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Anxiety and depression symptoms in pregnant women at the end of the COVID-19 pandemic

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Objective: To evaluate the prevalence of depression and anxiety among women giving birth at a public hospital at the end of the COVID-19 pandemic and to determine factors associated with depression and anxiety.
Methods: Women giving birth at the Queen Elizabeth Hospital in January 2023 were invited to complete a questionnaire. Data collected included age, marital status, economic status, education level, employment status, health personnel status, presence of comorbidities, history and severity of COVID, and whether their antenatal or intrapartum care was affected by COVID. The Patient Health Questionnaire-9 (PHQ-9) and the Generalised Anxiety Disorder-7 scale (GAD-7) were used to evaluate depression and anxiety, respectively. Multinomial logistic regression analysis was performed to determine factors associated with depression and anxiety.
Results: Among 100 participants, 26% had mild depression or above (PHQ-9 score ≥5), 36% had mild anxiety or above (GAD-7 score ≥5), and 1% had severe depression and anxiety. Women with birth companion delayed or prohibited during labour were associated with higher GAD-7 scores (p=0.015).
Conclusion: At the end of the COVID-19 pandemic, women with birth companion delayed or prohibited during labour are associated with higher anxiety levels.

Keywords: Anxiety; COVID-19; Depression; Mental health; Pregnancy

Introduction

During the COVID-19 pandemic, the stress level and prevalence of anxiety and depressive symptoms and subjective unhappiness were greatly increased in Hong Kong population[1-4]. In a study of mental health in Hong Kong in 2020, up to 19% of respondents had probable depression (with Patient Health Questionnaire-9 [PHQ-9] score ≥10) and 14% had probable anxiety (with Generalised Anxiety Disorder-7 [GAD-7] score ≥10)[1].

In March 2022, Queen Elizabeth Hospital was converted into a COVID-19-designated hospital. At the peak of the pandemic, most women giving birth in the hospital could not be accompanied during labour, and pain-relieving options were limited, especially if they had active COVID. For instance, Entonox was not allowed if women had active COVID. As time went by, public health measures started to loosen up and borders reopened. On 19 January 2023, isolation requirements for patients with COVID was ended. However, infection control measures remained in place in hospitals. Women with active COVID were not allowed to be accompanied during labour. The birth companion had to be tested negative for COVID within the last 48 hours before being allowed into the labour ward. Anyone with upper respiratory tract symptoms, fever, new loss of taste or smell, diarrhoea, rash, conjunctivitis or shortness of breath was not allowed to accompany labour.

Childbearing is intrinsically a stressful process for both the mind and the body, and the mental health of women giving birth during the COVID-19 pandemic is worth examining. We evaluated the prevalence of depression and anxiety among women giving birth at Queen Elizabeth Hospital in January 2023 and determined factors associated with depression and anxiety.

Methods

This cross-sectional study was conducted in women giving birth at Queen Elizabeth Hospital in January 2023. The first 100 participants with none of the exclusion criteria (having severe COVID, preterm delivery, needing intensive care unit care, having severe psychotic disorders, being mentally incapacitated, being illiterate, and being prisoners) were asked to complete a questionnaire, in either English or Chinese, in the postnatal ward.

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Data collected included age, marital status, economic status, education level, employment status, health personnel status, presence of comorbidities, history and severity of COVID, and whether their antenatal or intrapartum care was affected by COVID.

The PHQ-9 and the GAD-7 were used to evaluate depression and anxiety levels, respectively. The PHQ-9 is a 9-item questionnaire for screening depression in the past 2 weeks. Depression symptom is defined as none (score 0-4), mild (score 5-9), moderate (score 10-14), and severe (score ≥15). Scores of ≥10 indicate a possible major depressive disorder, with a sensitivity of 88% and specificity of 88%[5]. The Chinese version of PHQ-9 has been validated[6]. The GAD-7 is a 7-item questionnaire for screening common anxiety disorders. Total scores range from 0 to 21; anxiety is defined as none/minimal (score 0-4), mild (score 5-9), moderate (score 10-14), and severe (score ≥15). Scores of ≥10 indicate possible anxiety, with a sensitivity of 89% and a specificity of 82%[7]. The GAD-7 has been validated as a screening tool for anxiety among pregnant Chinese women[8].

The prevalences of depression and anxiety among participants were calculated. Multinomial logistic regression analysis was performed to determine factors associated with depression and anxiety. Statistical analysis was performed with SPSS (Windows version 24.0; IBM Corp, Armonk [NY], United States). All tests were two-tailed. A p value of <0.05 was considered statistically significant.

Results

Of 100 participants, 26% had mild depression or above (PHQ-9 score ≥5), 36% had mild anxiety or above (GAD-7 score ≥5), and 1% had severe depression and severe anxiety (Table 1). Using the cut-off score of 10, 9% of participants had possible major depression and 7% of participants had possible anxiety. Table 2 shows the demographics of pregnant women and COVID-related impacts.

In multinominal logistic regression analysis, women with birth companion delayed or prohibited during labour were associated with higher GAD-7 scores (p=0.015, Table 3).

Discussion

At the end of the COVID-19 pandemic in January 2023, 26% and 36% of women giving birth in a Hong Kong hospital had symptoms of depression and anxiety, respectively. These percentages were lower than the 37% and 57% reported in a study of pregnant women in Canada in 2020[9], which used the Edinburgh Depression Scale for depressive symptoms and the Patient-Reported Outcomes Measurement Information System Anxiety Adult 7-item short form for general anxiety symptoms.

Table 1. Symptoms of depression and anxiety in pregnant women at the end of the COVID-19 pandemic

Severity	No. (%) of participants	
	Patient Health Questionnaire-9 for depression symptom	Generalised Anxiety Disorder-7 for anxiety symptom
Normal	74 (74)	64 (64)
Mild	17 (17)	29 (29)
Moderate	8 (8)	6 (6)
Severe	1 (1)	1 (1)

Using the cut-off score of 10, the prevalences of depression and anxiety in general Hong Kong population in 2020 were 19.8% and 14%, respectively[1], whereas the prevalences of depression and anxiety in women giving birth in 2023 were lower at 9% and 7%, respectively. Both studies used the PHQ-9 and the GAD-7. In a meta-analysis in 2022, the pooled prevalence was 25.1% for depression and 18.7% for anxiety[10]. Possible reasons for the lower prevalences in our participants include adaptation to the pandemic, less fear of COVID-19 with improved understanding, availability of vaccinations, and loosened social-distancing measures resulting in less social isolation.

Delaying or prohibiting birth companion during labour was associated with anxiety. Labour companionship can provide emotional, psychological, and practical support so that women have less fear and stress during labour. The companion can bridge communication gaps, provide massage or handholding to relieve pain, and reassure women's feeling in control[11], thus reducing anxiety.

There are limitations to the present study. The PHQ-9 and the GAD-7 are screening tools only and are not valid to make diagnoses. The women may be prone to recall bias, especially immediately after delivery. They may be more likely to be joyous after delivery and tend to disregard depressive and anxious feelings that occurred before the delivery. The sample was from a single centre

Table 2. Demographics of pregnant women and COVID-related impacts

Variable	No. (%) of participants
Age, y	
<30	17 (17)
≥30	83 (83)
Marital status	
Married	96 (96)
Single, divorced or separated	4 (4)
Education level	
Secondary schooling or below	30 (30)
Diploma or the equivalent and above	70 (70)
Employment status	
Employed	75 (75)
Unemployed	25 (25)
Monthly income per person, HK$	
≤20 000	67 (67)
≥20 001	33 (33)
Health personnel	
Yes	16 (16)
No	84 (84)
Presence of comorbidities	
Yes	4 (4)
No	96 (96)
History of COVID	
Yes	72 (72)
No	28 (28)
COVID severity (n=72)	
Asymptomatic/stable	72 (100)
Serious/critical	0
COVID-related hospitalisation (n=72)	
Yes	4 (6)
No	68 (94)
Duration of recovery from COVID, mo (n=70)	
0-3	56 (80)
≥3	14 (20)
History of quarantine	
Yes	43 (43)
No	57 (57)
Quarantine duration, d (n=70)	
0-7	30 (43)
>7	40 (57)
Delay/cancellation of antenatal check-up	
Yes	22 (22)
No	78 (78)
Mode of delivery	
Normal vaginal delivery	59 (59)
Instrumental delivery	3 (3)
Caesarean section	38 (38)
Pain control limitation	
Yes	8 (8)
No	92 (92)
Birth companion delayed or prohibited during labour	
Yes	29 (29)
No	71 (71)

Table 3. Factors associated with depression and anxiety in women giving birth at the end of the COVID-19 pandemic

Factor	Depression		Anxiety			
	Univariate analysis		Univariate analysis		Multivariate analysis	
	Odds ratio	p Value	Odds ratio	p Value	Odds ratio	p Value
Age	3.8	0.279	0.376	0.945	-	-
Marital status	1.381	0.710	0.670	0.880	-	-
Education level	2.512	0.473	7.007	0.072	2.729	0.435
Employment status	2.811	0.422	6.319	0.097	2.263	0.520
Personal monthly income	2.176	0.537	0.831	0.842	-	-
Health personnel	5.050	0.168	2.500	0.475	-	-
Presence of comorbidities	1.565	0.667	1.683	0.641	-	-
History of COVID	1.175	0.759	1.611	0.657	-	-
COVID severity	0.639	0.888	0.847	0.838	-	-
Duration of recovery from COVID	2.829	0.419	2.330	0.507	-	-
Mode of delivery	3.662	0.722	6.089	0.413	-	-
Pain control option limited	3.395	0.335	2.859	0.414	-	-
Birth companion delayed or prohibited during labour	2.509	0.474	10.565	0.014	10.499	0.015
History of quarantine	1.939	0.585	2.369	0.499	-	-
Duration of quarantine	3.070	0.381	2.942	0.401	-	-
Antenatal care cancelled/postponed	0.557	0.904	3.630	0.304	-	-
Hospitalisation secondary to COVID	2.702	0.440	1.482	0.686	-	-

and thus the results may not be generalisable. Women in different hospitals may have different antenatal and intrapartum experiences as well as different depression and anxiety levels. There may be a self-selection bias; women who are more concerned with their mental well-being may be more willing to participate.

Conclusions

At the end of the COVID-19 pandemic, women with birth companion delayed or prohibited during labour are associated with higher anxiety levels. Companionship for women during labour can alleviate stress and anxiety and should not be prohibited. Screening of anxiety symptoms can be included postpartum care, along with the existing postpartum depression screening.

Contributors

Both authors designed the study, acquired the data, analysed the data, drafted the manuscript, and critically revised the manuscript for important intellectual content. Both authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

As an editor of the journal, KYL was not involved in the peer review process. The other author has disclosed no conflicts of interest.

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Data availability

All data generated or analysed during the present study are available from the corresponding author upon reasonable request.

Ethics approval

This study was approved by the Kowloon Central / Kowloon East Cluster Research Ethics Committee (reference: KC/KE-22-0129/ER-4). The patients were treated in accordance with the tenets of the Declaration of Helsinki. The patients provided written informed consent for all treatments and procedures and for publication.

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