PREGNANCY FACTORS OF ANXIETY IN PREGNANT MOTHERS DURING THE COVID-19 PANDEMIC : A SYSTEMATIC REVIEW

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Abstract

Introduction: *The COVID-19 pandemic has a negative impact on the mental health of pregnant women. Women are prone to psychological problems such as fatigue, emotional disturbances, mood disorders and anxiety disorders. Anxiety of pregnant women must be prevented so as not to cause negative impacts on pregnant women and their fetuses.* ***Objectives:*** *The purpose of this study is to identify the triggers for anxiety in pregnant women during the COVID-19 pandemic based on a systematic review.* ***Method:*** *The method used to search in PubMed, ProQuest, Google Scholar with the publication year starting 2020-2021. The critical appraisal used is The Joanna Briggs Institute JBI.* ***Results:*** *20 articles met the inclusion criteria. Research and studies were conducted in China, Iran, Canada, Turkey, Indonesia and the USA. Anxiety trigger factors are identified into 2, namely threats to physical integrity and threats to the integrity of one's own system. Threats to physical integrity consist of age, parity, physical activity, trimester of pregnancy, pregnancy complications, food availability, COVID-19 prevention efforts. Threats to the integrity of the self system consist of education, occupation, history of depression, unplanned pregnancy, family income, location of residence, presence of caregivers, health facility services, COVID-19 information, life partners, social support, counseling, telemedicine and insurance services.* ***Discussion and conclusion:*** *There are many factors that cause anxiety during a pandemic. There is a need for new identification to identify risk factors for anxiety in pregnant women so that more comprehensive prevention efforts can be carried out involving various health professions in the service.*

Keywords: Pregnancy, Anxiety Triggers, COVID-19

INTRODUCTION

The Pandemic that has occurred since 2019 has a negative impact not only on social, economic and political terms but also greatly affects mental health. Overall, women face more mental health problems than men (Etheridge B, Spantig L., 2020). The fact shows that mental health problems in women continue to increase, this is often associated with

pregnancy experienced by women (Nowacka U et al 2021).

Pregnancy is one of the events most important in a woman's life. Pregnancy causes many physiological, psychological and social changes. Vulnerable woman to psychological problems such as fatigue, emotional disturbances, mood disorders and anxiety disorders. Women also have extra burdens and challenges to care for their children and family members. Pregnancy-related anxieties such as fears and concerns about pregnancy, childbirth, neonatal health and childcare. This anxiety can negatively impact their children's overall physical, emotional, behavioral and cognitive development. Infectious diseases are a source of anxiety especially during epidemics and pandemics. As is known, epidemics and pandemics cause negative clinical impacts on pregnant women such as death, spontaneous abortion, premature birth and fetal death. The COVID-19 pandemic has reduced pregnant women's access to routine prenatal care services due to the rapid spread of the disease, lack of effective treatment, the need for quarantine, stigmatization and hopelessness (Khoury JE, Atkinson L, Bennett T, Jack SM, Gonzalez A, 2020). The prevalence of stress and anxiety in pregnancy is known to be increased when compared to the general population (15-23% vs 3-5%) (Baranowska B, Sys D, Pokropek A, Pawlicka P, Ka M., 2020). Anxiety during pregnancy, if not prevented, will lead to problems during labor and postpartum, such as abortion, preterm (premature) labor, and even postpartum depression. If the problem is not handled properly, it will contribute to mortality and morbidity rates for mothers and babies (Shahhosseini, Pourasghar, Khalilian, & Salehi, 2015).

Several factors contribute to overall mental health problems in pregnancy: (a) the COVID-19 pandemic and related problems; (b) social distancing, including limited contact and support from relatives and friends; (c) financial burden and economic impact; and (d) limited health support, reorganization of medical facility services and switching to online and telephone consultations (Ravaldi C, Wilson A, Ricca V, Homer C, Vannacci A, 2021).

Anxiety disorders as a type of mental health condition can be influenced by several risk factors including work status, physical activity, discomfort from visiting the hospital, and information about COVID-19. All of these factors are interrelated and cause psychological disorders in pregnant women. Based on the statement above, pregnant women in Indonesia also have the potential to experience psychological disorders as one

of the impacts of the COVID-19 pandemic. Many trigger factors or risk factors for the anxiety of pregnant women during the COVID-19 pandemic, if these factors can be detected early, the possible impact can be minimized. Based on the above background, researchers are interested in conducting a literature *systematic review review* of anxiety triggering factors in pregnant women during the Covid-19 pandemic.

METHODS

Data Sources And Search Strategy

Literature search in this *systematic review* was conducted in April-July 2021, using 4 *databases.* There are *ProQuest, Pubmed, Research Gate, Google Scholar.* The keywords used in this *systematic review* are "*Risk Factors AND Pregnancy AND Anxiety AND COVID-19* " for international journals while national journals use "*Precipitating factors AND anxiety AND pregnant women AND the COVID-19 pandemic". 19".*

Study Criteria

Determine the eligibility criteria with an article search strategy using the PICOS framework which is also adjusted to the inclusion and exclusion criteria. The inclusion criteria in this study are accessible full text for free, contains factors that trigger anxiety during the COVID-19 pandemic, the population in the journal is pregnant women, meets Critical appraisal JBI

Exclusion criteria in this study are the title is not in accordance with the concept to be studied, there is duplication in article, year of publication instead of 1 year (2020-2021), accessible only contains abstracts and the design research is a literature review, systematic review or meta-analysis.

Quality of Assessment

Methodological quality in each article was screened using The Joanna Briggs Institute (JBI) Critical Appraisal Checklist. The assessment criteria were assigned a score of 'yes', 'no', 'unclear' or 'not applicable', and each criterion with a 'yes' score was assigned one point and another score was zero, each study score was then calculated and summed. Critical appraisal to assess eligible studies is carried out by researchers. If the research score at 100% meets the critical appraisal criteria with the cut-off point value agreed upon

by the researcher, the study is included in the inclusion criteria. Researchers will exclude studies of low quality to avoid bias in the validity of results and review recommendations. If at the last screening, the article is ready for data synthesis then the article can be used.

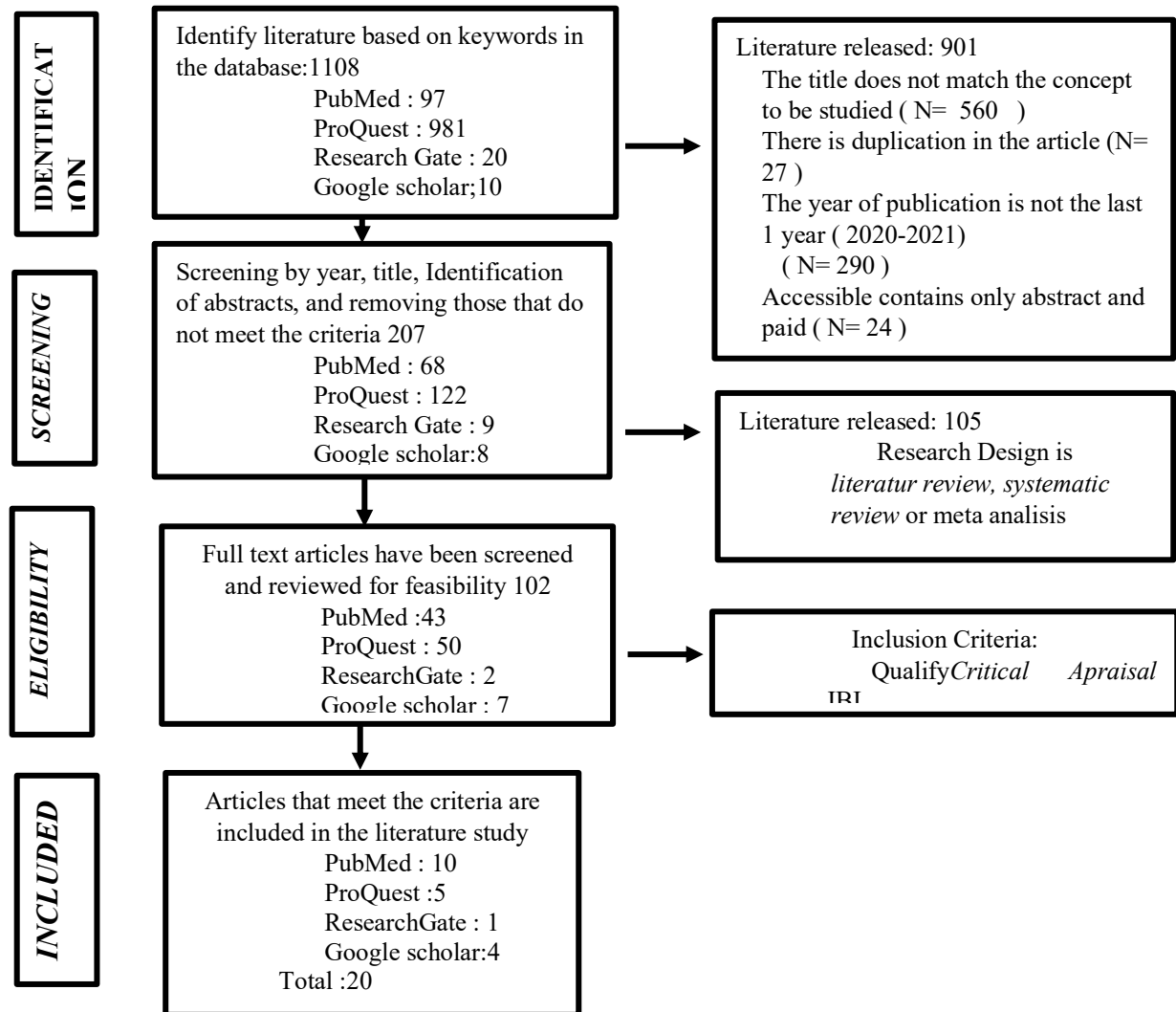The article selection process is illustrated below:

Figure 1 : Prism Flow Chart Journal Search

RESULTS AND DISCUSSIONS

RESULTS

A study included in this systematic review was carried out in 2020-2021. 7 studies were conducted in China, 5 studies in Iran, 2 studies in Canada, 4 studies in Indonesia, 1 study USA and Turkey. Respondents in this study were pregnant women during the COVID-19 pandemic. The majority of respondents are primiparous, in the third trimester of pregnancy. The number of respondents in the study amounted to more than 200

respondents, the majority of whom were housewives and had a college education. Based on a literature search, 20 articles were found which were then analyzed based on the trigger factors for anxiety in pregnant women during the COVID-19 pandemic

Table 1 Summary of Literature Search Results for *Systematic Review*

No.	Author	Method (Design, Sample, Variable, Instrument, Analysis)	Conclusion
1.	(6) X Liu, M Chen, Y Wang, L Sun, J Zhang, Y Shi, J Wang, H Zhang, G Sun, PN Baker, X Luo H Qi	**D :** *Cross sectional study* **S :** 1947 pregnant women **V :** The independent variables are family income and location of residence. The dependent variable is the level of anxiety of pregnant women during the Covid-19 pandemic. **I :** - Demographic, pregnancy and epidemic questionnaire - Anxiety : *The Self-Rating Anxiety Scale (SAS*) **A:** *Chi-square*, *kruskal-wallis* and *t-test, Logistics Regression, Statistics Analysis Software version 9.4 and PRISM version 8.0 for windows (GraphPad)*	- There is a significant relationship between family income and the level of anxiety of pregnant women during the Covid-19 pandemic. - There is a significant relationship between the location of residence and the level of anxiety of pregnant women during the Covid-19 pandemic.
2.	(7) Cheryl A. Moyer, Sarah D Compton, Elizabeth Kaselitz, Maria Muzik	**D :** *Cross sectional study* **S :** 2740 pregnant women **V :** The independent variables are the availability of food, family income, and the presence of caregivers. The dependent variable is the level of anxiety of pregnant women during the Covid-19 pandemic. **I :** Online survey,modified anxiety instrument *pregnancy-related anxiety scale (PRAS)* **A :** Bivariate and multivariate linear regression analysis	- There is a significant relationship between food availability and anxiety levels of pregnant women during the Covid-19 pandemic. - There is a significant relationship between family income and the level of anxiety of pregnant women during the Covid-19 pandemic. - More than half of the women reported increased stress due to the loss of a caregiver
3.	(8) Yanting Wu, PhD; Chen Zhang, MSc; Han Liu, MSc; Chenchi Duan, MSc, et al.	**D :** *Cross sectional* **S :** 4124 pregnant women **V :** The independent variables are household income, physical activity, area of residence and time work. The dependent variable is the anxiety of pregnant women during the Covid-19 pandemic. **I :** TheQuestionnaire *Edinburgh Postnatal Depression Scale*. **A :** *Chi square* and *Mann-Whitney U, logistic regression, software R statistical software version 3.6.2 (packages rms, ggplot2, ggradar, nCOV2019, recharts)*	- Women who are at high risk of experiencing symptoms of depression include those with household income medium per year and low levels of physical activity. - Pregnant women with a per capita living area of 20 m^2 appear to be more prone to developing depressive symptoms during the Covid-19 outbreak as are those who work full time.
4.	(9) Hatice Kahyaoglu Sut PhD, Burcu Kucukkaya Msc.	**D:** *Cross sectional* **S:** 403 pregnant women **V:** The independent variable is the level of education , physical activity status, discomfort of visiting the hospital and having information about Covid-19. The dependent variable is the level of anxiety of pregnant women during the Covid-19 pandemic. **I:** The online survey, survey of sociodemographic, knowledge and attitudes,	- The risk of depression in pregnant women with less education level of 9 years was 2.76 times higher (95% CI: 1.22-6.28) compared to pregnant women with education level 9 years and over (p = 0.015). - The risk of depression in pregnant women who do not perform regular physical activity is 2.36 times (95% CI: 1.34 to 4.18) higher than in pregnant women who do regular physical activity (p = 0.003)

		HADS-Anxiety and HADS-Depression **A:** *Mann-Whitney U test, Spearman correlation analysis, software IBM SPSS Statistics for Windows, Version 20.*	- the risk of depression among pregnant women who experienced discomfort visiting the hospital or doctor for follow-up visits was 6.61 times (95% CI: 3.43-12.75) higher than pregnant women who did not experience discomfort with these visits. p < .001) The
5.	(10) Fatemeh Effati-Daryani, Somayeh Zarei, Azam Mohammadi, Elnaz Hemmati, Sakineh Ghasemi Yngyknd and Mojgan Mirghafourvand	**D :** *Cross sectional* **S :** 205 pregnant women **V :** The independent variables are the spouse's education level, spouse's occupation and spouse's life satisfaction. The dependent variable is the level of anxiety of pregnant women during the Covid-19 pandemic. **I :** Sociodemographic and obstetrics questionnaire and DASS-21 (Depression, Anxiety and Stress Scale-21) **A :** *General linear model test* with SPSS (Version 24.0, SPSS Inc., Chicago, IL)	- The variables of spouse's educational level, spouse's occupation, and marital life satisfaction were significantly associated with depression scores (P < 0.05) and were able to predict 24.7% of the variance of depression scores in pregnant women during the prevalence of COVID-19. - There is a significant relationship between the couple's education level with symptoms of depression, anxiety and stress. Women whose husbands had non-university education were less likely to report depression, anxiety, and stress than those with college degrees.
6.	(11) Zeinab Hamzehgardeshi, Shabnam Omidvar, Arman Asadi Amoli, Mojgan Firouzbakht.	**D :** *Cross sectional* **S :** 318 pregnant women **V :** Independent variables (City, Health Center, Age, Education, Residence, Occupation, Husband's Job, Social support, Gravid, Abortion, Premature delivery, Pain, Vaginal delivery, any medical history, Knowledge about covid, attitude about covid, practice about covid, Depression) The dependent variable is the anxiety of pregnant women during the Covid-19 pandemic. **I :** Questionnaire (PRAQ questionnaire, Edinburgh, KAP COVID-19, CDA-Q and Demographics) **A :** Linear regression and logistic regression analysis, using SPSS software (v. 21)	- Approximately 21% of pregnant women suffer from anxiety during pregnancy during the COVID pandemic -19 and a significant predictor of anxiety in pregnancy during the pandemic was a. Number of pregnancies (P = 0.008) where nulliparous had a higher level of anxiety compared to multiparas b. Practices about COVID-19 (P < 0.001), where good practices related to COVID-19 decreased the chances of anxiety pregnancy-related by 62% c. anxietyCOVID-19 anxiety (P < 0.001), pregnant women with COVID19 anxiety were 13% more likely to have pregnancy-related anxiety. d. Depression (P < 0.001), pregnant women who experience depression will experience increased anxiety during pregnancy
7.	(12) Fei Wu, Wei Lin, Peiyi Liu, Minyi Zhang, Shengbin Huang, Caiyun Chen, Qiushuang Li	**D :** *Cross sectional* **S :** 3,434 pregnant women **V :** The independent variables are - socio-demographic characteristics and family care : age, health insurance, education level, spouse, tin education level, employment status after pregnancy, employment status, marital status, age of	Increased risk of symptoms of anxiety and depression in pregnant women is associated with a - woman who are not married / divorced / widowed, pregnant women with abnormal marital status (unmarried / divorced / widowed) more likely to experience prenatal anxiety and depression - Unemployed or unemployed women, unemployed women 1.4 times more

	An, Weikang Huang , Chuyan Zhong b, Yueyun Wang, Qing Chen S	marriage, living status, psychological counseling before pregnancy and level of family care, - obstetric characteristics: weeks of pregnancy (first, second, third trimester), parity (1, 2,) 3), number of spontaneous abortions (0, 1, 2, 3), vaginal bleeding and pregnancy complications (including gestational hypertension, gestational diabetes, intrahepatic cholestasis and cervical disease), pregnancy planning (planned conception, unplanned pregnancy, impregnation artificial delivery), expected mode of delivery (vaginal delivery, cesarean delivery not considered), - Characteristics associated with COVID-19: duration of isolation at home (days), frequency of hand washing after discharge, changes in intimacy between partners, household income and routine pregnancy check-ups , - lifestyle characteristics: body mass index (BMI), smoking and drinking alcohol in pregnant women and their partners, exercise and sitting time per day. The dependent variable is the anxiety of pregnant women during the Covid-19 pandemic. **I :** Questionnaire on socio-demographic characteristics, obstetrics, characteristics related to covid, lifestyle. Anxiety instrument: *General Anxiety Disorder 7-item (GAD-7)*, depression instrument: *Patient Health Questionnaire 9-item (PHQ-9) survey,* **A :** *Chi-square test or Fisher's exact test, logistic regression, SPSS software V.25*	likely to experience depression than working women - Professional psychological counseling before pregnancy, pregnant women who have not received professional psychological counseling before pregnancy are at higher risk experiencing anxiety and depression - Family dysfunction, estrangement of pregnant women from their partners following the COVID-19 pandemic increases anxiety and depressive symptoms in pregnant women The - first trimester of pregnancy has a higher risk of depression than in the last or third trimester, - Has pregnancy complications and vaginal bleeding experience vaginal bleeding is more anxious than those who are not, - Unplanned pregnancy, unplanned pregnancy significantly increases the likelihood of depression. - Decreased household income, pregnant women who experience a 20-50% or more than 50% reduction in household income are more likely to experience symptoms of anxiety and prenatal depression. Likewise, a% decrease in household income greatly increases the risk of depressive symptoms. - 20-50Spousal disputes due to the COVID-19 pandemic, partner violence, especially emotional abuse, can lead to unhealthy emotions.
8.	(13) Catherine Lebel, Anna MacKinnon, Mercedes Bagshawea, Lianne Tomfohr Madsen, Gerald Giesbrecht.	**D :** *Cross sectional* **S :** 1987 pregnant participants **V :** variables - IndependentCOVID-19 stressors : Loss of job due to COVID-19 , Threat to have life from COVID-19, Threat to baby's life from COVID-19, Strained relationship with spouse during COVID-19, Social isolation due to COVID-19, Worried about not receiving the necessary care due to COVID-19 - Resilience Factor : Activity Physical and Social Support The dependent variable is the anxiety and depression of pregnant women during the Covid-19 pandemic. **I :** Questionnaire	- Higher symptoms of depression and anxiety were associated with more concern about the threat COVID-19 poses to the lives of mothers and babies, as well as concerns about not getting needed prenatal care, relationship strain, and social isolation due to COVID-19, suggesting that maintaining care High-quality prenatal care is a priority for pregnant individuals, and changes in care can lead to increased anxiety symptoms - Better social support is associated with lower symptoms of depression and anxiety. Social support also reduces the effect of maternal prenatal stress on the infant's stress response. - Physical activity is associated with decreased symptoms of depression and anxiety. Physical activity (eg, closure of parks, beaches, and gyms) and shows that encouraging physical activity among pregnant individuals

		- Demographic - questionnaire Social support questionnaire: *social support effectiveness ques- tionnaire (SSEQ), interpersonal support evaluation list (ISEL) (Cohen* - Physical activity: *Godin- Shephard Leisure-Time Exercise Questionnaire* - Anxiety: *Edinburgh Depression Scale (EPDS), The PROMIS Anxiety Adult 7-item* **A :** *ANCOVA, Logistics Regression* using SPSS 26.0.	can help reduce feelings of anxiety and depression.

9.	(14)
	Fangfang Shangguan, Ruoxi Wang, Xiao Quan, Chenhao Zhou, Chen Zhang, Wei Qian, Yongjie Zhou, Zhengkui Liu, and Xiang Yang Zhang
		D : *Cross sectional*
		S : 2,120 pregnant women
		V : variables
		Age, education, Married, smoking, Drinking, Family annual income, Working as a medical staff Residence (Hubei), Relatives with a diagnosis of COVID-19, Neighbors with a diagnosis of COVID-19, Pelvic pain or vaginal bleeding, History of chronic illness, History of medical conditions related to pregnancy, Current treatment for chronic illness
		The dependent variable is the anxiety of pregnant women during the Covid-19 pandemic.
		I: questionnaire
		- demographicQuestionnaire-7
		- *The Generalized Anxiety Disorder (GAD-7)scale*
		- *The 10-item the Perceived Stress Scale (PSS)*
		A: *Binary logistic regression with* SPSS 21.0
			- A total of 21.7% (459) pregnant women reported at least mild anxiety (≥5 on the GAD-7 scale), and 82 women reported moderate to severe anxiety (≥10 on the GAD-7 scale).
			- Factors associated with mild anxiety in pregnant women during COVID-19 were
			  1. Living in Hubei province (OR = 1.68, 95% CI = 1.32–2.13) Pregnant women living in Hubei were 1.68 times more likely to experience anxiety than those living in other provinces
			  2. None provided daily life support (OR = 1.81, 95% CI = 1.18-2.77), Pregnant women were 1.81 times more likely to become anxious when no one provided daily life support
			  3. Pelvic pain or vaginal bleeding (OR = 1.67, 95% CI = 1.32-2.09), Pregnant women with pelvic pain or vaginal bleeding were 1.67 times more likely to experience anxiety than those without and higher perceived stress (OR = 6.87 , 95% CI = 5.42–9.02). Pregnant women with higher stress perceptions were 6.87 times more likely to experience anxiety than those with lower stress perceptions

10.	(15) Najmieh Saadati, Poorandokht Afshari, Hatam Boostani, Maryam Beheshtinasab, Parvin Abedi and	**D :** *Cross sectional* **S :** 300 pregnant women **V :** variables Independent Trimester of pregnancy, Age, Gravida, occupation, education, anomaly screening results, history of infertility, current pregnancy problems The dependent variable is the anxiety of pregnant women during the Covid-19 pandemic.	- Women in the third trimester had significantly higher health anxiety scores than those in the first trimester. p = 0.045) - Women in the second trimester and third pregnancies were more worried about illness, the consequences of illness, and had more worries about illness. but total health anxiety scores were significantly higher among women in the third trimester of pregnancy.

	Elham Maraghi	**I :** Questionnaire : *demographic questionnaire and the Health Anxiety Questionnaire* **A :** SPSS version 22, Shapiro-Wilk test, ANOVA test	
11	(16) Wenping Ding, Jianmei Lu, Yan Zhou, Weizhong Wei, Zhihong Zhou, Min Chen	**D :** *Cross sectional* **S :** 817 pregnant women **V :** The independent variables are sociodemographic characteristics, KAP, and Zung's self-rating anxiety scale (SAS); Socio Demographics include maternal age, gestational age, occupation, education level, household income, previous children in the family, reproductive history, and complications during pregnancy. The dependent variable is the anxiety of pregnant women during the Covid-19 pandemic. **I :** Online - Questionnaire Questionnaire - *SociodemographicZung self-rating anxiety scale (SAS)* **A :** Pearson's chi-square test and multivariable logistic regression analysis, *Statistical Analysis System software, version 9.4 (Cary, North Carolina).*	- The prevalence of prenatal anxiety in this population was 20.8%. - Attitude and practice data show that (71.0%) are very concerned about COVID-19 news, - (55.7%) consider official media to be the most reliable source of COVID-19 information, women who trust official media are less likely to have symptoms of anxiety compared to those who did not trust official media (OR = 0.620, 95% CI: 0.434, 0.885, - (83.4%) worried about the possibility of being infected with COVID-19. However, only (10.2%) were worried about contracting COVID-19 infection. Through the ultrasound transducer during scanning morphology routing woman who does not worry about infection COVID 19th of ultrasound transducers also have a lower probability to undergo prenatal anxiety (OR = 0.514, 95% CI: 0.308, 0.857). - About two-thirds (64.6%) suspend or cancel the antenatal visits, women who did not delay their antenatal appointments have a higher risk of anxiety than those who did (oR = 1.446, 95% CI: 1.003, 2.086).
12	(17) Yuan Ge, Chunhong Shi Bin Wu, Yannan Liu, Ling Chen, Yuegui Deng	**D :** *Cross sectional* **S :** 446 pregnant women **V :** variables IndependentTrimester of pregnancy, Age, Gravida, occupation, , Education, Anomaly screening results, History of infertility, current pregnancy problems The dependent variable is the anxiety of pregnant women during the Covid-19 pandemic. **I :** Questionnaire online: *the Questionnaire Star platform* **A :** SPSS version 22, Shapiro-Wilk test, ANOVA test	- The prevalence rate of anxiety among women was 36.77%, and some behavioral adaptations were observed. - Pregnant women who had an annual household income of less than $7,000, - Primiparas who had to be strictly isolated at home and canceled antenatal care, and were expected to receive prenatal health care through teleconsultation services showed a higher risk of anxiety. - However, Zhuang pregnant women aged 22-35 years, with undergraduate education, and in the second trimester were less likely to experience anxiety.
13	(18) Leili Salehi, Partner of Rahimzadeh. Sara Esmaelzadeh-Saeieh, Elham	**D :** *Cross sectional* **S :** 222 pregnant women **V :** variable IndependentAge (years), Fear of COVID-19, COVID-19 anxiety, Mental health, Concern about pregnancy, education, Economics, History of	- worry during pregnancy is a variable that is positively and significantly correlated with mental health and COVID-19 anxiety also has the highest positive direct relationship. - Happiness during pregnancy which has a significant negative and direct

	Molaei, Hamideh Zaheri	abortion, Family history of Corona, Number of children, History of illness The dependent variable is maternal anxiety during the Covid-19 pandemic. **I :** Questionnaire: *the Fear of COVID-19 Scale, the Anxiety of COVID-19 Scale, the pregnancy experiences Scales, Depression Anxiety Stress scale, and demographic checklist* **A :** Pearson correlation coefficient, path analysis Data were analyzed using AMOS and SPSS software -16.	relationship with mental health disorders - fear of COVID-19 through anxiety mediating the experience of pregnancy has been shown to have a significant positive relationship with mental health
14	(19) Najmeh Maharlouei, Pedram Keshavarz , Niloufar Salemi, Kamran B. Lankarani	**D :** *Cross sectional* **S :** 540 pregnant women **V :** Independent variables Socio-demographic section : age of participants, duration of marriage, area of residence (Shiraz versus villages around Shiraz), education level, employment status, insurance status, self-reported socioeconomic status (SES), and perceived correlation between household income and expenditure. The second part: gestational age (GA), number of pregnancies including current ones, concurrent maternal comorbidities, and medication history including supplements. The dependent variable is the anxiety of pregnant women during the Covid-19 pandemic. **I :** Online questionnaire: covering *socio-demographic, obstetric and medical histories, and the short form of the Depression Anxiety Stress Scales (DASS-21)* **A :** SPSS version 18.0 (IBM Corp., Armonk, NY, USA) was used to analyze the data . Chi-square test was applied to assess the relationship between qualitative variables. Independent T tests and ANOVA were used to compare numerical variables.	- Abnormal depression was significantly higher in those without insurance (OR=2.5) and in those with poor personal health (SRH) (OR=27.8). Depression rates were higher in pregnant women who did not have insurance. In addition, symptoms of depression were more common in pregnant women with low health status compared to pregnant women with good or moderate SRH. - Pregnant women with lower SRH and two or more comorbidities have a higher chance of having an abnormal level of anxiety subscale, Pregnant women with two or more comorbidities or who have lower self-rated health (SRH) have a higher chance high to have abnormal levels of anxiety.
15	(20) Qian Wang, Phoenix KH Mo, Bo Song, Jiang-Li Di, Feng-Rong Zhou, Juan Zhao, Ying-Lan Wu, Hong Tian, Li-Qian Qiu, Jianhong Xia, Lan Wang Fen Li,	**D:** *Cross sectional* **S:** 15 428 pregnant women **V:** independent variables Socio-demographic(ie age, education level), pregnancy-related (i.e. parity, gestational age and pregnancy complications), contextual (i.e. quarantined, locked place of residence, personally knowing someone infected with COVID-19), cognitive (i.e. perception of risk and level of danger of COVID -19) and social factors (i.e. social support obtained during the outbreak).	- Older age was associated with lower rates of depression and anxiety. - Higher levels of education are associated with depression and higher frequency of wearing face masks. - Living in lockdown, being quarantined and knowing someone personally infected with COVID-19 is associated with poorer mental health. - Personally, knowing someone is infected with COVID-19, Knowing someone who is currently infected may also increase their susceptibility to infection, which has a negative impact on mental health. The - The perception that COVID-19 will pose long-term physical harm to

	Lin-Hong Wang	The dependent variable is the anxiety of pregnant women during the Covid-19 pandemic. **I** : Online questionnaire: sociodemographic questionnaire, pregnancy characteristics, cognitive and social factors related to Covid 19, frequency of washing hands and wearing masks. as well as *Patient Health Questionnaire-9 (PHQ-9), General Anxiety Disorder scale (GAD-7).* **A** : *Spearman's correlation, Simple logistic regressions, software SPSS version 16.0 (IBM SPSS Statistics, USA)*	humans is associated with higher rates of depression and anxiety, whereas the perception that the disease will be under control in humans is associated with higher rates of depression and anxiety. The coming month was associated with lower rates of depression and anxiety. and a lower tendency to always wear a mask - Social support was associated with lower levels of depression and anxiety and a higher frequency of hand washing was associated with lower rates of depression and anxiety.
16	Davenport MH, Meyer S, Meah VL, Strynadka MC and Khurana R (2020)	**D** : Cross-sectional **S** : 900 pregnant women **V** : Anxiety, depression and influencing factors **I** : Edinburgh Postnatal Depression Survey; EPDS), anxiety (State-Trait Anxiety Inventory; STAI-State) **A** : Chi Square	Moderate to high anxiety was identified in 29% of women before the pandemic (mean STAI = 34.5 ± 11.4) vs. 72% of current women (mean STAI = 48.1 ± 13.6; $p < 0.01$, large effect). However, women who did at least 150 minutes of moderate-intensity physical activity (meets current guidelines) during the pandemic had significantly lower scores for anxiety and depression than those who did not ($p < 0.01$,).

17	(21)
	Ayu Devita Citra Dewi, Meta Nurbaiti, Raden Surahmat, Putinah
		D : Quantitative research with an approach *cross sectional*
		S : 37 pregnant women
		V : factors for Anxiety Pregnant women, the covid 19 pandemic
		I : Questionnaire *Hamilton Anxiety Rating Scale* (HARS)
		A : Analysis: Chi Square
			- *p-value* 0.010 ($\alpha < 0.05$)
			  there is a relationship between age and anxiety of pregnant women during the covid 19 pandemic
			- *p-value* 0.001 ($\alpha < 0.05$)
			  there is a relationship between education and anxiety of pregnant women during the covid 19 pandemic
			- *p-value* 0.024 ($\alpha < 0.05$)
			  there is a relationship between work and anxiety of pregnant women during the covid 19 pandemic

18	(22) Tresya Pratiwi Dwiwanto, Asri Mutiara Putri, Niputu Sudiadnyani	**D** research *Analytical survey* with aapproach *cross sectional* **S** : 59 pregnant women **V**: Husband's support , the anxiety of pregnant women before delivery. *I:* Questionnaire *Hamilton Anxiety Rating Scale* (Hars) *A:* Analysis: Pearson correlation	*p-value* <0.05 there is a significant relationship between husband with anxiety support pregnant women before delivery
19	(23) Aslinda Hafid, Hasrul	**D** : Descriptive observational design, **S** : 48 pregnant women **V** : The incidence of the covid 19 pandemic, anxiety of pregnant women. **I** : *Hamilton Anxiety Rating Scale* (HARS) Questionnaire **A** : Chi Square	*p-value* 0.002 ($\alpha < 0.05$) there is a relationship between the incidence of the covid 19 pandemic and the anxiety level of pregnant women in the third trimester

| 20 | (24)
Ratih Mega
Septiasari, Nurya
Viandika | **D:**quantitative descriptive exploratory study with *cross sectional*
S : 53 pregnant women
V : Knowledge about covid-19, Anxiety of pregnant women.
I : Questionnaire
A : Spearman Rank | *p-value* 0.029 ($\alpha < 0.05$)
there is a significant relationship between knowledge and anxiety of pregnant women during the covid 19 pandemic |

DISCUSSION

a. **Threats to a person's physical integrity**

Threats to physical integrity involve the potential for a person's physical disability or decreased ability to carry out activities of daily living -days include:

1) **Age of pregnant women**

There is a relationship between age and anxiety of pregnant women during the COVID-19 pandemic, increasing age will increase the ability of pregnant women to solve problems (Dewi ADC, Nurbaiti M, Surahmat R, Putinah, 2021). Older age is associated with lower rates of depression and anxiety (Wang Q, Mo PKH, Song B, Di JL, Zhou FR, Zhao J, 2021).

2) **Parity**

Nulliparous have a higher level of anxiety than multiparas (Hamzehgardeshi Z, Omidvar S, Amoli AA, Firouzbakht M, 2021). Nulliparous individuals had significantly higher pregnancy-related anxiety symptoms than primiparous and multiparous individuals (Lebel et al., 2020). Primiparity is also a risk factor for the high prevalence of anxiety, little experience of parenting and lack of confidence to become a mother to be the cause of anxiety in primiparas (Ge et al., 2021).

3) **Physical Activity**

There is a relationship between work and the anxiety of pregnant women during the COVID-19 pandemic (Dewi ADC, Nurbaiti M, Surahmat R, Putinah, 2021)**.** Pregnant women who lack physical activity are at risk of experiencing anxiety and depression 2.36 times compared to pregnant women who do regular physical activity (Kahyaoglu Sut H, Kucukkaya B, 2021). Women who are not working are 1.4 times more likely to be depressed than women who are working (Wu F, Lin W, Liu P, Zhang M, Huang S, Chen C, *et al*, 2021). Lack of exercise can also trigger anxiety. Because exercise affects neurotransmitters in the brain, including dopamine and serotonin, which affect mood and behavior, pregnant women with physical training are more likely to control their negative emotions. Pregnant women who sat for more than 5 hours per day were found to have a higher risk of developing anxiety and depression (Wu F, Lin W, Liu P, Zhang M, Huang S, Chen C, *et al*, 2021). Physical activity (eg, play at the park, beach, and gym) in pregnant individuals can help reduce feelings of anxiety and depression (Lebel C, Mackinnon A, Bagshawe M, 2020). Staying physically active can be a useful tool for pregnant and

postpartum women. Specifically, engaging in at least 150 minutes of moderate-intensity physical activity each week was associated with lower scores on screening tools for depression or anxiety. Thus, physical activity is an effort that can be done to overcome the mental health crisis currently experienced by pregnant and postpartum women (Margie et al., 2020).

4) Trimester of Pregnancy

The first trimester of pregnancy has a higher risk of depression than in the last or third trimester (Wu F, Lin W, Liu P, Zhang M, Huang S, Chen C, *et al*, 2021). Women in the third trimester had significantly higher health anxiety scores than those in the first trimester (Saadati N, Afshari P, Boostani H, Beheshtinasab M, Abedi P, Maraghi E, 2021). Women in the second and third trimesters of pregnancy are more worried about illness, the consequences of illness, and have more worries about illness. but total health anxiety scores were significantly higher among women in the third trimester of pregnancy (Saadati N, Afshari P, Boostani H, Beheshtinasab M, Abedi P, Maraghi E, 2021). The second trimester has the highest prevalence of anxiety compared to trimesters 1 and 3 (Ding W, Lu J, Zhou Y, Wei W, Zhou Z, Chen M, 2021). Another study in Iran revealed that pregnant women in the third trimester of pregnancy were worried about COVID-19 disease and its consequences and had higher levels of anxiety (Hamzehgardeshi et al., 2021). Studies on anxiety found a prevalence of 45% in the first trimester, 40% in the second trimester and 35% in the third trimester (Fan S, Guan J, Cao L, Wang M, Zhao H, Chen L, *et al*, 2020).

5) Pregnancy complications

Pregnant women who experience vaginal bleeding are more anxious than those who do not (Wu F, Lin W, Liu P, Zhang M, Huang S, Chen C, *et al*, 2021). Pregnant women with pelvic pain or vaginal bleeding were 1.67 times more likely to experience anxiety than those without (Shangguan F, Wang R, Quan X, Zhou C, Zhang C, Qian W, *et al*, 2021). Pregnant women who have two or more co-morbidities and those who have a higher chance of having abnormal levels of anxiety. The current study shows that pregnant women who report poor health status have abnormally higher depression scores than others (Maharlouei et al., 2021). One of the most recent studies examining the effect of high-risk pregnancies during the COVID-19 pandemic on rates of anxiety found higher

anxiety scores in this group compared to physiological pregnancy (Sinaci S, Ozden E, Ocal D, Atalay A, Yilmaz G, 2020).

6) **Food Availability**

There is a significant relationship between food availability and the anxiety level of pregnant women during the COVID-19 pandemic. More than half of women reported increased stress from running out of food (59.2%, N = 1622) (7) (Moyer CA, Compton SD, Kaselitz E, Muzik M, 2020). Food scarcity and housing restrictions due to the COVID-19 pandemic made it difficult for pregnant women to find healthy food. Stress due to food scarcity has implications for highly responsive systems such as stress physiology, while also impacting later generations (Barbosa-leiker C, Smith CL, Crespi EJ, Brooks O, Burduli E, Ranjo S, *et al*, 2021).

7) **Efforts to prevent COVID-19 in health services**

The existence of COVID-19 prevention efforts in health care facilities can reduce the anxiety of pregnant women (Kahyaoglu Sut H, Kucukkaya B, 2021).One of the efforts to prevent the spread of COVID-19 is quarantine with a period ranging from 14 days and above depending on the presence of symptoms and the results of the test COVID-19. This becomes a very stressful period with different coping mechanisms being used individually. Isolation and being alone during periods of high vulnerability increase the likelihood of anxiety and depression disorders, substance use disorders, and PTSD. Loneliness and uncertainty about prognosis, financial burdens, and worries about the health of those closest and dearest leave a person emotionally and physically vulnerable. There are cases where family members are hospitalized and other family members are quarantined without leaving the support system for the family. Problems increase if there are small children in the family. Social media platforms can prove to be a solace as well as a nuisance depending on how important and the belief is attached to them (Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, *et al*, 2020).

b. **Threats to a person's self-system**

This threat will cause disturbances to self-identity, self-esteem, and individual social functions:

1) **Education**

The education level of pregnant women who are less likely to experience anxiety and depression is higher than educated pregnant women (Kahyaoglu Sut H, Kucukkaya B, 2021). Women with education from junior high school to college are less likely to experience symptoms of prenatal depression (Wu F, Lin W, Liu P, Zhang M, Huang S, Chen C, et al, 2021). A higher level of education was associated with a lower likelihood of anxiety symptoms and a higher effort to wear a face mask (Wang Q, Mo PKH, Song B, Di JL, Zhou FR, Zhao J, *et al,* 2021). There is a relationship between education and the anxiety of pregnant women during the covid 1 (Dewi ADC, Nurbaiti M, Surahmat R, 2021) pandemic. PEducation can open people's eyes and make them understand the situation, and improve their reaction to the event, especially in critical situations such as the spread COVID-19. While people with non-university education may not have an idea of the bad conditions and are less sensitive to the crisis of disease outbreaks, or may even be unaware of the dimensions of the crisis and the depth of the symptoms of stress and anxiety and this causes high levels of depression, stress and anxiety in them and others. -people around them (Fatemeh et al., 2020).

2) **Employment**

Pregnant women who work full time are at risk of experiencing anxiety during the COVID-19 pandemic (Wu Y, Zhang C, Liu H, Duan C, Li C, Fan J, *et al*, 2020). Contract workers or part-time workers worry about losing their income if they decide not to work. This will lead to financial difficulties, in turn leading to limited options in terms of health care. Prenatal screening is necessary during a pandemic because this condition increases the risk of prenatal depression, and it is very important to treat it appropriately. With the cancellation of prenatal classes or other pregnancy support activities, prenatal checkups may be the only place where expectant mothers can talk face-to-face about their concerns or fears. Thus, financial support is very important to ensure that pregnant women attend prenatal checkups (Matsushima M, Horiguchi H, 2020).

3) **History of Depression**

Pregnant women who have a history of depression will increase anxiety during pregnancy (Hamzehgardeshi Z, Omidvar S, Amoli AA, Firouzbakht M, 2021). Higher symptoms of depression and anxiety were associated with more worries about the threat COVID-19 poses to the lives of mothers and babies, as well as concerns about not getting

needed prenatal care, relationship strain, and social isolation due to COVID-19 (Lebel C, Mackinnon A, Bagshawe M, 2020).

4) Unplanned pregnancy

Pregnancy significantly increases the likelihood of depression (Wu F, Lin W, Liu P, Zhang M, Huang S, Chen C, *et al*, 2021). Happiness during pregnancy greatly affects the anxiety and mental health of pregnant women (Salehi L, Rahimzadeh M, Molaei E, Zaheri H, Esmaelzadeh-Saeieh S, 2020).

5) Family Income

There is a significant relationship between family income and the level of anxiety of pregnant women during the pandemic COVID-19. Pregnant women with middle income are protected from anxiety compared to those with high or low wages (Liu X, Chen M, Wang Y, Sun L, Zhang J, Shi Y, *et al*, 2020). There is a significant relationship between family income and anxiety levels of pregnant women during the pandemic COVID-19. More than half of women reported increased stress due to loss of job or household income (63.7%, N = 1745)(7) (Moyer CA, Compton SD, Kaselitz E, Muzik M, 2020).

Decreased household income, pregnant women who experience a 20-50% or more than 50% reduction in household income are more likely to experience symptoms of prenatal anxiety and depression. Similarly, a 20-50% decrease in household income greatly increases the risk of depressive symptoms (Wu F, Lin W, Liu P, Zhang M, Huang S, Chen C, *et al*, 2021). The threat of layoffs causes pregnant women not only to face economic pressures and social isolation, but also concerns about whether they can continue to work in the future (Bödecs T, Szilágyi E, Cholnoky P, Sándor J, Gonda X, Rihmer Z, *et al*, 2013, Tang X, Lu Z, Hu D, Zhong X, 2019). The reduced working hours and income due to the COVID-19 pandemic is associated with higher levels of anxiety (Esteban-Gonzalo S, Caballero-Galilea M, González-Pascual JL, Álvaro-Navidad M, Esteban-Gonzalo L, 2021).

6) Location of Residence

There is a significant relationship between the location of residence and the level of anxiety of pregnant women during the Covid-19 pandemic.Living at the epicenter of the epidemic and suffering from subjective symptoms has a major impact on anxiety levels. There is a higher frequency of exposure to COVID-19 in the epicenter of the

epidemic (Wuhan) (Liu X, Chen M, Wang Y, Sun L, Zhang J, Shi Y, *et al*, 2020). Those living in confined or quarantined cities may indicate a higher risk of contracting COVID-19. Knowing someone who is currently infected may also increase their susceptibility to infection, which adversely affects their mental health (Wang et al., 2021).Living in a location with a large number of COVID-19 cases was also a significant driver of greater changes in pregnancy-related anxiety scores (Cheryl et al., 2020).

7) **Child Caregiver existence**

There is a significant correlation between the presence of caregivers of children with anxiety levels of pregnant women during the pandemic Covid-19. More than half of the women reported increased stress due to the loss of a caregiver (56.3%, N = 1543) (Moyer CA, Compton SD, Kaselitz E, Muzik M, 2020). Financial problems are closely related to the difficulty of pregnant women in getting a babysitter. Financial resources and access to health care are the main concerns and resources needed by pregnant women (Barbosa-leiker C, Smith CL, Crespi EJ, Brooks O, Burduli E, Ranjo S, *et al*, 2021).

8) **Health facility services**

Pregnant women who have bad experiences during visits to health services have a 6.6-fold risk of experiencing anxiety compared to pregnant women who feel comfortable during visits to health services (Kahyaoglu Sut H, Kucukkaya B, 2021). Pregnant women who delay antenatal visits during a pandemic have lower levels of anxiety than those who make antenatal visits during a pandemic (Ding W, Lu J, Zhou Y, Wei W, Zhou Z, Chen M, 2021). There is a very high risk of anxiety and depression in pregnant women who experience discomfort with these follow-up visits. In Wuhan, 41.9% of pregnant women stated that they refused to visit any hospital for fear of infection and they would delay antenatal care and hospitalization before delivery (Hatice & Burcu, 2020).

9) **Information on the Effects of Covid on Pregnancy**

Risk of depression in pregnant women who did not have information about the effects of COVID-19 on pregnancy was 8.87 times (95% CI: 4.23-18.59) higher than in pregnant women who had this information (p < 0.001)(9) (Kahyaoglu Sut H, Kucukkaya B, 2021). 70% of pregnant women are concerned about news about Covid 19, pregnant women who trust official government media tend to have less anxiety symptoms than those who get information from unofficial sources (Ding W, Lu J, Zhou Y, Wei W, Zhou

Z, Chen M, 2021). Pregnant women who do not have information about the effects of COVID-19 on pregnancy and are not informed by doctors/nurses/midwives about its effects are at high risk for anxiety and depression. Due to the limited information available about the effects of COVID-19 on pregnancy, pregnant women are at high risk of experiencing anxiety and psychological distress (Hatice & Burcu, 2020).

10) Spouses

Education level, partner's job and partner's life satisfaction are factors that can affect anxiety in pregnant women (Effati-daryani F, Zarei S, Mohammadi A, Hemmati E, Yngyknd SG, 2020). Disputes between partners due to the COVID-19 pandemic, partner violence, especially emotional abuse, can cause unhealthy emotions (Wu F, Lin W, Liu P, Zhang M, Huang S, Chen C, *et al*, 2021). Women whose husbands were shop owners had more symptoms of depression than those whose husbands were employees. Depression is more common in women whose husbands have lower paying jobs (Fatemeh et al., 2020).

Women without partners are particularly at risk; divorced/widowed women face a 3.43 times higher risk (Matsushima M, Horiguchi H, 2020). Increased levels of anxiety in unpaired pregnant women were detected during the pandemic.

11) Social support

There is a significant relationship between husband's support and anxiety of pregnant women before delivery (Dwiwanto TP, Putri AM, Sudiadnyani N, 2021). Good social support will reduce the risk of anxiety related to pregnancy during the COVID-19 period (Hamzehgardeshi Z, Omidvar S, Amoli AA, Firouzbakht M, 2021). Social support also reduces the effect of maternal prenatal stress on the infant's stress response (Lebel C, Mackinnon A, Bagshawe M, 2020). Pregnant women were 1.81 times more likely to become anxious when no one provided daily living support (Shangguan F et al, 2021). Social support is associated with lower rates of depression and anxiety (Wang Q, Mo PKH, Song B, Di JL, Zhou FR, Zhao J, et al, 2021). Better social support was associated with lower symptoms of depression and anxiety. The finding that higher perceived support and effectiveness of support is associated with decreased depression and anxiety symptoms is consistent with the idea that social support buffers the effects of stress on anxiety and depressive symptoms (Lebel et al., 2020).

12) Counseling

Professional psychological counseling before pregnancy, pregnant women who have not received professional psychological counseling before pregnancy are at higher risk for anxiety and depression (Wu F, Lin W, Liu P, Zhang M, Huang S, Chen C, et al, 2021). Pregnant women with higher stress perceptions were 6.87 times more likely to experience anxiety than those with lower stress perceptions (Shangguan F, Wang R, Quan X, Zhou C, Zhang C, Qian W, et al, 2021).

13) Téléconsultation Service

Primiparous pregnant women who perform strict isolation and conduct consultations teleconsultation tend to be at risk of having high anxiety (Ge Y, Shi C, Wu B, Liu Y, Chen L, Deng Y. 2021). Pregnant women reported missing prenatal schedules, many also reported using telemedicine for prenatal schedules and talking to health professionals about childbirth during the COVID-19 pandemic (Barbosa-leiker C, Smith CL, Crespi EJ, Brooks O, Burduli E, Ranjo S, et al, 2021). These stressors are in line with recent research showing that pregnant women experience increased levels of stress related to feelings of unpreparedness to give birth during a pandemic (Preis H, Mahaffey B, Heiselman C, Lobel M, 2020, Preis H, Mahaffey B, Heiselman C, Lobel M, 2020).

14) Health Insurance

Anxiety and depression are significantly higher among pregnant women who do not have health insurance (Maharlouei N, Keshavarz P, Salemi N, Lankarani KB, 2021). There is no fear in pregnant women, one of the reasons is because universal coverage of maternity insurance in China has eliminated concerns about medical costs (Ding et al., 2021).

CONCLUSIONS, SUGGESTIONS, AND ACKNOWLEDGMENTS

Anxiety trigger factors are identified into two, namely threats to physical integrity and threats to one's system integrity. Threats to physical integrity consist of age, parity, physical activity, trimester of pregnancy, pregnancy complications, food availability, efforts to prevent COVID 19. Threat factors for self-system integrity consist of education, occupation, history of depression, unplanned pregnancy, family income, location of residence, the presence of caregivers, health facility services, information on COVID 19, life partners, social support, counseling, telemedicine, and insurance services.

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