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PERSONAL PROTECTIVE EQUIPMENT COMPLIANCE IN MIDWIFERY SERVICES IN EASTERN INDONESIA

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ABSTRACT
At the begining of pademic, Indonesiam goverment suggested that midwifery services be carried by using appropriate personal protective equipment according to the guidelines to avoid cross-infection between health worker to mother and child. The purposes of this strudy is to determine the midwife's compliance in following the use of PPE when administering mother and child health services during COVID 19 pandemic. This survey was conducted at the begining of pandemi COVID-19, 403 registered midwives participated by filled an online survey with Google form application for data collection. Variable of this research are midwife compliance of using PPE in midwifery services. The data were analyzed using the statistical test used was Pearson's chi-square. Results showed that 89.8% of midwives were not following the health protocol, as 49.8% offered inadequate PPE in the workplace and the price of PPE was very high during the pandemic. Conclusions: Midwives were unable to comply with the use of personal health and safety equipment (PPE) in services. Age and duration of work had factor had a significant impact on whether or not midwives were able to use PPE appropriately.

Keywords: COVID-19; midwife; PPE

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INTRODUCTION

The declaration of COVID-19 as a global pandemic by the World Health Organization (WHO) in March 2020, lead to the implementation of special protocols to prevent its spread during the pandemic. COVID-19 is highly transmisible desease, and the Indonesian government has implemented a lockdown to limit the spread of the infection. These actions had a major impact on everyone, including health workers, pregnant and postnatal women. (Bick, 2020). In the course of the work, healthcare workers are potentially exposed to blood and body fluids and therefore are at the risk of infection with blood-borne pathogens. In addition Covid 19 exposure can cause significant transmission and spreading in health professionals and patients in the healthcare environment (Kotwal and Taneja, 2010; Asad *et al.*, 2020). Midwives are part of health workers with the competencies to serve women, mothers, and children. Women are still getting pregnant, giving birth and the pregnant women, as well as their families, need midwifery support and care during pandemic.

The Indonesian Ministry of Health classified pregnant women as a "vulnerable group" In the pandemic situation prenatal care should be postponed and a pregnant woman has carried out antenatal care based on an agreement, the pregnant women are considered to be staying at home and carrying out virtual consultation with the midwife, and if they felt any complication, the pregnant women are allowed to visit a midwife. Many antenatal and postnatal contacts are performed using mobile and web-based technology, and it has been a difficult decision when it comes to assisting with the allocation of obstetrics clinics to pregnant women with COVID-19 symptoms. In addition to enforcing the protocol, the Indonesian government has also issued guidelines through the Ministry of Health to prevent the transmission of the infection to health workers in all health services, including midwives.

The guideline also describes personal protective equipment (PPE) that can be used in every level of midwifery services (ANC, INC, Newborn, Postpartum Care, and Family Planning) as well as several health protocols in every midwifery service environment, such as washing hands with soap, etc.(Kemenkes RI, 2019, 2020). PPE is a tool that individuals use in their work to protect themselves from certain sources of danger both in the workplace and in the work environment and to reduce or prevent disabilities (Diri, Di and Kariadi, 2018; Suprapto, 2020). As health workers, midwives are exposed to the risk of occupational hazards and they are also exposed to blood-borne infections by pathogens such as HIV and hepatitis B and hepatitis C viruses from severe injuries and contact with deep body fluids when performing their clinical activities in the hospital, as well as being at risk for water-borne infections such as influenza, TB and COVID-19. In 2003, the WHO estimated that there are approximately 3 million cases of needlestick injuries in health care workers each year, 90% of which occur in developing countries. (Bick, 2020; Bick *et al.*, 2020).

Based on the data from the national COVID-19 task force at the time the incidence data in Indonesia continues to increase, the data obtained were 100,303 cases of infection, 58,173 recovered and 4838 died (Indonesia, 2020). From these data, the transmission of health workers that died until 28 December 2020 was about 233 physicians, 168 nurses, 68 midwives, 1 pharmacy, etc. An increase in the data also occurred in NTT Province, currently, the number of COVID-19 cases is 145 positive cases, 123 recovered and 1 individual died. In addition, an individual working as a doctor and 5 nurses are health workers in NTT Province infected with COVID-19 (NTT, 2020).

During this pandemic, in addition to the proper handling of COVID-19 patients, measures to prevent transmission are very important in the fight against the pandemic. The prevention of transmission promoted by the government includes washing hands, maintaining distance, and wearing masks. Meanwhile, the Indonesian Ministry of Health has issued guidelines for health workers working in health facilities for the use of PPE in every line of health facilities. It is hoped that its use can protect health workers and the public from transmission. To prevent nosocomial transmission events, understanding the dynamics of infection has important implications for the procedures used in hospitals (Asad *et al.*, 2020). Therefore, health workers, especially midwives need to comply with the health protocols and using PPE that is established in the COVID-19 transmission prevention guidelines, which has been released. This will cause a snowball effect for the community and the mother as well as the child as midwife clients if infected with COVID-19. However, there are still several barriers to the implementation of this health protocol, in such a way that not every region in Indonesia had been able to properly implement the protocol. Furthermore, some of the obstacles faced include the availability of PPE supply, attitudes of health workers when using it, the behavior of health workers when using PPE, and knowledge. Having encountered many standards-

based initiatives in the implementation of PPE, midwives are believed to be unable to implement its use following the Ministry of Health's standards. Therefore, this study aims to obtain a description of the compliance of midwives with the use of personal protective equipment in each order of mother and child health services in the province of East Nusa Tenggara. This study aims to describe the compliance of midwives with the use of PPE according to the guidelines of the individual midwifery services from the Indonesia Ministry of Health in East Nusa Tenggara Province. Furthermore, it also aims to examine the socio-demographic variables of midwives, the duration of work, the perceived barriers to the implementation of PPE, and the compliance of midwives in each midwifery service (ANC, INC, PNC, Newborn and Family Plan with the usage of PPE. This research also examined the relationship between Age and Duration of work of midwives with compliance at every midwifery service in using PPE.

METHOD

This research is a quantitaive study with a cross sectional design conducted online using a google link questionnaire form. There were 403 registered midwives whom participated in this study. They were midwife who gived maternal and child health who working on every level of healthcare facilities, such as community health centers and hospitals on East Nusa Tenggara, Indonesia. The sampling method used was a non-probability sampling technique using an accidental sampling method. The data was collected at March to July 2020 (at the beginning of pandemi) using the online questionnaire which distributed within four weeks. Questionnaires with informed consent and having twelve items consisting of age, duration of work, compliance with the use of PPE in antenatal care services, Intranatal Care, Postpartum Care, Family planning and newborns. Data was collected on the availability of PPE in health facilities and barriers to using PPE. Validity was checked by doing a pre-test on 30 participants. Modification of the tool was made based on the pre-test result. To make sure the questions are externally and internally consistent we validated through pilot testing and Cronbach's Alpha test. We did Cronbach's Alpha test for all questions and the results were greater than 0.7, indicating excellent internal consistency in the responses. After constructing a semistructured questionnaire, a template was created into Google survey tool (Google Forms) and disseminated in public using whats app on IBI channels in all districts in NTT by using a shareable link. Online approaches were used for keeping appropriate distancing and proper protection during the pandemic.

Data analysis included univariate and bivariate analyzes. The univariate analysis intended to describe the distribution of data, namely the frequency for both independent and dependent. Bivariate analysis was performed by constructing a 2x2 cross table between each independent variable and the dependent variable to calculate the odds ratio (OR). The statistical test used was Pearson's chi-square. Any variables significant at the 0.05 level were maintained and adjusted ORs with 95% confidence intervals (CI). Data analysis was performed using the statistical test used was Pearson's chi-square.

RESULTS

This study aims to describe midwives' compliance with the use of PPE by the guidelines in each of midwifery services from the Republic of Indonesia Ministry of Health in East Nusa Tenggara Province. COVID-19 is a contagious disease and infectious in which specific health protocols are implemented in different health services at various levels by governments worldwide. To prevent the spread of the disease, lockdown, hand washing, and health protocols (handwashing) must be followed. The action also extends to pregnant mothers, postpartum mothers, newborns, and prospective acceptors of family planning.(Kemenkes RI,

2019; Bhattacharya, Hossain and Singh, 2020; Kemenkes, 2020; Kementrian Kesehatan RI, 2020b, 2020a)

Respondent characteristics

The mean age of 403 respondents who participated was 41,20 years with a standard deviation of 9,58. The duration of work of 403 respondents who participated mostly more than 10 years.Almost 68 % of respondents reported that they are civil servants and 32% reported as volunteer in Public health centre and hospital.

Midwives compliance with using PPE

Midwives compliance with current health protocols ANC, INC, PNC, Newborn, and FP showed that they complied with the health protocol during ANC services were 32 (7,94), those that did not compliant with INC services by 330 (81.9)%, non-compliant in PNC services by 366 (90.8%), Newborn that was not compliant in services by 366 (90.8%), and those that were not compliant in family planning services by 388 (96,3%). The analysis results can be seen in figure. 1

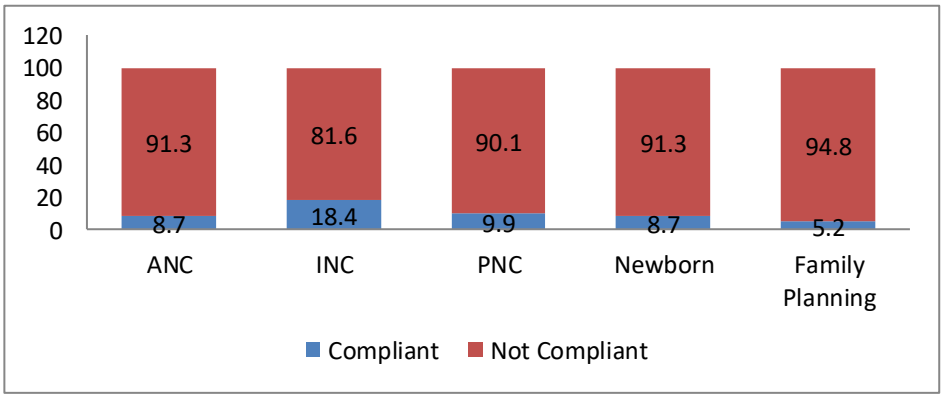

Figure 1. Midwife compliance with current health protocols ANC, INC, PNC, Newborn and Family Planning Services, 2020

Age-related to midwives compliance in implementing PPE in Midwifery services

After the bivariate analysis was carried out, it was reported that the relationship between the midwives age and compliance with using PPE according to the Ministry of Health guidelines obtained the following results, it is known that respondents that do not comply in implementing health protocols are often reported in respondents with age interval 20-30, 31-40,41-50 and above 50. The analysis results can be seen in table 1.

Table 1.

Midwife's Age-related to midwives compliance in implementing PPE, 2020

Working	ANC		INC		PNC		Newborn		Family Planning	
Period	Compliant	No	Compliant	No	Compliant	No	Compliant	No	Compliant	No
	f	f	f	f	f	f	f	f	f	f
20-30	7	56	7	56	11	52	6	57	9	54
31-40	12	87	30	69	16	83	16	83	2	97
41-50	13	224	33	204	9	228	15	222	7	230
>50	0	4	1	3	1	3	0	4	2	2
Total of	32	371	73	330	37	366	37	366	20	383
	p = 0.086		p = 0.001		p = 0.000		p = 0.001		p = 0.06	

The table 1 showed that there is a significant relationship between midwives' age and compliance with the use of PPE in midwifery services, especially in INC, PNC, BBL services. Meanwhile, ANC and family planning services did not have a significant relationship with the

age of the midwives. Compliance can be influenced by internal factors that someone is more adaptive in old age. The younger age and gender have proved to be protective for the most part. The importance of properly putting on the PPE in such a way that it can be uncomfortable to wear is to help support (Suprapto, 2020; Zhan *et al.*, 2020). The results describe the adherence of midwives to the use of PPE according to health protocol guidelines. Furthermore, it was reported that most midwives do not comply with PPE use according to the guideline in midwifery services. If health workers are infected with COVID-19, there will be a domino effect on the community. Knowledge, age, work experience are several things that affect compliance. Midwives need to be equipped with excellent knowledge and skills to prevent infection (Kurniawidjaja, 2010; Goje, Balami and Jarma, 2018; Sanjaya and Kurniawati, 2018; Bauchner, Fontanarosa and Livingston, 2020; Cook, 2020).

Duration of work related to midwives compliance in implementing PPE in Midwifery services

It is known that respondents that do not comply by implementing health protocols are often reported in respondents with a duration of work more than 10 years, compared with respondents with a duration of work less than10 years, with the details as follows: in ANC service about 371 (92,05%), INC 330 (81,8%), PNC 366 (90,81%), Newborn care 366 (90,81%) and Family Planning 383 (95,03%). Furthermore, from the Chi-square analysis between work period with compliance using PPE, it was reported that the *p-value was*: ANC (p = 0.055), INC (p = 0.000), PNC (p = 0.003), Newborn care (p = 0.007), Family Planning (p = 0.390). The analysis results can be seen in the table 2.

Table 2.
Duration of work related to midwife compliance in implementing health protocols

Duration of work	ANC		INC		PNC		BBL		KB	
	Compliant	No	Compliant	No	Compliant	No	Compliant	No	Compliant	No
	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
<1 year	3 (8.6)	10 (2.7)	8 (10.8)	5 (1.5)	6 (15.0)	7 (1.9)	5 (14.3)	8 (2.2)	3 (14.3)	10 (2.6)
1-5 years	12 (34.3)	112 (30.4)	30 (40.5)	94 (28.6)	13 (32.5)	114 (31.4)	15 (42.9)	109 (29.6)	5 (23.8)	119 (31.2)
6-10 years	11 (11 31.4)	35 (9.5)	16 (21.6)	30 (9.1)	10 (25.0)	36 (9.9)	5 (14.3)	41 (11.1)	3 (14.3)	43 (11.3)
>10 years	9 (25.7)	211 (57.3)	20 (27.0)	200 (60.8)	11 (27.5)	206 (56.7)	10 (28.6)	210 (57.1)	10 (47.6)	210 (55.0)
Total of	35 (100)	368 (100)	74 (100)	329 (100)	40 (100)	363 (100)	35 (100)	368 (100)	21 (100)	382 (100)
	p = 0.046		p = 0.022		p = 0.047		p = 0.208		p = 0.137	

Table 3.
Obstacles in the application of the Health Protocol, 2020

Constraints	f	%
High workload	61	15.1
Lack of Supervision	33	8.2
Lack of clear protocols	29	7.2
Lack of availability	201	49.8
APD reduces my skills	48	12.0
Low / no support from colleagues	31	7.7

Most of the respondents stated that the obstacles in applying the use of PPE according to standards are: Lack of availability of necessary protective equipment in the workplace was reported by 220 responden (49,8%). Data on the obstacles to applying PPE according to standards are in table 3.

DISCUSSION

From the table 1 it can be seen that length of service has a significant relationship with compliance with the use of PPE on INC, PNC, Newborn services (P.value ≤ 0,05), while it has no significant relationship with the ANC and Family Planning service levels (P.value ≥ 0,05). After the bivariate analysis was carried out, it was reported that the relationship between the midwives duration of work and compliance with using PPE according to the Ministry of Health guidelines obtained the following results, it is known that respondents that do not comply with implementing health protocols are often found in respondents with duration of work > 10 years, compared with respondents with duration of work < 10 years. Based on the Indonesian Ministry of Health (2020) guidelines, the use of PPE in prenatal care, intranatal care, newborn care, and family planning during the COVID-19 pandemic is level 1/level 2 PPE. But midwives with duration of work > 10 years do not always use PPE completely according to the health protocol of the pandemic. This would be due to a lack of knowledge and the longer the respondent works, and it only affects his experience of helping out at work and not the habit of always using PPE.

Sanjaya and Kurniawati, (2018); Kementrian Kesehatan RI, (2020b) the longer a person works, the higher the level of performance, the more performance comes from good behavior when using personal protective equipment while working. Supervision is the variable that contributes the most in influencing midwives. The longer the duration of work is associated with compliance with the PPE application, as more experience in performing procedures is expected from the individuals. Midwives that had a longer service life complied more with not adjusting to health protocol actions in midwifery services during the COVID-19 pandemic. (Gan, W. H., Lim, J. W., & David, 2020; Lotfinejad N, Peters A, 2020; Suprapto, 2020). But the findings of this research are not in accordance with previous studies, in this finding most midwives that do not comply with the guidelines are those with a long service period of more than 10 years, besides that the absence of supervision regarding adherence to using PPE makes health workers and health facilities to be in the most critical condition of contacting COVID-19.

Obstacles to applying PPE according to standards

From the table above was reported that midwives' obstacles in implementing health protocols were mostly due to the lack of available protective equipment of about 49.8%, high workload by 15.1%, and the use of PPE reduced skills by 12.0%. Furthermore, its supply-related obstacles also occur in India, and the country is taking an unusual measure to meet the supply in the community and health facilities. All products are submitted to the Indian government, and then the government distributes them to the public and health facilities. Health workers must use PPE appropriately to address the issue of under-supply, to ensure that the provision is appropriate to the needs of a pandemic. The compliance of midwives in using PPE at every level of midwifery service is a very important part of the COVID-19 pandemic in such a way that all midwives must be able to understand the purpose (Putri salma adillah, 2018; Bhattacharya, Mahbub Hossain and Singh, 2020; Cook, 2020; Ranney M.L, 2020).

CONCLUSION

The findings showed that midwives were unable to implement the health protocol. The PPE supply was limited because, during the pandemic, local government policies and PPE prices were very costly. The midwives were at high risk of contracting COVID-19 due to this condition. Therefore, the present study provides stakeholders with information on the implementation of health protocols by midwives in various health facilities during the pandemic and teaching barrier gestures for the application of health protocols. Furthermore, there is a need to hold regular training on PPE, socialization, and supervision of its use in each service room in the Maternal and Child Health Service Facilities and advocate for a sufficient supply of PPE at health facilities the local government.

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