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IMPACT OF COVID-19 ON FEMALE WORK PARTICIPATION IN INDONESIA: WHO IS MORE AFFECTED?

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ABSTRACT

This study aims to analyze the impact of Covid-19 on female work participation in Indonesia. Using microdata from the August 2020 National Labor Force Survey (Sakernas) conducted by the Central Statistics Agency, the study measures the impact through three indicators: unemployment, temporary non-working status, and reduced working hours. The survey included a sample size of 793,202 individuals aged 15 and over. Findings reveal that female workers are more likely to experience reduced working hours compared to male workers. These results highlight the disproportionate effects of the pandemic on women's employment. The study underscores the need for targeted policy interventions to support women in the labor force, ensuring their economic resilience and recovery during and after the pandemic.

1. INTRODUCTION

The Covid-19 pandemic has caused severe economic disruptions globally, including in Indonesia. The resultant weakening of socio-economic foundations has destabilized labor markets, particularly affecting female workers. As a result, many people worldwide lose their jobs and income (Bauer & Weber, 2020; Couch et al., 2020; Forsythe, 2020). Recent studies have also raised the possibility that the adverse effects of the pandemic will hinder global efforts to reduce inequality, especially the gap between men and women (Czymara et al., 2021; Dang & Viet Nguyen, 2021). This gap occurs due to the high level of vulnerability of women to leave the labor market during a crisis, which is mainly driven by family factors (Alon et al., 2020).

Moreover, especially when the Covid-19 pandemic occurs, the demands for the role of women in providing distance learning assistance due to face-to-face school closures are getting higher, so that it will significantly affect the level of participation of female workers in the labor market. But unfortunately, most of the similar studies were conducted in developed countries, such as in America, UK, Germany, etc. (Adams-Prassl et al., 2020; Fortier, 2020; Reuschke et al., 2021). Meanwhile, in Indonesia, research that raises gender issues related to the impact of Covid-19 on the labor market has never been carried out. The study linking the pandemic with female workers in Indonesia was only conducted in Makassar City using case studies of 7 (seven) female workers in the informal sector (Nursakina, 2021).

This paper analyzes the impact of Covid-19 on female work participation in Indonesia using microdata from the National Labor Force Survey (Sakernas) in August 2020 to see the difference in the impact of Covid-19 on participation in the labor market between men and women focusing on unemployment, temporary non-working status, and reduced working hours. This research is essential to provide input to policymakers in formulating appropriate steps related to handling the impact of the pandemic, especially those related to the problem of gender inequality in Indonesia.

2. RESEARCH METHODS

This study utilizes microdata from the National Labor Force Survey (Sakernas), conducted by the Central Statistics Agency of Indonesia. Sakernas is administered twice a year, in February and August. For this analysis, data from the August 2020 survey were selected due to its larger sample size and its ability to provide a comparative overview of labor conditions before and during the Covid-19 pandemic. The August 2020 Sakernas survey included 1,078,296 individuals from 300,000 households, focusing on those aged 15 and over, resulting in a final sample size of 793,202 individuals.

Three measurements were chosen to capture the economic impact of Covid-19 on female labor participation: unemployment, temporary non-working status, and reduced working hours. The unemployment variable identifies individuals who were employed in February 2020 but became unemployed by August 2020 due to Covid-19. The temporary non-working variable represents those who were working in February 2020 but were temporarily not working in August 2020 for Covid-19-related reasons. The reduced working hours variable includes individuals who continued to work from February to August 2020 but experienced a reduction in working hours due to the pandemic.

This study used logistic regression analysis to determine the difference between men and women labor output caused by Covid-19. The empirical model used in this study is:

$$Y_i^k = \alpha + \beta\, Female_i + \gamma X_i + u_i \quad \text{..... (1)}$$

where Y_i^k is the dichotomy variable which is the k-th dependent variable for the i-th individual. At the same time, k consists of 3 (three) output variables, namely unemployment status due to covid, a temporary position not working due to covid, and experiencing reduced working hours due to covid. $Female_i$ will be worth one if the individual is female and will be worth 0 (zero) if the individual is male. The control variable X_i is a variable that describes the socio-economic characteristics of the i-th individual. It consists of the number of children, education, residence characteristics (rural/urban), age, the business sector (agriculture, industry, and trade), and income level (quartile). 1 to 4). Meanwhile, u_i includes variables that are not observed in the i-th individual.

This study conducted further testing through a logistic regression analysis model to analyse the causes of changes in work participation due to the COVID-19 pandemic in women. The difference with the model (1) is that model (2) is used explicitly for female workers. The empirical model is as follows:

$$Yfemale_i^k = \alpha Yfemale_i^k = \alpha + \beta\, X_i + u_i \quad \text{..... (2)}$$

where $Yfemale_i^k$ is the dichotomy variable which is the kth dependent variable for the ith woman, while k is the kth output variable which statistically proves a difference in impact between men and women through model (1). Meanwhile, the control variable X_i is a variable that describes the socio-economic characteristics of the ith female worker, consisting of the number of children, education, residence (rural/urban), age, business sector (agriculture, industry, and trade), and level of employment income (quartile 1 to 4).

3. RESULTS AND DISCUSSION

Table 1 illustrates that the working-age population in Indonesia, namely the population aged 15 years and over, is primarily female. However, women's participation in the labor market is much lower than that of men, with only 39 percent of female workers in Indonesia. A similar structure also occurs in the unemployed population, where 39 percent of them are female.

When viewed from the status of work, most workers in Indonesia are workers/employees. But unfortunately, workers who are unpaid workers or family workers are still dominated by women. This domination shows that women in Indonesia tend to experience disparities because the unpaid workload becomes a disproportionate burden for women. Women also have to carry out a double load. In addition to being responsible for taking care of the household, women also have the responsibility to help increase family income even though they work as unpaid workers.

Meanwhile, when viewed from the type of employment, women tend to work in sectors that are very vulnerable to the impact of the COVID-19 pandemic, such as the trade sector, providing food and drink accommodation, and education services. This condition indicates that the economic pressure due to the COVID-19 pandemic is more severe for female workers than male workers.

Table 1. Indonesia's Working Age Population and Employment Status, August 2020

Labor Status	Number (million)		Percentage (%)	
	Male	Female	Male	Female
Working Age Population	101,96	102,02	50	50
Labor Force	84,02	54,20	61	39
Work	77,76	50,70	61	39
Unemployment	6,27	3,50	64	36
Working Status				
Own-account worker	15,90	10,27	61	39
Employer assisted by worker	16,35	7,78	68	32
Employee	29,99	16,74	64	36
Freelancers	10,09	3,02	77	23
Unpaid/contributing family worker	5,43	12,89	30	70
Sector				
Agriculture	24,43	13,80	64	36
Manufacturing	9,85	7,64	56	44
Wholesale & Retail Trade	12,28	12,42	50	50
Accomodation & Food Services	3,48	5,07	41	59
Education	2,28	3,74	38	62
Educational Attainment				
< Junior High Schol	58,06	62,56	48	52
Senior High School	34,12	28,44	55	45
Diploma & University	9,78	11,01	47	53

Source: Sakernas (2020)

To see the difference in the impact of COVID-19 between men and women through logistic regression analysis modelled in equation (1), the results in Table 2 show that female workers are not at higher risk of changing their status to unemployment and temporarily unemployed than male workers. - man due to covid-19. However, for workers who are still working during the pandemic, the negative impact on reducing working hours is significantly riskier for women than men. These results show that women have more fighting spirit to continue working during the pandemic, even though they have to face a higher risk of experiencing reduced working hours than men. These results align with Dang & Viet Nguyen (2021) research and Croson & Gneezy (2009), which reveal that women are more risk-averse than men.

Women tend to more afraid of losing their income in the future, so they will try to continue working, whatever type of work later. Furthermore, women also play a role as a support for the family economy when the head of the family can no longer meet the family's needs due to stopping work during the pandemic.

Table 2. Coefficient Value (β) and Standard Error from The Results of The Logistics Regression Analysis of The Impact of Covid-19, August 2020

Independent Variable	Unemployment because of Covid	Temporarily Not Working Due to Covid	Reduction of Working Hours due to Covid
Female	-0,747***	-0,359***	0,441***
	(0,015)	(0,009)	(0,008)
Numbers of Child	-0,140***	-0,078***	0,003***
	(0,008)	(0,005)	(0,004)
< Junior High School	-0,324***	-0,360***	-0,366***
	(0,016)	(0,010)	(0,009)
Diploma/University	0,405***	0,057***	0,724***
	(0,027)	(0,015)	(0,011)
Urban	0,579***	0,183***	0,281***
	(0,015)	(0,009)	(0,008)
Age	0,159***	0,042***	0,139***
	(0, 003)	(0, 002)	(0, 002)
Age^2	-0,002***	-0,001***	-0,002***
	(0,000)	(0,000)	(0,000)
Agriculture	-0,616***	-0,217***	-0,873***
	(0,022)	(0,013)	(0,013)
Manufacture	-0,285***	0,119***	0,798***
	(0,029)	(0,017)	(0,012)
Trade	-0,347***	0,112***	0,485***
	(0,023)	(0,013)	(0,010)
Quartile-1	0,263***	0,511***	1,382***
	(0,021)	(0,013)	(0,010)
Quartile-2	-0,246***	0,280***	1,145***
	(0,024)	(0,014)	(0,011)
Quartile-3	-1,511***	-0,070***	0,830***
	(0,037)	(0,016)	(0,011)
Constant	-5,631***	-2,879***	-5,131***
	(0,058)	(0,031)	(0,033)
Observations	793.202	793.202	793.202
R-squared	0,0598	0,0207	0,1540

Note: *** represents the level of significance (p<0.01); parentheses represent standard error
Source: Processed data (2020)

The significant impact of reducing working hours on women is also in line with the research of Reuschke et al. (2021), who revealed that female workers tend to reduce their working hours for reasons of childcare needs. One of the things that distinguish the Covid-19 problem from other financial crises is the closure of institutions such as schools and child care. As a result, workers have to reduce their working hours to continue to take care of their children and accompany their children to school at home.

The results of this study on the table 2 also show that the number of children is not proven to be a factor driving a worker to become unemployed or decide to temporarily not work during the covid-19 pandemic. However, having dependent children provides a more significant opportunity to influence workers to reduce working hours due to Covid-19. These results found that a worker who has dependent children will tend to continue to work, even though he has to reduce the time allocation for work, rather than to make a decision to temporarily not work or even be unemployed.

Although education services have shifted from formal channels to family assistance (school from home), the existence of children and their educational needs is a responsibility for parents. So, this is not an excuse to stop working during a pandemic. Moreover, the pandemic has taught us about flexible work patterns, where we can work anywhere. For this reason, parents can still combine child care and work, even though they have to reduce their working hours.

In contrast to workers with low education, workers with higher education have a higher chance of deciding to reduce working hours, temporarily not work, or even stop working completely during the pandemic. On the other hand, low-educated workers are less likely to stop working when the pandemic hits. This finding align with the research of Sunghee Nam (1991) that workers with a low educational background are almost two to three times more likely to remain in work compared to workers with higher education. Because of inadequate education, workers tend to accept any job to earn an income still to ensure their survival. Even if they have to be dismissed from their original position, workers with low education will immediately look for any job without much consideration. This is solely done to keep earning to meet the necessities of life.

Meanwhile, workers with higher education have more freedom to decide to temporarily not work or stop working entirely during a pandemic. Due to the provision of educational background, this decision will be the capital when applying for a job again later. This decision is linked to Gannika & Sembiring (2020) research, which revealed that workers with a higher education background would have a high level of vigilance against the possibility of transmitting Covid-19, especially in the work area. The high number of cases of the spread of Covid-19 in the work environment can be a separate consideration for highly educated workers to choose to stop working.

Meanwhile, workers living in urban areas will have a higher chance of experiencing the negative impact of the Covid-19 pandemic than those living in rural areas, either in reduced working hours, temporarily not working, or becoming unemployed. This condition is associated with a more massive spread of Covid-19 in urban areas than in rural areas, where a high population density and mobility will accelerate the spread of Covid-19 (Askitas et al., 2020). In addition, many business sectors in urban areas have to reduce their activities or even stop operating due to tightening community activities and large-scale social restrictions (PSBB) in big cities. This condition forces many business units to reduce costs and production capacity by reducing working hours or lowering workers.

The regression analysis results also show that the older a person is, the more likely a worker will withdraw from the labor market during a pandemic. Workers of mature age can be associated with considerable work experience or as a senior worker. Workers with high seniority levels will also have a high degree of discretion to stop working for specific reasons, especially for the pandemic, compared to junior workers who still have to be bound by regulations or work contracts with the company. In addition, workers with a considerable age will also have a higher risk of contracting Covid-19 due to their lower immune system and the higher likelihood of having comorbid diseases that can increase the severity of contracting Covid-19 (Canning et al., 2020). Thus, the higher the worker's age will also have a higher chance of quitting work or reducing working hours during a pandemic due to health-related reasons.

In terms of the business sector, workers who work in agriculture are significantly less likely to experience the negative impact of the Covid-19 pandemic, either by reducing working hours, temporarily not working, or becoming unemployed. This impact happens because, in addition to the agricultural sector, which is generally located in rural areas, workers who work in agriculture also have typically minimal physical contact to minimise the opportunity for the virus to spread. In addition, the agricultural sector is also related to the provision of food which is a basic human need. Whatever crisis or pandemic is going on, the demand for food production will never stop.

Therefore, it is not surprising that the agricultural sector seems to be the primadonna of saving the economy when the crisis hits. Meanwhile, workers who work in the industrial and trade sectors will have a higher chance of experiencing reduced working hours and not working temporarily. This condition is related to the government's policy to limit the economic activity of the community, where many companies have been forced to reduce their production capacity and operating hours and many markets and shopping centres that have been forced to close temporarily.

When viewed from the level of income, working-age residents who have low income or are in quartile-1 and below are proven to be more at risk of experiencing negative impacts from the pandemic, both those who are unemployed or those who have to experience reduced working hours. In addition, low-income workers are often associated with low-skilled workers, so they are at greater risk of being laid off than high-skilled workers who companies relatively more need.

After knowing that women are significantly more at risk of experiencing a reduction in working hours due to Covid-19 than men, this study tries to explore the variables that affect the reduction in working hours for women modelled in equation (2). The results by using model 2 on the table 3 show that the variable children numbers significantly increase the chances of female workers deciding to reduce their working hours. The Covid-19 pandemic has paralysed the economy foundations economy and social conditions in which education and childcare services were closed. For this reason, educational assistance and child care will depend heavily on the role of women workers as mothers. This is in line with Carlson et al. (2020), which revealed that the presence of children would change women's work patterns to allocate more time to take care of domestic needs, thus impacting reducing the time allocation for work during the pandemic.

As previously mentioned in Table 2, female workers with higher education have a higher chance of reducing working hours. Low-educated workers are less likely to work fewer hours during a pandemic. Women as family financial support will be willing to keep working and help maintain the family economy during the pandemic (Alon & Tertilt, 2020). Especially for women with low education, challenging economic conditions during the pandemic will encourage women to want to do any work to earn additional income. However, this condition does not apply to women with higher education, where women with diploma education and above have a 2-fold higher chance of experiencing reduced working hours during the pandemic. This is associated with the flexibility of highly educated women to reduce their working hours in the office, compared to female workers with low education who company regulations must closely bind.

Table 3. Results of The Logistics Regression Analysis of Reduction of Women's Working Hours Due to The Covid-19 Pandemic

Independent Variable	Coefficient (β)	Standard error	Odds Ratio
Numbers of Child	0,02***	0,01	1,97
< Junior High School	-0,58***	0,01	0,56
Diploma/University	0,94***	0,04	2,56
Urban	0,23***	0,01	1,26
Age	0,11***	0,00	1,12
Age^2	-0,001**	0,00	0,99
Agriculture	-0,31***	0,02	0,73
Industry	1,27***	0,02	3,57
Trade	0,71***	0,02	2,05
Quartile-1	1,53***	0,01	4,61
Quartile-2	1,30***	0,02	3,77
Quartile-3	1,35***	0,02	3,36
Constant	-5,28***	0,05	0,00

Note: Number of samples 399,935; R-squared: 0.1964; *** represents the level of significance (p<0.01)
Source: Sakernas (2020)

If you look at the field of business, women who work in the industrial sector have a three times greater chance of experiencing a reduction in working hours. In comparison, those who work in the trade sector have a two times higher chance of experiencing a decline in working hours. This condition happened because the industrial and trade sectors were the most affected by the pandemic. The government's policy has limited the community's economic activity. Many companies have to reduce their operating hours, not even a few markets and shopping centres have to close temporarily.

Table 3 also shows that Covid-19 has driven female workers to experience reduced working hours at all income levels. However, women with the lowest income levels (in quartile I) will have the highest chance of experiencing a reduction in working hours, which is 4.6 times higher than the reference group (quartile 3). Low-income women are often associated with workers who do jobs that do not require high skills. Therefore, the female workers in this group will have the highest risk of experiencing a reduction in working hours when the company limits its production activities.

4. CONCLUSION

In conclusion, this study provides critical insights into the significant impact of Covid-19 on female labor participation in Indonesia, highlighting that women are disproportionately affected by reduced working hours compared to their male counterparts. These findings contribute to the broader understanding of gender disparities in labor markets during economic crises and underscore the need for gender-sensitive policy interventions. Policymakers should consider targeted measures such as flexible working arrangements, enhanced access to childcare services, and sector-specific training programs to mitigate the adverse effects on women in the workforce. Additionally, these interventions should be integrated into economic recovery plans to ensure long-term gender equality and resilience in the labor market. Future research should focus on the long-term effects of the Covid-19 pandemic on female labor participation and assess the effectiveness of different policy interventions. Moreover, further studies could explore the intersectionality of gender with other socio-economic factors, such as education and income levels, to better understand the complex dynamics influencing women's labor market outcomes during and after the pandemic.

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