International efforts to reduce maternal mortality have been steadily applied in recent years, including a new global pact through the Sustainable Development Goals (SDG) for 2030.[9] The COVID-19 pandemic may represent a major obstacle to realizing the SDG by 2030, especially in middle- and low-income countries, where the pandemic seems to be leading to a significant increase in cases of both maternal near miss and mortality.

AUTHOR CONTRIBUTIONS

MNP and MLST equally contributed to study conception and design, data collection, data analysis, and data interpretation. MNP wrote the first draft of the paper and incorporated substantial contributions from CBA, MOM, RK and MLST after critical revision. All authors reviewed and approved the final manuscript.

CONFLICTS OF INTEREST

The authors have no conflicts of interest.

REFERENCES

1. Chen L, Li Q, Zheng D, et al. Clinical characteristics of pregnant women with Covid-19 in Wuhan, China. *N Eng J Med*. 2020;382:e100.
2. Collin J, Byström E, Carnahan A, Ahrne M. Pregnant and postpartum women with SARS-CoV-2 infection in intensive care in Sweden. *Acta Obs Gynecol Scand*. 2020;99:819–822.
3. Ellington S, Strid P, Tong VT, et al. Characteristics of women of Reproductive age with laboratory-confirmed SARS-CoV-2 infection by pregnancy status – United States, January 22-June 7, 2020. *Morb Mortal Wkly Rep*. 2020;69:769–775.
4. Kayem G, Alessandrini V, Azria E, et al. A snapshot of the Covid-19 pandemic among pregnant women in France. *J Gynecol Obstet Hum Reprod*. 2020;4:101826.
5. Knight M, Bunch K, Vousden N, et al. Characteristics and outcomes of pregnant women hospitalised with confirmed SARS-CoV-2 infection in the UK a national cohort study using the UK Obstetric Surveillance System (UKOSS). *BMJ*. 2020;369:m2107.
6. Takemoto MLS, de Menezes MO, Andreucci CB, et al. The tragedy of COVID-19 in Brazil: 124 maternal deaths and counting. *Int J Gynecol Obstet*. 2020; https://doi.org/10.1002/ijgo.13300
7. Lumbreras-Marquez MI, Campos-Zamora M, Lizaola-Diaz de Leon H, Farber MK. Maternal mortality from COVID-19 in Mexico. *Int J Gynecol Obstet*, 150: 266–267.
8. Hantoushzadeh S, Shamshirsaz AA, Aleyasin A, et al. Maternal death due to COVID-19 disease. *Am J Obs Gynecol*. 2020;223:109.E1–109.E16.
9. United Nations. *Transforming our World: The 2030 Agenda for Sustainable Development*. New York, NY: United Nations; 2015.

Obstetrics

Psychological impact of the COVID-19 pandemic among pregnant women in Sri Lanka

Malitha Patabendige[1,*] iD | Madhawa M. Gamage[2] | Malika Weerasinghe[3] | Asanka Jayawardane[2]

[1]Castle Street Hospital for Women, Colombo, Sri Lanka

[2]Department of Obstetrics and Gynecology, Faculty of Medicine, University of Colombo, Sri Lanka

[3]Consultant Psychiatrist, Colombo, Sri Lanka

Correspondence
Malitha Patabendige, Castle Street Hospital for Women, Colombo, Sri Lanka.
Email: mpatabendige@gmail.com

KEYWORDS: Anxiety; COVID-19; Depression; Hospital Anxiety and Depression Scale; Pregnancy

Psychological disturbance among pregnant women is an important health parameter.[1] There is a dearth of studies assessing the psychological impact of the COVID-19 pandemic on the pregnant population. The present descriptive, cross-sectional study evaluated

TABLE 1 Basic demographic and relevant clinical variables and responses for HADS

Demographic characteristics	Frequency (%) N=257	Normal (%) n=184	Anxious (%) n=45	Depressed (%) n=50	Both anxious and depressed together (%) n=22	p value
Age in years						0.31
18-25	66 (25.7)	45 (24.5)	14 (31.1)	17 (34.0)	10 (45.5)	
26-30	91 (35.4)	67 (36.4)	16 (35.5)	14 (28.0)	6 (27.3)	
31-35	57 (22.2)	45 (24.5)	5 (11.1)	9 (18.0)	2 (9.1)	
36-40	33 (12.8)	21 (11.4)	8 (17.8)	6 (12.0)	2 (9.1)	
41-50	5 (1.9)	3 (1.6)	1 (2.2)	2 (4.0)	1 (4.5)	
Missing data	5 (1.9)	3 (1.6)	1 (2.2)	2 (4.0)	1 (4.5)	
Parity						0.56
Primigravida	90 (35)	67 (36.4)	13(28.9)	16 (32.0)	6 (27.3)	
Multigravida	167 (65.0)	117 (63.6)	32 (71.1)	34 (68.0)	16 (72.7)	
Missing data	0	0	0	0	0	
Gestational age						0.09
First trimester	50 (19.5)	33 (17.9)	8 (17.8)	12 (24.0)	3 (13.6)	
Second trimester	98 (38.1)	68 (37.0)	20 (44.4)	22 (44.0)	12 (54.5)	
Third trimester	98 (38.1)	75 (40.8)	16 (35.6)	14 (28.0)	7 (31.8)	
Missing data	11 (4.3)	8 (4.3)	1 (2.2)	2 (4.0)	0	
Complications						0.12
Uncomplicated	191(74.3)	142 (77.2)	29 (64.4)	33 (66.0)	13 (59.1)	
Diabetes	25 (9.7)	17 (9.2)	5 (11.1)	6 (12.0)	3 (13.6)	
Hypertension	6 (2.3)	4 (2.3)	0	2 (4.0)	2 (9.1)	
SGA	4 (1.6)	1 (0.5)	2 (4.4)	3 (6.0)	2 (9.1)	
Multiple pregnancy	2 (0.8)	0	0	0	1 (4.5)	
Heart disease	1 (0.4)	1 (0.5)	0	0	0	
Anemia	1 (0.4)	1 (0.5)	0	0	0	
Epilepsy	1 (0.4)	1 (0.5)	0	0	0	
Missing data	26 (10.1)	17 (9.2)	9 (20.0)	6 (12.0)	1 (4.5)	
Educational level						0.16
No formal education	3 (1.2)	2 (1.1)	1 (2.2)	0	0	
Up to G.C.E. Ordinary Level	126 (49.0)	83 (45.1)	27 (60.0)	29 (58.0)	13 (59.1)	
Up to G.C.E. Advanced Level	87 (33.8)	67 (36.4)	10 (22.2)	15 (30.0)	5 (22.7)	
University degree or above	26 (10.1)	22 (12.0)	3 (6.7)	1 (2.0)	0	
Missing data	15 (5.8)	10 (5.4)	4 (8.9)	5 (10.0)	4 (18.2)	
Monthly income in LKR						0.01
<20 000	59 (23.0)	37 (20.1)	15 (33.3)	12 (24.0)	5 (22.7)	
20 000–50 000	134 (52.1)	98 (53.2)	21 (46.7)	25 (50.0)	10 (45.5)	
>50 000	14 (5.4)	12 (6.5)	1 (2.2)	1 (2.0)	0	
Missing data	50 (19.5)	37 (20.1)	8 (17.8)	12 (24.0)	7 (31.8)	
Employment Status						0.38
Employed	55 (21.4)	43 (23.4)	8 (17.8)	7 (14.0)	3 (13.6)	
Self-employed	9 (3.5)	6 (3.3)	1 (2.2)	2 (4.0)	0	
Unemployed	182 (70.8)	130 (70.7)	22 (48.9)	38 (76.0)	17 (77.3)	
Missing data	11 (4.3)	5 (2.7)	14 (31.1)	3 (6.0)	2 (9.1)	

(Continues)

TABLE 1 (Continued)

Demographic characteristics	Frequency (%) N=257	Normal (%) n=184	Anxious (%) n=45	Depressed (%) n=50	Both anxious and depressed together (%) n=22	p value
Use of social media to get COVID-19 information						0.39
Not using social media	22 (8.6)	17 (9.2)	3 (6.7)	4 (8.0)	2 (9.1)	
Less than 2 hours per day	125 (48.6)	90 (48.9)	20 (44.4)	25 (50.0)	10 (45.5)	
2-4 hours per day	60 (23.3)	44 (23.9)	11 (24.4)	9 (18.0)	4 (18.2)	
Average 6 hours per day	10 (3.9)	8 (4.3)	2 (4.4)	2 (4.0)	2 (9.1)	
More than 6 hours per day	8 (3.1)	3 (1.6)	3 (6.7)	4 (8.0)	2 (9.1)	
Missing data	32 (12.4)	95 (51.6)	6 (13.3)	6 (12.0)	2 (9.1)	
Watching television to get COVID-19 information						0.02
Less than 2 hours per day	104 (40.5)	81 (44.0)	16 (35.5)	16 (32.0)	9 (40.9)	
2-4 hours per day	113 (44.0)	83 (45.1)	17 (37.8)	20 (40.0)	7 (31.8)	
Average 6 hours per day	21 (8.2)	15 (8.1)	4 (8.9)	5 (10.0)	3 (13.6)	
More than 6 hours per day	14 (5.4)	3 (1.6)	5 (11.1)	7 (14.0)	1 (4.5)	
Missing data	5 (1.9)	2 (1.1)	3 (6.7)	2 (4.0)	2 (9.1)	

Abbreviations: G.C.E., General Certificate of Education; LKR, Sri Lankan Rupees; SGA, Small for gestational age.

anxiety, depression, and associated factors in pregnant women attending antenatal clinics in Castle Street Hospital for Women (CSHW), a tertiary care maternity hospital located in Colombo, Sri Lanka. Assessments were conducted between April 27, 2020 and May 20, 2020 during the peak of Sri Lanka's pandemic response and lockdown through use of the Hospital Anxiety and Depression Scale (HADS). Ethical approval was granted by the Ethical Review Committee of CSHW, Colombo, Sri Lanka.

Sri Lanka had a low rate of infection at the time of the study. Women with non-viable pregnancy, fetal anomaly, suspected or confirmed COVID-19, and known psychiatric illnesses were excluded from this study. The study instrument was a self-administered waiting room questionnaire with two sections. Section 1 assessed demographic and clinical variables. Section 2 consisted of the validated Sinhala translated version of HADS. HADS is a reliable 14-item self-assessment tool used in outpatient hospital clinics to assess the levels of anxiety (seven items) and depression (seven items) experienced by patients, with each item scored from 0–3.[2] A total score of ≥8 on the depression or anxiety scale was considered a positive result. Anxiety or depression status was regarded as the main outcome variable. The Sinhala translated version of HADS has been validated and used in Sri Lankan practice previously.[3]

Variables measured in Section 1 included demographic and clinical information, time spent watching television to seek COVID-19-related information, the use of social media to obtain COVID-19-related information, and psychological disturbance. Psychological disturbance was defined as being anxious, depressed, or both.

Approximately 1500 pregnant women attended antenatal hospital clinics during the study period. A quota sampling technique was used and approximately 50 women were recruited from each clinic. Women were allocated a number on a first come, first served basis and the first 25 eligible attendees each day were invited to take part in the study. Mean age was 29.2 (SD±5.7) years and median (IQR) parity 2(1–3). Mean gestational age of the study participants was 23.3 (SD±10.2) weeks. Of 257 patients studied, 191 (74.3%) had uncomplicated pregnancies at the time of survey. Overall, the prevalence of anxiety and depression were 17.5% (45/257) and 19.5% (50/257), respectively. Of the patients, 73 (28.4%) were either anxious, depressed, or both. The youngest age group (18–25 years) was found to be at higher risk (45.5%) of being both anxious and depressed.

Logistic regression details for anxiety and depression, along with demographic and other variables, are summarized in Table 1. Monthly family income (P=0.01), and watching television to seek COVID-19-related information (P=0.02) were found to be significant. Seeking information from social media (Facebook, WhatsApp, Viber, etc.) was not significant.

A Sri Lankan study by Agampodi et al.[4] revealed a 16.2% prevalence of antenatal depression in 2013. The present study found an increased prevalence of antenatal depression (19.5%) among non-COVID-19-infected pregnant women. A recent study by Liu et al.[5] assessing perinatal anxiety among pregnant women in Wuhan reported that 24.5% of women were suffering from anxiety, while a less affected city, Chongqing, reported an anxiety prevalence of 10.4%. By comparison, Sri Lankan women displayed a higher rate of anxiety than that observed in Chongqing, despite the fact that Sri Lanka had successfully contained the spread of the virus at the time of the study (10.4% vs 17.5%). Other studies have also reported higher

prevalence of perinatal and postpartum anxiety and depression during the COVID-19 pandemic.[6,7]

As of June 22, 2020, Sri Lanka has reported 1951 COVID-19 cases, 11 deaths, and six reported cases of COVID-19-positive pregnant women in the country.[8] This is evidence of effective control of the COVID-19 pandemic within the country. However, strict quarantine measures were in place during this period; airports and ports were closed, and an island-wide curfew was implemented. All non-essential workers were told to stay at home and healthcare access was limited. Pandemic-related news dominated the media output. Increased rates of psychological disturbance may be attributed to media focus on the pandemic, social isolation, economic concerns, quarantine and the resultant change in family interactions.

The COVID-19 pandemic has resulted in an increase in prevalence of perinatal anxiety and depression among Sri Lankan pregnant women with no proven/known COVID-19 infection. Special support is needed for pregnant mothers during infectious epidemics. HADS is a valid and appropriate tool to assess pregnant women at outpatient antenatal clinics during the COVID-19 pandemic, allowing clinics to take necessary actions and provide appropriate support. Limitations of this study are its single center design and possible selection bias.

AUTHOR CONTRIBUTIONS

MP participated in the conception of the study, administering of the questionnaire, analysis of data, and writing of the manuscript. MMG participated in the administering of the questionnaire, analysis of data, and writing of the manuscript. MW participated in the conception of the study and editing of manuscript. AJ participated in conception of the study and writing of the manuscript. All authors critically revised, edited, and approved the final version of the manuscript.

CONFLICTS OF INTEREST

The authors have no conflicts of interest.

REFERENCES

1. Knight M, Nair M, Tuffnell D, Kenyon S, Shakespeare J, Brocklehurst P, Kurinczuk JJ, eds. on behalf of MBRRACE-UK. Saving lives, improving mothers' care - surveillance of maternal deaths in the UK 2012–14 and lessons learned to inform maternity care from the uk and ireland confidential enquiries into maternal deaths and morbidity 2009–14. Oxford: National Perinatal Epidemiology Unit, University of Oxford; 2016.
2. Zigmond A, Snalth R. The Hospital Anxiety and Depression Scale. *Acta Psychiatr Scand*. 1983;67:361–370.
3. de Silva D. Anxiety disorders in Sri Lanka. Dissertation submitted to the Postgraduate Institute of Medicine, Sri Lanka: University of Colombo.
4. Agampodi SB, Agampodi TC. Antenatal depression in Anuradhapura, Sri Lanka and the factor structure of the Sinhalese version of Edinburgh post partum depression scale among pregnant women. *PLoS One*. 2013;8:e69708.
5. Liu X, Chen M, Wang Y, et al. Prenatal anxiety and obstetric decisions among pregnant women in Wuhan and Chongqing during the COVID-19 outbreak: A cross-sectional study. *BJOG*. 2020;10. [Epub ahead of print.] https://doi.org/10.1111/1471-0528.16381
6. Zanardo V, Manghina V, Giliberti L, Vettore M, Severino L, Straface G. Psychological impact of COVID-19 quarantine measures in northeastern Italy on mothers in the immediate postpartum period. *Int J Gynecol Obstet*. 2020;150:184–188.
7. Ceulemans M, Hompes T, Foulon V. Mental health status of pregnant and breastfeeding women during the COVID-19 pandemic: A call for action. *Int J Gynecol Obstet*. 2020. [Epub ahead of print.] https://doi.org/10.1002/ijgo.13295
8. Health Promotion BUREAU. COVID-19: Live Situational Analysis Dashboard of Sri Lanka [Internet]. 2020. https://hpb.health.gov.lk/covid19-dashboard/. Accessed June 22, 2020.