & editing. **Jan Stener Jørgensen:** Conceptualization, Methodology, Funding acquisition, Writing – review & editing. **Mette Bliddal:** Methodology, Investigation, Resources, Data curation, Supervision, Writing – original draft, Writing – review & editing.

## Acknowledgements

Authors sincerely thank Louise Rosengaard from Open Patient data Explorative Network, Odense University Hospital, Odense, Denmark, for assistance with the graphical design of figures.

## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.midw.2023.103716](https://doi.org/10.1016/j.midw.2023.103716).

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