

Assessment of clinical skills of midwives who graduated from Mashhad school of nursing and midwifery who are employed in hospitals and health centers

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Abstract: Appropriate midwifery skills can prevent deaths and help avoid complications of childbirth. Quality of midwifery training significantly affects clinical skills. Graduate students of midwifery should gain a minimum level of clinical skills to adequately perform their duties. Assessing the graduates' clinical skills can be helpful for evaluating the curriculum. The objective of this research was to determine clinical skills of graduated midwives from Mashhad school of nursing and midwifery who are employed in hospitals and health centers. Present research is a cross-sectional study. Statistical society of this research is a group of 50 recent graduated midwives who have been employed in the health centers of Mashhad from three month up to three years. Fifty heads of health centers were also selected. All of the heads had at least six months of job experience. After following the legal processes and explaining the research objectives and method of filling the questionnaire, the midwives and the heads were asked to complete the questionnaires. Another questionnaire is "assessment of midwives by heads," which is extracted from the other questionnaire. Results of the present research illustrate that more than 95 percent of the essential skills for a midwife are obtained during education. More than 90 percent of the graduated midwives who work in maternity and obstetrics and gynecology and 85.5 percent of midwives in healthcare assessed their knowledge and skills adequate for their job in low-risk situations. But, in high-risk situations, 76.1 percent of graduated midwives who work in the maternity and 77.4 percent who work in healthcare assessed their knowledge and skills satisfactory for doing their duties. From a statistical point of view, self-assessment of the skills for handling low-risk situations is significantly higher than the numbers related to the high-risk situations ($P < 0.05$). The Pearson product moment test illustrated a positive correlation between the acquired skills in the curriculum and increasing self confidence among the graduates ($P < 0.05$). Seventy-one percent of the authorities in midwifery who are employed in the maternity and obstetrics and gynecology and 75 percent of authorities in the health centers assessed the graduates skillful enough to handle low-risk situations. Results of the present research illustrate that the graduates assessed themselves significantly more skillful compared to the authorities' assessment ($P < 0.01$).

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1. Introduction

Maternal death rate is equal to 370/100,000 (Kruske, 2006). In all, over the world, 500,000 women die each year from obstetric complications (Harvey, 2007). Maternal mortality is a catastrophic event and affects the lives of the other family members. Because of these deaths of half a million mothers at least one million children are deprived of having a mother. For each maternal death, at least 15 women suffer complications and chronic deficiencies till end of their lives. Annually 1.8 million neonatal cases suffer from asphyxiation, convulsion, cerebral palsy and mental disorders till end of their lives because of prolonged labor. The World Health Organization (WHO) has declared that death due to asphyxia and injuries during the childbirth are reason

for one third of neonatal deaths (Modarres, 2004). Several investigations have shown that enhancing midwifery care can prevent many neonatal deaths (Harvey, 2004). Fifty-nine percent of the maternal occurs happens in Asian countries.

The rate of maternal mortality in Iran is 37/100,000 and the rate of infant mortality is equal to 16-20 in 1000 births (Modarres, 2004). Previous studies illustrated that appropriate clinical skills and adequate midwifery care during and after labor can prevent more than 75 percent of these mortalities. The World Health Organization (WHO) definition for midwife is: "midwife is a person who is trained for doing necessary clinical skills for handling a normal pregnancy, normal delivery, diagnosis and referring the un-normal cases" (Harvey, 2004).

Midwives need to acquire sufficient skills in family planning, primary care, and neonatal resuscitation (Who, 2001). Midwives play an important role in training and counseling women and families to improve the health level for the families and society. Midwives have a responsibility to train families for prenatal issues, parenting skills, women's health, sexual issues, and infant's cares. Quality of midwifery education affects performance of these duties significantly. Graduates in this field require a minimum level of clinical and professional skills in midwifery to meet the expected goals (Kruske, 2006). Unfortunately, many studies have shown that the quality of midwives' activities is not desirable. Farrokhi, et al. (2007), reported that the quality of provided care by midwives is acceptable only in 55.8 percent of cases (Farrokhi, 2008). Abedzadeh, et al. (2000), mentioned that only 29 percent of midwives do a reasonable job of breast examination (Abedzadeh, 2009).

Curricula should prepare the midwives for performing professional activities in the changing health system for the future (Fleming, 2005). To reach this goal, cooperation, consultation, and comprehensive participation of scholars in midwifery education planning as well as various points of views of the students and university lecturers is essential. By reviewing the midwifery education and obtaining feedback from midwifery training, midwifery courses could be revised. To achieve appropriate changes in the curriculum of midwifery, requirements and essential changes in various parts should be identified. Planning should be done based on these factors. The curriculum development process can be described and identified based on four main components:

1. Knowing the necessity of dynamic planning and choosing the appropriate pattern
2. Improving the details of the curriculum such as objectives and content, learning experiences, methods, and resources
3. Implementation of developed solution
4. Evaluation of previous programs and current programs

One of the components of identifying the curriculum process is evaluation of the performed program (Salehi, 2004). An appropriate method of evaluation is self-assessment (Seyf, 2005). One of the best methods to determine clinical skill and knowledge is self-assessment. Every midwife is an appropriate resource for data collection about himself/herself. Performing the investigation at the beginning of working after educating is important

because the midwife is facing problems and requirements and this helps him/her to assess his/her knowledge for doing his/her duties (Nasirian, 2006; Salehi, 2003). Evaluating curriculum for assessing methods of training and course content is essential. Required data about quality of the methods and course content could be obtained from students and graduates (Wentling, 1997). On the other hand, assessment by authorities from a different point of view is a significant component of program evaluation (Salehi, 2003).

By reviewing studies conducted in Iran, a lack of data about this issue can be seen. According to the importance of considering the educational system of midwifery, this study has been conducted for the assessment of clinical skills of graduated midwives from Mashhad school of nursing and midwifery who are employed in hospitals and health centers.

2. Material and Methods

Present research is a cross-sectional study. Statistical society of this research is a group of recent graduated midwives in the last three years including 50 persons, who are employed in private and charity hospitals, maternities, and health centers of Mashhad for a period between three months up to three years. Also a group including 50 persons from authorities of the health centers was selected. All these people had at least six months of job experience. Due to limited statistical society in this research, the sampling method was census, while sample and society are assumed to be the same.

After following the legal processes and explaining the research objectives and method of filling the questionnaire to the midwives and the heads of the departments, they were asked to complete the questionnaires. Meanwhile, all the research samples are ensured that the information will remain confidential.

The applied tool in this study for assessment of the graduated midwives included two different parts:

1- "An instrument for self-assessment of midwife," that is a questionnaire for determining level of capabilities and clinical skills of midwives. This questionnaire contains essential components that should exist in midwifery training courses for high-quality care of women and family to train a competent midwife. More than 40 midwifery skills that result in a decrease in infant mortality and morbidity exist in this questionnaire. This questionnaire was prepared by International Confederation of Midwifery (ICM 2006) by Delphi method and it is approved by the World Health Organization (WHO). Several meetings have been

held by representatives of member states (86 countries) and non-members to provide this questionnaire.

Validity of instruments has been evaluated by members of the International Confederation of Midwifery (ICM) and its reliability has been tested by conducting a study in Cambodia and Mongolia. It has been shown that this instrument has high correlation with the observation method and it has been approved. The questionnaire contains three sections:

- a) Demographic characteristics of the graduates including age, job experience, job location, type of degree, and some other components.
- b) Self-assessment instrument of midwife in maternity.
- c) Self-assessment instrument of midwife in health center.

There are six options for each question in the questionnaire. Four options are related to learning or not learning of a specific skill. Two other options are related to having self-confidence for doing that specific skill.

2- Another questionnaire is "assessment of midwives by heads of the departments." This questionnaire is extracted from the first questionnaire and the person in charge does the scoring for the clinical skills of the midwives based on the Likert scale.

Although validity and reliability of the applied tools were tested out of Iran, these tools were translated to Persian by the researcher and were approved by members of the Faculty of Nursing and Midwifery of Mashhad University from face validity and content point of view. To determine the reliability of the self-assessment tools of the midwives and assessment tools of midwives by heads of the departments, re-test and determining correlation with Chronbach's Alpha were used. After extracting and coding the data, statistical analysis was performed by SPSS software.

3. Results

Average of the age among graduates of the midwifery in this research was 24 years and average GPA was 16.5. According to results of present study, 91.2 percent of the recent graduates of midwifery who are employed in maternities and obstetrics and gynecology departments of hospitals reported that these skills were included in their curricula. They reported having sufficient skills after graduation to handle the following: low-risk pregnancies and deliveries, record patient history, perform venipuncture, bladder catheterization, estimate gestational age, abdominal and vaginal examinations, labor management process, episiotomy, perianal

rupture, admissions and primary neonatal care, training and effective assistance to start breastfeeding for mothers.

A various percentage of graduates employed in maternities and obstetrics and gynecology departments of hospitals reported that they had enough training during their education to handle the following skills. Numbers in the parenthesis show the percentage of graduates: CDP (92.9 percent), diagnosis of FHR (83.3 percent), handling FHR (63.6 percent), diagnosis of abnormal presentations (60 percent), breech delivery (54.5 percent), management of labor with umbilical cord prolapse (75 percent), diagnosis and management of level four of obstetric bleeding (84 percent), management of pre-eclampsia (76.9 percent), diagnosis and management of eclampsia (62 percent), diagnosis of emergencies in midwifery (64.3 percent). The average percentage of those graduates who believe they are able to handle high-risk deliveries and above-mentioned skills is equal to 76.1 percent. There is another group of graduates who believe that although they had been trained in mentioned skills, they were not able to perform them after graduation.

Numbers in parenthesis show the percentage of the second group: management of FHR (36.4 percent), diagnosis of abnormal presentations (40 percent), management of breech delivery (36.4 percent), management of pre-eclampsia (23.1 percent), diagnosis and management of eclampsia (36 percent) and diagnosis of midwifery emergencies (35.7 percent). Statistically, self-assessment of skills by graduates of midwifery for management of low-risk pregnancies and deliveries is considerably higher than management of high-risk pregnancies and deliveries ($P < 0.05$).

Another part of this study illustrate that the percentages of midwifery graduates of t assessed their training sufficient for management of the following skills in low-risk situations: prescribing drugs and supplements to pregnant women and training of method of application of these drugs and supplements (90 percent), training for contraception (100 percent), prescribing supplements to neonatal and instruct method of application of these supplement to mothers (70 percent), appropriate and effective control of growth of children under 5 years of age (90 percent), training for children's nutrition, training for vaccination program, apply and interpret routine tests in pregnancy and breast examination (100 percent), pelvic examination (90 percent), performing and interpreting Pap smear (60 percent), and IUD insertion (50 percent). On average, 85.5 percent of graduates assessed themselves knowledgeable and skillful enough in the above skills.

Table 1: Self-assessment of graduates of midwifery from Mashhad universities about pregnancy and high-risk deliveries

Self assessment of clinical skills	1) This skill was taught during the education and after graduation I was enough skillful to perform it	2) This skill was taught during the education and after graduation I was not enough skillful to perform it	3) This skill was not taught during the education and I learned it in training courses after graduation during employment	4) I never learned this skill	Total
Clinical skills					
Diagnosis of CPD	92.9%	7.1%			100%
Diagnosis of FHR	83.3%	16.6%			100%
Managing FHR	63.6%	36.4%			100%
Diagnosis of abnormal presentations	60%	40%			100%
Managing breech delivery	54.5%	36.4%	9.1%		100%
Managing delivery with cord prolapse	75%	16.7%	8.3%		100%
Managing long third level	81.8%	18.2%			100%
Diagnosis of bleeding in fourth level of delivery	83.3%	16.7%			100%
Managing bleeding in fourth level of delivery	84/6%	15/4%			100%
Diagnosis of preeclampsia and eclampsia	85.7%	14.3%			100%
Managing preeclampsia and eclampsia	76.9%	23.1%			100%
Diagnosis of eclampsia attacks	61.5%	38.5%			100%
Managing the eclampsia attacks	64.3%	35.7%			100%
Diagnosis of the emergency cases	64.3%	35.7%			100%
Managing the emergency cases	76.5%	23.5%			100%
Neonatal resuscitation by bag and mask	85.7%	14.3%			100%
Diagnosis of un normal cases in neonatals	100%				100%

Table 2: Assessment of authorities and heads of the departments about clinical skills for managing high-risk pregnancies and deliveries

Assessment of Clinical skills	Not acceptable	Lower than expected level	Border line	At expected level	Higher than expected level	Total
Clinical Skill						
Diagnosis of CPD	%7.16		%7.16	%7.66		%100
Diagnosis of FHR	%7.16	%7.16		%7.66		%100
Diagnosis of abnormal presentations	%7.16		%7.16	%7.66		%100
Managing the breech delivery	%100					%100
Managing the long third level	%100		%7.16	%7.66		%100
Diagnosis of bleeding in fourth level of delivery	%7.16		%1.9	%7.72		%100
Managing bleeding in fourth level of delivery	%2.18		%1.9	%6.63		%100
Diagnosis of preeclampsia and eclampsia	%3.27	%3.8		%7.66		%100
Managing the preeclampsia and eclampsia	8.3%	%3.8		%3.88		%100
Diagnosis of eclampsia attack	%3.8	%3.8	%3.8	%75		%100
Managing the eclampsia attack	%16.7	%3.8	%3.8	%7.66		%100

Diagnosis of emergency cases		%7.16		%3.83		%100
Managing emergency cases	%16.7			%3.83		%100
Neonatal resuscitation by bag and mask	%8.3	%7.16	%3.8	%7.66		%100
Diagnosis of un normal cases in neonatals	%33.3		%7.16	%50		%100

Also on average, 77.4 percent of the graduates assessed themselves skillful enough and assessed the courses during their education enough to manage the following skills in high-risk conditions: evaluating and training the risk factors in pregnant women (90.9 percent), diagnosis of risky cases in pregnancy (90 percent), diagnosis and management of complications of postpartum (100 percent), consultation and diagnosis of risk factors in neonatal (66.7 percent), diagnosis and management of current diseases among neonatal (88.9 percent), effective training for mothers who are not capable of breastfeeding (84 percent), consultation with mothers who suffer from hepatitis (11.1 percent), diagnosis and treatment of gynecologic infections and management of abnormal breast cases (90 percent).

Statistically, self-assessment of skills for management of low-risk conditions is significantly higher than high-risk conditions by midwifery graduates ($P < 0.05$). Extracted results from present

research show that the average of self-assessment by graduates about self-confidence for performing clinical skills of midwifery is as follow: 90.2 percent of graduates of midwifery who are employed in maternities and surgical wards in the obstetrics and gynecology departments of hospitals assessed their self-confidence adequate for management of low-risk conditions for reception of patient and 74 percent of them assessed their self-confidence sufficient for management of high-risk.

Table 3: Level of self-confidence for graduates of midwifery from universities and colleges in Mashhad about situations and emergencies. Statistically, there is a significant difference between self-confidence of the graduates in these two situation ($P < 0.05$).

Pearson test has shown a positive correlation between acquiring the skills during the education and self-confidence of the graduates for management the situations ($P < 0.05$).

Table 3: Level of self-confidence for graduates of midwifery from universities and colleges in Mashhad about situations and emergencies

Self-assessment of Clinical skills	I have enough self confidence for doing this skill	I don't have enough self confidence for doing this skill	total
Clinical skills			
Diagnosis of CDP	%7.91	%3.7	%100
Diagnosis of FHR	%70	%30	%100
Managing FHR	%7.72	%3.27	%100
Diagnosis of abnormal presentation	%3.83	%7.16	%100
Managing breech delivery	%70	%30	%100
Managing delivery with cord prolapsed	%8.77	%2.22	%100
Managing third long level	%8.88	%2.81	%100
Diagnosis of bleeding in fourth level of delivery	%100		%100
Diagnosis of preeclampsia and eclampsia	%100		%100
Managing preeclampsia and eclampsia	%100	%7.7	%100
Diagnosis of eclampsia attack	%3.92	%2.5	%100
Managing eclampsia attack	%75	%2.18	%100
Diagnosis and managing emergency cases	%8.81	%3.33	%100
Neonatal resuscitation by bag and mask	%7.66	%7.16	%100
Diagnosis of un normal cases in neonatals	%3.83		%100

Table 4: Comparison between graduates of midwifery's clinical skills for managing high-risk and low-risk pregnancies and deliveries from heads of departments' and authorities' point of view, (result for T-test is $p = 0.04$).

Number of skills	Number	Average	Deviation
Clinical skills At expected level Or higher than that			
Managing low-risk situations	21	%4.71	2.27
Managing high-risk situations	16	%61	3.30
Total	37		

Results of the present study illustrate that by average 71 percent of the heads of the departments assessed the performance of the graduates higher than the expected level for the following areas: management of low-risk pregnancies and labors, recording patient history, venipuncture, bladder catheterization, estimation of gestational age, abdominal and vaginal examinations, labor management process, episiotomy, perianal rupture, admissions and primary neonatal care, training and effective assistance to start breastfeeding for mothers. Meanwhile, an average of 61 percent of

heads of the departments assessed performance of the graduates equal or higher than expected level for management of high-risk pregnancies and labors. Somehow, for diagnosis and management of FHR (33.4 percent), management of breech delivery, management of cord prolapsed (100 percent), diagnosis and management of fourth level of delivery (27.3 percent), diagnosis and management of preeclampsia and eclampsia (33.3 percent) and neonatal resuscitation (25 percent), assessed the capability of the midwives lower than expected level.

Table 5: Comparison between self-assessment of graduates for managing high-risk and low-risk pregnancies and deliveries (T-test result is $p=0.027$)

Acquired Clinical skills at time of graduation	Number of skills	Number	Average	Deviation
low-risk situations		21	%2.91	8.8
high-risk situations		16	%1.76	3.6
Total		37		

Table 6: Comparison between self-confidence of the graduates for managing high-risk and low-risk pregnancies and deliveries (T-test result is $p=0.02$).

Self confidence of Graduates for	Numbers	Number	Average	Deviation
Managing low-risk situations		21	2.90	8.8
Managing high-risk situations		16	5.74	3.9
Total		37		

According to the extracted results from this research, an average of 75 percent of the authorities and heads of the departments assessed the capabilities of the midwives for low-risk situations at expected level or higher than that, such as prescribing drugs and supplements to pregnant women and training of method of application of these drugs and supplements and training for contraception (88.9 percent), prescribing supplements to neonatal and train method of application of these supplement to mothers (55.6 percent), appropriate and effective control of growth of children under 5 years of age (44.5 percent), training for children's nutrition (55.6 percent), training for vaccination program (33.3 percent), apply and interpret routine tests in pregnancy (77.8 percent), breast examination (77.8 percent), pelvic examination (88.9 percent), performing and interpreting Pap smear (71 percent) and IUD insertion (88.9 percent). On the other hand, an average of 73 of the authorities and heads of the departments assessed the knowledge and capabilities of the graduates at expected level or higher than that for managing high-risk situations, such as diagnosis of risky cases in pregnancy (77.7 percent), diagnosis and management of complications of postpartum

(77.8 percent), consultation and diagnosis of risk factors in neonatal (75 percent), diagnosis and management of current diseases among neonatal (33.3 percent), effective training for mothers who are not capable of breastfeeding (53.4 percent), diagnosis and treatment of gynecologic infections and management of abnormal breast cases (80 percent).

4. Discussions

Extracted results from the present study illustrate that nearly 95 percent of vital skills for midwifery exist in curriculum and students received enough training. 91.2 percent of the graduated midwives who work in the maternity and department of obstetrics and gynecology and 85.5 percent of the employed midwives in healthcare assessed their knowledge and skills adequate for their job in low-risk situations. But, in high-risk situations, 76.1 percent of the graduated midwives who work in maternity and 77.4 percent of the employed midwives in healthcare assessed their knowledge and skills satisfactory for performing their duties. From a statistical point of view, self-assessment of the skills for handling low-risk situations is significantly higher than the numbers related to high-risk situations ($P <$

0.05). According to a similar investigation, conducted by Kruske et.al (2006), 81 percent of the midwives for performing breech delivery, 91 percent for managing delivery with prolapsed cord, 89 percent for neonatal resuscitation, 56 percent for managing eclampsia, and 93 percent for managing sepsis, assessed their skills lower than expected level and from a statistical point of view assessed their skills for managing low-risk deliveries higher than the high-risk situations (Kruske, 2006). Also Harvey et.al (2004) reported only 48.2 percent of the midwives have enough skills and knowledge for managing bleeding, eclampsia, difficult deliveries, infection, and abortion complications (Harvey, 2004)

To fortify clinical skills in abnormal situations, opportunities should be created for acquiring clinical skills and adequate supervision for students' practicing. To increase clinical skills for handling high-risk situations, training courses should be based on acquiring qualifications, using the training manual, using the check lists and Loog book, including minimum clinical skills (Kruske, 2006). Other research has shown that although more than 90 percent of the courses are based on required lessons, students do not have enough skill to manage uncommon cases such as breech delivery, using forceps and neonatal resuscitation. Also, for training the uncommon cases that have less opportunity to be taught in the clinical environment, Molaje and audio and visual equipment such as films could be utilized to increase the self-confidence of the graduates during the study period (Ehsanpour, 2006). Self-confidence of 90.2 percent of midwifery graduates who are employed in the maternity and department of obstetrics and gynecology in low-risk situations and self-confidence of 74 percent of them was enough to handle high-risk situations. There is a significant difference from a statistical point of view ($p=0.05$). Self-confidence of 79 percent of graduates who are employed in health centers and 73 percent of them was enough for managing low-risk and high-risk situations, respectively.

In high-risk situations, 61 percent of the authorities in the maternities and 73 percent of the authorities in the health centers assessed the graduates skillful enough to handle the situations. From a statistical point of view, authorities in the maternities and departments of obstetrics and gynecology assessed the skills for handling low-risk situations significantly higher than high-risk situations ($P < 0.05$). Also, results of the present research illustrate that the graduates assessed themselves significantly more skillful in comparison to how the authorities assessed them ($P < 0.01$). In a similar study with an objective related to self-assessment of graduates of nursery about their

performance and from heads of departments' point of view, similar results were extracted. To remove the gap between the training courses and practical clinical skills a common planning by training group and clinical group is suggested (Kruske, 2006; Harvey, 2007). The association of American nursing universities applied preceptorship as an effective tool for decreasing the gap between the training courses and practical skills (Udis, 2006). Investigations about applying a preceptorship method in nursery and midwifery training programs found it could be useful for increasing the self-confidence, performance, and clinical skills of the graduates (Allrich, 2001).

Also, using a mentor in training courses for midwifery clinical skills and creating an appropriate environment could be effective for increasing the motivation in learning and elevating the performance of the midwifery graduates (Carlisle, 2009). To fortify clinical skills, especially in high-risk situations, and increase clinical skills for handling high-risk situations, training courses should be based on acquiring qualifications, using a training manual, check lists, and the Loog book, including minimum clinical skills. For training in uncommon cases where there are fewer opportunities to learn in a clinical environment, Molaje and audio and visual equipment such as films could be utilized to increase graduates' self-confidence. To increase the points of evaluation of the heads of the departments and authorities, collaborations and common planning should be arranged between the training group and clinical group. This will result in training more skillful midwives and will elevate the level of health in infants and mothers.

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