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MEDICAL COLLEGE
IN KRAKOW



“Corona Mums Project” preliminary results and conclusions based on statistical analyses”

Aleksandra Ciochoń, MSc

Doctoral School of Medical and Health Sciences, Jagiellonian University Medical College, Poland
Department of Environmental Health, Jagiellonian University Medical College, Poland



Photo: Anna Wojnar



Photo: Filip Radwański

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Aleksandra Ciochoń, Msc

Education:

- Postgraduate program: Management of health care units, Jagiellonian University Medical College, 2022 - at present, Cracow
- Doctoral School of Medical and Health Sciences, Jagiellonian University Medical College, 2020 - at present, Cracow
- Jagiellonian University Medical College, Field of study: Physiotherapy / Bachelor's and Master's degree, 2014-2019, Cracow



Research Topic:

- The impact of stress during the COVID-19 pandemic in Poland on the physical and mental health of pregnant women, the course of pregnancy and pregnant women's physical and mental health, the course of pregnancy, the neonatal birth size.

Research interests:

- Mental and physical health of pregnant women, the impact of physical activity on the functioning of the human body, statistical analyses in health sciences,

Aleksandra Ciochoń, Msc

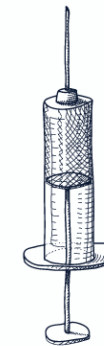
Conference reports:

- Ciochoń A., Marcinkowska U.M., Danel D., Galbarczyk A., Apanasewicz-Grzegorzczuk A., Klimek M., Mijas M., Ziomkiewicz-Wichary A.: The impact of social support, depression, and anxiety on smoking status in pregnant women. 8th International Conference of the Polish Society for Human and Evolution Studies; Sopot 2022.



Research grants:

- 2022-2023: Research Support Module; Strategic Programme Excellence Initiative - Research University, (ID.UJ); Jagiellonian University Medical College.
Project title: To vaccinate or not to vaccinate? - Physical and mental health of pregnant women and the newborn in the context of immunization and COVID-19 vaccination.



SZCZEPIĆ CZY
NIE SZCZEPIĆ?

PROJEKT NAUKOWY

Corona Mums Project

The aim of the project, conducted jointly by scientists from the Jagiellonian University - Collegium Medicum and the Polish Academy of Sciences, is to investigate the impact of the Covid-19 pandemic on mood, well-being, health, and the course of pregnancy.



What we measure:

- Levels of received support, anxiety, and depression experienced by pregnant women.
- Basic demographic information (age, education, place of residence),
- Exposure to COVID and the course of pregnancy,
- The problem of access to medical services provided to pregnant women
- Impact of restrictions on social distance on the level of stress in future mothers,
- Cortisol levels in the past 6 months from mother and child (based on hair and nail samples).

The project results will aid in understanding the complex net of relations between mother and child health and stress exposure, and the buffering effect of social support.

Corona Mums Project

Team

- ¹ Anna Ziomkiewicz-Wichary, Professor (Associate), PhD,
- ² Urszula Marcinkowska Trimboli, Professor (Associate), PhD
- ² Andrzej Galbarczyk, PhD
- ² Magdalena Klimek, PhD
- ² Magdalena Mijas, PhD
- ³ Dariusz Danel, PhD
- ³ Anna Apanasewicz, Msc



- ¹ Institute of Zoology and Biomedical Research, Jagiellonian University, Poland
- ² Department of Environmental Health, Jagiellonian University Medical College, Poland
- ³ Hirshfeld Institute of Immunology and Experimental Therapy, Polish Academy of Sciences, Poland

Antenatal Classes in the Context of Prenatal Anxiety and Depression during the COVID-19 Pandemic

7th International Conference of the Polish Society for Human and Evolution Studies; Białystok 2021

Aleksandra Ciochoń, Magdalena Klimek, Anna Apanasewicz-Grzegorzczak, , Dariusz Danel, Andrzej Galbarczyk, Urszula M. Marcinkowska, Anna Ziomkiewicz

Introduction

Perinatal maternal anxiety and depression negatively affect intrauterine fetal development, birth outcome, breastfeeding initiation, duration, and milk composition. Antenatal classes potentially **reduce the anxiety** of pregnant women and may thus contribute to healthy infant development.

Aim of the study

The study investigates the relationship between **participation in online or in-person antenatal classes and levels of anxiety and depression** in Polish women during the COVID-19 pandemic.



Antenatal Classes in the Context of Prenatal Anxiety and Depression during the COVID-19 Pandemic

Aleksandra Ciochoń, Magdalena Klimek, Anna Apanasewicz-Grzegorzczak, Dariusz Danel, Andrzej Galbarczyk, Urszula M. Marcinkowska, Anna Ziomkiewicz

Study Group

The study group included **1774 women**, aged **19–43** (mean age = 30.26 years; SD = 3.76), non-smokers, who were in the **second or third trimester** of pregnancy. We compared the **state anxiety** (STAI-State) and **depression** levels (EPDS) in women who (i) **attended antenatal classes in-person**, (ii) **attended online classes**, and (iii) **did not attend any of them**. All participants filled in the online questionnaire (complete information regarding all measured values) between **May 2020 and March 2021**.

The levels of anxiety and depressive symptoms were measured with the **State-Trait Anxiety Inventory (STAI)** and the **Edinburgh Postnatal Depression Scale (EPDS)**.

Anxiety as a state - a temporary transient emotional state

Anxiety as a trait - a persistent, permanent personality trait expressed by a readiness to react in certain situations with a state of anxiety

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Statistical analysis

The statistical analyses included a GLM model and trend analysis while controlling for maternal trait anxiety, age, pregnancy complications, trimester of pregnancy, previous pregnancies, and COVID-19 infections.

Post hoc pairwise comparisons were conducted using Bonferroni correction.

A probability value of $p < 0.05$ indicated statistically significant results. The analyses were performed in SPSS software, version 27 (Chicago, IL, USA)

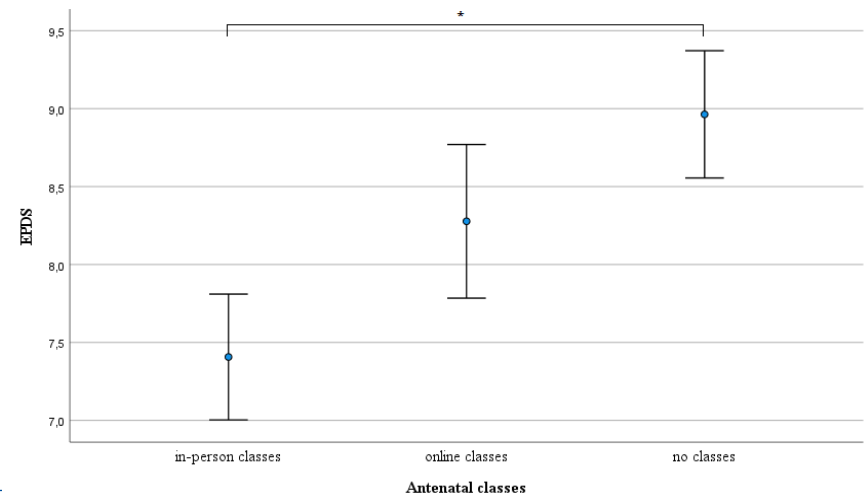
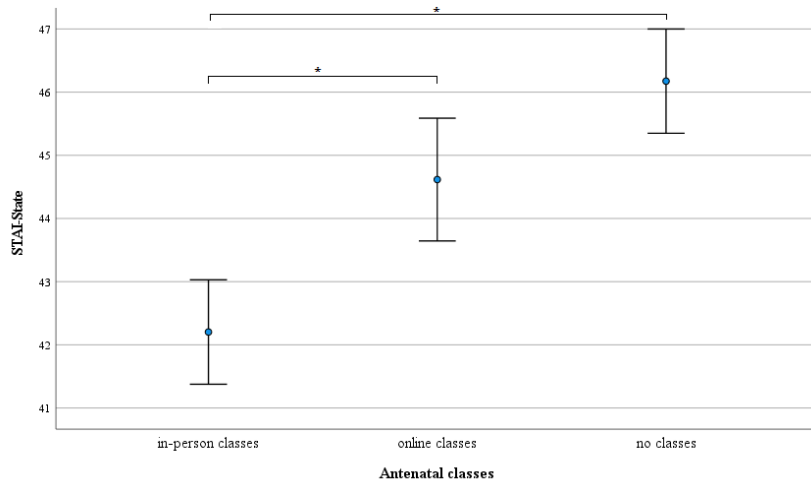
Antenatal Classes in the Context of Prenatal Anxiety and Depression during the COVID-19 Pandemic

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Results

We observed statistically significant differences in the level of anxiety and depression. Women who did attend antenatal classes in-person had the lowest levels of anxiety and depression.

The observed trends in the increase in both STAI-State ($F_{1;1771} = 17.089$; $p < 0.001$) and EPDS Score ($F_{1;1771} = 6.963$; $p < 0.01$) associated with non-participating vs. participating different forms of classes were statistically significant.



Antenatal Classes in the Context of Prenatal Anxiety and Depression during the COVID-19 Pandemic

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Conclusions

1. Maternal prenatal anxiety and depression have a significant impact on breastfeeding and child development during prenatal and postnatal periods.
2. The opportunity to attend antenatal classes is vital in terms of reducing anxiety and depression symptoms and maintaining a positive sense of well-being in pregnant women.
3. Due to the better mental well-being of pregnant women attending **in-person classes** compared to online classes, it **should be recommended** to use this form of antenatal classes whenever health risks do not outweigh the benefits associated with. it.

Fathers would like to care about first child than the next one, especially, if it's girl!

22nd EAA Congress, August 24-27, 2022, Vilnius, Lithuania

Anna Apanasewicz-Grzegorzcyk, Magdalena Klimek, Aleksandra Ciochoń, Dariusz Danel, Andrzej Galbarczyk, Urszula M. Marcinkowska, Magdalena Mijas, Anna Ziomkiewicz

Previous studies found a relation between social support and birth outcomes, breast milk immune properties, and children's development. Especially, support in child-caring during infancy from the father seems to be crucial.

Aim of the study

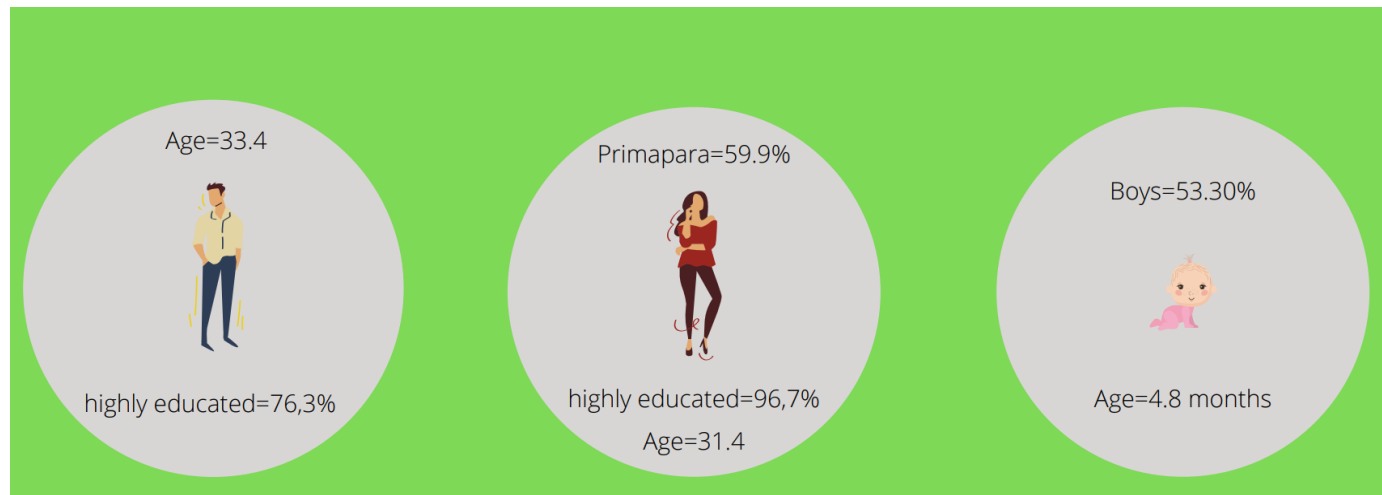
If there are the differences in paternal childcare between sons and daughters?

Fathers would like to care about first child than the next one, especially, if it's girl!

Anna Apanasewicz-Grzegorzcyk, Magdalena Klimek, Aleksandra Ciochoń, Dariusz Danel, Andrzej Galbarczyk, Urszula M. Marcinkowska, Magdalena Mijas, Anna Ziomkiewicz

Methods

An ongoing relationship between mother and father was mainly an inclusion criterium. Our study group included **152 women**. While the online survey, they were asked about their parity status, infant sex, and how many hours the father (mean age 33.45 years, SD=4.81) spends caring about their child.



Fathers would like to care about first child than the next one, especially, if it's girl!

Anna Apanasewicz-Grzegorzczuk, Magdalena Klimek, Aleksandra Ciochoń, Dariusz Danel, Andrzej Galbarczyk, Urszula M. Marcinkowska, Magdalena Mijas, Anna Ziomkiewicz

Statistical analysis

We conducted the **GLZ model** to study the relation between paternal investment, parity of infant sex, and interaction.

Paternal childcare models:

- during one week day
- during one weekend day
- during whole week

Paternal age [years]+ Infant age [months]
+ Parity status* Infant sex

Fathers would like to care about first child than the next one, especially, if it's girl!

Anna Apanasewicz-Grzegorzczuk, Magdalena Klimek, Aleksandra Ciochoń, Dariusz Danel, Andrzej Galbarczyk, Urszula M. Marcinkowska, Magdalena Mijas, Anna Ziomkiewicz

Results

- We found differences in the time of child-caring between partners of primiparous and multiparous ($W=8.81$, $p<0.001$).
- Equally, the interaction between parity status and infant sex was significant ($W=40.57$, $p<0.001$).
- The primiparous got more help with child caring, especially, in the case of daughters (daughters: 29.50h vs sons: 23.90h).
- The fathers give the least amount of help to multiparous mothers of daughters (16.80h).

Fathers would like to care about first child than the next one, especially, if it's girl!

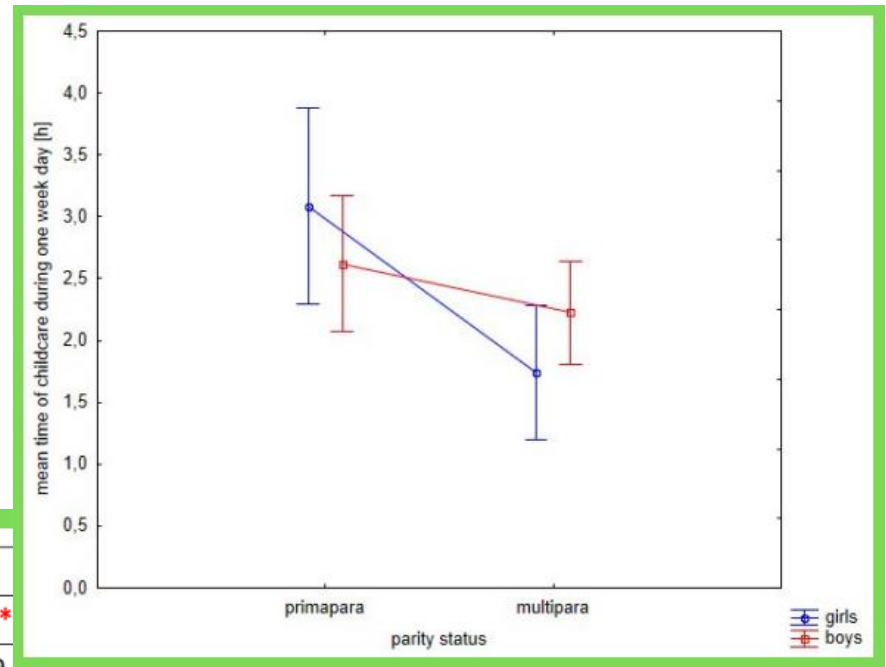
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Paternal childcare during one week day

parity status - only one significant factor

	W	p
Overall model	6.33	0.012*
Infant age	3.31	0.069
Paternal age	0.36	0.549
Infant sex	0.09	0.769
Parity status	8.97	0.003*
Infant sex * parity status	2.83	0.092

***Bonferroni correction $p < 0.017$**

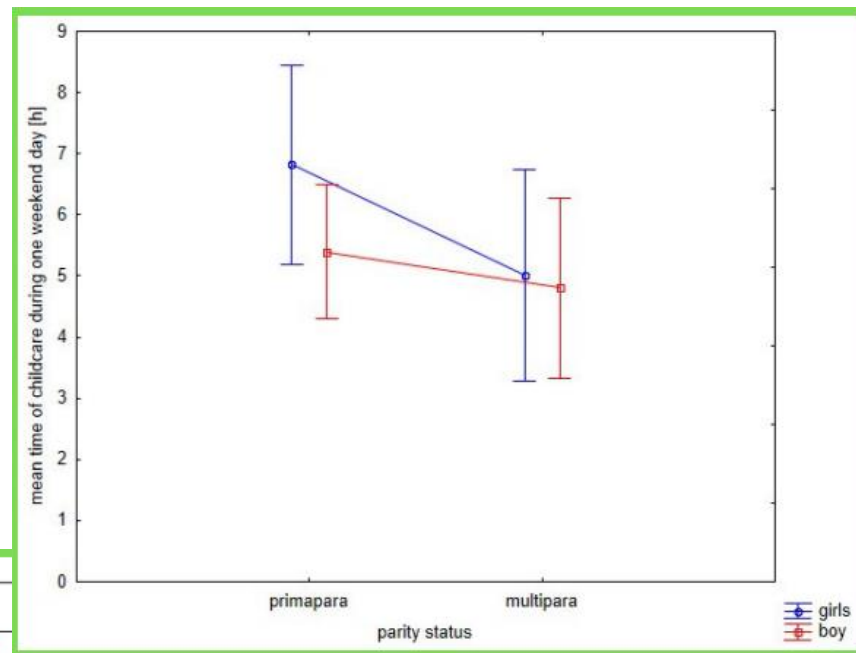


Fathers would like to care about first child than the next one, especially, if it's girl!

Anna Apanasewicz-Grzegorzczuk, Magdalena Klimek, Aleksandra Ciochoń, Dariusz Danel, Andrzej Galbarczyk, Urszula M. Marcinkowska, Magdalena Mijas, Anna Ziomkiewicz

Paternal childcare during one weekend day

parity status - only one significant factor



	W	p
Overall model	59.18	<0.001*
Infant age	0.21	0.648
Paternal age	1.40	0.236
Infant sex	0.09	0.769
Parity status	5.98	0.014*
Infant sex * parity status	1.39	0.239

***Bonferroni correction p<0.017**

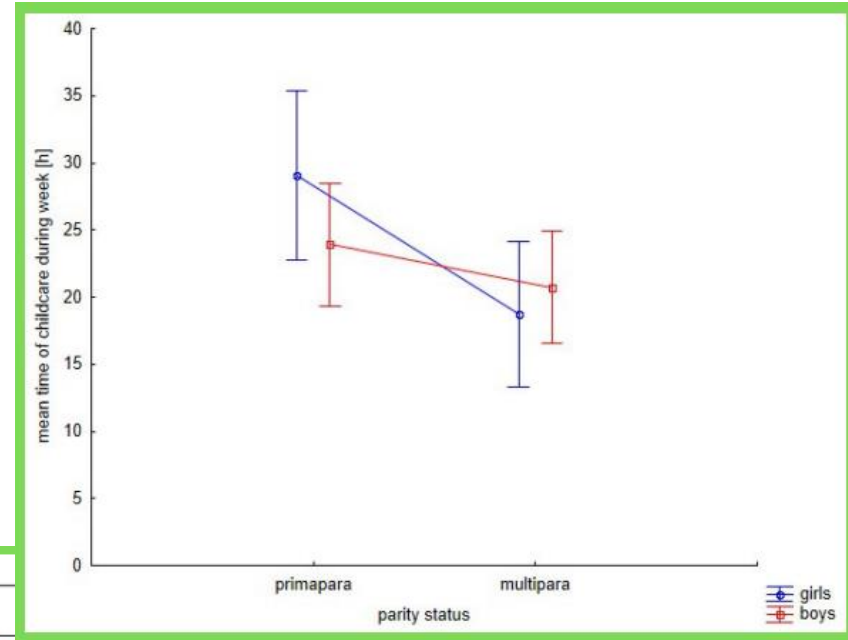
Fathers would like to care about first child than the next one, especially, if it's girl!

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Paternal childcare during the whole week

Not only parity status but also:

- Infant age
- Interaction between parity status and infant sex



	W	p
Overall model	704.22	<0.001*
Infant age	11.58	0.001*
Paternal age	4.57	0.032
Infant sex	2.53	0.112
Parity status	51.79	<0.001*
Infant sex * parity status	14.30	<0.001*

***Bonferroni correction $p < 0.017$**

Fathers would like to care about first child than the next one, especially, if it's girl!

Anna Apanasewicz-Grzegorzcyk, Magdalena Klimek, Aleksandra Ciochoń, Dariusz Danel, Andrzej Galbarczyk, Urszula M. Marcinkowska, Magdalena Mijas, Anna Ziomkiewicz

Conclusions

1. Fathers from western countries care more about sons than daughters. Our study did not confirm this.
2. However, we found that fathers would like to care more about their daughters if she is the first child.
3. The observed results might relate to the lasting Covid-19 pandemic.
4. We suppose that it is more worthwhile to invest in girls if they are the first child because they are less eco-sensitive than boys.
5. On the other hand, the Covid-19 pandemic has also brought economic worries which can additionally support caring about girls.

“Pandemic mindfulness: is there a difference in pregnancy and birth outcomes between women practicing relaxation techniques or not”

Pandemic Babies? The Covid-19 Pandemic and Its Impact on Fertility and Family Dynamics. Max Planck Institute for Demographic Research; Berlin 2021

Magdalena Klimek, Anna Apanasewicz-Grzegorzcyk, Aleksandra Ciochoń, Dariusz Danel, Andrzej Galbarczyk, Urszula M. Marcinkowska, Magdalena Mijas, Anna Ziomkiewicz

Introduction

- The COVID-19 pandemic is undeniably a source of psychological stress which might be especially meaningful in pregnant women.
- Higher stress level is associated with worse pregnancy course and outcomes.
- Mindfulness behaviors might significantly reduce psychological stress levels.

Aim

To explore the association between **practicing mindfulness techniques** by women pregnant at the time of the COVID-19 pandemic and their **pregnancy duration and birth outcomes**

HYPOTHESIS: practicing mindfulness techniques → better pregnancy and birth outcomes

“Pandemic mindfulness: is there a difference in pregnancy and birth outcomes between women practicing relaxation techniques or not”

Magdalena Klimek, Anna Apanasewicz-Grzegorzczak, Aleksandra Ciochoń, Dariusz Danel, Andrzej Galbarczyk, Urszula M. Marcinkowska, Magdalena Mijas, Anna Ziomkiewicz

Materials

- The participants were 486 pregnant women recruited between May and December 2020 in Poland.
- The mean age was 30.7 (SD 3.74).
- The data was collected via an online questionnaire advertised on social media.
- The mindfulness behaviors included practicing yoga, listening to relaxing music, and meditation.
- Birth dimensions were reported by mothers from the child's health records.

“Pandemic mindfulness: is there a difference in pregnancy and birth outcomes between women practicing relaxation techniques or not”

Magdalena Klimek, Anna Apanasewicz-Grzegorzczuk, Aleksandra Ciochoń, Dariusz Danel, Andrzej Galbarczyk, Urszula M. Marcinkowska, Magdalena Mijas, Anna Ziomkiewicz

Methods

- **General Linear Models** with categorical variables -> women compared based on:
 - A. the fact of practicing mindfulness techniques
 - B. the frequency of practicing mindfulness techniques (4 categories)
- **Covariates:** maternal age, maternal BMI, pregnancy complications, sex of the baby, duration of the gestation*
 - *depending on the model
 - **Exclusion criteria:**
 - Smoking, drinking alcohol while pregnant
 - Twin pregnancy
 - Birth weight <2.5 kg
 - <37 weeks of pregnancy

“Pandemic mindfulness: is there a difference in pregnancy and birth outcomes between women practicing relaxation techniques or not”

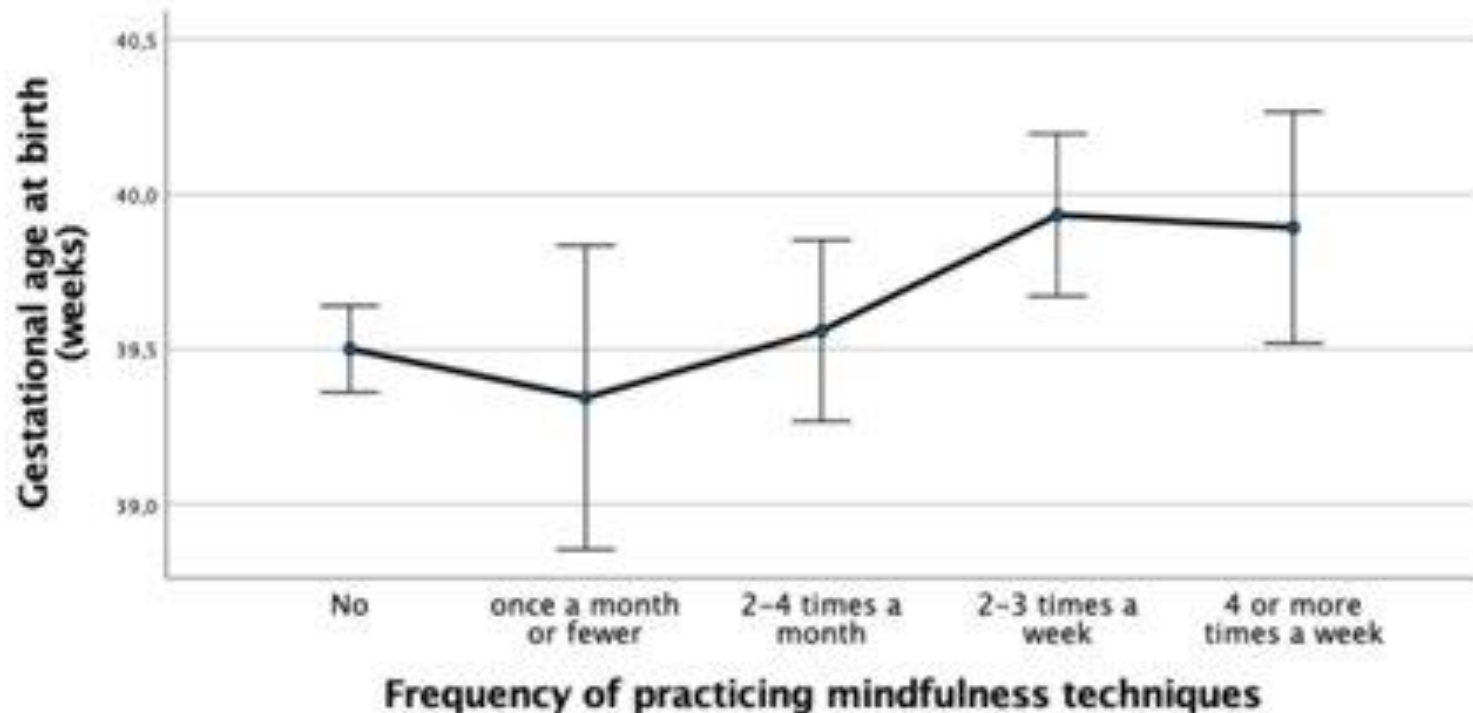
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Results

1. Birth outcomes (birth weight, birth length, and head circumference) did not differ between groups of women when analyzing both the fact of practicing relaxation and its frequency.
2. Nevertheless, the duration of gestation differed significantly between women who practiced relaxation techniques ($p=0.007$) compared to those who did not and between women with a different frequency of practicing mindfulness behaviors ($p=0.032$).
3. Women who practiced relaxation more often gave birth later than women who did not.

“Pandemic mindfulness: is there a difference in pregnancy and birth outcomes between women practicing relaxation techniques or not”

Magdalena Klimek, Anna Apanasewicz-Grzegorzczuk, Aleksandra Ciochoń, Dariusz Danel, Andrzej Galbarczyk, Urszula M. Marcinkowska, Magdalena Mijas, Anna Ziomkiewicz



Covariates: maternal age, pre-pregnancy BMI, pregnancy complications, sex of the baby

Whiskers represent 95%CI

Post-hoc test with Bonferroni correction: significant difference between groups „No” and „2-3 times a week” ($p=0.04$)

“Pandemic mindfulness: is there a difference in pregnancy and birth outcomes between women practicing relaxation techniques or not”

Magdalena Klimek, Anna Apanasewicz-Grzegorzcyk, Aleksandra Ciochoń, Dariusz Danel, Andrzej Galbarczyk, Urszula M. Marcinkowska, Magdalena Mijas, Anna Ziomkiewicz

Conclusions

- Pregnant women who practiced mindfulness techniques (including the frequency of the practice) gave birth later the average than women who did not practice relaxation (however, the observed effect size was small)
 - No difference was observed for the birth measurements
- These preliminary results shed light on the potential contribution of mindfulness practices to optimal pregnancy length, especially in the highly stressful COVID-19 pandemic context.

Who cheers pregnant women up?

15th Conference European Human Behaviour and Evolution Association (EHBEA), Kraków 2021

Kinga Nowak, Julia Marianowska, Andrzej Galbarczyk, Anna Apanasewicz, Aleksandra Ciochoń, Dariusz Danel, Magdalena Klimek, Urszula Marcinkowska, Magdalena Mijas, Anna Ziomkiewicz

Introduction

Women may go through a range of emotional states during pregnancy, including increased anxiety caused by multiple environmental and social factors.

Having a strong support system and the direct presence of significant others may contribute to reduced anxiety.

The aim of this study was to explore the relationship between living with family members in the same household and the level of anxiety in pregnant women.

Who cheers pregnant women up?

Kinga Nowak, Julia Marianowska, Andrzej Galbarczyk, Anna Apanasewicz, Aleksandra Ciochoń, Dariusz Danel, Magdalena Klimek, Urszula Marcinkowska, Magdalena Mijas, Anna Ziomkiewicz

Methods

N=1152
pregnant Polish women (aged 18-43)

Data Collection
Information on family structure, pregnancy and anxiety was collected by an online survey advertised via social media.

Anxiety Measurement
State and trait anxiety were measured with the Polish adaptation of the State-Trait Anxiety Inventory (STAI).

Statistical analysis
General linear models with state of anxiety as dependent variable, controlled for woman's age, trimester of pregnancy, pregnancy complications, and trait anxiety.

During pregnancy:

Living with a **partner** or husband was significantly associated with **decreased state anxiety**.

Living with **parents** was associated with **increased state anxiety**.

Living with **parents-in-law** did **not influence** the anxiety level.



Who cheers pregnant women up?

Kinga Nowak, Julia Marianowska, Andrzej Galbarczyk, Anna Apanasewicz, Aleksandra Ciochoń, Dariusz Danel, Magdalena Klimek, Urszula Marcinkowska, Magdalena Mijas, Anna Ziomkiewicz

Anxiety level among women—the comparison of groups of women living with different family members

		Adj mean	SE	F	p
Living with a partner	yes	42.8	0.33	4.53	0.033
	no	48.3	1.56		
Living with parents	yes	45.7	1.13	6.98	0.008
	no	42.8	0.34		
Living with parents-in-law	yes	44.5	0.33	0.01	0.967
	no	42.9	1.32		

Conclusions


Our results show that living with a partner, but not with own or spouse's parents is linked to the reduced anxiety experienced by pregnant women.

From a broader perspective, the alleviation of anxiety during pregnancy may be beneficial for women's health and pregnancy outcomes.

Any questions?



Thank you for your attention!

 ndgphotos



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