

# Effect of Training on the Application of ANC 10 T on Midwife Knowledge to Prevent Maternal Death in Dairi Regency of North Sumatra Indonesia

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Received: November 30, 2020 Accepted: January 19, 2021 Online Published: February 5, 2021

doi:10.5539/gjhs.v13n3p70

URL: <https://doi.org/10.5539/gjhs.v13n3p70>

## Abstract

**Introduction:** Antenatal Care (ANC) data collected at Matlab Thana and shows that the maternal mortality rate for mothers aged 15 – 19 years is 7.4 per 1000 live births while for mothers aged 20 – 24 it is 3.8 to 1000 live births. For mothers under the age of 15, 17, 7. This ratio was then cited in the 1989 WHO volume compilation of age-specific maternal mortality data from 40 countries over approximately the same period as the Bangladesh study suggesting a much more moderate risk of excess for young mothers, but most of them were ignored in the scientific literature. Rizki Dewi et al's 2017 research-led most midwives (69.7%) 10T standard in good integrated antenatal service. The purpose of the research to know the knowledge of midwives in the application of antenatal care to prevent maternal death in Dairi Regency of North Sumatra.

**Methods:** Design research was quantitative research with a quantitative design experiment. Models used, observed/measured changes. Bivariate Analysis, to analyze the influence between independent variables (each dimension) and dependent variables with different tests (t-tests).

**Research Results:** Midwife knowledge increased after ANC implementation training. Knowledge Before an ANC 10 T application training, value  $p = 0.731$  This means that there was no difference in knowledge, control before (pre-test) training implementation of ANC 10 T. The average knowledge difference between the pre-test and post-test is 0.067 with a value of  $p = 0.058$  The difference between the case group and the control group before and after the training of an ANC 10 T implementation with a value of  $p = 0.000$ ,  $p$ -value  $(0.000) < 0.05$  then it can be concluded that the training of the implementation of ANC 10 T effectively improves midwife knowledge in Dairi Regency of Sumatra Province.

**Conclusion:** Midwife knowledge increased after an ANC implementation training in the Dairi regency of North Sumatra. Advice that training was very effective to improve the knowledge of midwives in the application of ANC in Dairi district of North Sumatra.

**Keywords:** midwife knowledge, training on the application of ANC 10 T

## 1. Introduction

Antenatal Care (ANC) data collected at Matlab Thana shows that the maternal mortality rate for mothers aged 15–19 years was 7.4 per 1000 live births while for mothers aged 20–24 it was 3.8 to 1000 live births. For mothers under the age of 15, was 17, 7. This ratio was then cited in the 1989 WHO volume compilation of age-specific maternal mortality data from 40 countries over approximately the same period as the Bangladesh study suggesting a much more moderate risk of excess for young mothers, but most of them were ignored in the scientific literature. (Nove et al., 2014; Nortman, 1974). Rizki Dewi et al.'s 2017 research-led most midwives (69.7%) to perform 10T standards in a well-integrated antenatal service (Risqi et al., 2017).

Antenatal visits for monitoring and monitoring of maternal and child well-being at least four times during pregnancy in time, i.e. up to trimester I pregnancy (<14 weeks) one visit, and pregnancy trimester II (14–28 weeks) one visit, and pregnancy trimester III (28–36 weeks and after the 36th week) two visits. Nationally the target for

antenatal care visits is 90%. Assessment of the implementation of maternity health services can be done by looking at the coverage of K1 and K4 (Ministry of Health, 2017).

Coverage of maternal pregnancy screening in Indonesia based on data from Basic Health Reser (Riskesdas) in 2018 overall there are 96.1% of mothers who check their pregnancy in health workers. Meanwhile, the coverage of the proportion of pregnancy screening in Indonesia K1 is 86.0% and K4 was 74.1% (Health, 2018).

Intensive field observations in recent years have shown that antenatal services are still focused on the 7T service. Integrated antenatal service for examination using 10T (Weigh weight and measure height, measure blood pressure, nutritional status value, measure high abdominal, determine the fetal presentation and fetal heart rate, screening of immunization status TT, blood added tablets, laboratory check, procedure/case management, interview). This standard of examination is expected to provide quality antenatal services to improve maternal health status which will ultimately contribute to the decrease in maternal mortality rate (Ministry of Health, 2015). The referral system in obstetric service mechanisms was an abundance of reciprocal responsibility for cases or obstetric problems arising both vertically and horizontally.

## 2. Methods and Materials

Design research is quantitative research with quasi-experiments. Models used, changes observed/ measured

ANC 10 T: O1 □X1 □O2 Implementation

ANC NON 10 T: O3 □X2□ O4

Description:

O1: Midwives before ANC 10 T Implementation Training

O2: Midwives after ANC 10 T Implementation Training

X1: ANC 10 T Training

O3: Midwife before ANC 10 T pre-test

O4: Midwife After Implementation training of ANC 10 T

X2: No ANC 10 T Implementation Training

The population of this study is all midwives in Dairi Regency. The sample was a midwife who conducted the antenatal examination in Dairi Regency with purposive sampling technique. Inclusion criteria include 1. Midwives who have worked for more than 5 years; 2. Midwives domiciled in the village; 3. Midwives who are physically and spiritually healthy; 4. Willing to be a respondent. Bivariate analysis, to analyze the influence between independent variables (each dimension) and dependent variables with different tests (t-tests).

## 3. Research Results

The research was conducted in Dairi Regency with a sample of 150 midwives divided into 2 groups, namely 75 people who were given training interventions in the application of ANC 10 T and 75 people without training. This study obtained the characteristics of respondents (age, education, and length of work), knowledge, midwives about the application of ANC 10 T.

Table 1. Frequency distribution of respondents' characteristics by age, education, and length of work at intervention and control group

No	Variable	Intervention		Control	
		f	%	f	%
<b>I</b>	<b>Age</b>				
1	30 – 39 year	32	42,7	34	45,3
2	40 – 49 year	37	49,3	35	46,7
3	≥ 50 year	6	8,0	6	8,0
	<b>Total</b>	<b>75</b>	<b>100,0</b>	<b>75</b>	<b>100,0</b>
<b>II</b>	<b>Education</b>				
1	<b>Diploma III</b>	60	80,0	63	84,0

2	<b>Diploma IV / Bachelor's Degree</b>	15	20,0	12	16,0
	<b>Total</b>	<b>75</b>	<b>100,0</b>	<b>75</b>	<b>100,0</b>
<b>III Long Working Time</b>					
1	< 10 year	26	34,7	28	37,3
2	≥ 10 year	49	65,3	47	62,7
	<b>Total</b>	<b>75</b>	<b>100,0</b>	<b>75</b>	<b>100,0</b>

Based on Table 1 above it was known that the age of respondents in the intervention group and the control group was 30 years old to 50 years. The majority of respondents were aged 40–49 years with a total of 37 people (49.3%) intervention group and 35 people (46.7%) control group, followed by 30–39 years old as many as 32 people (42.7%) intervention group and 34 people (45.3%) control group. Based on education it is known that the majority of respondents educated diploma III with the number of 60 people (80.0%) intervention group and 63 people (84.0%) control group. Based on the length of employment it is known that the majority of respondents have worked more than 10 years with a total of 49 people (65.3%) intervention group and 47 people (62.7%) control group.

### 3.1 Respondents' Knowledge about the Application of ANC 10 T

Knowledge was obtained based on respondents' answers to 10 knowledge questions about the Application of ANC 10 T. To see the effectiveness of training in the application of ANC 10 T was carried out 2 times, namely before conducting training on the application of ANC 10 T (pretest) and after conducting training on the application of ANC (post-test). The 10 questions asked are worth 1 if true and 0 if incorrect with a value each between 0–10.

Table 2. Distribution of Respondents' Knowledge Before and After training on the implementation of ANC 10 T in Dairi Regency

No	Knowledge	Intervention				Control			
		Pre-test		Pos-test		Pre-test		Pos-test	
		f	%	f	%	f	%	f	%
1	5	2	2,7	0	0,0	2	2,7	1	1,3
2	6	4	5,3	0	0,0	4	5,3	3	4,0
3	7	13	17,3	1	1,3	10	13,3	12	16,0
4	8	25	33,3	7	9,3	26	34,7	24	32,0
5	9	21	28,0	27	36,0	23	30,7	25	33,3
6	10	10	13,3	40	53,3	10	13,3	10	13,3
	<b>Total</b>	<b>75</b>	<b>100,0</b>	<b>75</b>	<b>100,0</b>	<b>75</b>	<b>100,0</b>	<b>75</b>	<b>100,0</b>
	<b>Average value</b>	<b>8,19</b>		<b>9,41</b>		<b>8,25</b>		<b>8,32</b>	

Based on Table 2, it was known that in the prior knowledge (pretest) the intervention group had an average value of 8.19 and almost the same as the control group i.e. an average score of 8.25. After training in the application of ANC 10 T, there was an increase in the average knowledge value in the intervention group to 9.41. Knowledge in the control group at the time post-test had an average score of 8.32. Most of the respondents' knowledge on pre-test with a score of 8 was 25 people (33.3%) intervention group and 26 people (34.7%) control group. After training on the application of ANC 10 T, knowledge in the intervention group, most have a score of 10, namely 40 people (53.3%) while in the control group had a score of 9 (nine), namely 25 people (33.3%) post-test.

### 3.2 Bivariate Analysis

#### 3.2.1 Differences in Knowledge, before and after an ANC 10 T Implementation Training

Differences in knowledge before and after the ANC 10 T implementation training compared to respondents' knowledge before and after being given 10 T implementation training. The difference in knowledge was measured by pre-test and post paired tests. The results are as shown in the table below.

Table 3. Distribution of differences in knowledge values, before and after 10 t implementation training in Dairi regency

Variable		Mean	SD	Mean Different	p
Knowledge	Pretest	8,19	1,193	1,227	0,000
	post-test	9,41	0,718		

Based on Table 3 known changes in average knowledge after training the application of ANC 10 T was 1,227 with a value of  $p = 0.000$ .  $p = 0.001 < 0.005$  can be concluded there was a difference in respondents' knowledge before and after training on the implementation of ANC 10 T in Dairi Regency, North Sumatra Province.

### 3.2.2 Differences in Pretest and Post-test Midwife Knowledge Control Group in Dairi District

Differences in the knowledge of pretest and post-test respondents were conducted 2 times as measured by paired t-tests at the control group.

Table 4. Distribution of Knowledge Value Changes before and after an ANC 10 T implementation training at Control group in Dairi Regency

Variable		Mean	SD	Mean Different	p
Knowledge	pre-test	8,25	1,175	0,067	0,058
	post-test	8,32	1,105		

Based on table 4, it was known that the average difference in knowledge before (pre-test) and post-test in the control group are 0.067  $p$ -value =  $0.058 < 0.005$  then it can be concluded that there is no difference in knowledge value before and after pad control group that was not given training in the implementation of ANC 10 T in Dairi Regency, North Sumatra Province.

### 3.3 Effectiveness of ANC 10 T Implementation Training

The implementation of ANC 10 T in intervention groups and control groups in Dairi District using independent t-tests.

Table 5. Knowledge before and after training on the implementation of ANC 10 T in intervention and control group in Dairi regency

Variable		Group	Mean	SD	p
Knowledge	pretest	Intervention	8,19	1,193	0,731
		Control	8,25	1,175	
	post-test	Intervention	9,41	0,708	<0,001
		Control	8,32	1,105	
	average change	Intervention	1,23	0,831	<0,001
		Control	0,07	0,300	

Based on Table 5, it was known that Before the ANC 10 T implementation training, respondents' knowledge of intervention and control groups was a value of  $p = 0.731$ . This means no significance because there was no difference in knowledge in the intervention group and control group before (pretest) and After (post-test then knowledge  $p$ -value of =  $0.000$ ,  $<0.05$  then it can be concluded there was a difference in knowledge of intervention group and control group after (post-test) training of ANC 10 T application.

The difference in average knowledge of intervention group with control group before and after training of ANC 10 T  $p$ -value of  $<0.001$ , because  $p$ -value of  $0.001 < 0.05$  concluded that training in the application of ANC 10 T effectively increased the knowledge of midwives in Dairi Regency

#### 4. Discussion

The productive lifespan, length of work, and education of respondents influenced the knowledge of midwives in the application of ANC 10 T to prevent maternal death. Based on the results of the research, it is known that there are still midwives who have less knowledge in the application of ANC 10 T, namely a value below 8 as much as 25.3% in the intervention group and 21.3% of the control group.

The knowledge of midwives or respondents is low because there are still midwives who have never attended training on ANC 10 T from the Dairi District Health Office. This is following the statement of most respondents who stated that they have never received ANC 10 T training in Dairi because those invited to attend the ANC 10 T training are midwives coordinators at the Community Health Center (Puskesmas). Antenatal 10 T is service information according to the standards required for all midwives who perform antenatal examinations. In line with the research conducted by Ariyanti in Marniyati (2016) to eight Midwives Center for Public Health (Puskesmas) Purbalingga regency that states midwives need to gain knowledge about the latest antenatal service standards so that they can adapt to the science that is developing now.

Leslie's research (2012) showed there was a very positive and statistically significant relationship between knowledge of antenatal examination and antenatal service capabilities in midwives ( $p < 0.001$ ). Efforts that can be made to improve knowledge include conducting technical training antenatal services according to standards, Puskesmas Coordinator Puskesmas and midwives routinely evaluate the performance of midwives in providing antenatal services.

Respondents' knowledge in the intervention group and control group before the ANC 10 T implementation training had almost the same average score and based on independent T-Test results it was known that there was no significant difference in knowledge, between the intervention group and the control group. This is in the opinion of Hennekens and Buring di Murti (2003) who stated that before conducting experimental research, it is recommended that group conditions should have comparable or balanced abilities with the aim of avoiding bias. Bias can occur in experimental studies. Research bias consists of selection bias and information bias so it is necessary to balance the ability of research subjects.

One of the strategies to gain knowledge according to WHO quoted by Notoatmodjo (2007) was to provide information to increase knowledge to increase awareness of increased knowledge and then impact on the change of midwives in the application of ANC 10 T.

To increase knowledge, in the application of ANC 10 T in Dairi Regency, research was conducted training on the application of ANC 10 T to midwives who were used as intervention groups, and based on the results of research it was known that the average change in knowledge after training the application of ANC 10 T was 1,227. Knowledge has a value of  $p = 0.000 < 0.05$  can be concluded that there was a difference in the value of knowledge, to the application of ANC 10 T before and after the training of the implementation of ANC 10 T in Dairi Regency, North Sumatra Province.

Differences in knowledge changed, in intervention groups and control groups before and after training the application of ANC 10 T with a value of  $p < 0.001 < 0.05$  can be concluded that the training of the application of ANC 10 T effectively increases the knowledge of midwives to prevent maternal death in Dairi Regency of North Sumatra Province.

This increase in knowledge is due to new information obtained by midwives after training. One's knowledge was strongly influenced by the information obtained, this was by Suyono's statement in Tomastola (2015) that the provision of informative and interesting educational materials was a very strong driver in providing health counseling because it will quickly increase knowledge.

The results of this study are in line with Ruwayda (2016) conducted to 40 midwives in Jambi Regency Health Center found a link between knowledge ( $p = 0.014$ ), training ( $p = 0.031$ ), supervision /supervision ( $p = 0.008$ ), and workload ( $p = 0.012$ ) with the application of antenatal midwife service standards by the Center for Public Health (Puskesmas).

Integrated ANC services related to physical examination (10T) can run well with the implementation of routine technical training to improve midwifery competency for midwives and other supporting training needed as well as laboratory examination training for lab analysts/lab officers including basic lab services Of Public Health Center (including STI examination training for HIV / AIDS) has not gone well.

#### 5. Conclusion

Midwife knowledge increased after training in the implementation of ANC 10 T in Dairi district, North Sumatra.

Prior knowledge training application of an ANC 10 T with  $p = 0.731$ . This means that there is no difference in knowledge, control before (pretest) training application of ANC 10 T. The average knowledge difference between pretest and post-test is 0.067 with a value of  $p = 0.058$ . After the implementation of training the application of ANC 10 T was known knowledge variable value  $p < 0.001$ . Because the value  $p < 0.005$  it can be concluded that there was a difference in knowledge, in intervention groups and control groups after (post-test) training on the application of ANC 10 T. Training on the application of ANC 10 T effectively improves the knowledge of midwives in Dairi Regency of North Sumatra Province. The suggestion that the training of the ANC 10 T application was very effective to increase the knowledge of midwives to prevent maternal death in the Dairi district.

### Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

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