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Analysis Of Antenatal Care Performance By Health Workers On Early Detection Of Preeclampsia At Public Health Centers In Pekalongan Regency

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Abstract
Preeclampsia is a condition of pregnant women with blood pressure of ≥ 140/90 mmHg, followed by one or more criteria such as proteinuria, other organs dysfunction, and uteroplacental dysfunction in newly emerging conditions or after 20 weeks of gestation. The Maternal Mortality Rate (MMR) in Pekalongan Regency is still quite high, one of the most frequent causes of death is preeclampsia. This study aims to assess the performance of antenatal care carried out by health workers in the early detection of preeclampsia at the Public Health Center in Pekalongan Regency. This study uses explanatory sequential mixed methods. The quantitative analysis uses descriptive analytics and the qualitative analysis uses content analysis. Quantitative data analysis resulted mean filling out of mother/family statement about maternal health services that have been received sheets of 198 (49%) with standard deviation 113.1 and median 206 (52%). Mean of filling out the preeclampsia screening sheet was 94.1 (24%) with standard deviation 48.4 and median 103 (26%). Based on these results, the researcher analyzed the factors that affect the performance of antenatal care according to the Van Horn Meter policy implementation. The qualitative research results revealed the lack of health workers resources, distribution of MCH books has not reached all antenatal care facilities, reward punishment system was not optimal yet, coordination meetings are not yet held regulary, not all health workers have received training, supervision from leaders that was not yet optimal, less supportive social, economic, and political conditions, and lack of attitude of implementers in accepting policies.
Keywords: *preeclampsia, mixed methods, MCH book, Van Meter and Van Horn*

1. INTRODUCTION

Indonesia was ranked third as the country with the highest Maternal Mortality Rate (MMR) in Southeast Asia in 2020 (1). The achievement of MMR in Indonesia in 2020 was 189 per 100,000 LB (2). The achievement of MMR is still far from the target of MMR achievement set by Word Health Organization (WHO) for 2020, which is 134 per 100,000 LB (3). Pekalongan Regency is one of the areas in Central Java that has experienced a significant increase in MMR. This increase can be seen in the achievement of MMR in 2023 of 241 per 100,000 LB or as many as 34 cases of maternal deaths (4). Previously, the achievement of MMR in 2022 was only 143.32 per 100,000 LB (5). A total of 34 cases of maternal deaths in Pekalongan Regency were caused by bleeding (32.3%), preeclampsia (17.6%), and heart disease (17.6%) (4).

Preeclampsia itself is defined as a condition of systolic blood pressure ≥ 140 mmHg and diastolic blood pressure ≥ 90 mmHg at least twice measured 4 hours apart in pregnant women with a history of normal blood pressure, and followed by one or more criteria for new conditions that arise or after 20 weeks of gestation, including (1) proteinuria (≥ 30 mg/mol creatinine protein ratio; ≥ 300mg/24 hours; or ≥ 2+ dipstick), (2) evidence of other organ dysfunction in pregnant women including acute renal failure, liver involvement, with or without upper right quadrant or epigastric abdominal pain, neurological complications (such as eclampsia, decreased mental status, blindness, stroke, severe headache), and hematological complications (such as platelet count thrombocytopenia < 150,000/μL, hemolysis), as well as (3) uteroplacental dysfunction (such as fetal developmental disorders, stillbirth) (6).

The Government of Indonesia seeks to accelerate the reduction of MMR and IMR by strengthening the quality of antenatal services at primary service facilities as a step in early detection of pregnancy and childbirth risks, one of which is preeclampsia (7). Antenatal Care (ANC) is integrated as a comprehensive and quality service provided to pregnant women by health workers, including competent doctors and midwives (8). According to recommendations WHO, a comprehensive and quality integrated ANC was awarded 8 times. Then adjustments were made by related professions and programs in Indonesia and resulted in the implementation of ANC being carried out at least 6 times, including 1 first trimester visit

(0-12 weeks), 2 second trimester visits (>12-24 weeks), and 3 third trimester visits (>24 weeks to birth) (9) (10).

The series of antenatal care that aim to recognize pregnancy problems in mothers must meet the requirements such as pregnant women must be exposed to a doctor at least 2 times, namely once in the first trimester and once in the third trimester. ANC performed by doctors in the first trimester with a gestational age of < 12 weeks (first contact) is intended to screen for the possibility of pregnancy risk or comorbidities in pregnant women, including ultrasound examinations. ANC by doctors in the third trimester is an effort to plan labor, which involves ultrasound examinations and planned referrals when necessary (10).

A preliminary study by researchers at one of the Public Health Center in Pekalongan Regency conducted through interviews with midwives implementing antenatal services found several obstacles in the implementation of antenatal services. These obstacles include most midwives who perform antenatal services have not received training, limited facilities and infrastructure to support antenatal services, differences between ultrasound antenatal service days and laboratory service days, and problems with referrals to advanced health facilities. Research by Ramadhianti et al. in the city of Padang in 2019 explained that integrated antenatal services according to standards have not been fully implemented in health service facilities and facilities due to the lack of socialization process of Norms, Standards, Procedures, and Criteria (NSPK) of integrated antenatal services, as well as the lack of use of logistics to support antenatal care (11).

Donald Van Meter and Carl Van Horn have developed a model of public policy implementation by offering an approach that tries to connect policy issues with implementation and a conceptual model that links policy to work performance. Van Meter and Van Horn explained that policy performance is influenced by several interrelated variables. These variables are policy standards and objectives, resources, characteristics of implementing organizations, communication between related organizations, social, economic, and political conditions, and implementing attitudes (12). Based on the preliminary study of the researcher and previous studies, a strong relevance was obtained on the constraints found with variables that affect policy performance in the Van Meter and Van Horn public policy implementation model. Therefore, this study intends to analyze the factors that affect the performance of antenatal services according to the variables described by Van Meter and Van Horn. The results of this study are expected to help understand the problems of implementing antenatal services in the field and then formulate effective solutions to overcome these problems.

2. METHOD

This research method is *a mix method* with *an explanatory mixed methods* approach, where the researcher collects and analyzes quantitative data first, then collects and analyzes qualitative data to explain and elaborate on quantitative research findings. The research was carried out from November 2024 to July 2025 at 26 Public Health Centers in Pekalongan Regency.

2.1 Quantitative methods

Quantitative research was conducted using *a cross-sectional* approach and *a proportionate random sampling* method. The basic data used in the calculation is based on the population of pregnant women who underwent K6 in Pekalongan Regency in 2023, totalling 12,068 pregnant women. Then the sample size was calculated using *the Lemeshow* formula and produced 400 MCH books as research samples.

The MCH book taken must meet the inclusion criteria, including pregnant women in the third trimester with a gestational age of ≥ 32 weeks, pregnant women who perform antenatal services in the MCH room of the public health center, MCH books was printed in 2021 or 2023 and pregnant women who are willing to lend MCH books. The research instrument used was in the form of a checklist of completeness of filling out the MCH book. The checklist contains the score for each statement point on the sheets that will be assessed in the MCH book. The sheets include mother/family statements about maternal health services that have been received sheets and preeclampsia screening sheets. The filling of the sheet is carried out by midwives and doctors who provide antenatal services. The filling of the MCH book is declared complete if the average percentage of each sheet reaches 100%.

Quantitative data was analyzed uses descriptive analytics to find out the *mean*, *median*, *mode*, standard deviation, minimum value and maximum value of filling in the MCH book.

2.2 Qualitative Method

The qualitative research method uses semi-structured *in-depth interviews*. The interview guide is made according to the variables studied, then the next questions are developed during the interview to dig deeper into the information from the research informant. The selection of informan on qualitative research uses *purposive* approach based on the results of completing the MCH book. *In-depth interviews* were conducted with the main informants and triangulation informants at 7 Pekalongan Regency Health Centers and the Pekalongan Regency Health Office. The informants in this study were 24 informants, consisting of 13 main informants and 11 triangulation informants. The main informants in this study include doctors, MCH midwives, and village midwives. The triangulation informants consisted of a coordinating midwife, the head of the health center, and the family health field of the Pekalongan Regency Health Office.

The object of this study is the analysis of antenatal service performance by health workers in the early detection of preeclampsia at the Public Health Center in Pekalongan Regency using the Van Meter and Van Horn policy implementation methods. The variables analyzed include standards and objectives of antenatal services, resources, characteristics of implementing organizations, communication between organizations, social, economic, and political conditions, and attitudes of implementing antenatal services. Qualitative data analysis was carried out using *content analysis*. The components of qualitative data analysis consist of data reduction, data presentation, and conclusions drawn. Data validation was confirmed through *in-depth interviews* with triangulation informants. Secondary data collected in this study include *Standard Operating Procedures* (SOP) and training certificates for health workers implementing antenatal services. This research has been approved by the research ethics committee of Diponegoro University with the issuance of *ethical approval* number 355/EA/KEPK-FKM/2024.

3. Result and Discussion

Pekalongan Regency is one of the autonomous areas located along the northern coast of the Java Sea and has an area of ± 835.1 km^2 which consists of 19 sub-districts and 285 villages/sub-districts. The number of health centers in Pekalongan Regency in 2024 is 26 units (13). The total number of pregnant women in Pekalongan Regency in 2023 is 14,067 mothers. The achievement of pure K1 in 2023 is 91.8% (12,913), while the achievement of K1 by doctors is 70.63% (9,936). This shows that pregnant women who have contact with doctors in the first trimester are still low. The last achievement that became the basis for calculating the sample size in this study was the K6 achievement of 85.69% (12,068) (14).

The implementation of antenatal services at the Public Health Centers in Pekalongan Regency is supported by health workers, namely midwives and doctors spread across 26 health centers. The total number of doctors at the Public Health Centers in 2024 is 52 doctors and the number of midwives is 547 midwives. The Government of Indonesia has supported health services through the JKN program which aims to bring access to health services closer to the community and provide financial support that can be used, especially in antenatal services. The Pekalongan Regency Government has also made efforts to run the system *Universal Health Coverage* (UHC) in 2024 with population health insurance coverage which is divided into 2, including Contribution Assistance Recipients (PBI) and Non-PBI (13).

The researcher assessed the performance of antenatal services based on the calculation of the results of the average checklist of the completeness of filling out the MCH book by health workers at the Public Health Centers in Pekalongan Regency. Filling out the MCH book is carried out by doctors and midwives who carry out antenatal services at the health center. The sheets that are assessed to see the early detection of preeclampsia are the mother/family statement sheet about the maternal health services that have been received and the preeclampsia screening sheet.

Based on table 3.1. The average result of filling both MCH books < 50%. Sheet number 1 which contains 97 statement points resulted in the filling of 198 MCH books out of 400 books by midwives, with a minimum value filled in the reference statement point of 3 books and a maximum value filled in the last menstrual period (LMP) statement point of 396 books. Meanwhile, on sheet number 2 which contains 22 statement points, the filling carried out by the doctor is 94 MCH books out of 400 books. On sheet number 2, the minimum value is filled in the statement points of the fasting blood sugar follow-up plan, the results of blood sugar 2 hours post prandial, the blood sugar follow-up plan for 2 hours post prandial as many as 0 books and the maximum value is filled in the point of the statement of the examiner's signature as many as 163 books.

Table 3.1. Data on the results of filling out the MCH booksheet by Doctors and

No.	Sheet Name	*Mean*	Standard Deviation	*Median*	*Mood*	Min Value	Max Value
1.	Mother/Family Statement About Maternal Health Services That Have Been Received Sheet	197,7 (49%)	113,1	206 (52%)	130 (33%)	3 (1%)	396 (99%)
2.	Screening Preeclampsia Sheet	94,1 (24%)	48,4	103 (26%)	100 (25%)	0 (0%)	163 (41%)

The mother/family statement about maternal health services that has been received sheet contains important information and the results of examinations that have been carried out by health workers in antenatal services. Important information used in early detection of preeclampsia includes weight gain, height measurement, blood pressure, physician screening, and case management.
Measurements of body weight and height are carried out to assess BMI and classify the degree of obesity of a person. The classification of obesity BMI for adults is BMI 23-24.9 categorized as obesity risk, BMI 25-29.9 categorized as obesity I, and BMI ≥ 30 categorized as obesity II. According to IOM, the recommended weight gain for pregnant women in the obesity category II is 4.99-9.08 kg.(15) Meta-analysis studies say that pregnant women with obesity on average give birth to large babies (macrosomia) and experience more pregnancy complications such as preeclampsia and postpartum hemorrhage.(16) The incidence of preeclampsia in pregnant women with the obesity category (≥30 kg/m2) increased by 2-4 times.(6) Table 3.2. It shows that the filling of weight weighing points and height measurement by the midwife implementing antenatal services is quite high > 80%, the filling of these points should be maximum so that it can detect preeclampsia early in all pregnant women.
Table 3.2. Results of filling out the Mother/Family Statement About Maternal Health Services That Have Been Received Sheet by the Midwife

No	Statement	Filled	
		Frequency	%
1	LMP	396	99%
Trimester 1 (Column 1)			
2	Check Date	346	87%
3	Where to Check	286	72%
4	Weight Loss	353	88%
5	Height Measurement	347	87%
6	Measure the Circumference of the Upper Arm	318	80%
7	Blood pressure	345	86%
No	**Statement**	**Filled**	
		Frequency	%
8	Check the Height of the Uterus	270	68%
9	Check the Location and Heart Rate of the Fetal	202	51%
10	Tetanus Status and Immunization	187	47%
11	Counseling	270	68%
12	Doctor Screening	159	40%
13	Blood Supplement Tablets	237	59%
14	Test Lab Hemoglobin	149	37%
15	Blood Type Test	146	36%
16	Ultrasound examination	71	18%
17	PPIA (Sifilis, HIV, HbSAg)	72	18%
18	Case Management	36	9%
Trimester 2 (Column 1)			
19	Check Date	343	86%
20	Where to Check	264	66%

21	Weight Loss	338	85%
22	Height Measurement	333	83%
23	Measure the Circumference of the Upper Arm	206	52%
24	Blood pressure	333	83%
25	Check the Height of the Uterus	278	70%
26	Check the Location and Heart Rate of the Fetal	234	59%
27	Tetanus Status and Immunization	144	36%
28	Counseling	262	66%
29	Doctor Screening	115	29%
30	Blood Supplement Tablets	244	61%
31	Test Lab Protein urine	64	16%
32	Case Management	28	7%
Trimester 2 (Column 2)			
33	Statement number 33-46	237	59%
Trimester 3 (Column 1)			
34	Statement number 47-62	237	59%
Trimester 3 (Column 2)			
35	Statement number 63-79	176	44%
Trimester 3 (Column 3)			
36	Statement number 80-94	95	24%
Other Data			
37	Maternity, Birthplace	349	87%
38	Primary Health Care	5	1%
39	Refferal	3	1%

Blood pressure statement points in the first trimester and second trimester were filled by midwives > 80%. Blood pressure checks should be done at the same time as calculations *Mean Arterial Pressure* (MAP) to detect the risk of preeclampsia, namely if the MAP > 90 mmHg (8). In addition to early detection of preeclampsia, blood pressure monitoring needs to be carried out to find out the abnormalities of pregnant women that lead to hypertension in pregnancy. Gestational hypertension is a condition of an increase in blood pressure ≥ 140/90 mmHg found at 20 ≥weeks of gestation and more than one examination with an interval of 4 hours. While chronic hypertension is hypertension that has occurred before pregnancy or before 20 weeks of gestation (6).

Doctor's screening in the first trimester and second trimester is still low with an average percentage of < 50%. This causes preeclampsia screening in pregnant women to be not optimal because preeclampsia screening must be done by a doctor at < 20 weeks of gestation or if the mother performs K1 at > 20 weeks of pregnancy. The management of cases filled in the first and second trimesters has not reached 10%. Important case management is written related to interventions that have been carried out by health workers for maternal pregnancy problems such as obesity, preeclampsia, anemia and so on.

Referral is one of the interventions when pregnant women experience health problems. So that it is important to record referrals in the MCH book to ensure that pregnant women get fast, safe medical care, and as a beginning of coordination between health services (17).

The preeclampsia screening sheet functions to carry out early detection of preeclampsia in pregnant women by looking for risk factors for preeclampsia (8). Risk factors for preeclampsia include the age of the pregnant woman, parity, history of previous diseases, history of preeclampsia in previous pregnancies, distance of last pregnancy, assisted reproduction, family history of preeclampsia, obesity, race and ethnicity, and comorbid diseases. The age of pregnant women ≥ 35 years increases the risk of preeclampsia cases by 1-2 times (6).

The effect of parity was explained in a systematic literature review study that nulipara women increased preeclampsia cases by 3 times and was supported by other risk factors such as age, race, and BMI of pregnant women. Gestational age < 32 weeks (*early-onset*) increases the incidence of preeclampsia by 2 times more severe than the gestational age > 32 weeks (*late onset*). A multi-center retrospective study was conducted to determine the effect of the distance between the last pregnancy and the risk of preeclampsia resulting in a pregnancy distance of < 12 months or > 72 months related to an increased risk of preeclampsia compared to a pregnancy gap of 12-23 months (6).

In a cohort study, it was stated that 1 million pregnant women who used ovarian stimulant hyperestrogenic medication were at high risk of increasing the incidence of preeclampsia in their pregnancy compared to pregnant women with natural reproduction (6). This emphasizes the link between assisted reproduction and the risk of preeclampsia. Family disease history factors influence the incidence of preeclampsia. Children or sisters who have experienced preeclampsia in the family of pregnant women will increase the risk of preeclampsia by 3-4 times compared to those who do not have a family history of preeclampsia (6).

The presence of comorbid diseases in mothers increases the incidence of preeclampsia cases in pregnancy. Pregnant women who have chronic hypertension and diabetes mellitus also experience an increased incidence of preeclampsia cases (6). So in this sheet there is a laboratory examination column to find out the comorbid diseases experienced by pregnant women.

Table 3.3. shows that the implementation of preeclampsia screening history by asking for risk factors in pregnant women is still low with a percentage range of 20-30%. So that the filling in of conclusions by doctors does not reach 50%. Likewise, in the very low gestational diabetes mellitus screening, it did not reach 5%. This causes preeclampsia screening in pregnant women not to be carried out optimally and there is a risk of late treatment of preeclampsia in pregnant women.

Table 3.3. Results of filling out the Preeclampsia Screening Sheet at < 20 weeks gestational age by the Doctor

No	Statement	Filled	
		Frequency	%
Medical History Criteria			
1	Multiparous with pregnancy by a new couple	118	30%

2	Pregnancy with assisted reproductive technology: IVF, ovulation induction drugs	116	29%
3	Age ≥ 35 years old	130	33%
4	Nuliparous	127	32%
5	Multiparous with a previous pregnancy gap of 10 years > years	120	30%
6	History of preeclampsia in mother or sister	116	29%
7	Obesity before pregnancy (BMI > 30 kg/m2)	117	29%
8	Multiparous with a previous history of preeclampsia	103	26%
9	Multiple pregnancy	100	25%
10	Diabetes in pregnancy	100	25%
11	Chronic hypertension	102	26%
12	Kidney disease	100	25%
13	Autoimmune diseases, SLE	100	25%
14	Anti phospholipid syndrome	100	25%
15	*Mean arterial pressure* > 90 mmHg	113	28%
16	Proteinuria (urine dipped > 1+ at 2 examinations 6 hours apart or immediate quantitative 300mg/24 hours)	87	22%
Doctor's Conclusion			
17	Conclusion	156	39%
Gestational Diabetes Mellitus Screening at 24-28 weeks gestational age			
18	Fasting blood sugar results	3	1%
19	Fasting blood sugar follow-up plan	0	0%
20	Blood sugar results 2 hours post prandial	0	0%
21	Blood Sugar Follow-up Plan 2 hours post prandial	0	0%
Other Data			
22	Signature of the examining doctor	163	41%

In the doctor's conclusion statement, the preeclampsia screening sheet contains 156 books and 163 books are signed by the examining doctor. Meanwhile, in the statement of medical history criteria, the most filled points include the age of ≥ 35 years old (130 books), nullipara (120 books), multiparous with a gap of 10 years of previous pregnancy > 10 years (120 books), and multipara with pregnancy by a new couple (118 books). In conclusion, not all doctors are optimal in filling out or marking the checklist on the medical history criteria, but they immediately give a conclusion on the sheet. This raises the question of what obstacles are faced by health workers in filling out MCH books.

"*The obstacle, at the beginning of the socialization of midwives understand that filling out preeclampsia screening is the authority of the doctor. Recently I socialized again, for filling out preeclampsia screening can be done by midwives, after that I verify...* ($IU_{2.4}$ – Doctor).

According to information from the main informant, the midwife's understanding of the authority to fill out the preeclampsia screening sheet is the authority of the doctor so that midwives who perform antenatal services, especially village midwives, have never conducted a preeclampsia screening. That condition maybe occur because coordination meeting have not yet held regulary so midwives did not know about that information or not all midwives have received antenatal training so understanding of how to fill out the MCH book is not yet thorough.

A comprehensive conclusion regarding the results of quantitative data analysis in the MCH book was found that the filling of the MCH book was incomplete and causing early detection of pregnancy problems, especially preeclampsia screening in mothers, not to be carried out properly. *In depth interviews* were conducted with the informants to find out the factors that influenced the policy implementation methods by Van Meter and Van Horn.

a. Antenatal service standards and objectives

Policy achievement is determined by certain standards and goals that must be achieved by policy implementers. It is said that policy implementation is successful if the implementers are fully aware and understand the standards and objectives of the policy (18).

"*...Antenatal care are comprehensive services, by conducting blood pressure, weight, laboratory checks, and other complete examinations...*" ($IU_{1.3}$ – MCH Midwife)

"*... Antenatal care are services provided to pregnant women as a whole, from the beginning of pregnancy to the third trimester, carried out in teams, and discussed with pregnant women for good pregnancy monitoring*" ($IU_{1.7}$ – Village Midwife)

"*...Antenatal means services during the process of the mother getting pregnant until giving birth by doing 10T, now it is 12 T with additional ultrasound services and psychiatric screening. The number of visits to TM 1 1 time, TM 2 2 times, TM 3 3 times, accompanied by supporting laboratory examinations such as hemoglobin, blood type, proteinuria, urine glucose. Ultrasound was performed 2 times in the first trimester and third trimester. Blood pressure checks are also important and should be monitored if there is an increase in blood pressure*" ($IU_{2.1}$ – Doctor)

Doctors, village midwives, and MCH midwives at the Public Health Care in Pekalongan Regency have a good understanding of the standards and targets of antenatal care as written in the Regulation of the Minister of Health. However, the MCH books is still incomplete. Based on that results, it can be concluded that a good understanding of antenatal care standart and target is not related to the completeness of filling out the MCH books.

b. Resources

The successful implementation of the policy depends on the utilization of available resources (18). These resources are in the form of human resources, material resources, and financial resources. Human resources in antenatal services consist of doctors and midwives who have clinical and midwifery competence or authority so that they are able to carry out comprehensive, integrated, and quality antenatal care (7), (10).

The antenatal care resources analyzed in this study include human resources, material resources in the form of facilities and infrastructure, financial resources, and *reward* and *punishment* systems.

"*...Pregnant women patients average 10 to 15 mothers in one posyandu, plus toddler patients between 45 and 50...Only assisted by health cadres when weighing and height, I do examinations of mothers and toddlers. So if you want to fill out the MCH book completely, the time is not enough and the energy is not enough*" ($IU_{1.2}$ – Village Midwife)

"*..ultrasound services have one midwife, one doctor, one....doctor, because there are no people, our midwives are indeed lacking, especially midwives*" ($IU_{2.4}$ – Doctor)

Based on *an in-depth interview* with the main informant, it was found that the availability of health workers implementing antenatal care is still lacking at the Public Health Care in Pekalongan Regency. This is strengthened by information from triangulation informants regarding the lack of resources for health workers who carry out antenatal care.

"*....if we are pulled back from February here, our energy is indeed lacking, because we lost 4 people. 1 died, 1 became PPPK, 1 retired and 1 sick.*" ($IT_{1.3}$ – Head of Public Health Center)

"*....because I'm looking for a doctor who wants to work here, it's very difficult, ma'am, ...*" ($IT_{1.6}$ – Head of Public Health Center)

The shortage of human resources certainly affects the success of the implementation of antenatal care. The increase in the number of pregnant women who need antenatal care and the lack of increase in health workers performing antenatal care can lead to a decrease in antenatal care performance such as incomplete filling of MCH books. This condition is in accordance with the findings of research conducted by Hidayah et al. The lack of human resources involved in the implementation of the MCH program at the Dupak Public Health Center in Surabaya City resulted in 10 of the 12 achievements of the MCH program not being achieved according to the target (19).

Material resources in the form of antenatal care support facilities include medical devices, medical materials, pregnancy health monitoring record books, and supporting infrastructure for antenatal care such as MCH rooms and posyandu. Medical devices and medical materials in question include scales, height gauges, sphygmomanometers, stethoscopes, dopplers, 2D ultrasound, examination beds, and *lubricant* gel. The book for recording pregnant women's health monitoring is in the form of a MCH book.(10)

"*...The implementation of our Posyandu is already in the building, there are already check beds, tension, height meters, scales, midlines, and Dopplers. All tools and buildings are given from the village, but only one doppler is given, so one doppler is for the tour of the posyandu*" ($IU_{1.7}$ – Village Midwife)

"*...The MCH room is complete, ma'am, there is already a midline, height gauge, scales, ultrasound, ultrasound gel, printer, even a stethoscope...*" ($IT_{2.1}$ – Coordinating Midwife)

The conclusion of the interview with the informant is that the availability of facilities and infrastructure to support antenatal care has been sufficient. These conditions support the implementation of antenatal care, especially during the 10 T examination. The availability of antenatal care facilities is not related to the completion of KIA books because the availability of complete equipment does not necessarily mean that health workers will complete KIA books thoroughly. The completeness of facilities and infrastructure makes antenatal care run in accordance with the standards as mentioned in the research on the evaluation of the implementation of 10T service standards *antenatal care* at the Semanu II Public Health Center. The facilities and infrastructure are quite adequate, including sphygmomanometers, thermometers, long gauges, dopplers, adult stethoscopes, examination beds, scales, height measuring instruments, measuring tapes, reflex hammers, stand lamps for actions, instrument tables and MCH rooms available (20).

"*...I gave the MCH book directly to the village midwife, because if the MCH book is given at the health center, pregnant women will not contact their village midwife..*" ($IT_{2.1}$ – Coordinating Midwife)

Distribution of MCH books not yet reached all antenatal care facilities. That condition influenced by social conditions that occuring in public health centers area. An example, MCH books are only distributed to village midwives so that they can input pregnant women data on the cohort. This causes pregnant women who make their first visit to the health center not having their antenatal checkup results recorded in their MCH book.

Financial resources to support antenatal care is from BPJS Kesehatan non-capitation funds (23). Those resources can be utilized for antenatal care by all public health center in Pekalongan Regency. The use of these resources is also good, so that antenatal care can run as expected and health centers can innovate antenatal care to achieve policy goals. But, that condition not related to completeness of filling out the MCH books.

"*...We do direct, we provide appropriate services, what we do is indeed appropriate, what we claim is in accordance with the 1st trimester of the 3rd trimester there are also restrictions... Because we are the age of pregnancy we adjust, so little is rejected ... We are directing for K1 screening 9 to 12 weeks, but really less than 12 weeks so that we can claim... so 28 weeks have entered K4, we are artists to come here, date like this...*" ($IT_{2.4}$ – Coordinating Midwife)

Hidayah et al's research explains that the financial resources at the Dupak Public Health Center have been supported by the government, especially the Health Office, which budgets for the implementation of programs at the MCH room so that antenatal care can run (20).

Financial support in the form of incentives is able to facilitate the implementation of a policy, one of which is the antenatal care policy (21),(22). Incentives can be in the form of grants *Reward* for those who successfully implement policies and grants *punishment* for those who fail in policy implementation (22). The provision of incentives to health workers who provide antenatal care is sourced from BPJS Kesehatan capitation and non-capitation funds (23)

"*...there is no warning, just be told that the antenatal examination must be more complete.*" ($IU_{1.5}$ – Village Midwife)

The reward and punishment system as a motivation for antenatal care implementers in carrying out antenatal care performance has not yet been enforced and implemented properly at the Public Health Center in Pekalongan Regency.

"*....previously the midwife did not fill out the MCH book completely and did not want to be assigned to the MCH room, then I changed it to the capitation and non-capitation calculation system, now it has started to improve and I want to do the task in the MCH room...*" ($IT_{1.4}$ – Head of Public Health Center)

"*...regarding punishment we have applied at the time of the preeclampsia case yesterday at PONED, we sent PONED midwives for OJT, I said so that you can be smarter, ma'am...*" ($IT_{1.2}$ – Head of Public Health Center)

Effectiveness of system implementation *Reward* and *punishment* This has been proven by several public health centers that carry it out. The results of the implementation of the system are able to change the attitude and work culture of antenatal care implementers quite well. It's influenced the motivation of health workers to fill out the MCH books completely. This is in accordance with the research conducted by Sitompul resulting in the provision of incentives as *Reward* Village midwives have a good effect on their performance with a percentage of 85.4% (24).

c.Characteristics of the implementing organization.

The characteristics of implementing organizations can be seen from the resilience of the policy-implementing organization (25). Organizational resilience is shown by how much of the organization's carrying capacity is manifested in the organizational structure (21). This organizational structure has an impact on a clear division of duties and authority, the formation of communication, and the creation of good leadership in a system order. One of the important aspects of the organizational structure is the availability of *Standar Operating Procedure* (SOP) (26).

"*...ANC is the same every time, except for the ultrasound, we don't palpate, we go straight to the ultrasound... Doppler isn't necessary, sometimes the doctor asks for a Doppler if there is a miss, we repeat the Doppler. But if there is no miss, then no....*" ($IT_{2.4}$ – Coordinating Midwives)

"*...I'm sorry, but honestly it's not the best of the bunch, it's not 10 and it's not good overall. Sometimes it is not stressed by pregnant women.*" ($IU_{2.3}$ – Doctor)

The implementation of antenatal care contained in the SOP is according to the 10T standard and visits are at least 6 times, but the implementation of antenatal care in accordance with the SOP has not been fully implemented at the Public Health Center in Pekalongan Regency. Antenatal care that are not in accordance with the SOP will affect the quality of these services and become an obstacle in the early detection of maternal health disorders during pregnancy. However, health centers that provide antenatal services in accordance with SOPs also do not complete the MCH book. Therefore, the provision of antenatal services in accordance with SOPs is not related to the completeness of the MCH book.

This condition is similar to the research carried out at the Semanu Public Health Center which resulted in the implementation of the 10T antenatal care standard that has been running but is not optimal in accordance with the existing SOPs. This caused the achievement of K4 in 2019 at the Semanu Health Center to be 74.04% and still far from the target set in the same year which was 95% (12).

Other things that need to be observed in organizational characteristics include staff competence, number of staff, and range of control (hierarchy) (27). Human resources, including an adequate number of staff and the right expertise to carry out duties and authority to translate written proposals into public services that function as important factors in the implementation of antenatal service policies.(26)

"*....the last training was between 2008 and 2009 ma'am... Usually from the health office, the training is self, ma'am, one by one of public health center.*" ($IU_{1.1}$ – KIA Midwife)

"*....if for the 2023 MCH book, I have not been trained, only socialized from Coordinator midwive to village midwives, just participated in PMBA training... If the latest MCH book has been trained to fill in at Kesesi Hospital.*" ($IU_{1.6}$ – Village Midwife)

"*....Not yet, not yet. Yesterday I asked for OJT... Actually, I want to do an ultrasound, I still want to study, OJT that 2 weeks, but it's not scheduled, hesitate... It is even scheduled for one day...*" ($IU_{2.2}$ – Doctor)

The number and participation on training of antenatal care implementers, both doctors and midwives, at the Public Health Center in Pekalongan Regency are still lacking. The competencies referred to here are ultrasound training for doctors and antenatal training for midwives. Health workers who have competence are very important in the implementation of antenatal care. Good competence from the implementer will also result in good service performance. Not all health workers have participated in training that supports antenatal services related to filling out the MCH book. Understanding how to fill out the MCH book properly will encourage health workers to fill it out completely.

"*....yesterday it was because I didn't know there was an obligation to fill in the weight gain chart sheet, so it was only a quick glance to fill it out...*" ($IU_{1.2}$ – Village Midwife)

The Health Office has followed up on this by realizing ultrasound training for doctors and completing it this year.

"*....I spent ultrasound training this year, ma'am...*" (IT_3 – Pekalongan Regency Health Office)

The study of the implementation of maternal and child health services in NTT Province resulted in the inadequate availability of human resources in the implementation of antenatal services and training for midwives is still uneven because midwives who provide services at the Auxiliary Health Center have not received the training (12).

The range of control (hierarchy) that affects an organization in the policy implementation process according to Van Meter and Van Horn is the level of hierarchical supervision over the decisions of sub-units and processes in the implementing body (21). The implementation of antenatal care at the health center is supervised by the Head of the Public Health Center and assisted by the Coordinating Midwife (12).

"*....there is nothing from the head of the public health center asking about the regulations, the important thing is that the service is running, patients are served and there are no complaints...*"($IU_{1.1}$ – KIA Midwife)
"*...Usually we coordinate with the coordinator midwife, ma'am, but if the coordinator midwife reports or not to the head of the health center, I don't know...*($IU_{1.2}$ – Village Midwives)
The supervision carried out by the Head of the Public Health Center and the Coordinating Midwife at the Public Health Center in Pekalongan Regency is still low. Bad supervision of antenatal care services affected incompleteness of filling out MCH books as a form of implementation. Research on maternal health services in accelerating decline *maternal mortality* producing supervision and technical guidance at the Karanganyar II Public Health Center has been running well with the support of the coordinating midwife as an experienced supervisor so that it can motivate village midwives to improve their performance (19).

d. Communication between organizations

Communication between organizations aims to communicate policy standards and objectives with implementers and the information conveyed must be consistent and uniform (18). This communication must be established as a reference, for example the implementation of periodic routine meetings that have been determined at a predetermined place and time (21).
"*....if the lokmin is now once every 2 or 3 months, ma'am...*"($IU_{1.2}$ – Village Midwife)
"*...Before Covid, I used to get together once every 3 months, but now it has stopped. Busy alone, ma'am, there is a lot of work...*"($IT_{2.5}$ – Midwife Coordinator)
Communication between organizations is assessed from regular meetings and meetings such as midwife meetings and mini-workshops (Lokmin) as well as meetings with the Health Office regarding antenatal care services. Based on the results of the interviews, it was shown that the implementation of communication between organizations at the Public Health Center in Pekalongan Regency was not going well. So, so that the latest information and solutions regarding antenatal care are not discussed properly, resulting in incomplete MCH book entries as a problem that cannot be corrected.
The research conducted by Kurniasih et al found that the lack of optimal evaluation and monitoring carried out by the Semanu II Public Health Center related to the implementation of 10T service standards is due to the evaluation and monitoring of services in the MCH room in general, not specifically.(20)

e. Social, economic, and political conditions

Social, economic, and political conditions are part of the policy environment that can affect the implementation of public policies. The socio-economic conditions of a developed society, a democratic and stable political system, good support from the ruling elite, and a supportive daily culture of the community will facilitate the implementation of a policy (12).
"*....the average number of visits by pregnant women is highest on Fridays, because they have the day off. Most of their husbands are casual daily laborers and can only take their wives for prenatal checkups on their days off....*" ($IU_{2.1}$ – Doctor)
Supportive economic conditions in antenatal services are mainly supported by BPJS Kesehatan and the *Universal Health Coverage* (UHC) (28). The support of the central government and local governments in the form of the ratification of regulations that support the implementation of antenatal care can provide a good political environment in the implementation of antenatal services (10). In addition, geographical conditions and socio-cultural conditions in the target group also affect the implementation of public policies (18).
"*...What is often missed is the 1st trimester...Because they are far away, the Doro area is geographical, especially the upper areas, Pekuluran, Sidoarjo, Pungangan...The difficulty is access here.*" ($IU_{2.4}$ – Doctor)
"*...Here the culture is still thick, for example, it has been found that there is high tension or there is an abnormality, given a referral, the patient does not leave. Because she is not pregnant yet, why do you have to go to the hospital, and be given medicine without taking it, it is difficult. The midwife has picked up the ball, sometimes she doesn't want to. Pregnant women who walk around the cemetery here are also still mothers...*" ($IU_{2.3}$ – Doctor)
According to interviews with informants, it is illustrated that the social, economic, and political conditions at the Public Health Center in Pekalongan Regency have not supported the running of antenatal care well. Those conditions causes the absence of pregnant women during scheduled appointments means that they do not undergo examinations, their maternal and child health records cannot be updated, and the risk screening phase is missed. This condition was found by research at the

Dupak II Public Health Center, that the social, economic, and political environment was not supportive, thus hampering the MCH service program (29).

f. Attitude of the Implementer

The attitude of acceptance or rejection from the implementer greatly affects the success of the implementation of public policies (18). The attitude that is expected to be possessed by policy implementers is honest, commitment, and responsible. This attitude is able to direct policy implementers to stay within the policy path of the program that has been made. The responsibility and commitment of the implementers make them enthusiastic in carrying out their duties, authorities, and functions in accordance with the policy provisions (26).

"*...pressure from the Health Office... I am assigned to PONED ma'am, so I have to know the completeness of identity, number one NIK, number two KK, date of birth, mother's age, husband's age, that's my motivation to complete*." ($IU_{1.4}$ – Village Midwives)

"*...My knowledge, I'm much more stupid than you midwives, the midwives are smarter... I used to be a bit of a nerd, but now I'm hesitant. I want to retire, I'm lazy*" ($IU_{2.2}$ – Doctor)

"*...My weakness is lazy ma'am...But if you want to fill it up, sometimes you don't want to fill it up*." ($IT_{2.1}$ – Coordinating Midwives)

Doctors and midwives as antenatal implementers must have an attitude of responsibility, commitment, and discipline in the implementation of antenatal care to pregnant women. These three attitudes are important for health workers at the Public Health Center in Pekalongan Regency to have so that antenatal care are quality, integrated and comprehensive. The attitude of health workers at the Public Health Center seems to lack support for antenatal care policy because it appears to lack commitment and discipline, resulting in the incompleteness of fill out the MCH books.

The study on the implementation of maternal health program policies in NTT Province found that there was a correlation between disposition and policy implementation performance with a value of $p = 0.00$ and a correlation coefficient of 0.358. The correlation obtained is quite strong and positive, which means that the better the disposition, the higher the policy performance (12).

4. CONCLUSION

The implementation of antenatal service policies by health workers at the Public Health Center in Pekalongan Regency is still not good. This can be seen from the incomplete filling of the MCH book as the policy performance assessed in the implementation of the antenatal care policy. Policy variables that cause the implementation of antenatal care are less than optimal in the implementation of antenatal care, the implementation of the reward punishment system has not been effective, the lack of meetings and coordination meetings of service providers, antenatal care provided are not in accordance with SOPs, lack of number and competence of antenatal care implementers, lack of optimal supervision from the Head of Public Health Center and Coordinating Midwife, social, economic conditions, and Politics that is not supportive, as well as the poor attitude of the implementers in accepting the policy of antenatal care.

Improvements in antenatal implementation are expected to be realized by overcoming obstacles that arise with recommendations from researchers, including (1) increasing the number of health workers in antenatal care through the recruitment of ASN and the provision of antenatal care assistants in villages (such as TPK, village nurses); (2) integration between professions in the implementation of antenatal care at Posyandu (midwives, nurses, nutritionists, health programs, doctors); (3) the implementation of a reward system by providing incentives or determining the amount of service for health workers at public health centers and punishment by participating in training according to the main duties and functions of health workers; (4) distribution of MCH books throughout all facilities providing antenatal care; (5) meetings and coordination meetings with the determination of schedules and relevant topics of discussion; (6) supervision of antenatal care each semester using a checklist by the coordinating midwife; (7) improving the competence of all health workers through training and a list of participants determined by the head of administration; (8) strengthening the supervision of the head of the public health center and the coordinating midwife with direct monitoring from the Health Office; (9) build effective communication with the community, especially pregnant women and their families through pregnant women classes or other counseling classes; (10) providing education through socialization, pamphlets, and media about the insurance system, especially JKN; (11) fostering good communication and coordination with cross-sectoral and community leaders who have an impact on maternal health by

attending village meetings; and (12) creating a work culture, effective communication between others, and performance evaluation.

Limitations

The limitation in this study is that the difference in MCH book prints, namely the 2021 print and the 2023 print, causes the researcher to adjust the score formulated in the checklist of the completeness of filling out the MCH book.

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