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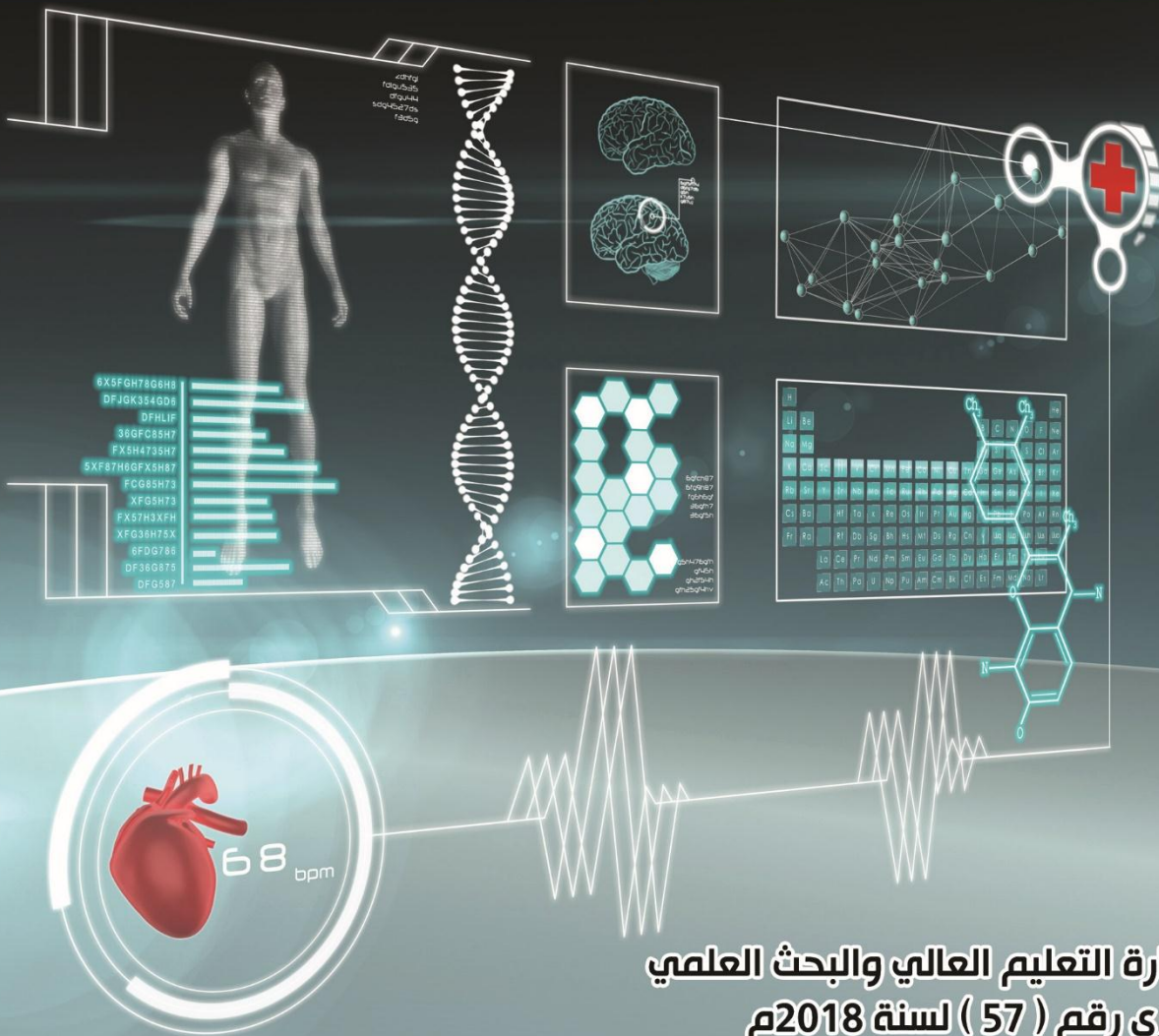
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Competences of Midwives in Prevention and Management of Postpartum Hemorrhage at Public Hospitals, Sana'a City.

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Abstract

Background: *Postpartum hemorrhage is a leading cause of maternal mortality worldwide.* ***Aim****: To determine the competences of midwives in prevention and management of PPH at labor ward in public hospitals.* ***Methods:*** *Descriptive, cross-sectional study was done among all midwives working at labor ward in public hospitals in Sana'a city during the period from April to June 2019. The sample size was determined using EpiCalc program. A stratified random sampling was administered to select 60 midwives. Data were collected through structured questionnaire. The questionnaire was includes: the demographic characteristics of the midwives, knowledge on prevention of PPH, knowledge on management of PPH, skills in handling PPH, and barriers to prevention and management of PPH. The data were analyzed using SPSS version 20.0. x^2 test was used to find out the association among variables Approval was obtain and oral consent was obtained from midwives to participate in the study.* ***Results****: All midwives were females, the majority (91.7%) of midwives had diploma degree. Whereas the mean±SD of age 32.4±7.7 year, 59.1% had worked in a labour ward and 58.3% were trained on PPH. The level of competences on prevention and management of PPH showed that (60%) of midwives had moderate competences, (30%) had poor competences and only (10%) had good competences. As regards to skills on handling PPH (45%) felt they needed assistance. As regards to barriers to prevention and management PPH, (66.7%) answered uterotonic supplies were always available.* ***Conclusion****: Sixty percent of midwives had moderate competences on prevention of PPH. The midwives require updates/training on AMTSL to help them practice as per the guidelines of AMTSL.*

Keywords: PPH; Midwives; Competences; AMTSL; Sana'a.

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Introduction

Postpartum hemorrhage (PPH) is generally defined as blood loss greater than or equal to 500 ml within 24 hours after birth, while severe condition is blood loss greater than or equal to 1000 ml within 24 hours[1]. Approximately 15 percent of women will experience a complication during pregnancy or childbirth, most of which cannot be predicted, but almost all of which can be managed[2]. Each year, 529,000 maternal deaths and 5.7 million perinatal deaths occur worldwide, 99% of them in the low income countries[3]. PPH is the leading cause of maternal deaths globally (27%), followed by infections (11%),

unsafe abortions (8%), high blood pressure during pregnancy (pre-eclampsia and eclampsia) (14%), obstructed labour (9%), blood clots/embolism (3%) and pre-existing conditions related to pregnancy and childbirth (28%)[4]. A study done in central Kenya by Muchemi and Gichogo (2011)[5] established the leading causes of maternal mortality in Kenya to be antenatal and PPH, eclampsia, sepsis, ruptured uterus, and obstructed labor. Therefore establishing whether midwives have the knowledge and skills required to prevent or manage PPH if it occurs will be a step towards achieving the MDG no. 5 of improving maternal health by reducing the maternal deaths by ¾ by 2015. PPH is one of the obstetric emergencies that can be prevented if the correct skills are employed yet it remains the leading cause of maternal mortality globally. Prevention and management of PPH is crucial to averting this reality in an effort to achieve the millennium development goal number five of improving maternal health. This can be achieved if the midwives have the knowledge and skills required to prevent and manage PPH if it occurs. Midwives independently manage the antepartum, intrapartum, postpartum, and gynecological care of essentially normal women and their normal newborns.

Aim of the study

To determine the competences of midwives in prevention and management of PPH at labor wards in public hospitals in Sana'a city-Yemen.

Subjects and Methods

A descriptive, cross-sectional study was done to assess the midwives competences in prevention and management of PPH. The study was conducted at labor ward in 4 public hospitals, Sana'a city-Yemen. Currently, the hospitals are the teaching and referral hospitals in Yemen. The study population was all midwives working at labor ward in public hospitals in Sana'a city during the months of April and June 2019. The sample size was determined using EpiCalc software program, version 2000. When calculation the sample size the researchers team based on the following parameters: Proportion was 4.1% (based on study conducted by Elizabeth (2015)[6] (Proportion of midwives who ticked false for controlled cord traction as a component of active management of third stage of labour (AMTSL), precision was 5% , confidence level was 95%. Then the final sample size was 60 midwives.

A stratified random sampling was administered to select 60 midwives from 4 public hospitals. The researcher team obtained the list of midwives working in labor wards. The list was reviewed and midwives meeting the inclusion criteria were included in the study to obtain from the total study population N = 85 midwives. Then the sampling frame was divided into 4 strata (hospital); Al-Thowrah hospital (K= 30), Al-Jomhury hospital (K= 14), Al-Sabeen hospital (K= 31) and Al-Kuwait (K=10). To calculate the number of midwives to be drawn at random from each of the 4 strata (hospital) was used the following formula:

$\frac{n}{N} * K$ = sample size to each hospital.

Where: n = (sample size), N= (study population) and k= (population of each hospital). Then a selection of nurses to be sampled from each stratum was done by probability proportional sampling in order to ensure that all midwives in public hospitals have the same probability of selection irrespective of the size of their cluster.

Inclusion criteria were included all midwives who had worked for 1 year in public hospitals at labour wards at the time of study and consented to participate in the study.

A structured questionnaire was used to aid in data collection. For this study data was collected by use of a questionnaire. The researcher developed his own tool to assess competence of midwives in prevention and management of PPH at Public Hospitals, Sana'a City. The tool consisted of five part, which all had been constructed based on several studies[6,7,8].

A close ended based questionnaire was developed in English language and translated to Arabic and completed by the midwives. The questionnaire had been distributed after being translated to Arabic language to be easily understood by the respondents. In each questionnaire, an explanatory letter was attached to facilitate questionnaire filling. The questionnaire was clear with no complex terms, no jargons, and no leading questions. All questions follows binary and nominal scales. The questionnaire was includes the following: (Demographic data of the midwives, knowledge on prevention of PPH, knowledge on management of PPH, Skills in handling PPH and barriers to prevention and management of PPH.

A pilot study was conducted before starting the data collection as a pretest to point out weaknesses in wording, translation to Arabic, predict response rate, determine the real time needed to fill the questionnaire and identify areas of vagueness and to test the validity and suitability of the questionnaire. Pilot study was done by administering the questionnaire to10% of the actual population recommended for pre-testing the questionnaire to ensure validity[9]. However at the end of this process one small change have

been conducted. The results were not part of the study findings.

Validity of the questionnaire was achieved by organizing the instruments in categories with logical sequence. The instruments were sent to 2 panel of expert to assess the clarity and relevance of the questionnaire to the objectives of the study. All comments on the instruments were taken in consideration, as a result some modification for some items were done. Data collection were done from April to June, 2019.The researchers or assistant checked the questionnaires for completeness and any information missing obtained from the respondent before moving to the next respondent.

The data was coded and entered into the SPSS program for analysis. During data collection, coding was done to ensure accuracy during data analysis. Data was analyzed using descriptive and inferential statistics. Descriptive analysis of each demographic variable was conducted by calculating mean (SD) for continuous variables like age and frequency distribution of categorical factors like sex and training. The main outcomes of knowledge and skills were described and appropriate frequency distribution of responses presented using either tables, figures, or frequency tables. Chi-square (X^2) test was computed to measure the association of independent and dependent variables and p-value was considered significant when <0.05.

Approval to carry out the study was obtained from Al-Razi University. Oral informed consent was obtained from midwives after explanation about the study. Confidentiality was maintained by ensuring that no names appeared in the questionnaires. There was no coercion to participate in the study and participants were free to opt out without consequences.

Results

Demographical characteristics of midwives

Table 1 showed that 68.3% of midwives were married and the majority (91.7%) of midwives had diploma degree. Whereas the mean age 32.4±7.7 year. As regards to the work experiences, the mean was 10.8± 8.2**.** More than half of midwives (58.3%) attended training courses in AMTSL**.**

Table 1: Demographical characteristics of midwives (n=60)

Demographic data	F	%
Age in year		
• 20-30	32	53.3
• 31-40	20	33.3
• >40	8	13.3
Marital status		
• Married	41	68.3
• Unmarried	19	31.7
Educational level		
• Diploma in midwifery	55	91.7
• BSc in midwifery	5	8.3
Year of experience		
• <5	24	40.0
• ≥5	36	60.0
Training courses on AMTSL		
• Yes	25	41.7
• No	35	58.3

Knowledge of midwives toward prevention of PPH

• *Components of AMTSL*

As regards to components of AMTSL, the majority of midwives (65%) ticked true for administration of uterotonic (41.7%) ticked true for clamping and cutting. More than two third (73.3%) ticked true for controlled cord traction as a component. Majority (98.3%) as true for uterine massage. Table 2.

• *Prophylactic uterotonic agents*

As regards to prophylactic uterotonic agents used in AMTSL, all the midwives (100%) agreed that prophylactic uterotonic are used in prevention of third stage of labour, the uterotonic drug of choice in prevention of third stage of labor was oxytocin (15%) while (58%) for combination of them. Furthermore, for oxytocin drug , the majority (41.7%) of midwives were answered the dose 30 unit and (45.7%) of midwives were said that the dose for Misoprostol 600 mg. However on the timing of administration of drugs, majority of them (73.3%) said the usual dose is administered at delivery of anterior shoulder of the infant while the rest (26.7%) said it is administered within one minute of delivery, after delivery of placenta and at the first sign of excessive blood loss. Table 3.

Table 2: Knowledge on component of AMTSL (n=60)

Components of AMTSL	Response			
	True		False	
	F	%	F	%
• Administration of a uterotonic	39	65	21	35
• Early cord clamping and cutting	25	41.7	35	58.3
• Controlled cord traction	44	73.3	16	26.7
• Uterine massage	59	98.3	1	1.7

Table 3: Knowledge of midwives on prophylactic uterotonic agents (n=60)

Variables	Responses	
	F	%
Prophylactic uterotonic used		
• Yes	60	100
Prophylactic uterotonic of choice		
• Oxytocin	9	15
• Misoprostol	0	0.0
• Combination	51	85
Dose for choice		
• *Oxytocin*		
○ 10 unit	13	21.7
○ 20 unit	9	15
○ 30 unit	25	41.7
○ Do not know	13	21.7
• *Misoprostol*		
○ 600 mg	28	46.7
○ 800 mg	15	25
○ Do not know	17	28.3
Timing of administration uterotonic drug	3	5
• At delivery of anterior shoulder	44	73.3
• one minute after delivery of infant	10	16.7
• After delivery of placenta	3	5
• At the first sign of excessive blood loss	3	5

• *Perform uterine massage and timing*

The results of the study showed that (92%) of midwives agreed that they usually perform uterine massage with the majority 39(65%) indicating the timing to perform uterine massage as after delivery of the placenta while only 13(21.7%) indicating the timing as after delivery of the baby. Figure 1.
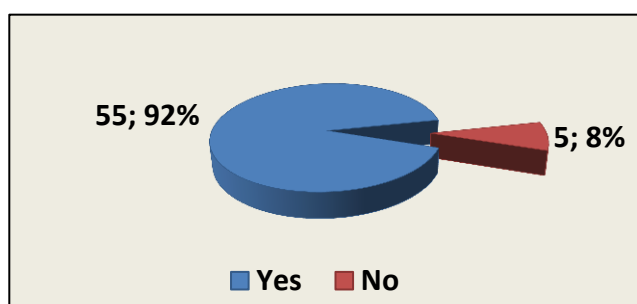

Figure 1: Perform uterine massage (n=60).

Knowledge of midwives on management of PPH

- *Recognition of PPH and first response on diagnosing PPH*

  On how to recognize PPH, majority of the midwives (58.3%) were selected all options. (48.3%) of midwives gave their first response on diagnosing PPH as to shout for help. Table 4.

- *Causes of PPH*

  Most of midwives (95%) agreed that uterine atony, (78.3%) trauma/lacerations to birth canal. Were the causes of PPH. Majority (88.3%) also agreed that retained placenta cause and thrombolytic disorders causes PPH (70%). Table 5.

Table 4:Recognizing PPH and first response on diagnosing PPH (n=60).

Statement	Responses	
	F	%
Recognition PPH immediately after delivery		
• Measuring blood loss after delivery	12	20
• Observing maternal vital signs	2	3.3
• Soaked linen after delivery	12	20
• All of the above	34	56.7
First response on diagnosing PPH		
• Shout for help	29	48.3
• Explore the cause	14	23.3
• Arrest the bleeding	17	28.3

Table 5: Knowledge of midwives toward causes of PPH (n=60)

Cause of PPH	Responses					
	True		False		Don't know	
	F	%	F	%	F	%
Uterine atony	57	95	2	3.3	1	1.7
Trauma/lacerations of the birth	47	78.3	4	6.7	9	15
Retained products of conception	53	88.3	1	1.7	6	10
Thrombolytic disorders	42	70	11	18.3	5	8.3

Skills on handling PPH

Identification of risk factors to PPH were (48.3%) felt they able to do without assistance, they could handle most of the other components as far as skills are concerned as in table 6.

Table 6: Skills on handling PPH among midwives (n=60)

Statement	Responses					
	Not able to do even with assistance		able to do with assistance		Able to do without assistance	
	F	%	F	%	F	%
Identification of risk factors to PPH	4	6.7	27	45	29	48.3
Diagnosis of PPH	4	6.7	19	31.7	37	61.7
Bimanual compression to the uterus	6	10	17	28.3	37	61.7
Suturing of perineal tears	7	11.7	10	16.7	43	71.7
Suturing of episiotomy	5	8.3	14	23.3	41	68.3
Manual removal of placenta	7	11.7	23	38.3	30	50

Barriers to prevention and management of PPH

Table 7 shows that, for all of them (66.7%) uterotonic supplies were always available, for majority (65%) the supplies were always stored at recommended temperatures while only (31.7%) gave sometimes as the response. (48.3%) of the midwives replied that transport was always available in case of a referral while only (36.7%) gave sometimes response, however a greater percentage of the respondents (55%) gave ratio of staff on duty to patient was sometimes appropriate with the rest (26.7%) as never the ratio is appropriate.

Level of competences on prevention and management of PPH

The findings of the study showed that (60%) of midwives had moderate competences toward prevention and management of PPH, (30%) had poor competences and only (10%) had good competences. Figure 2.

Table7:Barriers to prevention and management of PPH among midwives (n=60)

Statement	Responses					
	Always		Sometimes		Never	
	F	%	F	%	F	%
Uterotonic supplies available	40	66.7	14	23.3	6	10
Uterotonic supplies stored at recommended temperatures in the ward	39	65	19	31.7	2	3.3
Transport available in case of a referral	29	48.3	22	36.7	9	15
Ratio of staff on duty to patients appropriate	11	18.3	33	55	16	26.7

Figure 2: Level of competences toward PPH among midwives

Association between level of competences and demographic data

The relationship between midwives age, marital status, level of education, courses training, experiences and their competences on prevention and management of PPH did not yield statistically significance (p-value=0.086; p-value=0.209; p-value=0.580; p-value=0.515; p-value=0. 0.068) respectively but a statistical significance association was found between hospitals and midwives competences on prevention and management of PPH (p-value=0.013). Table 8.

Table 8: Level of competences in related to demographic data (n=60)

Demographic data	Level of competences			p- value
	Good	Moderate	Poor	
Age in year				
• 20-30	2	20	10	
• 31-40	1	12	7	0.086
• >40	3	4	1	
Marital status				
• Married	6	23	12	
• Unmarried	0	13	6	0.209
Level of education				
• Diploma in midwifery	5	34	16	0.580
• BSc. in midwifery	1	2	2	
Hospital name				
• Al-Sabeen	4	14	4	
• Al-Jomhury	1	7	2	0.013
• Al-Thowrah	1	12	8	
• Al-Kuwait	0	3	4	
Training course on management of PPH				
• Yes	2	17	6	0.515
• No	4	19	12	
Year of experiences				
• <5	1	12	11	0.068
• ≥5	5	24	7	

Discussion

It is important to monitor and evaluate the use of AMTSL using the updated definition in all health facilities in Yemen, since AMTSL shows to reduce the incidence of PPH, shortening of the third stage of labor and reducing the need for additional treatments[10,11]. Supportive supervision among skilled midwives is crucial in order to keep them with updated information and skills, this will improve midwifery care and hence reduction of maternal morbidity and mortality towards achievement of MDG 5 by UN (2015)[12].

Demographic data of midwives:

From the study, all participants were of one sex (female). This may be attributed to the historical background of the profession. 63.3% of the midwives were mean aged 32.4 ± 7.3 year.

Only (8.3%) of the midwives had college level of education with most of them (91.7%) trained at diploma level and this yielded statistical significance (p-value 0.013).

Even though duration worked in a labour ward setting did not yield statistical significance (p-value=0.068), the study found that the mean was 10.8± 8.2 year of the midwives had worked in a labour ward setting. Majority of the midwives (58.3%) had not been trained on management of PPH which is key in prevention of PPH. Having a greater percentage trained was in line with a joint statement in 2010 by the International Confederation of Midwives and International Federation of Gynecologists and Obstetricians endorsing the need for all deliveries to be attended by a caregiver trained in AMTSL[13].

Competences on prevention and management of PPH:

Level of competences among midwives on prevention and management of PPH was moderate (60%). Majority were well informed on components of the AMTSL though 58.3% indicated that early cord clamping and cutting was not a component and 35% also indicated administration of a uterotonic was not a component of active management of third stage. This may be indicative of lack of updates hence depending mainly on information during training period.

All the midwives indicated they always use prophylactic uterotonics in management of third stage of labour, that the drug of choice was combination of oxytocin and misoprostol and a dose of 30 IU and 600mg respectively. This was not with line with WHO (2007)[14] recommendations and Cochrane data base systematic review done by Westhoff et.al (2013)[15]. Considering prophylactic uterotonic, a Cochrane review by RCOG (2011)[16] including seven trials comparing prophylactic oxytocin versus no uterotonic concluded that oxytocin reduced the risk of PPH by about 60% and the need for therapeutic oxytocin by about 50%.

On the timing of administration of prophylactic uterotonic, only 16% had the knowledge that administration should be within a minute after delivery of the infant. This can be partly attributed to un updated knowledge through training courses on prevention and management of PPH which almost all the respondents agreed that it was never appropriate and needed to be improved for better performance.

According to the hospitals policy, the drug of choice was oxytocin and all midwives administered the correct dose of 30 IU intramuscular to every parturient with a singleton pregnancy (41.7%). This had a slight difference with a study in three maternity hospitals in Istanbul, Turkey that documented the use of oxytocins in 95% of deliveries during the third stage of labour[17].

Even though majority unknown the administration of oxytocin should be within one minute of delivery of the infants per standards. This differed with a study by Mfinaga et.al (2009)[18] that found out the extremely low rate of AMTSL was due to administration of uterotonic drug after delivery of placenta.

Use of AMTSL according to the recommendations of FIGO/ICM was observed in 75 percent of deliveries in Cirebon district and that, factor that accounted for the drop of AMTSL practice is the timing of administration of oxytocin following the delivery of the fetus[14]. However, standard AMTSL practice consists of about 18 steps that a midwife has to follow when conducting this intervention to a woman during third stage of labour. These steps were not completed by most of the midwives that made majority to score low in the skills that contributed to very low rate of competence on AMTSL.

From the study, almost all the midwives 92% agreed that they usually perform uterine massage with 65% indicating the timing to perform uterine massage as after delivery of the placenta. Similar result was found by Elizabeth (2015)[6]. On observed deliveries, all midwives performed uterine massage after delivery of the placenta but none taught the mother how to do uterine massage every 15 minutes for two hours as the protocol requires indicating knowledge gap. The study found out that 90.9% of the midwiferies always examined the placenta, its membranes and the umbilical cord after delivery for

completeness. The remaining 9.9% cited too much workload as the hindrance to doing the examination. Similar results was found by Elizabeth (2015)[6].

On how to recognize PPH immediately after delivery, varied responses were obtained with 56.7% indicating more than one option. The rest would recognize PPH through measuring blood loss after delivery and soaked linen after delivery or by observing maternal vital signs. On inquiry of why measuring of blood loss was not being done, they cited challenges like too much workload and shortage of staff[16]. points out that Visual blood loss estimation often underestimates blood loss, therefore, more accurate methods, such as blood collection drapes for vaginal deliveries and weighing swabs may be used. Written and pictorial guidelines may help staff working in labour wards to estimate blood loss.

Our results were similar to study done by Elizabeth (2015)[6], varied responses were obtained with 40.9% indicating that they measure blood loss after delivery. The rest would recognize PPH through soaked linen after delivery or by observing maternal vital signs. However, on observed deliveries, all midwives did visual estimation of blood loss but not by measuring blood loss as majority indicated.

The present study found almost all midwives were aware of uterine a tony as the major contributing factor to PPH and on recognizing PPH, 46.7% of the midwives would shout for help. This was in line with the protocols of handling obstetric emergencies according to the Fraser et.al (2006)[19] where communication is key when handling any obstetric emergency citing shouting for help as the first thing.

On observed deliveries, if PPH occurred, the midwife shouted for help

and teamwork was observed in attending to the emergency.

• *Skills in handling PPH if it occurs:*
The study found that 61.7% of the midwives could diagnose PPH, suture perineal tears 71.7% and episiotomies 68.3% without assistance, however, 45% of the midwives felt that they would require assistance in identifying risk factors to PPH. Our study not similar to study was conducted by Elizabeth (2015)[6] the study found that 90.9% of the midwives could diagnose PPH, suture perineal tears and episiotomies without assistance, however, 27.3 % of the midwives felt that they would require assistance in identifying risk factors to PPH.

The study found out that uterotonic supplies were always available (66.7%) which enabled the midwives to practice AMTSL. This differed with findings of a study done by Smith et al (2014)[20] that found oxytocin to be regularly available in 89% of facilities in a key informant interview of 37 countries. Oxytocin is relatively stable at temperatures below 30 °C and when used routinely for active management of the third stage, the rapid turnover of stock results in shorter environmental exposures. Surveys in Africa show that oxytocin is available and accessible in most health facilities and the lack of oxytocin is often due to health system failures that affect any commodity[21]. Majority of the midwives indicated that supplies were always stored at the correct temperatures mainly at room temperature. The study was on midwives only so generalization is limited to practicing midwives and not to other skilled birth attendants who also play a role on prevention and management of PPH.

Conclusion
This study has yielded new knowledge on competences of midwives on

prevention and management of PPH. The knowledge and skills on prevention and management of PPH among midwives was moderate.

Recommendations
Standard guidelines on prevention and management of PPH to be availed in labour wards to serve as a reminder of the steps involved and when to undertake them. The midwives require training on AMSTL to help them practice as per the guidelines of AMSTL.

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References
1. Tako, T., Ujjiga, A.& Ochi, E.B. Risk factors associated with postpartum haemorrhage at Juba Teaching Hospital. 2014; 7(3).
2. WHO. MPS technical update. Prevention of postpartum haemorrhage by active management of third stage of labour. 2005.
3. WHO. Making a Difference in Countries. Strategic Approach to Improving Maternal and Newborn Survival and Health. Geneva, Switzerland. 2006.
4. Say L., Chou D., Gemmill A., Tuncalp T., Moller A.-B., Daniels J., Gulmezoglu A.M. & Alkema L. Global causes of maternal death: A WHO systematic analysis. The Lancet Global Health. 2014; 2 (6).
5. Muchemi, O.M. &Gichogo, A.W. Maternal Mortality in Central Province, Kenya, 2009-2010. Pan African Medical Journal. 2014; 17: 2009–2010.
6. Elizabeth M M. Competence of midwives in prevention and management of postpartum hemorrhage at Kiambu district hospital labour ward, Kiambu country. A thesis submitted in partial fulfillment of the requirements for the award of Master of Science degree in nursing (Obstetrics nursing and Midwifery) of the University of Nairobi. 2015.
7. Floyd, B.L. Helping midwives in Ghana to reduce maternal mortality. , African journal of midwifery and women's health. 2013; 7(1) 35
8. Deepak, N.N., Mirzabagi E., Koski A., Tripathi V. Knowledge, Attitudes, and Practices Related to Uterotonic Drugs during Childbirth in Karnataka, India: A Qualitative Research Study. PLoS One. 2013 Apr 29;8(4):e62801.
9. Czaja, R. and Blair, J. Designing surveys: a guide to decision and procedure , second edition, sage publications; California, USA. 2005; 301
10. WHO. Managing Complications in Pregnancy and Childbirth. A Guide for Midwives and Doctors. WHO Department of Reproductive Health and Research. Geneva, Switzerland. 2000.
11. Nordström, L., Fogelstam, K., Gunilla, F.G., Larsson, A., & Rydhstroem. Routine oxytocin in the third stage of labour. A placebo controlled randomized trial. British Journal of Obstetrics & Gynecology. 1997; 104: 781-786.
12. UN. Millennium Development Goals. New York, NY. 2015.
13. International confederation of midwives: ICM Essential competencies for basic midwifery practice. 2010.
14. WHO. Prevention of Postpartum Hemorrhage: Implementing Active Management of the Third Stage of Labor (AMTSL): Facilitator's Guide. Seattle: PATH. 2007.
15. Westhoff G., Cotter AM, Tolosa JE. Prophylactic oxytocin for the third stage of labour to prevent postpartum haemorrhage. Cochrane Database Syst Rev. 2013; 30(10): CD001808.
16. RCOG. Prevention and Management of Post-Partum Haemorrhage. Green Top Guidelines. 2011; 52, (52) : 1–24.
17. Stanton C, Armbruster D, Knight R, Ariawan I, Gbangbade S, Getachew A, Portillo JA, Jarquin D, Marin F, Mfinanga S, Vallecillo J, Johnson H, Sintasath D. Use of active

management of the third stage of labour in seven developing countries. Bulletin of the World Health Organization. 2009; 87(3) : 207–215.

18. Mfinanga, G.S., Kimaro G.D., Ngadaya E., Massawe S., Mtandu R., Shayo E.H., Kahwa A., Achola O., Mutungi A., Knight R., Armbruster D., Sintasath D., Kitua A., Stanton C. Health facility-based Active Management of the Third Stage of Labor: findings from a national survey in Tanzania. Health research policy and systems /BioMed Central. 2009; 7: p.6.

19. Fraser, D.M., Cooper, M.A., Nolte, A.G.M. Myles textbook for midwives. African edition, Churchill Livingstone. 2006.

20. Smith, J.M., Curries., Cannon T., Armbruster D.&Perri J. Are national policies and programs for prevention and management of postpartum hemorrhage and preeclampsia adequate? A key informant survey in 37 countries. Global Health: Science & Practice. 2014; pp.275–284.

21. Mathai M, Gülmezoglu AM, & Hill. Saving women's lives: evidence-based recommendations for the prevention of postpartum haemorrhage. Bulletin of the World Health Organization. 2007;85(4):322-323.