

# The Model of Midwife Performance of Antenatal Care in Banda Aceh

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## ABSTRACT

**Background:** Maternal Mortality Rate (MMR) is considered as one of the health indicators to evaluate health status of population. Indonesia had the highest MMR (305 per 100,000 live births) compared to other countries in South East Asia. Efforts to reduce MMR have been developed including increasing the quality of antenatal care (ANC). The high coverage of ANC through first and fourth visit only describe the accessibility of the ANC. This study aims to find a model of antenatal care, both from accessibility and quality of care in Aceh Province, Indonesia.

**Methods:** This is an explanatory study using cross sectional design, with the population of all village midwives in Aceh province. Cluster sampling was used for all midwife in Banda Aceh municipality, totaling 105 respondents. Data was collected using a structured questionnaire, maternal and child health books, and mother's cohort books. Statistical analysis was conducted using Structural Equation Model (SEM) Amos 16 to estimate the relationship of midwife's characteristic, organization and psychology towards quality of antenatal care and midwife performances.

**Results:** Individual midwife characteristics, organization, and midwife psychology had a significant and positive relationship with the quality of antenatal care and midwife performances. Quality of

antenatal care also had a significant and positive relationship with midwife performance. The results indicated that variables of individual, organization and psychological midwife had direct and indirect relationship with midwife performance through the quality of antenatal care as the intervening variable. Antenatal care quality was significantly mediated the correlation between the individual, organization, and psychological variables with midwife performance.

**Conclusion:** Variable of organization had the highest correlation with the quality of antenatal care and midwife performances. Thus, it is suggested the improvement of incentives, leadership and resources as the organization indicators.

**Keywords:** antenatal care, midwife, maternal and child health, performance

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## INTRODUCTION

Public health is expected to have an increase in the quality of health care and various priority efforts has been done to manage this. Antenatal care is one of health cares by health professionals (obstetricians and obstetrics, general practitioners, midwives and nurses) to pregnant women during their pregnancy. The quality of antenatal care has been determined in the Regulation of the Minister of Health of the Republic of Indonesia Number 97 of 2014 concerning the health care standards known as Standard 10 T (Ministry of Health of the Republic of Indonesia, 2010).

The coverage of K1 and K4 antenatal care in Banda Aceh City in 2015 was 97.98% and 92.18%. This high number has reached the target of the strategic plan set at 95% but has not been followed by a decrease in MMR in the Banda Aceh City area. Achieving coverage of K1 and K4 antenatal care as a form of assessment of the performance of midwives in the village at this time can only provide an overview of access to health cares for pregnant women but has not been able to describe the quality of good antenatal care so as to suppress the MMR in the city of Banda Aceh. This also provides a temporary picture that the midwives performance in providing antenatal care does not accord with the standards of established antenatal care. Therefore, other efforts are needed to obtain a comprehensive and comprehensive picture of the performance of village midwives so that they are able to evaluate the performance of village midwives both in terms of accessibility and quality.

Employee performance (including the performance of midwife and health workers in providing the health care) can be defined as work outcomes that contribute to economy and strongly have relationship with the organization's strategic objectives and customer satisfaction (Masinambow et al., 2015). Demographic and health survey data for Indonesia (IDHS) 1990 - 2015 (as the latest data summarized) MMR in Indonesia was known to be 390 per 100,000 live births in 1991, the figure fell slowly to 305 in 2015. The MDGs target for AKI in the year 2015, namely the reduction in MMR with a ratio of up to three quarters, which is around 110 maternal deaths for every 100,000 live births. The condition of the MMR in Indonesia turns out to be contradictory, which is still above 305. On the other hand, neighboring Malaysia has been able to reduce the MMR by 45% over the past 20 years, as well as the maternal mortality rate on a world scale (Indonesian Demographic and Health Survey, 2013).

The success of the implementation of antenatal care is only done by looking at the value of K1 and K4 coverage and the achievement of the target of the coverage where this is also used as an indicator of village midwife performance. K1 coverage is the number of pregnancies who have received antenatal care for the first time, regardless of gestational age, compared to the target number of pregnancies in a work area within one year. Whereas K4 coverage is the number of pregnancies who have received the antenatal care accordingly to the standards at least four times as recommended in each trimester compared to the target number of pregnant women in a work area within one year.

The indicator shows that health care access for pregnant women and the level of compliance of pregnant women in checking their pregnancy to health workers. In addition to coverage of K1 and K4, the midwives' performance is also measured by achieving coverage of births and detection of the pregnancy high risks by health workers in health care facilities (Ministry of Health of the Republic of Indonesia, 2010).

## LITERATURE REVIEW

According to Wibowo (2011), there is broader meaning to define about performance, not only the work results during some periods but also how the work process takes place. Robbins (2008) mentions the interaction function of ability, motivation and opportunity. Performance is basically what people do or don't do. Setiawan (2007) stated that performance is a work achievement or work output (output), a person or group carrying out their duties to bring in products or services with both quality and quantity in accordance with the responsibilities given to them. In health care organizations it is very important to have an effective performance appraisal instrument for the professional workforce.

The process of performance evaluation for professionals becomes the most important part of management's efforts to improve the effective organizational performance. Assessment of antenatal care by health workers should be accessible through the measurement of quality and quantity (Ilyas, 2007). Health research results are highly dependent on village midwives as personal implementers in the field, one of the examples is the successful program of the maternal and child health (KIA) (Abu et al., 2017). Therefore, the need for government attention should not be on the program, but rather its resources that carry out tasks in the field.

Midwives as the most important person who are directly related to public health cares can be a supporting factor of health development. The factors of the improvement of midwife's performance are the quality of antenatal care provided to the maximum in line with expectations in the midwife's vision and mission. These are supported by the ability and skills, and proper non-financial motivation. The midwife's performance is also influenced by individual competence, organizational and management support (Mardiah, Lipoeto, & Nursal, 2012).

Gibson et al. (1987) conveyed the theory of performance models and conduct an analysis of variables that affected work behaviour and performance. The variables are: individual, organizational, and psychological variables. The individual variables are consisted of abilities and skills (mental and physical), background (family, social level and experience), and demographics (age, ethnicity and gender). Organizational variables are consisted of resources, leadership, rewards, structure, and job design. Psychological variables are consisted of perception, attitude, personality, learning and motivation. Those three groups of variables affected work behaviour which ultimately affected the performance of personnel. Behaviour relating to performance is related to work tasks that must be completed to achieve the goals of a position or task. This can also be

used to develop a model for improving the performance of village midwives.

Tampi (2014) explained that the performance is both of quality and quantity result of work responsibly achieved by employees. The results work are adjusted to the criteria, expectations and standard of the organization. Every employee is required to make a positive contribution because the success or failure of the organization's achievement is influenced by the performance of individual and group employees; the better the performance of the employee the better the performance organization. Stone (2005) in Christine et al. (2010) said that self-assessment results are indicating by (1) a more satisfying and constructive performance evaluation discussion; (2) the level of defensive employees when the assessment process is reduced; and (3) improve performance through a higher commitment to organizational goals.

## METHODOLOGY

The sampling was done by probability sampling with cluster sampling method, which determined the sample of a group or population (Sugiyono, 2011). The sample in this study were all midwives who work in villages in the area of Banda Aceh in 2018. The total of sample is 105 people. This research applied primary and secondary data as a part of explanatory research or confirmatory study with cross-sectional design conducted by the symptoms explanation which caused by an object of research. This research aimed to analyze the relationship and hypothesis among individual, organizational and psychological variables on the performance of midwives. The analysis was done directly to the performance of midwives or through the quality of antenatal care provided by the midwives in Banda Aceh. Reliability test was done to show an index about how far a measuring instrument can be trusted or relied on (Latan, 2013). To measure reliability in SEM, they are: composite reliability measure and variable extracted measure variable are used:

$$\text{Construct Reliability} = \frac{(\text{std. Loading})^2}{(\text{std. Loading})^2 + e^2}$$

$$\text{Variance Extracted} = \frac{\text{std. Loading}^2}{\text{std. Loading}^2 + e^2}$$

Standard loading can directly be obtained from the output of Amos is the measurement error of each indicator or variable observed. The variant extract reflected the total number of variants of the indicator explained by latent variables. The result of reliability is visible from the value of construct reliability (CR) > 0.60 and variance extracted (VE) > 0.5. The construction or measurement model has good validity if the standard loading factor (SLF) > 0.30.

The validity evaluation of model measurement is said to be good for the construction or its latent variable, if the t-value (factor loading) is greater than the value critical (1.96 or practical > 20) and a validity evaluation of the model measurement can indicate a standard loading factor.

The Significance test was done by comparing the value of r count with r table for degree of freedom (df) = n - 2, (n is the number of samples) in the SPSS output display in the Correlated Item - Total Correlation column. If it is found

that r is greater than r-table and a positive value then the item the question or indicator is declared valid.

**DATA ANALYSIS**

The respondents in this study were the midwives with 31-35 years old (49.5%) and 36-40 years (45.7%) with an average age of 35.5 years. Almost all respondents were married

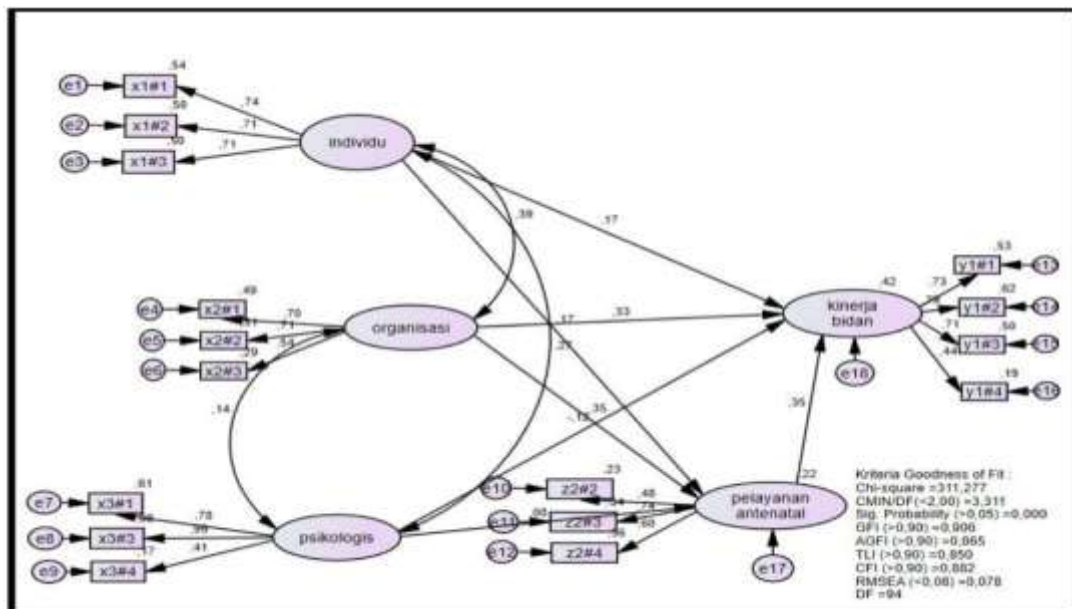
(99%), only 1 person who was not married. Most respondents were contracted village midwives (69.5%), and the rest were civil servants. Most respondents have worked as village midwives for more than 10 years (77.1%), with an average tenure of 10.9 years. Respondents who did not live in the placement location village were 55.2% and those who lived in the placement location village were 44.8%.

**Table 1:** Frequency Distribution of Antenatal Care Quality

No	Antenatal Check Up/ Intervention	Category			
		Yes		No	
		n	%	n	%
1	Recent complaint	88	83.8	17	16.2
2	Blood pressure	82	78.1	23	21.9
3	Weight	102	97.1	3	2.9
4	Gestational	102	97.1	3	2.9
5	Fundus height	103	98.1	2	1.9
6	Fetus location	102	98.1	3	2.9
7	Fetal heart rate	94	89.5	11	10.5
8	Special treatment (lab)	87	82.9	18	17.1
9	Counseling	60	57.1	45	42.9
10	Treatment of TT	92	87.6	13	12.4
11	Prescriptiof of multivitamin	96	91.4	9	8.6
12	Risk type detection	97	92.4	8	7.6
13	Referred	99	94.3	6	5.7
14	Temporary treatment	69	65.7	36	34.3

The Test of Correlation in Research Models  
The next step is to conduct a complete structural analysis of the model (full model) to test the relationship or correlation

of each exogenous variable with other endogenous variables. The results of the analysis on AMOS can be seen in figure below.



**Figure 1:** The test of Structural Models before Modification

Based on figure 1, an explanation for the test of model feasibility can be seen in table 2.

**Table 2:** Feasibility Testing Index of SEM before the Modification

Goodness of Fit Index	Cut-off Value	Result	Model Evaluation
$\chi^2$ - Chi-square	(df =94)	311,277	Not Good
Probability	$\geq 0,05$	0,000	Not Good
RMSEA	$\leq 0,08$	0,078	Good
GFI	$\geq 0,90$	0,906	Good
AGFI	$\geq 0,90$	0,865	Marginal
TLI	$\geq 0,90$	0,850	Marginal
CFI	$\geq 0,90$	0,882	Marginal

Based on the data in table 2, the model testing analysis was performed using Goodness of Fit (GoF) criteria. The results are adjusted to the desired criteria. GoF model has not been met as a whole so it is concluded that the proposed research model is not fully fit with the data used by researchers. AMOS recommends connecting some of the residuals of these indicators so that the model becomes fit with the data

using the Table Modification Indices guide. Through this Modification Indices Table, several covariance model modifications are carried out by connecting the covariance models. So that later the model will meet the Goodness of Fit standards and said the model is fit. After the modification, a new model of modification is produced, which can be seen in Figure 2.

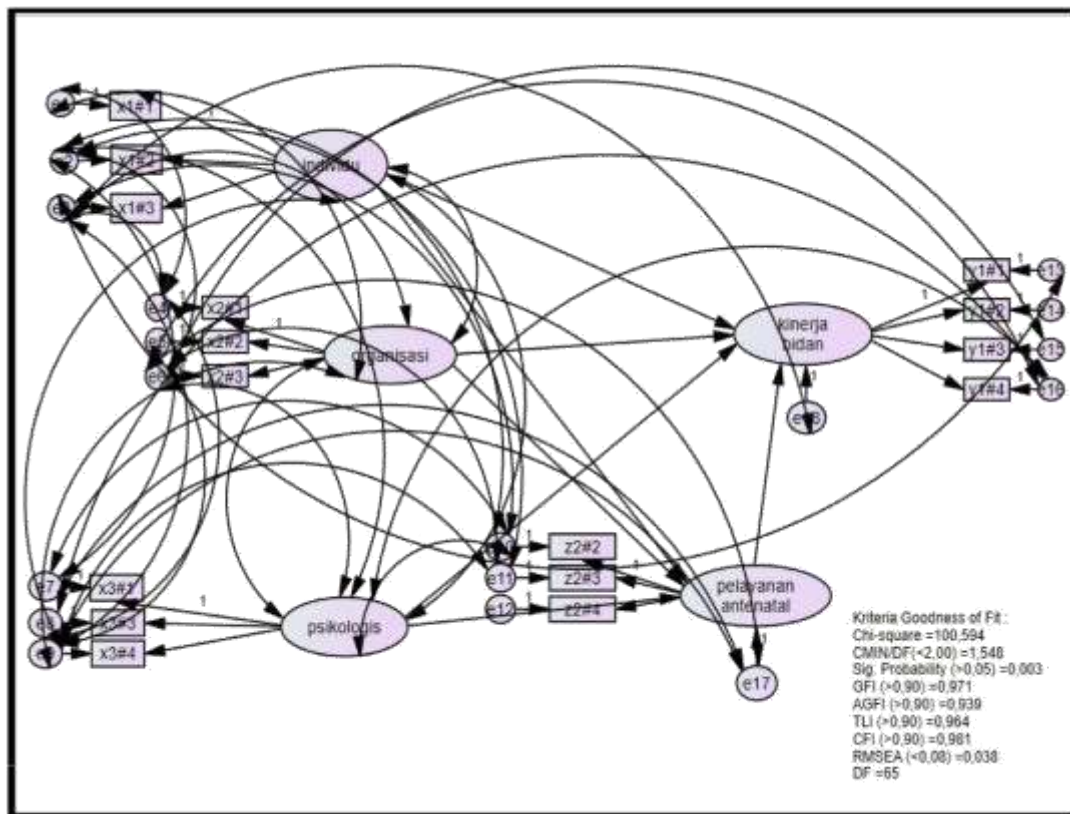


Figure 2: The test of Structural Models after Modification

Source: The Result of Data Analysis (2019)

Table 3: Feasibility Testing Index of Structural Equation Model (SEM)

Goodness of Fit Index	Cut-off Value	Hasil Analisis	Evaluasi Model
$\chi^2$ - Chi-square	(df=65)	100,594	Good
Probability	$\geq 0,05$	0,003	Marginal
RMSEA	$\leq 0,08$	0,038	Good
GFI	$\geq 0,90$	0,971	Good
AGFI	$\geq 0,90$	0,939	Good
TLI	$\geq 0,90$	0,964	Good

CFI	≥ 0,90	0,981	Good
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Source: The Result of Data analysis (2019)

Based on Table 3, It can be seen that the results of the research model through several modifications with the applicable modification provisions, that the feasibility test of the model using the data in the Goodness of Fit Table as a whole the model is Good, it can be used for the next step of analysis to test the research hypothesis.

The Test Result of Direct Effect and Indirect Effect  
 The results of data analysis of the direct and indirect relationship between research variables will explain how the role of intervening variables (antenatal care) mediate the relationship between exogenous variables (individual, organizational and psychological) with endogenous variables (midwife performance). The results of data analysis can be seen in table 4.

Table 4: The Effect of Independent Variables of Midwife Performance

Variabel	Total	Direct		Indirect	
		Score	Explanation	Score	Explanation
Individu	0,276	0,128	Avarage	0,148	Avarage
Organization	0,782	0,361	Good	0,421	Good
Psychology	0,123	0,055	Poor	0,068	Poor
Quality of Antenatal Care	0,388	0,388	Good, tend to strengthen the indirect effect of others variables	0	Nothing

Source: The Result of Data analysis (2019)

Based on the output data in table 4, it can be seen that the indirect relationship of individual, organizational, and psychological variables to the performance of midwives in Banda Aceh through the variable of quality of antenatal care provided by midwives, has a greater effect than the direct variables of individual, organization, and psychology of the performance of midwives. The mathematical model of the variables in the hypothesis model can be written as follows:

$$\text{Midwives Performance} = 0.388 \text{ antenatal service} + 0.361 \text{ organization} + 0.128 \text{ individual} + 0.055 \text{ psychology} + e18$$

The explanations of the mathematical model:

- Variables in the quality of antenatal care, organizational, individual and psychological services together affect the performance of village midwives. If these variables together increase by 1 unit, the midwife's performance will increase by 0.932 performance units. An increase of this magnitude was contributed by the antenatal care quality variable with a  $\beta$  coefficient of 0.388.
- In addition to the antenatal care quality variables, organizational variables also improve midwife performance. Increase of one unit of this variable will increase  $\beta = 0.361$  performance unit.
- From the mathematical model above, it can also be interpreted to increase by one unit of the percentage of individuals, it will increase the performance of 12.8%
- Psychological variables will have a positive effect on performance, an increase in one unit of psychological variables will increase direct performance by 0.055 units of performance.

A regression between measured variables can be written in a mathematical model:

$$\text{Quality of Antenatal Service} = 0.073 \text{ psychology} + 0.124 \text{ individual} + 0.310 \text{ organization} + e17$$

The regression model of Antenatal care quality shows that the variables of organizations, individuals, and psychology have a positive relationship with antenatal Care as an intervention variable. Psychological variables have a direct influence that is not too large ( $\beta = 0.073$ ), as well as individual variables ( $\beta = 0.124$ ) and organizational variables ( $\beta = 0.310$ ).

The ratio of organizational variables is relatively large, 4 times that of psychological variables.

## RESULT AND DISCUSSION

The evaluation of midwives performance cannot be separated with access and quality, hence the midwives performance is still a construct, which cannot only be measured directly through achieving some services coverage for pregnant women, but it must also be included in the measurement of service quality through the variable of quality of antenatal care. Table 3 shows the results of SEM analysis with the coefficient value as the estimated value ( $\beta$ ) accompanied by the level of significance (p). A value of  $p < 0.05$  indicates that the regression relationship is statistically feasible to be accepted in the model. Other outputs give a standardized regression weight which is the weight of influence value among variables.

Table 4 provides an overview of the level of influence among variables that are paired directly, without calculating the

path. The results of the analysis show 4 variables that affect performance directly where the antenatal service quality variable has the biggest influence ( $\beta = 0.388$ , positive) on performance, the second biggest influence on performance is the organizational variable ( $\beta = 0.361$ , positive), then the individual variable ( $\beta = 0.128$ , positive), and psychological ( $\beta = 0.055$ , positive). In other words, the better the quality of antenatal care, the better the midwife's performance. But from the structure of the model built, the influence of one variable on another can be both direct and indirect (according to path analysis). For example, the influence of individuals on the midwives performances can be directly or indirectly through intervening variables.

Improving the performance of midwives is based on various factors, one of which is the organization. The better the organization where the midwife works, the better the performance. In other words, it can be stated that the better the indicators of resources, rewards and leadership in the organization, the better the performance of the village midwife.

Organizational variables have the highest total effect on performance ( $\beta = 0.782$ ). From the path analysis it appears that the direct effect of organizational variables on performance is quite strong ( $\beta = 0.361$ , but is corrected by the indirect effect of the organization on performance through an intermediate variable (antenatal service) of  $\beta = 0.421$  (positive).

This model is in accordance with research by Fort and Voltero (2004) who conducted research on 285 midwives in Armenia, stating that the performance of nurses and midwives in maternal and child health is influenced by good leadership in the form of input/feedback from superiors and training. Ruwayda (2016) stated that there is a significant relationship between knowledge, training and supervision/supervision of antenatal services provided by midwives to pregnant women. Health workers who get maximum supervision with regular schedules on average 1-2 times each month will show improved performance and their motivation as midwives is getting better, even this supervision is influenced by the number/schedule of supervision, support and motivation from workers (Robbins, 2008; Perkins et al., 2007). Leadership is a driving force for human resources (midwives) so that the maintenance and development of human resources is needed, which is absolute. Because if attention and maintenance are reduced, it will have an impact on decreasing the quality of work, a sense of responsibility and enthusiasm that affect the performance and performance of midwives (Surani, 2008). It is the same with rewards, mixed-method research by Aninanya et al. (2016). In nurses and midwives in northern Ghana found that performance-based incentives increased the motivation of midwives and nurses in providing services to pregnant women in primary health care centres.

The total effect of the individual variable on midwife performance was  $\beta = 0.276$ . The estimation is interpreted that the better the picture of midwives individually, the better the performance. These results are consistent with Alkaseh and Kweik's research (2019) of 212 midwives who work on the Gaza Strip, which stated that sociodemographic

factors such as marital status, age, experience, means of transportation and salary affect the performance of midwives. Research by Bekru, Cherie, & Anjulo (2017) on 234 midwives in Addis Ababa also stated the same thing that age, educational status, and workplace influence the satisfaction of midwives which ultimately affects their performance.

The total influence of psychological variable (perception, personality and learning) on performance is  $\beta = 0.123$ , consisting of a direct influence of  $\beta = 0.055$  and indirectly through an intermediate variable (antenatal care)  $\beta = 0.421$ . Research by Paterson et al (2010) on 20 midwives in Australia states that the midwife profession is considered a risky job, requiring hard work so that many midwives feel stressed, scared, and moody if the workload exceeds their ability. The results of this study are supported by research conducted by Abu et al. (2017) namely the factors improving the performance of midwives is the quality of antenatal service performance obtained optimally in line with expectations in the midwives' vision and mission, this is supported by the ability and skills, proper non-financial motivation.

The results of the midwife's performance modelling in this study indicate that the better the antenatal care quality provided; the better the midwives' performance is ultimately expected to reduce maternal mortality in the area. Research by Prasetyo et al. (2018) stated that the quality of antenatal care as measured by the frequency of the labour assisted delivery, the labour of referral and management of obstetric complications can reduce maternal mortality in 10 provinces in East Java. The quality of antenatal care can also increase the detection of high-risk pregnant women (Marniyati et al., 2016; Wanma et al., 2018). The results of this study indicated a number of important variables that affected the midwives' performance and the complexity of relationships among individual, organizational and psychological variables, to produce the expected performance as according with the theory (Gibson et al., 1987), which directly and indirectly affected the performance of midwives.

## CONCLUSION

The organizational variable has the greatest influence to the midwives performance the quality of antenatal care, therefore it is expected that the leadership of the community health center in villages (*puskesmas*) and coordinating midwives will further improve supervision, completeness of resources, rewards, structure and work design that is consistent with respect for work results, application of rules, promotion system and equal distribution of responsibilities of fellow colleagues.

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