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Effect of Antenatal Care Training Program on Knowledge of community Midwives in Al-Ḥaṣaḥiṣa Health Centers in –Gazira-State (2021)

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Abstract

Background: Pregnancy is a critical and complex period in a woman's life, which needs care and support. Antenatal care is given to an expectant mother from the time of conception until the beginning of labor. It includes monitoring the progress of pregnancy, and offering health promotion to the pregnant woman and her family.

Knowledgeable community midwives play a crucial role in promoting women's health by providing information, health promotion and integrated care continuously during pregnancy.

This study aims to evaluate the effect of antenatal care training program on knowledge of the community midwives. The main objective of the study was to evaluate the effect of Antenatal care training program in Alhasahissa Health Centers in-Gazira State.

Methods: A quasi-experimental study design was used. The study was conducted in 19 Health Centers in Al-Ḥaṣaḥiṣa- *Gazira* State, Sudan. All community midwives (53) were included in the study, after they all agreed to participate.

The necessary research data were collected from them using structured interview pre and after six months post intervention .Training program was offered to the community midwives it included(providing knowledge and health promotion about the antenatal care, assessment of the pregnant women, routine care and advices ,communication and counseling about danger sign ,birth and family planning)Data were analyzed by SPSS version 20 descriptive, and inferential statistic(T .test and chi squared) was used with significant P. value <0.05 .

Results: Age group of community midwives between (31-40) years represents (62.26%). Years of experiences between 5-10, and 16-20 years represent 39.6% and 26.4% respectively. The level of knowledge of midwives before the program was 76.42% changed to 96.96% after the training program with P= 0.000, the average amount of knowledge recorded to measure blood pressure data significantly improved by intervention from pre (57.23%), to post (90.59%) with P= **0.000** and the average amount of recorded knowledge about the danger sign, significantly improved from 50.94%% to 96.50% P= 0.000 .

Conclusion: The implementation of an antenatal care training program was very effective that increased the level of knowledge of community midwives.

It is essential to implement health education programs that concentrate on ANC to the all midwives in Sudan to improve women health outcome.

Keywords: Antenatal care, training program, community midwives. knowledge. Pregnant, Women were the most infected patients.

1.Introduction:

Antenatal care (ANC) is a care given to an expectant mother from the time of conception and confirmation until the beginning of labor. It includes monitoring the progress of pregnancy, providing appropriate support to the woman and her family, and providing information which will assist them to make sensible choices [1].

The aim of antenatal care is to monitor the progress of pregnancy critically, and evaluate the physical, psychological and sociological effects of the pregnant mother and her family to detect complications of pregnancy and appropriately refer her to obstetric team or relevant health professionals or other organizations which facilitate and prepare them to meet the demands of birth and make birth plan [2].

Midwives' roles provide women's health support, care and advice pre-pregnancy, during pregnancy, labor birth, and postpartum. promoting physiological childbirth and identifying complications for the woman and her baby, consultation and referral to medical care or other appropriate assistance, and implementing emergency measures, preparations for child birth, neonatal care, maternal examination , health promotion , health education to reduce barriers to reproductive health services, breast feeding, family planning and offering services and advices in the gynecological area [3].

Midwives play an important role in health centers as preventive services such as screening, measuring weight, investigation to detect infection and basic chronic conditions, and transferring cases that need specialization to receive an appropriate level of health care in time [4].

The global strategic plan to reduce maternal and newborn mortality, emphasize care services and quality of care provided to mothers and continuous training and education for midwives in the health system to improve the quality-of-care services. [5]

In developing countries, 99% of maternal deaths and 98% of child deaths occurred from reversible causes by the quality of antenatal care services, and 60% that occur during pregnancy and childbirth, mostly due to untreated infections, high blood pressure and low fetal growth. [6]

WHO in 2016 recommended that caring for pregnant women should be routine ANC because one of the most important deaths of adolescents and women in childbearing age be protected by quality of pregnant care service. [7]

The MMR in Sudan decreased by years (1990-2015) due to the increase in the number of midwives, in-service training for midwives. In Gezira MR slightly decreased and then rose again in the year 2016 and 32% of it due to bleeding ,18% hypertensive disorder, 3%,blood infections, 2%,miscarriage 2%,embolism,5% other direct causes, 28%,indirect causes, and 3% not classified. In the year 2015, midwives used uterine astringents and magnesium sulfate under supervision to reduce maternal deaths due to high blood Pressure, and the study showed that the availability of trained midwives reduces maternal deaths by 80%. [8]

Maternal Mortality Ratio (MMR) is a main problem in developing countries, it can be prevented or reduced by good statistical information. But in Sudan, due to the lack of financial and technicality support, improving the quality of ANC care help in knowing the causes of mortality rate, taking actions to prevent and reduce these causes and eventually increase maternal satisfaction. Most direct causes of maternal deaths, in Al-Gazira states estimated (61.1%), refer to conditions such as (hemorrhage, eclampsia& sepsis) and indirect causes estimated (38.9%), refer to (hepatitis & anemia related conditions) , also they found that : (57.5%) of maternal death had no ANC. Obstetric Hemorrhage, is a leading cause of the maternal deaths and 55.5% of this hemorrhage caused by uterine atonia. And they think that: Detection of problems in regular ANC and prevented if there is good training for health provider [9]

High quality antenatal care is a fundamental right for women to safeguard the health. A high quality of care and shorter walk time was significantly associated with more utilization of antenatal care services [10]

Promote health and educate pregnant women about the type of nutrition, and provide nutritional advice, one of the most important activities of midwives [11]

Folic acid is a vitamin supplement that is recommended for use before pregnancy and up to 12 weeks' gestation for women and healthy balance diet is recommended. [12]

contraception, infant immunization, and reduce fear and the anxiety of the pregnant women. [13]

Minor disorders may occur due to hormonal changes, accommodation changes, metabolic changes and postural changes. [14]

A study conducted to evaluate the effect of training of health care personnel to improve performance of community based antenatal care program, the study showed that the average score of the participant knowledge increased significantly from 41.0% before to 60.1% after training p-value <0.001. [15]

A study conducted in Omdurman maternity hospital on midwives to evaluate the knowledge about ANC reveal that: knowledge on danger signs of pregnancy, nutrition, disease that can be transmitted during delivery by contaminated instrument was low; advice given to mothers about important issues during and after pregnancy were found good quality.[16]

A study was conducted in Khartoum state for village midwives to assess knowledge, attitude and practice of health visits 2014; the study concluded that, their knowledge was poor, (33.7%) . [17]

A study conducted to evaluate the effect of training of health care personnel to improve performance of community based antenatal care program, the study showed that the average score of the participant knowledge increased significantly from 41.0% before to 60.1% after training p-value <0.001. [15]

Justification: In a study conducted among midwives working at Omdurman maternity hospital, illustrated a clear need for intensive training on ANC and follow up . **[16]**

According to the 2014 reproductive health report (57.5%) of maternal deaths were due to not receiving health care during pregnancy and (27.2%) of them received irregular ANC, and Gezira state ranks the third in terms of maternal mortality. [9]

To the best of the researcher's knowledge dearth information about the knowledge of community midwives, in Al-Ḥaṣaḥiṣa Health Centers in –Gazira-State. So, this study is thought to increase their knowledge about ANC. Many studies reveal that the knowledge of midwives had a direct or indirect impact on their performance, improving the quality of maternal and child health care service and eliminating maternal mortality and morbidity. [5]

There are not enough qualified midwives in Sudan especially in backward areas. [18]

Research Hypotheses:

H1: There is a significant increase in the level of knowledge of community midwives who took the Antenatal care training program.

H0: There is no change in the level of knowledge of the community midwives who took the Antenatal care training program.

General Objectives: To evaluate the effect of Antenatal care training Program on knowledge of community Midwives in Al-Ḥaṣaḥiṣa Health Centers in -Gazira State.

Specific Objectives:

1- To assess the knowledge of community midwives regarding Antenatal care pre a training program.
2- To develop an Antenatal care training program for the community midwives.
3- To evaluate the effect of the training program on knowledge on community midwives after the training program.

2.Materials and Methods:

Study design: A quasi-experimental study design was used.

Study area: The study was conducted in Al-Ḥaṣaḥiṣa health centers in Gazira State,which is located in, on the west bank of the Blue Nile, at an altitude of 401 meters above sea level. It is about 121 kilometers to the southwestern of Khartoum. It is 46 kilometers in length. The area of Al-Ḥaṣaḥiṣa is about 2825 kilometers which contains7 administrative units including: Ṭabat, Abu-Gutah, Ṭaybah, Al-Musallamiyyah, Al-Muhayribah and Wad Ḥabboba. It has 29 health centers nineteen (19) of which offer the care for pregnant women, and the population is 28735 people.

Study Population: The total number of community midwives in Al-Ḥaṣaḥiṣa health centers was included in the study according to the report of the director of primary health care in Al-Ḥaṣaḥiṣa, Gazira State.

Sampling: all community midwives (53) In the research area were included in the study. The sample size was census. The sample was taken as a total coverage of that sample less than 200, as total coverage· [19]

Variables of the study: Dependent variables: Level of knowledge of community midwives regarding antenatal care. And independent variables: socio-demographic data.

Data methods of collection & tools:: Data were collected by questionnaires to assess the community midwives' knowledge scale on antenatal care, at two stages: pre-intervention stage and post-intervention stage.

Development of data collection tools: The questionnaire consisted of two sections:

Section I consisted of demographic variables such as age and years of experience.

- Section II: consisted of 19 questions on knowledge of antenatal care among community midwives. For knowledge questions, a correct answer was given 1 point while the wrong answer was given .

Phase I (assessment phase): The required data were collected before the intervention from participants using a structured questionnaire which (was) considered as baseline data before the program about antenatal care among community midwives.

Phase II (implementing the antenatal care program) After obtaining due approvals from the director of health services in the study area, the community midwives were gathered and their verbal consent for the training was taken.

In this phase, material for antenatal care for community midwife program was developed by the researcher based on available resources and review of relevant literature including WHO recommendations and community midwives' course for the care of pregnant women, booklets regarding antenatal. The program activities were implemented sessions in 5 hours per day for two days. The program was presented in a clear, concise manner and was focused on the points to be learned, using different methods such as lectures and the materials were displayed via PowerPoint slides, pictures, posters, stickers, and discussion of the program.

Training was carried out by providing information about antenatal care including: the aim of antenatal care; History taken, Physical examination Maternal blood pressure, weight and height and investigation, health education and counseling

checking the chronic diseases and the cases that need to be transferred; information about the proper time to take folic acid pills and number of visits of pregnant women to primary health care centers; time of dose immunization agonist tetanus; knowledge about the danger signs during pregnancy; advice and awareness given to women during pregnancy; advice given to pregnant women to reduce common discomfort symptoms; information about the birth plan and relevant explanation.

Phase III (evaluation phase): Evaluation of the program for antenatal care in community midwives was done after the elapse of (6) months from the implementation of the program, and the data were collected using the same methods of data collection used in Phase I.

Data analysis: The data were analyzed in replication using the Statistical Packages for Social Sciences (SPSS) program for Windows version 21.0.and relevant descriptive and inferential statistical methods were used. using statistical significance with p-value less than 0.05 to determine and compare the changes or improvements on the levels of knowledge of the study population before and after the implementation of the training program.

3.Results

Table1: show age Socio-demographic characteristics of the community midwives. N= (53)

Variable	Type	Frequency	Percentage
Age	20-30	9	16.98%
	31-40	33	62.26%
	41-50	10	18.87%
	More than 50	1	1.89%
Years of experience	5---10	21	39.62%
	11---15	10	18.87%
	16---20	14	26.42%
	more than 20	8	15.09%

Table (1) show that: majority of CM average age range between (31-40) years (62.26%). The average working experience of community midwives in antenatal care more than (10) year represent (60%).

Table 2: show knowledge of community midwives, about aim of Antenatal care , knowledge of community midwives about Important to measure Pregnant weight, and blood pressure *N=53*

Variables		Pre intervention		Post intervention		Sigp-value
	Variables	**Frequent answer**	**%**	**Frequent answer**	**%**	
.	Promote, protect and maintain the health of the mother during pregnancy	53	100%	53	100%	1.000
	Detect high risk pregnancies and give the mothers special attention.	53	100%	53	100%	1.000
	Anticipate complication and take preventive measures	49	92.45%	53	100%	0.046
	Remove anxiety and fear associated with pregnancy	49	92.45%	53	100%	0.046
	Teach the mother elements of nutrition, personal hygiene and newborn care	50	94.34%	53	100%	0.083
	Sensitize the mother to the need of family planning.	33	62.26%	49	92.45%	0.001
	Average		**90.25%**		**98.74%**	**0.006**
	Important to measure pregnant weigh to know growth of the fetus	50	94.34%	52	98.11%	0.317
	Important to measure pregnant weigh to know poly hidrominous	21	39.62%	51	96.23%	0.000
	Important to measure pregnant weigh to discover twins	23	43.40%	52	98.11%	0.000
	Important to measure pregnant weigh to discover chronic hypertension	12	22.64%	51	96.23%	0.000
	Important to measure pregnant weight to discover Fibroid	11	20.75%	49	92.45%	0.000
	Average		**57.23%**		**90.59%**	**0.000**

The average amount of recorded aim of Antenatal care data significantly improved from pre (90.25%), and after (98.74%).
The average amount of recorded important to measure pregnant weight data significantly improved from pre (44.15%).to 96.23% The training program remained high
The average amount of recorded important to measure blood pressure data significantly improved from pre (57.23%), and after (90.59%). The training program remained high.

Table 3: show knowledge of community midwives, about methods for calculating the age of the fetus and benefits of abdominal examination ,and knowledge of community midwives about point for measuring edema and routine investigation *N= (53)*

Variables Correct answer		**Pre intervention**		**Post intervention**		**Sig p-value**
	Variables	**Frequent answer**	**%**	**Frequent answer**	**%**	
.	Calculating age of the fetus by Menstrual cycle	50	94.34%	53	100%	0.083
	Calculating age of the fetus by abdominal examination	38	71.70%	53	100%	0.000
.	Calculating age of the fetus by ultrasound	19	35.85%	40	75.47%	0.000
	Average		**67.30%**		**91.82%**	**0.00014**
	Benefits of abdominal examination to know age of the fetus by weeks	51	96.23%	52	98.11%	0.564
	Benefits of abdominal examination to know Lying of the fetus	49	92.45%	52	98.11%	0.180
	Benefits of abdominal examination to know presentation	50	94.34%	52	98.11%	0.317
	Benefits of abdominal examination to know fetal heart sound	48	90.57%	53	100%	0.025
	Average		93.40%		98.58%	0.183

The average amount of recorded methods for calculating the age of the fetus data significantly improved from pre (67.3o%), and after (91.82%). The training program remained high
The average amount of recorded Benefits of abdominal examination data not significantly also there were improved from pre (93.40%), and after (98.58%). The training program remained high.

Table 4: show knowledge of community midwives about point for measuring edema and routine investigation *N= (53)*

Variables Correct answer		Pre intervention		Post intervention		Sig p-value
	Variables	**freq**	**%**	**freq**	**%**	
	. Brow is point to measure edema	47	88.68%	53	100%	0.014
	Face is point to measure edema	35	66.04%	51	96.23%	0.000
	Lower limpsare point to measure edema	53	100%	53	100%	1.000
	Average		84.91%		94.74%	0.043 0.000
	urine test to detect infection and treated one of routine investigation	50	94.34%	53	100%	0.083
	HB% one of routine investigation	51	96.23%	53	100%	0.157
	blood grouping and cross matching one of routine investigation	33	62.26%	51	96.23%	0.000
	ultrasound one of routine investigation	29	54.72%	47	88.68%	0.001
	.HIV one of routine investigation	48	86.79%	53	100%	0.008
	Average		**78.87%**		**96.98%**	**0.0036**

The average amount of recorded point for measuring edema data significantly improved from pre (84.91%), and after (94.74%). The training program remained high.

The average amount of recorded routine investigation data significantly improved from 78.87%to 96.98% after intervention. The training program remained high.

Table 5: show knowledge of community midwives about chronic diseases and the cases that need to be transferred *N= (53)*

Variables Correct answer		**Pre intervention**		**Post intervention**		**Sig p-value**
	Variables	**Freq correct answer**	**%**	**freq correct answer**	**%**	
	Knowledge about Chronic hypertension one of the chronic diseases	53	100%	53	100%	1.000
	Knowledge about diabetes mellitus is of the chronic diseases	53	100%	53	100%	1.000
	Knowledge about thyroid diseases is one of the chronic diseases	47	88.68%	53	100%	0.000
	Average		**96.23%**		**100%**	**0.000**
	Knowledge about Anemia is one of the cases that need to be transferred	53	100%	53	100%	1.000
	Knowledge about previous operations. the cases that need to be transferred:	52	98.11%	53	100%	0.317
	Knowledge about chronic abortion is one of the cases that need to be transferred:	52	98.11%	53	100%	0.317
	. Knowledge about previous obstructed labor is one of the cases that need to be transferred:	52	98.11%	53	100%	0.317
	Knowledge about chronic disease one of the cases that need to be transferred:	52	98.11%	53	100%	0.317
	Knowledge about bleeding during and after delivery one of the cases that need to be transferred	52	98.11%	53	100%	0.317
	Average		**98.43%**		**100%**	**0.317**

The average amount of recorded chronic disease data, significantly improve from 96.23% to 100% after intervention. Hypertension and diabetes mellitus pre intervention them knowledge remained high 100%. The training program remained high.

The average amount of recorded and the cases that need to be transferred significantly improved from 98.43%to 100%after intervention. The training program remained high.

Table 6: show knowledge of community midwives about time to take folic acid pills and number of visits of pregnant women to visits primary health care centers *N= (53)*

Variables Correct answer		Pre intervention		Post intervention		Sig p-value
	Variables	**freq Correct answer**	**%**	**freq Correct answer**	**%**	
	Knowledge of community midwives about pregnant women to take folic acid pills before pregnancy	35	66.04%	52	98.11%	**0.000**
	Knowledge of community midwives about pregnant women to take folic acid pills during first trimester	52	98.11%	53	100%	**0.317**
	Knowledge of community midwives about pregnant women to take folic acid pills at any time during pregnancy in case of anemia	29	54.72%	52	98.11%	**0.000**
	Average		**72.96%**		**98.74%**	**0.000**
	Knowledge of community midwives about first visit of pregnant women at 20 weeks or as soon as pregnancy is known	48	90.57%	53	100%	0.025
	Knowledge of community midwives about 2end visit of pregnant women at 32weeks	47	88.68%	53	100%	0.014
	Knowledge of community midwives about3ed visit of pregnant women at 36week	49	92..45%	53	100%	0.046
	Knowledge of community midwives about visit A t any time during pregnancy in case of complain	47	88.68%	51	96.23%	0.157
	Average		**90.18%**		**99.06%**	**0.004**

The average amount of recorded time to take folic acid pills data, significantly improve from 72.96% to 98.74% after intervention. The training program remained high.

The average amount of recorded number of visits data, significantly improve from 90.18% to 99.06% after intervention. The training program remained high.

Table 7: show knowledge of community midwives about time of dose immunization agonist tetanus *N= (53)*

Variables Correct answer		**Pre intervention**		**Post intervention**		**Sig p-value**
	Variables	**freq Correct answer**	**%**	**freq Correct answer**	**%**	
	Knowledge of community midwives about First dose immunization agonist tetanus at early as possible in pregnancy and none protect	52	98.11%	52	98.11%	1.000
	Knowledge of community midwives about 2end dose immunization agonist tetanus At least 4th weeks after first dose and protect 1-3years	48	90.57%	52	98.11%	0.046
	Knowledge of community midwives about 3ed dose immunization agonist tetanus at least Six month after 2end dose or during subsequent pregnancy and protect 5years	48	90.57%	52	98.11%	0.046
	Knowledge of community midwives about 4thdose immunization agonist tetanus one years after 3ed dose or during subsequent pregnancy and protect 10years	47	88.68%	52	98.11%	0.025
	Knowledge of community midwives about 5th dose immunization agonist tetanus one years after 4th dose or during subsequent pregnancy and protect longer.	45	84.91%	52	98.11%	0.020
	Average		**90.57%**		**98.11%**	**0.019**

The average amount of recorded about time of dose immunization agonist tetanus data, significantly improve from 90.57%% to 98.11% after intervention. The training program remained high

Table 8: show knowledge of community midwives about the danger sign during pregnancy *N= (53)*

Variables Correct answer		Pre intervention		Post intervention		Sig p-value
	Variables	freq Correct answer	%	freq Correct answer	%	
.	Abdominal pain is one of danger signs during pregnancy	12	22.64%	48	90.57%	**0.ooo**
	vaginal bleeding is one of danger signs during pregnancy	51	96.23%	53	100%	**0.157**
	fever is one of danger signs during pregnancy	25	47.17%	49	92.45%	**0.000**
	Headache is one of danger signs n during pregnancy	16	30.19%	52	98.11%	**0.000**
	fitsare one of danger signs n during pregnancy	16	30.19%	52	98.11%	**0.000**
	blurred vision is one of danger signs n during pregnancy	48	90.57%	51	96.23%	0.253
	Swelling of hands, face, and legs. is one of danger signs n during pregnancy	21	39.62%	53	100%	0.000
	Average		50.94%		96.50%	0.000

The average amount of recorded about the danger sign during data, significantly improve from 50.94%% to 96.50% after intervention knowledge before intervention were poor. The training program remained high.

Table 9: show knowledge of community midwives about advice and awareness are given to women during pregnancy *N= (53)*

Variables Correct answer		**Pre intervention**		**Post intervention**		**Sig p-value**
	Variables	**freq Correct answer**	**%**	**freq Correct answer**	**%**	
.	. Balance diet Nutrition:	53	100%	53	100%	1.000
	Personal hygiene and care of the breast during pregnancy	53	100%	53	100%	1.000
	using saturated bed net in malaria-endemic areas	51	96.23%	53	100%	0.157
	Avoid positive and negative smoking,	29	54.72%	52	98.11%	0.000
	Avoid taking any medication without consulting adductor	48	90.57%	53	100%	0.000
	Wear loose clothing and avoid high shoes	51	96.23%	52	98.11%	0.564
	moderate course of exercise during pregnancy	47	88.68%	53	100%	0.014
	sexual inter course during pregnancy not known to be associate with pregnancy danger sine	29	54.72%	49	92.45%	0.000
	Average		**85.14%**		**98.58%**	0.000

The average amount of recorded about advice and awareness are given to women during pregnancy data, significantly improve from 85.14%% to 98.58% after intervention. The training program remained high. Balance diet Nutrition and Personal hygiene and care of the breast during pregnancy were high knowledge before intervention 100%.

Table 10: show knowledge of community midwives about the advices are given to pregnant women to reduce common discomfort Symptom s *N= (53)*

Variables Correct answer		Pre intervention		Post intervention		Sig p-value
	Variables	**freq Correct answer**	**%**	**freq Correct answer**	**%**	
	Fatigability	35	66.04%	51	96.23%	0.000
	Morning nausea and vomiting:	40	75.47%	51	98.11%	0.001
	Heartburn	18	33.96%	53	100%	0.000
	Constipations	38	71.70%	53	100%	0.000
	Feet/legs edema	34	64.15%	50	94.34%	0.001
	varicose Veins:	12	22.64%	45	84.91%	0.000
	Back pain:	47	88.68%	47	88.68%	1.000
	Average		**60.38%**		**94.61%**	0.000

The average amount of recorded about the advices are given to pregnant women to reduce common discomfort Symptom s data, significantly improve from 60.38% to 94.61% after intervention. The training program remained high. Heartburn improved from 33.96% to 100% poor knowledge before intervention, varicose Veins poor knowledge before intervention from 22.64% to 84.91%, and Back pain no improved mint pre and after intervention.

Table 11: show knowledge of community midwives midwife about the Birth plan and explaining, *N= (53)*

Variables Correct answer		**Pre intervention**		**Post intervention**		**Sig p-value**
	Variables	**freq Correct answer**	**%**	**freq Correct answer**	**%**	
	Explanation of child birth in health facilities to avoid complication and possibility of transferring to a higher level of care if necessary	26	49.06%	53	100%	0.000
	Explain how to reach the service centers and the cost of transportation to reach it	23	43.40%	51	96.23%	0.000
	who is doing, monitoring and assisting her during child birth, and who takes care of her children at home	40	75.47%	53	100%	0.000
	Instruct the mother to bring a sterile towel to dry and cover baby, another such as virginal Pad after birth and clean clothes for the mother and the baby.	34	64.15%	53	100%	0.000
	Bring drinks, foods that are easy to digest	38	71.70%	51	96.23%	0.002
	Free breast feeding for 6month continuously	39	73.58%	51	96.23%	0.003
	The importance of explain to mother using the family planning methods between child birth to promote the baby and mother health	29	54.72%	52	98.11%	0.000
	Average		**61.73%**		**98.11%**	0.000

The results can be used to assess the impact of training on improving knowledge of community midwives about Antenatal care.

The average amount of recorded Birth plan and explaining data significantly improved from pre (61.73%), and after (98.11%). The training program remained high.

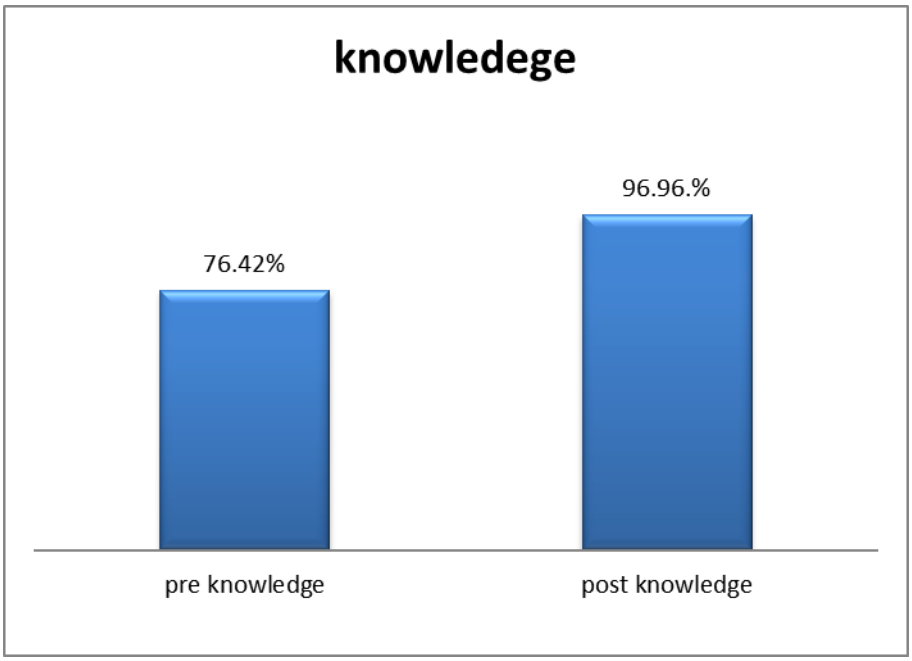


Figure 1: show Average knowledge of community midwives about Antenatal careon alhassahissa health centers about Antenatal care program, pre intervention and after intervention with statistically significant p-value 0.000

4.Discussion

This study aimed to evaluate the effect of antenatal care training program on knowledge and practice of community midwives in Al-Ḥaṣaḥiṣa health centers - Gezira State. The sample covered a total of (53) community midwives in the study area. The ages of the majority of the community midwives were between (31 to 40), and this constitutes the highest percentage (62.26) of the selected community midwives. Regarding years of the experience, 39.62% of the community midwives had between (5-10) years.

The overall knowledge of the community midwives about antenatal care in the current study area increased significantly from76.42% to 96.96% after intervention p-value (0.000). This result is similar to a result obtained by another study which was conducted to find out the effect of training of healthcare personnel to improve the performance of community-based midwives through antenatal care program, where their level of knowledge was low before training 41.0%, but it was increased to reach 60.1% after the experiment. [15]

similar to another study which was conducted to measure the effect on integrated antenatal care training on the quality of midwife service show increase in service quality scores in the intervention than the control groups by 5.5% and 0.86% respectively, with significant difference in increase between the two groups ($p<0.05$) [20]

similar to another study which was conducted in Indonesia show that to khowlege of the midwives about the service before the training has a mean of 3.25 and after training has a mean of 5.42. this shows significant increase with $p=0.014$ ($p<0.05$). [21]

The participants' knowledge about the aim of antenatal care, was improved significantly from90.25% to98.74% after the intervention, and the community midwives' knowledge about the importance of measuring pregnant women weight was poor, but significantly improved from 44.15% to 96.23% after the intervention.

Concerning the knowledge of community midwives about the importance of blood pressure, it was also relatively poor but significantly improved from 57.23 % to90.59% after the intervention and this result co-responding result with study done on Kalimantan which is mentioned above which showed that midwives' performance of blood pressure had improved from (57.3% to100 %. [22]

Regarding the community midwives' knowledge about the expected date of delivery (EDD) (calculating the age of the fetus by weeks), the result showed that their knowledge significantly

improved from 68.30% to 91.82% after the intervention, and this particular result is also similar to the result of the study done in Kalimantan and which showed that abdominal palpation fundal level improved from (42.5%to100%) after intervention. [22]

Regarding the community midwives 'knowledge about the benefit of the abdominal examination in the present study, improved significantly from93.40% to 98.58% after the intervention. Similarly, their knowledge about the purpose of measuring edema improved significantly from84.91%to94.74% after the intervention.

About routine investigation, the community midwife's knowledge significantly improved from 78.87% to96.98% after the intervention. The community midwives' knowledge about chronic diseases also significantly improved from96.23%to100% after the intervention. Likewise, their knowledge about the cases that need to be transferred significant improved from 98.43% to100% the intervention. According to these results, the knowledge of community midwives about the benefits of abdominal examination, cases that need referral and chronic diseases was high before the training program, and this was an expected result of the continuous practice of midwives during their work period.

This specific result is different from a result obtained by a quasi-experimental study done to evaluate the effect of community based health education on knowledge and attitude towards iron and folic acid supplementation among pregnant women in, Kenya: that showed that positive effect in maternal knowledge improved from 13% to35% - the result still remaining low after training program. [23]

The community midwives' knowledge about the number of times pregnant women should visit care centers significantly improved from 90.10% to99.10% after the intervention. It was similar to a result of a study conducted period before the intervention, and it improved from92.1%to 96.4%after the intervention, and four visits during the whole pregnancy period increased from 42.4% to 67.8%after intervention. [24]

The community midwives 'knowledge about time taking the dose of immunization against tetanus significantly improved from90.57% to 98.11% after intervention p-value (0.019); this was as the close to a result of a study done to evaluate the effect of tetanus immunization training program on female nursing students in government universities and the result significantly improved from 34.8% to91.70% after the intervention. [25]

The community midwives knowledge about danger signs during pregnancy significantly improved from 50.94% to96.50% after intervention ;this result is different from a corresponding result of a study done to evaluate the effectiveness of home-based life-saving skills training by community

health workers on the knowledge of danger signs, birth preparedness complication readiness in that particular study there was significant improvement of knowledge from15.2%to 48.1% after the intervention p-value (less than 0.001); the training program remained low. [24]

Advice and awareness given to women during pregnancy is very important. The community midwives' knowledge significantly improved from85.14%to98.58% after the intervention. It was very similar to a result of a study done in Edu, Kwara State, Nigeria which showed an upward shift from 71.08% to 93.33%after the implemented program. [26]

The community midwife's knowledge about advice to reduce common discomfort symptoms significantly improved from60.38%to 94.61%after the intervention, and it was similar to the result of a study conducted at maternal and pediatric hospitals in Soran city to evaluate the effectiveness of information, education and communication package of knowledge regarding minor ailments of pregnancy and its management. The previous result of the program of the antenatal care for mothers showed a poor knowledge of common minor disorders (12.73), whereas after the intervention the knowledge significantly improved with difference of (0.742)revealing the effectiveness of the planned teaching program. [27]

The community midwives' knowledge about birth planning and explanation significantly improved from 61.73 % before the intervention to 98.11% after the intervention. It is opposite to the result of a study that was conducted in Tanzania to evaluate the knowledge about birth preparations and the result showed very weak knowledge9.2%before improved to be 95% after intervention. [24]

5.Conclusion: The training program results showed that there was a highly significant increase in the level of knowledge among the community midwives who underwent the antenatal care training program.

The implementation of antenatal care training program was very effective that increase the level of knowledge of community midwives.

Recommendations

1. The results of the present study clearly indicate that there is need for more periodic training and follow-up for community midwives to improve their competence.

2. The researcher recommends generalizing the training program implemented in the current study to all states, especially the distant ones, with the support of the Federal Ministry of Health and the organizations active in this field of maternal health. And generalizing the training program to all antenatal care providers, not just community midwives

Ethical Considerations: Approval and ethical clearance were obtained from the Graduate College Medical & Health Studies Board -University of Ribat. Permission was taken from the Federal

Ministry of Health and from the primary health care centers Officialsin Al-Ḥaṣaḥiṣa Locality. The researcher made it clear to the participants in the study that they can withdraw at any time and their right was protected, and high confidentiality was observed during and after filling questionnaire.

Competing interests. No competing of interests.

Availability of Data and Material: All relevant data of this study are available to any interested researchers upon reason-able request to the corresponding author.

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