

# Correlation between Occupation, Stress Level and Breast Milk Production during Covid-19 Pandemic in Indonesia

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## Abstract

**Introduction:** Burdens and types of occupation will cause psychological stress during Covid-19 pandemic, especially jobs in the medical field. The rapid transmission of the disease and the increasing number of people infected by Covid-19 bring anxiety and worry and decrease the level of happiness that will obstruct the secretion of oxytocin hormone that brings problems to breast milk production and breastfeeding process. This study was aimed at analyzing the correlation between occupation, stress level and breast milk production during Covid-19 pandemic in Indonesia.

**Method:** This correlational study was conducted by using cross sectional design. The technique used to collect the samples totaling 110 breastfeeding mothers was simple random sampling technique. The independent variables were occupation and stress level, whereas the dependent variable was breast milk production. This study used Perceived Stress Scale (PSS) questionnaire to measure the stress level and another questionnaire to measure the smoothness of breast milk production. Furthermore, data analysis was done by using Chi-square statistic test with the significance level of  $p < 0.05$ .

**Result:** The result of this study showed that of 110 respondents, most of them (67%) worked in the medical field; nearly all (70.9%) experienced severe stress; and nearly all (80%) had unsmooth production of breast milk. Whilst, the result of Chi-square test showed that the value of  $p = 0.000$  showing that there was a correlation between occupation, stress level and breast milk production during Covid-19 pandemic in Indonesia.

**Conclusion:** Occupation, stress level and breast milk production are correlated during Covid-19 pandemic in Indonesia. Therefore, the medical workers, especially nurses are expected to play their active roles to educate and teach the breastfeeding mothers how to manage stress correctly to maintain the production of breast milk in any conditions.

**Key words:** occupation, stress level, breast milk production, breastfeeding mothers, Covid-19

## Introduction

Breastfeeding is a developmental task for

postpartum mothers by way of giving breast milk (ASI). Breastfeeding is given at least 6 months (exclusive breastfeeding) after the baby is born.<sup>1</sup> Breast milk has advantages as a nutrient compared to other nutritional sources. The macro and micro components contained in breast milk are needed at each stage of the baby's growth. Macro components consist of carbohydrates,

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proteins, and fats.<sup>2</sup>Meanwhile, the micro components are vitamins and minerals. Breast milk also contains an antibody substance called IgA which acts as a defense system for the walls of the digestive tract against infection.

The World Health Organization (WHO) recommends that mothers breastfeed their babies within the first hour of delivery and continue until the first 6 months of their baby's life for optimal growth and fulfillment of the baby's developing nutrition.<sup>3</sup>Breastfeeding mothers have concerns regarding the COVID 19 pandemic so that in Indonesia the data on breastfeeding mothers has decreased. WHO data in 2018 globally exclusive breastfeeding is quite low, only 41%, while the RISKESDAS data for 2018 in Indonesia the number of exclusive breastfeeding only reaches 37%.<sup>4</sup>The Indonesian government provides support for working mothers to continue to provide breast milk to their babies, this is supported by the enactment of government regulation Number 33 of 2012 concerning exclusive breastfeeding which requires every company or workplace to provide a space for breastfeeding mothers.

Breast milk production is greatly influenced by psychological factors. Stress due to the COVID-19 pandemic and maternal work, especially in the health sector, raises concerns for mothers to provide breast milk for babies. Breastfeeding mothers and their babies are a vulnerable group for exposure to COVID 19.<sup>5</sup>Indonesia the number of positive cases of Covid-19 continues to increase. Based on data on May 5, 2020, announced by the Task Force for the Acceleration of Handling Covid-19 in Indonesia, there were 12,071. The United Nations International Children's Emergency Fund (UNICEF) confirms that exclusive breastfeeding is safe to give to babies and still be given even though the mother is positive for COVID 19. COVID 19 is not detected in positive mother's milk, but there is a concern of transmission through droplets while breastfeeding. Nursing mothers must apply the COVID 19 protocol, namely using a mask and washing their hands before and after touching the baby.

The psychological and emotional condition of the mother greatly affects milk production.<sup>6</sup>If the mother experiences stress and an increase in workload, there will be a blockade from the oxytocin hormone release reflex/let down reflex. If the letdown reflex is not perfect, then a thirsty baby is dissatisfied.<sup>7</sup>This dissatisfaction is an additional stressor for the mother. In addition, the increased workload during the COVID 19 pandemic made mothers unable to provide optimal breast milk for babies, especially mothers who work in the health sector, it is very difficult to find free time to pump breast milk. So that the result is a decrease in milk production. This study aims to analyze the relationship between work and stress levels on breastfeeding production of breastfeeding mothers during the COVID 19 pandemic in Indonesia.

## Methods

The research design used was analytic with a cross-sectional approach, because there was a relationship between the independent variable and the dependent variable. The independent variable of this research is work and stress level and the dependent variable is breast milk production which is observed at the same time. The place where the research was conducted in Indonesia. The research was conducted in May. The population of this study was all breastfeeding mothers in Indonesia. The research sample was 110 respondents who were taken using probability sampling with a random sampling technique. The research instrument was a questionnaire Perceived Stress Scale (PSS) and the Smoothness of Breast Milk Production, the independent and dependent variables were nominal.

Test the validity and reliability of the questionnaire using 15 respondents. The results of the validity test of the Perceived Stress Scale questionnaire obtained the results of  $r$  count for each question between 0.580-0.922 while the questionnaire for the smoothness of breast milk production obtained the results of  $r$  count 0.615-0.901 for each question was greater than  $r$  table 0.550 so it could be stated that both questionnaires were valid to be used as questions. The results of the reliability test of the Perceived Stress Scale questionnaire showed

that the Cronbach’s Alpha value was 0.821, while the smoothness of milk production resulted in a Cronbach’s Alpha value of 0.938, which means it is very reliable or

reliable so that the questionnaire is suitable for use in data collection. Data analysis was performed using the Chi-Square statistical test with a significant  $p < 0.05$ .

## Result and Discussion

### Respondents Characteristics

**Table 1 Frequency Distribution of Respondent Characteristics**

Characteristics	Respondent n (110)		Characteristics	Respondent n (110)	
	f	%		f	%
Age (years)			Breastfeeding		
Late adolescence(17-25)	17	15.5	Breast milk	15	13.6
Early adulthood(26-35)	81	73.6	Breast milk and Expressed breast milk	35	31.8
Late adulthood(36-45)	11	10.0	Breast milk and Formula milk	53	48.2
Early adolescence(46-55)	1	0.9	Breast milk and complementary foods breast milk	7	6.4
Education			Parity		
Basic	14	12.7	Primipara	62	56.4
Intermediate	10	9.1	Multipara	48	43.6
High	86	78.2			
Residence					
City	86	78.2			
Village	24	21.8			

Table 1 shows that most of the 100 respondents (73.6%) were in early adulthood. Almost all of the education levels (78.2%) are highly educated, and almost all of them (78.2%) live in cities. Breastfeeding almost half (48.2%) of respondents gave breast milk and formula milk to their babies, while the parity of most (56.4%) respondents primipara.

**Table 2: Occupational Characteristics, Level of Stress, and Quality of Breastmilk Production**

Characteristics	Respondent n (110)	
	f	%
Profession		
Non-Health	17	15.5
Health	67	60.9
Does not work	26	23.6
Stress level		
Light	8	7.3
Moderate	10	9.1
Weight	14	12.7
Very heavy	78	70.9
Quality of Breastmilk Production		
Not smooth	88	80
Current	82	20

Table 2. It shows that most of the 110 respondents (60.9%) work in the health sector. The stress level of most respondents (70.9%) experienced very heavy stress levels and almost all of the milk production (80%) was not smooth.

**3.1 Relationship Analysis**

**Table 3 Relationship of Employment, Level of Stress and Quality of Breastmilk Production**

Variable	Quality of Breastmilk Production					
	Not smooth		Current		Total	
	f	%	f	%	f	%
Profession						
Non-Health	11	64.7	6	35.3	17	100
Health	62	92.5	5	7.5	67	100
Does not work	15	57.7	11	42.3	26	100
Stress level						
Light	1	12.5	7	87.5	8	100
Moderate	8	80	2	20	10	100
Weight	8	57.1	6	42.9	14	100
Very heavy	71	91	7	9.0	78	100
P value					0.000	

Table 3 shows that of the 67 respondents who work in the health sector, almost all (92.5%) of the quality of breast milk production is not smooth. Meanwhile, of the 78 respondents with very heavy stress levels, almost all of them (91%) the quality of breastmilk production was not smooth. The results of cross-tabulation of the relationship between work and stress levels with the quality of breastmilk production were analyzed using the Chi-Square test, the result was  $p = 0.000$  which means that there is a relationship. work and stress levels with the quality of breastfeeding production of breastfeeding mothers during the COVID 19 pandemic in Indonesia.

### Discussion

The results showed that there was a relationship between work and the stress level of breast milk production during the COVID 19 pandemic with a value of  $p = 0.000$ . The age of the respondents based on table 1 is mostly (73.6%) in early adulthood, this shows that the respondents are mostly in their productive period. In general, mothers of productive age have a better ability to lactate than mothers who are more than 35 years old.<sup>8</sup>In this age group, it is a good age for mothers to get pregnant and give birth because the reproductive organs are in good condition. Whereas at the age of fewer than 20 years the reproductive organs have not grown optimally and at the age of more than 35 years after experiencing a decline in the reproductive organs. In line with research conducted by Fortner (2019), healthy reproductive age is 20-35 years. Apart from the productive age, they often experience shocks which result in a lack of attention to meeting nutritional needs.<sup>9</sup>

Most of the respondents in this study (56.4%) were primiparous. Parity is related to maternal knowledge and experience so that psychologically primiparous mothers are less experienced than multiparous mothers.<sup>7</sup>Multiparous mothers have previous experience with children, so they are more active and diligent in breastfeeding their babies. The autocrine control system begins when milk production stabilizes. Breastfeeding is very beneficial for babies, one of which is as a source of ideal nutrition with a balanced composition and by

the growing needs of a perfect baby both in quality and quantity.<sup>10</sup>Sherwood stated that mothers who provide exclusive breastfeeding can stimulate the prolactin hormone to increase breast milk, the more milk that comes out, the more breast milk is produced.<sup>11</sup>This is in line with a 2016 Hackman study which stated that multiparous mothers had breastfeeding resistance for 6 months compared to primiparous mothers.<sup>12</sup>

Mothers who have good knowledge or a high level of education will have more positive attitudes or behaviors, but this is the opposite of the research. The results showed that almost all of them (78.2%) were highly educated and almost half (48.2%) of respondents gave breast milk and formula milk to their babies. Mothers choose to provide additional formula milk to their babies in addition to fulfilling the baby's nutrients.<sup>2</sup>Mothers are attracted to advertisements for formula milk which is attractively packaged, so there is a concern that it will damage the mother's perspective on exclusive breastfeeding. This can affect the understanding of mothers where formula milk can meet all the nutritional needs of the baby compared to exclusive breastfeeding. Apart from the addition of formula milk in this study, a small proportion (6.4%) of mothers gave additional food for their babies. The provision of additional food is due to the community's habit of thinking that babies will be fussy if they are only given breast milk for the first 6 months. Feeding other than breast milk at an early age can increase morbidity.<sup>13</sup>These babies will be prone to gastrointestinal and respiratory infections.<sup>1</sup>The infant mortality rate in Indonesia is quite high due to the high rate of gastrointestinal and respiratory infections.

Almost all of the working mothers (76.4%) of the respondents worked and most (60.9%) worked in the health sector. Working mothers devote half of their time to work so that the time with their children will be reduced.<sup>8</sup>Working hours can influence exclusive breastfeeding due to differences in working hours between mothers who have shift working hours, namely in the health sector and mothers who work not on shifts. This is in line with research by Murtagh (2011) which states that mothers who work shifts tend not to

exclusively breastfeed their babies (97.7%).<sup>14</sup> Mothers who work shift work for longer leave their babies and are prone to fatigue.

The hardest thing to do for the future of the baby. Mothers who work in the health sector have excessive stressors because they have to treat patients with positive confirmation of COVID 19, and are worried about contracting the COVID 19 virus. This condition will put pressure both physically and mentally on medical personnel.<sup>15</sup> Medical personnel must wear personal protective equipment by covering all parts of their body using masks, google glasses, black clothes, and booth shoes to protect them from contracting COVID 19. Mothers who work in the health sector spend their time caring for and interacting with COVID 19 patients throughout their shifts. Most of them say that they just take a break to eat and pray, they don't have time, let alone pumping breast milk. The activity of pumping breast milk is carried out when conditions are free and the patient is reached in the field a little so that the mother can take the time to pump breast milk. These conditions can affect the psychological condition of the mother and have an impact on decreasing milk production.<sup>16</sup> This study showed that most (70.9%) experienced very heavy stress levels and almost all of their milk production (80%) was not smooth. According to Krol, if the mother is tired or stressed, the production of the hormone oxytocin will be hampered which results in the quality of breast milk production decreasing.<sup>2</sup>

Stress during the pandemic was mostly experienced by breastfeeding mothers in urban areas because the urban environment was a zone for the spread of the COVID 19 virus. This is the cause of excessive stressors in breastfeeding mothers, the volume of milk produced is influenced by the psychological condition of the mother, breastfeeding mothers are not subject to stress and anxiety. excessively. Stress has a close relationship with the body's biological function.<sup>17</sup> Primiparous mothers who experience stress will experience several changes in their biological functions which have an impact on milk production. During the COVID 19 pandemic, mothers experienced stress because of limited space for

mothers who worked in the health sector. When working mothers other than health work at home, working mothers in the health sector must always be on standby at the hospital to care for patients. Stress activates the hypothalamus to control two neuroendocrine systems, namely the sympathetic system and the adrenal cortical system.<sup>18</sup> The sympathetic nervous system responds to hypothalamic nerve impulses by activating various organs and smooth muscles. Then the adrenal cortex system stimulates the release of hormones including sex hormones, namely oxytocin, endorphins, adrenal hormones and testosterone which are carried through the bloodstream followed by the neural activity of the sympathetic branch of the autonomic nervous system so that they play a role in the fight or flight response.<sup>19</sup> The release of oxytocin is followed by a let-down reflex that the mother can feel as tingling or other breast droplets that the baby is sucking in. This reflex is influenced by the psychological condition of the mother.<sup>20</sup> The skin attachment between the mother and her baby is a stimulus that will be transmitted to the brain. This stimulus will trigger the release of oxytocin which will have a positive impact on milk production.

## Conclusion

The results showed that there was a relationship between work and stress levels of breastfeeding in breastfeeding mothers during the COVID 19 pandemic. Where almost all respondents who worked their milk production were not smooth, while for mothers with high stress their milk production was not smooth. Likewise, on the other hand, the mother does not work and experiences mild stress, her milk production runs smoothly.

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