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The Relationship Between Midwifery Practical Skills Evaluation and Midwifery Experience Among Young Midwives Working at Perinatal Medical Centers in Japan

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ABSTRACT

The purpose of this study was to clarify the association between the level of midwifery skills evaluation and midwifery experience in maternity care among young midwives with two to four years of experience, excluding new midwives with one year of experience among those with less than five years of experience working at perinatal medical centers in Japan. The survey was conducted among consenting midwives in 38 cooperating facilities. The subjects of the survey were randomly selected from 407 perinatal mother and child healthcare centers in Japan, and 38 midwives who cooperated were surveyed. Maternity care skills (20 items on pregnancy, 41 items on labor, 34 items on the puerperium and neonatal period) in the training guide for newly-graduated midwives were used as survey items. Responses were received from 102 (42.1%) midwives, of which 99 (97.1%) were valid responses. Twenty-seven (27.3%) were in their second year of midwifery experience, 33 (33.3%) in their third year, and 29 (39.4%) in their fourth year. The percentage of "able to do" response was high for 17 items in <diagnosis and care during pregnancy>, 37 items in <Diagnosis and care during labor >, and 31 items in <Diagnosis and care in puerperal and neonatal periods>. The percentage of responses other than "possible" was high for items in the high-risk diagnosis and care in all periods. In terms of "maternal transport care" and "mental health follow-up of maternal women and families with children such as fetal abnormalities and deaths," and similar issues, midwives with 2 years of experience had a low score for "do it yourself." Clearly, young midwives still have items that are difficult to evaluate with confidence. Therefore, midwives have yet to acquire the skills necessary for high-risk cases compared to low-risk cases. We believe that these skills would improve as the midwife gains more experience.

<Key-words>

Perinatal Medical Center, maternity care midwifery practice ability, young midwife, CLoCMiP® Level III

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I. Introduction

Perinatal medicine in Japan faces numerous challenges, including a decline in birthrate, an increase in childbirth age and high-risk pregnancy, a decline in obstetrics and gynecology physicians, and uneven regional distribution. Under these circumstances, midwives are task-shift partners for obstetricians to provide quality medical care to mothers and children¹⁾. The International Confederation of Midwives (ICM) presents the essential competencies for the Midwifery Practice Framework as a required ability for individuals to begin midwifery practice under the ICM midwifery qualification title²⁾. Accordingly, midwives must provide high-and low-risk maternal care. Good quality midwifery care reduces maternal and newborn mortality and morbidity in high, low, and middle-income countries (LMICs)³⁾. However, there is considerable variation in the provision of midwifery care and the content, duration, and quality of midwifery education globally. Only 15% of "skilled birth attendants" in LMICs describe themselves as midwives⁴⁾.

In 2015, the Japan Midwifery Evaluation Organization launched the clinical ladder level III certification system for improving the ability to practice midwifery, evaluating practical skills, as well as visualizing and objectivizing expertise and skills⁵⁾. In level III, midwives can practice midwifery autonomously. Moreover, those who are responsible for outpatients have the practical ability to be task-shift partners for obstetricians and work as in-hospital midwives are certified⁶⁾. For midwives to reach level III certification, it is necessary to gain the ability to practice midwifery step-by-step. Hospitals are being structured for midwives to gain practical skills, such as the unification of outpatients and wards and a short-and long-term training secondment system. However, it cannot be introduced due to various circumstances of the facility⁶⁾.

When the survey on the midwife's practical skills was outlined, numerous items covered the evaluation of the skills acquired through their basic education. Previous studies did not investigate the practical skills acquired by a new midwife after gaining some work experience; only scattered data were collected. The practical skills of midwives from the second to the fourth year after obtaining the license were investigated focusing on the delivery period. The results showed that midwifery practice of a relatively difficult routine, such as care from the hospitalization time to the first delivery stage, was considered "possible" by young midwives. However, several responses regarding high-risk delivery revealed a low confidence level, reflected in answers such as "if there is guidance," "it can be done with exercises," and "it can be understood by knowledge"⁷⁾. The midwives involved in this study worked in various settings, such as perinatal maternal and child medical centers, general hospitals, and clinics. The results concerned only the delivery period. Moreover, a second-year midwife revealed having experienced a gap between their school experience and field practice and between their abilities and those required in the field⁸⁾. These results showed that new midwives were concerned about these gaps.

Level II refers to midwives with two to four years of experience. Team medicine requires practical skills to handle high-risk delivery⁵⁾. Moreover, 82.1% of midwives with less than three years of experience working in hospitals aim to work as in-hospital midwives⁹⁾. We need to consider helping them build their careers. The study aimed to define midwives in their second to fourth year at the hospital and clarify the relationship between experience of midwifery and that of maternity care (pregnancy, delivery, puerperal period, neonatal period) of young midwives working at the Perinatal Maternal and Child Medical Center in Japan.

II. Methods

1. Study design

The observational study was based on a self-written questionnaire.

2. Study participants and time period

As of April 1, 2017, the survey facilities randomly extracted 102 of the 407 perinatal maternal and child medical centers in Japan. The research collaborators were midwives with two to four years of experience, excluding newcomers who had completed one year at the hospital. The midwifery business of the Perinatal Maternal and Child Medical Center is the care of low-and high-risk maternal and puerperal women and their families¹⁰⁾. Midwives should be able to handle these cases¹¹⁾. Moreover, the mixing of obstetric wards in general hospitals is progressing, and even midwives working in general hospitals may have few opportunities related to maternity care¹²⁾. Therefore, the subjects were midwives working at the Perinatal Maternal and Child Medical Center, who are most likely to be involved in maternity care.

3. Study items and methods

1) Survey duration and method

The survey was conducted from June to July 2017. The request for research cooperation was made to the Director of the Perinatal Maternal and Child Medical Center by the principal investigator by mailing a document. The facility that obtained the cooperation for the research responded to the consent form and the number of midwives who agreed to cooperate and respond. Then, the research cooperation request form, questionnaire, and return envelope of the number of midwives scheduled to cooperate were mailed. It was distributed to the midwives after examination by the ward nurse chief from the nursing director or the person in charge of education. Midwives answered the questionnaire and asked the principal investigator to reply directly using a return envelope.

2) Measuring tool

The subject's attributes included the number of years of midwife experience, number of delivery assistances, graduate course of midwifery education, and facility form. The item for practical skills of midwifery used the maternity care ability checklist of "new graduate midwife training guide"¹³⁾. The items in this checklist were based on the core competencies¹⁴⁾ and quality assessment criteria of midwifery care¹⁵⁾. Therefore, they were used to comprehensively confirm the maternity care ability. There were 20 investigation items in «diagnosis and care during pregnancy», 41 in «diagnosis and care during the delivery period and consideration in each stage of delivery», and 34 in «diagnosis and care in the puerperal stage and diagnosis and care in the neonatal stage». Answers included 1) "understand as knowledge," 2) "practice available," 3) "possible with guidance," and 4) "possible in four stages."

4. Analysis

The basic statistics for each variable were calculated. To examine the related factors of the achievement of practical ability of midwives, number of years of midwifery experience, and number of delivery assistances were used as explanatory variables in the delivery period. The χ^2 test or Fisher's direct probability test was performed. The residual analysis was conducted for the item wherein the significance was recognized. The ϕ coefficient was determined. SPSS Ver.27 was used for the analysis, and the significance level was set to 5%.

5. Ethical considerations

This study was conducted with the approval of the Ethics Review Committee of Sophia University (approval number 17-12). The facility asked to explain the purpose of the research, the method, safety and voluntary security, privacy, anonymity, and the protection of personal information in writing. The approval request was sent directly to head of the facility who was explained the purpose and method orally and consent form was signed. It was assumed that this was explained to the participating midwives and that consent was obtained when the questionnaire was returned.

III. Results

1. Outcome of survey form collection

The survey sheet was distributed to 242 midwives at 38 facilities. Responses were received from 102 (42.1%) midwives, of which 99 (97.1%) were valid responses.

2. Participants' attributes

The subjects' attributes are shown in Table 1. Among the midwives, 70 (70.7%) worked at the General Perinatal Maternal and Child Medical Center and 29 (29.3%) at the Regional Perinatal Maternal and Child Medical Center. Regarding experience, 27 (27.3%), 33 (33.3%), and 39 (39.4%) midwives were in their second, third, and fourth years, respectively. Regarding cases, 70 (70.7%) had worked on 1 to 49 cases, 19 (19.2%) in 5 on 0 to 99 cases, and 7 (7.1%) on 100 cases or more.

< Table 1> Target characteristics attribute (n=99)

item	n	%
Years of midwife experience		
Second year	27	27.3
Third year	33	33.3
Fourth year	39	39.4
Number of delivery assistance		
1-49	70	70.7
50-99	19	19.2
More than 100	7	7.1
No Answer	3	3.0
Midwifery Education Program		
Graduate school	15	15.2
University Major	9	9.1
University department	3	3.0
University	27	27.3
Junior College Major	8	8.1
Senshu School	36	36.4
No answer	1	1.0
Facility from		
Comprehensive Perinatal Maternal and Child Medical Center	70	70.7
Regional Perinatal Maternal and Child Medical Center	29	29.3

3. Evaluation of the practical skills of midwives in maternity care and the relationship with midwifery experience (number of delivery assistances in years and delivery period)

The survey items are the degree of achievement from the first- to second-year of experience. The analysis of maternity care ability of young midwives with two to four years of midwife experience was indicated in the results as items with a high percentage of answers to "possible."

1) «Diagnosis and care during pregnancy»

Table 2 shows the results for «diagnosis and care during pregnancy». Among the 20 midwives, 17 answered that they perform it. More than 70% answered that it was possible. However, along with "possible," the highest number of midwives responded to three items, which were "care consultation education based on the care plan of pregnant women," "assistance with examination procedures performed for pregnant," and "mental health follow-up of maternal women and families with children such as fetal abnormalities and deaths."

Items wherein the significant difference was recognized in the relation between «diagnosis and care during pregnancy» and the number of years of midwife experience are shown in Table 3. Regarding the number of years of experience, "planning a care plan for pregnant women" ($p<.019$), "care consultation education based on the care plan for pregnant women" ($p<.025$), "care for representative diseases in the perinatal period" ($p<.012$), "maternal transport care" ($p<.009$), and "mental health follow-up of maternal women and families with children such as fetal abnormalities and deaths" ($p<.004$) were "possible" in the second year of midwifery experience. The percentage of respondents who answered was significantly lower.

< Table 2 > Diagnosis and care during pregnancy (n=99)

Diagnosis and care during pregnancy	Possible		Possible with guidance		Practice available		Understand as knowledge	
	n	%	n	%	n	%	n	%
1 Understanding vital testing standards for pregnant women	85	85.9	14	14.1	0	0.0	0	0.0
2 Delivery monitoring and judgment	83	83.8	16	16.2	0	0.0	0	0.0
3 Know the birth plan	79	79.8	18	18.2	1	1.0	1	1.0
4 Understanding the needs for breastfeeding	76	76.8	20	20.2	2	2.0	1	1.0
5 Understanding of pathophysiology of perinatal representative diseases	73	73.7	24	24.2	1	1.0	1	1.0
6 Utilization of pregnancy business standard procedures for facilities	72	72.7	24	24.2	0	0.0	3	3.0
7 Planning a care plan for pregnant women	72	72.7	22	22.2	2	2.0	3	3.0
8 Implementation of health checkups for pregnant women	71	71.7	25	25.3	2	2.0	1	1.0
9 Understanding and responding to the facility's maternity care policy	68	68.7	28	28.3	0	0.0	3	3.0
10 Understanding pregnant women's needs	67	67.7	29	29.3	0	0.0	3	3.0
11 Understanding anatomy and physiology associated with pregnant women	63	63.6	34	34.3	1	1.0	1	1.0
12 Evaluation of care provided to pregnant women	59	59.6	37	37.4	1	1.0	2	2.0
13 Implementation of fetal health checkups	58	58.6	38	38.4	2	2.0	1	1.0
14 Coordination and continuation of care	58	58.6	39	39.4	0	0.0	2	2.0
15 Care, education, and consultation related to breastfeeding	48	48.5	46	46.5	2	2.0	3	3.0
16 Care consultation education based on the care plan of pregnant women	37	37.4	53	53.5	5	5.1	4	4.0
17 Care for representative diseases in the perinatal period	65	65.7	32	32.3	2	2.0	0	0.0
18 Maternal transport care	51	51.5	45	45.5	2	2.0	1	1.0
19 Assistance with examination procedures performed for pregnant women	39	39.4	51	51.5	3	3.0	6	6.1
20 Mental health follow-up of maternal women and families with children such as fetal abnormalities and deaths	38	38.4	52	52.5	5	5.1	4	4.0

< Table 3 > The relationship between pregnancy diagnosis and care and years of midwifery experience (n=99)

Item	Years of midwife experience								Φ	p-value	
	Sum		Second year		Third year		Fourth year				
	n	%	n	%	n	%	n	%			
7 Planning a care plan for pregnant women	Possible	72	72.7	14	19.4	24	33.3	34	47.2	.392	.019
	Possible with guidance	22	22.2	9	40.9	9	40.9	4	18.2		
	Practice available	2	2	2	100	0	0	0	0		
	Understand as knowledge	3	3	2	66.7	0	0	1	33.3		
16 Care consultation education based on the care plan of pregnant women	Possible	37	37.4	4	10.8	15	40.5	18	48.6	.382	.025
	Possible with guidance	53	53.5	17	32.1	18	34	18	34		
	Practice available	5	5.1	3	60	0	0	2	40		
	Understand as knowledge	4	4	3	75	0	0	1	25		
17 Care for representative diseases in the perinatal period	Possible	65	65.7	12	18.5	23	35.4	30	46.2	.361	.012
	Possible with guidance	32	32.3	15	46.9	8	25	9	28.1		
	Practice available	2	2	0	0	2	100	0	0		
	Understand as knowledge	0	0	0	0	0	0	0	0		
18 Maternal transport care	Possible	51	51.5	7	13.7	18	35.3	26	51	.416	.009
	Possible with guidance	45	45.5	19	42.2	13	28.9	13	28.9		
	Practice available	2	2	0	0	2	100	0	0		
	Understand as knowledge	1	1	1	100	0	0	0	0		
20 Mental health follow-up of maternal women and families with children such as fetal abnormalities and deaths	Possible	38	38.4	7	18.4	11	28.9	20	52.6	.440	.004
	Possible with guidance	52	52.5	15	28.8	18	34.6	19	36.5		
	Practice available	5	5.1	1	20	4	80	0	0		
	Understand as knowledge	4	4	4	100	0	0	0	0		

χ^2 test. Fisher's direct establishment test for tests containing 5 or fewer cells p < .05

2) «Diagnosis and care during delivery»

Table 4-1 and 4-2 shows the «diagnosis and care during delivery» period. The highest number of midwives answered "yes" to 36 out of 41 items. More than 70% answered "possible" to 26 items. However, the highest number of midwives answered "possible" to five items. The items were "dealing with flaccid bleeding," "stillbirth care," "understanding primary lifesaving measures in cardiopulmonary arrest in expectant and nursing mothers," "understanding of secondary lifesaving procedures in cardiopulmonary arrest in expectant and nursing mothers," and "calling obstetrics and pediatricians to determine the timing."

< Table 4-1> Diagnosis and care during the delivery period (n=99)

Ability to practice midwifery during labor	Possible		Possible with guidance		Practice available		Understand as knowledge	
	n	%	n	%	n	%	n	%
1 Description and explanation of maternal and child health handbooks	97	98.0	2	2.0	0	0.0	0	0.0
2 Description of midwifery	94	94.9	5	5.1	0	0.0	0	0.0
3 Understanding the reference values of maternal vital signs and test values	84	84.8	13	13.1	2	2.0	0	0.0
4 Description and description of birth certificate	84	84.8	7	7.1	1	1.0	7	7.1
5 Understanding the needs of maternal women	75	75.8	23	23.2	1	1.0	0	0.0
6 Predictive consideration of the delivery period's course	75	75.8	23	23.2	1	1.0	0	0.0
7 Use of facility business procedures	70	70.7	27	27.3	1	1.0	1	1.0
8 Understanding and responding to facility policies	67	67.7	30	30.3	1	1.0	1	1.0
9 Cooperation and continuation of care	66	66.7	31	31.3	2	2.0	0	0.0
10 Understanding anatomy and physiology related to labor	65	65.7	32	32.3	2	2.0	0	0.0
11 Evaluation of care provided to maternal women	61	61.6	35	35.4	2	2.0	1	1.0
12 Planning a midwifery care plan	60	60.6	35	35.4	4	4.0	0	0.0
13 Implementation of delivery assistance	58	58.6	38	38.4	3	3.0	0	0.0
14 Diagnosis of the labor's course	50	50.5	46	46.5	2	2.0	1	1.0
15 Dealing with flaccid bleeding	38	38.4	55	55.6	3	3.0	3	3.0
16 Stillbirth care	27	27.3	55	55.6	5	5.1	12	12.1
17 Understanding primary lifesaving measures in cardiopulmonary arrest in expectant and nursing mothers	15	15.2	18	18.2	47	47.5	19	19.2
18 Understanding of secondary lifesaving procedures in cardiopulmonary arrest in expectant and nursing mothers	10	10.1	22	22.2	47	47.5	20	20.2

< Table 4-2> Diagnosis and care during the delivery period (n=99)

Ability to practice midwifery during labor	Possible		Possible with guidance		Practice available		Understand as knowledge	
	n	%	n	%	n	%	n	%
19 Self-introduction	97	98.0	1	1.0	1	1.0	0	0.0
20 Orientation at the time of hospitalization	97	98.0	2	2.0	0	0.0	0	0.0
21 Explanation and implementation of the procedure to maternal women and their families	89	89.9	8	8.1	2	2.0	0	0.0
22 Sharing the course of labor with maternal women and their families	88	88.9	10	10.1	1	1.0	0	0.0
23 Appropriate communication with maternal women and their families	88	88.9	9	9.1	2	2.0	0	0.0
24 Consideration to ensure women can give birth in an easy position	87	87.9	10	10.1	2	2.0	0	0.0
25 Explanation of hospital care plan	86	86.9	11	11.1	2	2.0	0	0.0
26 Have the opportunity to discuss the birth plan	82	82.8	14	14.1	2	2.0	1	1.0
27 Working with doctors to support labor	73	73.7	24	24.2	2	2.0	0	0.0
28 Consider anxiety immediately after delivery and do not leave the mother alone	83	83.8	12	12.1	3	3.0	1	1.0
29 Consideration of support to the husband and the family	81	81.8	15	15.2	2	2.0	1	1.0
30 Consideration to help women give birth in an easy position	67	67.7	25	25.3	4	4.0	3	3.0
31 Consideration to the delivery position	64	64.6	25	25.3	5	5.1	5	5.1
32 Calling obstetrics and pediatricians to determine the timing	42	42.4	53	53.5	2	2.0	2	2.0
33 Words of reassurance to the mother, husband, and family	93	93.9	5	5.1	1	1.0	0	0.0
34 Explanation of the same room of mother and child (explaining the postpartum and neonatal rooms)	93	93.9	2	2.0	1	1.0	3	3.0
35 Environmental adjustments to make your family feel comfortable at an early stage	90	90.9	6	6.1	3	3.0	0	0.0
36 Have the baby see you as soon as possible after calving.	89	89.9	8	8.1	2	2.0	0	0.0
37 Breastfeeding directly within 30 minutes after calving	61	61.6	23	23.2	5	5.1	10	10.1
38 Courteous treatment of maternal women, family members, and other staff members	95	96.0	3	3.0	0	0.0	1	1.0
39 After using LDR (labor, delivery, recovery) room, the indoor environment is improved and organized.	93	93.9	5	5.1	0	0.0	1	1.0
40 Care in consideration of privacy and shame	92	92.9	6	6.1	0	0.0	1	1.0
41 Revision of birth plan according to discussion with the mother and family, and support for satisfactory delivery	71	71.7	24	24.2	2	2.0	2	2.0

Viewpoint of consideration in each stage of labor

Table 5-1 and 5-2 showed significant differences in the relationship between « diagnosis and care during delivery period » and years of midwife experience and number of delivery assistances. Regarding the number of years of midwife experience, the percentage of respondents who answered "possible" in the second year was significantly lower with 11 out of 41 items.

Regarding the number of delivery assistances (Table 6), the proportion of answers to "possible" was low, from 1 to 49 cases of care experience for two out of 41 items. The breakdowns were "implementation of delivery assistance" (p<.043) and "understanding primary lifesaving measures in cardiopulmonary arrest in expectant and nursing mothers" (p<.037).

< Table 5-1 > Relationship between diagnostic care and years of midwifery experience during the delivery period (n=99)

Item	Years of midwife experience								Φ	p-value	
	Sum		Second year		Third year		Fourth year				
	n	%	n	%	n	%	n	%			
6 Predictive consideration of the delivery period's course	Possible	34	34.3	4	11.8	12	35.3	18	52.9	.398	.016
	Possible with guidance	61	61.6	20	32.8	20	32.8	21	34.4		
	Practice available	3	3.0	3	100.0	0	0.0	0	0.0		
	Understand as knowledge	1	1.0	0	0.0	1	100.0	0	0.0		
9 Cooperation and continuation of care	Possible	66	66.7	13	19.7	23	34.8	30	45.5	.313	.045
	Possible with guidance	31	31.3	12	38.7	10	32.3	9	29.0		
	Practice available	2	2.0	2	100.0	0	0.0	0	0.0		
	Understand as knowledge	0	0.0	0	0.0	0	0.0	0	0.0		
10 Understanding anatomy and physiology related to labor	Possible	65	65.7	11	16.9	25	38.5	29	44.6	.366	.010
	Possible with guidance	32	32.3	14	43.8	8	25.0	10	31.3		
	Practice available	2	2.0	2	100.0	0	0.0	0	0.0		
	Understand as knowledge	0	0.0	0	0.0	0	0.0	0	0.0		
12 Planning a midwifery care plan	Possible	60	60.6	10	16.7	21	35.0	29	48.3	.411	.002
	Possible with guidance	35	35.4	13	37.1	12	34.3	10	28.6		
	Practice available	4	4.0	4	100.0	0	0.0	0	0.0		
	Understand as knowledge	0	0.0	0	0.0	0	0.0	0	0.0		
14 Diagnosis of the course of labor	Possible	50	50.5	7	14.0	20	40.0	23	46.0	.391	.019
	Possible with guidance	46	46.5	18	39.1	12	26.1	16	34.8		
	Practice available	2	2.0	2	100.0	0	0.0	0	0.0		
	Understand as knowledge	1	1.0	0	0.0	1	100.0	0	0.0		

χ² test. Fisher's direct establishment test for tests containing 5 or fewer cells p < .05

< Table 5-2 > Relationship between diagnostic care and years of midwifery experience during the delivery period (n=99)

Item	Years of midwife experience										Φ	p-value
	Sum		Second year		Third year		Fourth year		Φ	p-value		
	n	%	n	%	n	%	n	%				
16 Stillbirth care	Possible	27	27.3	3	11.1	9	33.3	15	55.6	.477	.001	
	Possible with guidance	55	55.6	12	21.8	20	36.4	23	41.8			
	Practice available	5	5.1	4	80.0	1	20.0	0	0.0			
	Understand as knowledge	12	12.1	8	66.7	3	25.0	1	8.3			
17 Understanding primary lifesaving measures in cardiopulmonary arrest in expectant and nursing mothers	Possible	15	15.2	0	0.0	4	26.7	11	73.3	.378	.028	
	Possible with guidance	18	18.2	5	27.8	8	44.4	5	27.8			
	Practice available	47	47.5	17	36.2	12	25.5	18	38.3			
	Understand as knowledge	19	19.2	5	26.3	9	47.4	5	26.3			
23 Appropriate communication with maternal women and their families	Possible	88	88.9	20	22.7	30	22.7	38	43.2	.312	.047	
	Possible with guidance	9	9.1	6	66.7	2	66.7	1	11.1			
	Practice available	2	2.0	1	50.0	1	50.0	0	0.0			
	Understand as knowledge	0	0.0	0	0.0	0	0.0	0	0.0			
29 Consideration of support to the husband and the family	Possible	81	81.8	16	19.8	28	34.6	37	45.7	.462	.002	
	Possible with guidance	15	15.2	10	66.7	3	20.0	2	13.3			
	Practice available	2	2.0	0	0.0	2	100.0	0	0.0			
	Understand as knowledge	1	1.0	1	100.0	0	0.0	0	0.0			
32 Calling obstetrics and pediatricians to determine the timing	Possible	42	42.4	5	11.9	15	35.7	22	52.4	.388	.021	
	Possible with guidance	53	53.5	21	39.6	15	28.3	17	32.1			
	Practice available	2	2.0	0	0.0	2	100.0	0	0.0			
	Understand as knowledge	2	2.0	1	50.0	1	50.0	0	0.0			
34 Explanation of the same room of mother and child (explaining the postpartum and neonatal rooms)	Possible	89	89.9	20	22.5	30	33.7	39	43.8	.356	.014	
	Possible with guidance	8	8.1	6	75.0	2	25.0	0	0.0			
	Practice available	2	2.0	1	50.0	1	50.0	0	0.0			
	Understand as knowledge	0	0.0	0	0.0	0	0.0	0	0.0			

χ^2 test. Fisher's direct establishment test for tests containing 5 or fewer cells p < .05

< Table 6 > Relationship between diagnostic care and number of delivery assistances during the delivery period (n=96)

Item	Number of delivery assistance										Φ	p-value
	Sum		1 - 49		50 - 99		more than 100					
	96	70	19	7	n	%	n	%				
13	Implementation of delivery assistance	Possible	58	60.4	37	63.8	15	25.9	6	10.3	.256	.043
		Possible with guidance	38	39.6	33	86.8	4	10.5	1	2.6		
		Practice available	0	0.0	0	0.0	0	0.0	0	0.0		
		Understand as knowledge	0	0.0	0	0.0	0	0.0	0	0.0		
17	Understanding primary lifesaving measures in cardiopulmonary arrest in expectant and nursing mothers	Possible	15	15.6	7	46.7	4	26.7	4	26.7	.374	.037
		Possible with guidance	17	17.7	15	88.2	2	11.8	0	0.0		
		Practice available	47	49.0	34	72.3	10	21.3	3	6.4		
		Understand as knowledge	17	17.7	14	82.4	3	17.6	0	0.0		

χ^2 test. Fisher's direct establishment test for tests containing 5 or fewer cells p < .05

3) «Diagnosis and care during the puerperal and neonatal periods»

Table 7-1 and 7-2 shows the «diagnosis and care during the puerperal and neonatal periods». Among 34 items, most midwives answered "possible" to 31 out of 34 items. Of those, more than 70% midwives answered "possible" in 23 categories.

< Table 7-1 > Diagnosis and care during puerperal periods and diagnosis and care in the neonatal stage (n=99)

	Diagnosis and care during puerperal and neonatal periods	Possible		Possible with guidance		Practice available		Understand as knowledge		
		n	%	n	%	n	%	n	%	
Diagnosis and care during the puerperal period	1	Understanding the reference values of vital signs and test values of postpartum women	94	94.9	4	4.0	1	1.0	0	0.0
	2	Understanding the needs of postpartum women	81	81.8	17	17.2	1	1.0	0	0.0
	3	Understanding of anatomical physiology related to maternal	81	81.8	17	17.2	1	1.0	0	0.0
	4	Use of facility business procedures	79	79.8	18	18.2	2	2.0	0	0.0
	5	Evaluation of care provided to postpartum women	79	79.8	19	19.2	1	1.0	0	0.0
	6	Understand and respond to facility policies	78	78.8	19	19.2	2	2.0	0	0.0
	7	Planning of care plan for postpartum women	77	77.8	20	20.2	2	2.0	0	0.0
	8	Implementation of health checkups for postpartum women	71	71.7	27	27.3	1	1.0	0	0.0
	9	Care, health education, and consultation based on the care plan of postpartum women	71	71.7	27	27.3	1	1.0%	0	0.0
	10	Continue care in cooperation with facilities and communities	61	61.6	36	36.	2	2.0	0	0.0
	11	Diagnosis and care of uterine recovery	78	78.8	20	20.2	1	1.0	0	0.0
	12	Assessing and addressing high-risk factors for maternal and child attachment formation and child abuse	49	49.5	45	45.5	4	4.0	1	1.0
	13	Diagnosis and response to breast troubles	46	46.5	52	52.5	1	1.0	0	0.0
	14	Early detection and support for maternity blues	44	44.4	49	49.5	3	3.0	3	3.0

< Table 7-2 > Diagnosis and care during puerperal periods and diagnosis and care in the neonatal stage (n=99)

	Diagnosis and care during puerperal and neonatal periods	Possible		Possible with guidance		Practice available		Understand as knowledge		
		n	%	n	%	n	%	n	%	
Diagnosis and care in the neonatal period	15	Check immediately after birth along with checkpoints	85	85.9	13	13.1	1	1.0	0	0.0
	16	Routine care immediately after birth near the mother	85	85.9	12	12.1	1	1.0	1	1.0
	17	Appropriate explanations and words for mothers and families	78	78.8	18	18.2	3	3.0	0	0.0
	18	Understanding the need for oxygenation	76	76.8	20	20.2	1	1.0	2	2.0
	19	Report to doctors and other midwives when a checkpoint immediately after birth is recognized	75	75.8	22	22.2	1	1.0	1	1.0
	20	Initial treatment of neonatal resuscitation when a checkpoint immediately after birth is observed	68	68.7	26	26.3	4	4.0	1	1.0
	21	Understanding the problems of high concentration oxygen administration	63	63.6	25	25.3	7	7.1	4	4.0
	22	Understanding the need for artificial respiration and sternum compression	57	57.6	20	20.2	16	16.2	6	6.1
	23	Artificial respiration and sternum compression in line with neonatal resuscitation algorithms when needed	20	20.2	41	41.4	32	32.3	6	6.1
	24	Neonatal health checkups	84	84.8	13	13.1	2	2.0	0	0.0
	25	Understanding the reference values of vital signs and test values in newborns	84	84.8	14	14.1	1	1.0	0	0.0
	26	Assessment of maternal life adaptation in newborns	77	77.8	19	19.2	3	3.0	0	0.0
	27	Utilization of business standards and procedures related to the neonatal period	76	76.8	21	21.2	2	2.0	0	0.0
	28	Providing care to newborns	76	76.8	21	21.2	1	1.0	1	1.0
	29	Planning of care plans based on neonatal health checkups	75	75.8	21	21.2	3	3.0	0	0.0
	30	Understanding the test contents required for newborns	74	74.7	19	19.2	4	4.0	2	2.0
	31	Evaluation of care provided to newborns	73	73.7	24	24.2	2	2.0	0	0.0
	32	Understanding anatomy and physiology related to newborns	67	67.7	28	28.3	3	3.0	1	1.0
	33	Continuous care in cooperation with facilities and communities	64	64.6	30	30.3	2	2.0	3	3.0
	34	Coping with emergencies and abnormalities in newborns and providing support to mothers and families	50	50.5	42	42.4	5	5.1	2	2.0

Table 8 shows items wherein significant differences were observed between « diagnosis and care during the puerperal and neonatal periods » and the number of years of midwife experience. Regarding the number of years of midwife experience, the proportion of respondents who answered "possible" in the items of "understanding the needs of postpartum women" ($p < .026$), "continue care in cooperation with facilities and communities" ($p < .047$), and "understanding the problems of high concentration oxygen administration" ($p < .032$) was significantly lower.

< Table 8 > Relationship between diagnosis and care and midwifery experience in puerperal and neonatal periods (n=99)

	Item		Years of midwife experience								Φ	p-value	
			Sum		Second year		Third year		Fourth year				
			99	27	33	39	n	%	n	%			
Puerperium period	2	Understanding the needs of postpartum women	Possible	81	81.8	18	22.2	26	32.1	37	45.7	.334	.026
			Possible with guidance	17	17.2	9	52.9	6	35.3	2	11.8		
			Practice available	1	1.0	0	0.0	1	100.0	0	0.0		
			Understand as knowledge	0	0	0	0	0	0	0	0		
	10	Continue care in cooperation with facilities and communities	Possible	61	61.6	12	19.7	22	36.1	27	44.3	.312	.047
			Possible with guidance	36	36.4	15	41.7	9	25.0	12	33.3		
			Practice available	2	2.0	0	0.0	2	100.0	0	0.0		
			Understand as knowledge	0	0	0	0	0	0	0	0		
Neonatal period	22	Understanding the problems of high concentration oxygen administration	Possible	63	63.6	13	20.6	19	30.2	31	49.2	.373	.032
			Possible with guidance	25	25.3	7	28.0	12	48.0	6	24.0		
			Practice available	7	7.1	5	71.4	1	14.3	1	14.3		
			Understand as knowledge	4	4.0	2	50.0	1	25.0	1	25.0		

χ^2 test. Fisher's direct establishment test for tests containing 5 or fewer cells $p < .05$

IV. Discussion

1. «Diagnosis and care during pregnancy»

Among the 20 items, 17 were answered with "possible" for the items «diagnosis and care during pregnancy», but some were less than 60%. Moreover, regarding consultation and education based on the care plan for pregnant women as well as responses and assistance to high-risk pregnant women, answers other than "possible" exceeded "possible." Among young midwives, the items regarding the practical skills of midwives during pregnancy can be evaluated as "possible." However, after graduating from midwifery education, there were items that could not be confidently evaluated as "possible" even after four years. The health guidance's goal for pregnant women is that level I provides general guidance to those in the normal delivery range, and level II provides general guidance at each pregnancy stage while considering their individuality⁵⁾. The midwives surveyed were those working at the General and Regional Perinatal Maternal and Child Care Center, which attends to several high-risk expectant and nursing mothers. Therefore, it is inferred that there were few opportunities to be involved in general health guidelines for pregnant women in the normal birth range. Generally, the process of acquiring the practical skills for midwives is to first gain those regarding diagnosis and care within the normal range and then handle high-risk cases and obtain assistance. Regarding the number of years of midwife experience, it was confirmed that the achievement of the items of "maternal transport care" and "mental health follow-up of maternal women and families with children such as fetal abnormalities and deaths" was "possible" in the third- and fourth-year compared to the second-year of experience. Hence, it was confirmed that the degree of achievement increased by gaining experience.

2. «Diagnosis and care during delivery»

Level III refers to the fifth to the seventh year of midwife experience⁵⁾. The certification requirement is more than 100 cases of delivery assistances⁵⁾. As a need for midwives, 82.1% with less than three years of experience working in hospitals aim to be midwives who can engage as in-hospital midwives⁹⁾. Those surveyed were between the second and fourth year of experience, but only 26 (26.3%) had assisted in more than 50 deliveries. When a young midwife aims for level III, she may not reach more than 100 cases with certification requirements. The number of deliveries decreases due to the declining birthrate. Moreover, with the increase in cesarean sections due to the increase in high-risk expectant and nursing mothers, it is difficult for young midwives to gain experience regarding delivery.

Considering the number of deliveries over the past three years, 23.5% of the General Perinatal Maternal and Child Medical Center and 26.5% of regional perinatal medical centers stated that the number of deliveries was decreasing¹²⁾. Therefore, the opportunity to experience delivery assistance is limited. Midwives not receiving the opportunity to

gain midwifery experience would be an impediment to their careers. Currently, about 40% of perinatal maternal and child medical centers have in-hospital midwifery¹²⁾. For young midwives to establish careers and move toward achieving their goals, we will use a further midwife secondment support system¹⁵⁾. It is necessary to consider the introduction of in-hospital midwifery, which is conducted by midwives for low-risk delivery by adopting a method and system wherein they provide independent care.

In the diagnosis and care during the delivery period, the young midwives generally evaluate the ability to practice midwifery for low-risk cases in the delivery period as "possible." However, less than 60% were assigned with the course of delivery and assistance. A total of 70 surveyed midwives (70.7%) had assisted in fewer than 50 deliveries.

The delivery assistance experience is necessary for the midwives to evaluate the execution of the delivery assistance and the diagnosis of the delivery progress as "possible." Regarding the number of years of midwife experience, there was a significant difference in 11 items. Delivery assistance technology reached higher by accumulating the number of service cases¹⁶⁾. In this study, the ratio of "possible" was significantly lower when the number of delivery assistances was below 50 cases.

Among the diagnosis and care in the delivery stage, items related to high-risk delivery response were high in items other than "possible." Midwives at level I experience fear and anxiety regarding the care of high-risk maternal and puerperal women¹⁷⁾. The items that they feel that they cannot respond to using their ability were for high-risk delivery, implementation of neonatal resuscitation technology, and assistance¹⁷⁾. In this study, the response of high-risk delivery was lower than that of a low-risk one. The correspondence in the high-risk delivery is accompanied by urgency. Therefore, gaining experience through practice is undeniably difficult for young midwives.

Instead of dealing with high-and low-risk maternal women, midwives are involved in all high-risk maternal diagnoses; the medical team, comprising obstetricians, provides care according to the needs and conditions of expectant and nursing mothers¹⁸⁾. To improve the practical skills of young midwives, it is necessary to reconstruct knowledge and skills as a team with the support of senior midwives and doctors. Several studies have also evaluated incumbent training programs focused on emergency maternity. The training, to varying degrees, has resulted in improved knowledge and skills and changes in clinical practice for healthcare professionals¹⁹⁻²¹⁾. Along with on-site practice, it is necessary to improve clinical reasoning through lectures, exercises, role plays, simulations, case studies, and so on, to improve midwives' skills^{12,22)}. Among the facilities, 41.2% have clinical ladders specializing in midwives, and 23% are currently creating clinical ladders, and training and participation specializing in midwives have been conducted¹²⁾. We believe that midwives can improve their practical skills through various educational methods.

3. «Diagnosis and care during the puerperal and neonatal periods»

Among the diagnosis and care items of young midwives during the puerperal and neonatal periods, more than 80% answered "possible" for care items with relatively low difficulty. However, the answers other than "possible" were high for the items related to dealing with high risk and aid.

Regarding the number of years of midwife experience, the average score of practical ability on coping with high risk and aid increased from the second to the third and fourth years of experience. In this study, young midwives working at the Perinatal Maternal and Child Medical Center and the proportion of high-risk maternal and puerperal women is high in midwifery care subjects. At present, the number of facilities that change to mixed wards due to the declining birthrate is increasing in the obstetric ward, where the experience of midwifery practice is increasing¹²⁾. Therefore, there is confusion regarding unfamiliar work with other departments²³⁾. As patients in other departments are cared for in parallel, they cannot concentrate on midwifery work, and there are few opportunities to experience midwifery practice²⁴⁾. While confirming these trends, it is necessary to develop an educational system to enable young midwives to continue their careers.

The subjects were 99 young midwives with two to four years of experience, excluding midwife experience after entering the Perinatal Maternal and Child Medical Center for one year; the sample size is thus limited. Moreover, it is considered that the attainment level of the practical skills of young midwives varies depending on the hospital. Career support measures for all young midwives should be considered. Moreover, it is necessary to focus on the practical midwifery skills of young midwives working in general hospitals and clinics regarding maternity care.

V. Conclusions

Generally, young midwives evaluated the diagnosis and care for cases requiring low-risk midwifery practical skills related to maternity care as "possible," but some items were difficult to confidently evaluate as "possible." The recognition of the achievement of midwifery practical ability was not reached with high-risk cases compared to low-risk ones. Therefore, we believe that their skills would improve as each midwife gains more experience.

There is no conflict of interest in this study.

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