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Original Article

Development of a self-assessment tool for measuring competences of obstetric nurses in rooming-in wards in China

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Abstract: Introduction: To provide high-quality nursing care, a reliable and feasible competency assessment tool is critical. Although several questionnaire-based competency assessment tools have been reported, a tool specific for obstetric nurses in rooming-in wards is lacking. Therefore, the purpose of this research is to develop a competency assessment tool for obstetric rooming-in ward nurses. Methods: A literature review was conducted to create an individual intensive interview with 14 nurse managers, educators, and primary nurses in rooming-in wards. Expert reviews (n = 15) were conducted to identify emergent themes in a Delphi fashion. A competency assessment questionnaire was then developed and tested with 246 rooming-in ward nurses in local hospitals. Results: We constructed a three-factor linear model for obstetric rooming-in nurse competency assessment. Further refinement resulted in a self-assessment questionnaire containing three first-tier, 12 second-tier, and 43 third-tier items for easy implementation. The questionnaire was reliable, contained satisfactory content, and had construct validity. Discussion: Our competency assessment tool provides a systematic, easy, and operational subjective evaluation model for nursing managers and administrators to evaluate obstetric rooming-in ward primary nurses. The application of this tool will facilitate various human resources functions, such as nurse training/education effect evaluation, and will eventually promote high-quality nursing care delivery.

Keywords: Competency assessment, competency-based education/organization & administration, educational measurement, obstetric nurse, rooming-in ward nurse

Introduction

The introduction of single-room maternity care (SRMC) in the 1990s necessitated a new approach to nursing education and practice. As part of SRMC, rooming-in is encouraged for healthy mothers and babies. Rooming-in with baby helps mother learn the infant's cues: how the infant responds when he/she is hungry or tired, or wants to be held. SRMC has several benefits. First, skin-to-skin holding supports an infant's transition after birth; second, early attachment promotes the infant's brain development; third, more frequent breastfeeding increases maternal milk supply and reduces engorgement; last, the mother's room is less distracting than the nursery noise and lights, which helps to stabilize baby's body rhythms (heart rate, body temperature, and sleep cycle). However, unique from traditional newborn care, nurses in the rooming-in ward must have greater depth of knowledge, broader range of competencies, and provide comprehensive and family-centered perinatal care for the entire in-hospital birth experience [1].

Nurse competence is a prerequisite for high-quality nursing interventions and outcomes [2]. Although instruments for evaluating nurse competence have been developed for several decades, research to define competence for assessment purposes is limited in the context of obstetric rooming-in ward nurses. Most literature concentrates on the development of competence standards in areas such as general and mental health and learning disability nursing, radiotherapy, occupational therapy, and counseling [3]. In addition, competence is a dif-

ficult concept to define and to assess [4]. Greater efforts need to be invested to develop better instruments, and to control the setting and individual variables that are inherent in these measurements [5].

China's 12th Five-Year Plan (2011-2015) stated that, by 2015, the most important goal of a high-quality nursing care is to promote the implementation of patient-centered integrated nursing care delivery in all the secondary and tertiary hospitals, to explore optimal nurse job management, and to establish sustainable quality care mechanisms. Thus, nursing job management has become an important part of China's medical reform and will replace people-centered management. Therefore, policies and decisions must be defined for using competencies in the employee recruitment and selection processes. Competencies required for the job need to be identified. The customization or construction of competency-based assessment tools and the implementation of these tools for personnel recruitment, training, and assignment are urgently needed.

Literature review

A literature review revealed that several new instruments have been developed in mainland China. Liu pointed out that a competency assessment tools should cover eight aspects: knowledge, skills and attitudes, clinical care, ethics and law, professional development, education and counseling, critical thinking, leadership, and interpersonal relationship and research ability [6]. Li [7] believes that a nurse's professional quality is comprised of diverse elements, e.g. career motivation, quality, attitudes, values, self-image, knowledge, and skills etc. These integrated qualities determine professional performance. Qu *et al.* [8] suggested that competency of nurses should include five areas: knowledge of nursing, nursing expertise, motivation, personality traits, and self-concept.

In addition, a number of competency assessment tools were reported world-wide [9, 10]. Internal consistency is typically used in primary development phases of the instrument. Content validity was typically established by expert panels [11] and construct validity was established by factor [12] or cluster analysis [13]. The literature review revealed a lack of rigorous research in competency assessment tools for obstetric rooming-in nurses.

An efficient tool to assess the competencies of rooming-in ward nurses is critical as such would help obstetric care managers in various human resource functions (i.e., recruitment/selection, performance management, career development, human resource planning, etc.). Also, this tool would define optimal competencies for practicing nurses and evaluate these competencies and training outcomes. In addition, competency-based management is more objective and can help with retaining talent. To assist with this, we developed and tested a competency assessment tool for obstetric nurses in rooming-in ward settings. Our instrument will provide guidance for nurse managers and administrators to ensure competency among obstetric rooming-in ward nursing staff and ensure safe and qualified nursing care.

Methods

A multiphase study was conducted through as follows: Phase 1, qualitative interview; Phase 2, a two-round Delphi method; and Phase 3, field testing of the competency tool. Our study was reviewed and approved by the Ethics Committee of the Second Military Medical University. Before starting every study step, the purpose of the study, voluntary participation and confidentiality were emphasized by the researcher. All participants agreed to participate and provided written consents.

Qualitative interview

A purposive sampling was adopted to select the objectives, including both the nurse managers/educators and the primary nurses. The nurse managers/educators were required to have at least 5 years' clinical working experiences and 10 years' management or education experiences related to obstetrics; whereas primary nurses were required to have experience in rooming-in clinical settings for at least 3 years. The researchers recorded interviews with the participants' permission. Interview outlines were developed for both groups, concentrating on rooming-in and post competency. Two experienced nursing management experts evaluated the outlines. The final interview outlines were formed after a revision of group meetings and pre-interviews of two nursing graduate stu-

dents. Recordings were transcribed into text by a research assistant and proofread by the researcher. With a Colaizzi's framework analysis method, the researchers reflected the nurse managers' and primary nurses' interview reports and analyzed significant statements. After coding repeated opinions, the researchers compiled the main opinions and extracted qualities required for nurse post-competencies. Telephone interviews supplemented ambiguous statements. An evaluation model draft was conducted on the basis of interview findings.

A two-round Delphi method

The Delphi method, also known as expert consult method, is an effective way to settle complex problems by group communication to avoid authority or majority submission bias [14]. In this study, the Delphi method was used to reach a consensus about the evaluation model for primary nurse's post-competency in obstetrical rooming-in wards. To rate the importance of each item, a 5-point Likert scale was used. Experts were chosen with the following criteria: (1) working in fields related to obstetrical clinical nursing, nursing management, and nursing education; (2) having an associate's degree or more; (3) possessing an intermediate title or more; (4) having at least 10 years' working experience; and (5) willing to share related experiences and feelings. A threshold of 75% consensus, an importance degree more than 3.50 and a coefficient of variation below 0.25 were used to reach a higher reliability along with a research group discussion. The first round screened items extracted from interviews via expert consultation. Experts could add, delete or modify the items to include their opinions. The second round questionnaire was formed the research group discussion and expert summary. To identify each item and have a scientific and unified index system, a second round was implemented. Before the consult, the researchers offered the questionnaires to the experts and clarified the purpose, significance, and precautions in person and experts returned the questionnaires at a given deadline.

Field testing of the competency tool

Participants

Participants considered for assessment meet the following criteria: (a) were the primary nurse in the rooming-in ward for > 1 year, (b) had a college education or more, and (c) were senior staff nurse or staff nurse. Participants not meeting all criteria were excluded. Before inclusion, all participants in the simulation provided written informed consent. Based on these criteria, 214 primary nurses from obstetric rooming-in wards of 10 hospitals were included.

Assessment setup

Before the study, participants were informed about the study purpose and were instructed to read the questionnaire carefully to avoid missing answers or misunderstanding questions. Twenty-four questionnaires with incomplete personal information or those identified as fraudulent were excluded.

Statistical analysis

Excel 2003 was used for data entry. PASW18.0 and AMOS17.0.0 statistical software were used for data analysis. Descriptive statistical, factor, correlation, and variance analyses were used. The score for each item was expressed using means and standard deviations. The reliability of the tools was evaluated with an internal consistency test. Validity was evaluated using exploratory factor (EFA), confirmatory factor (CFA), and criterion-related validity analyses (CRVA). Collect-ed complete questionnaires were randomly divided into two groups; 95 questionnaires were subjected to EFA and the other 94 questionnaires were subjected to CFA. Factors or variables related to competency were analyzed by correlation analysis and ANOVA. A correlation of 0.5-0.8 indicated a fair correlation and < 0.5 indicated a poor correlation. We considered a P-value < 0.05 to be significant.

Results

Phase 1 qualitative interview

A total number of 14 subjects participated in the interviews, including 6 nurse managers with different titles, 2 educators and 6 primary nurses. **Table 1** depicts demographic information about nurse managers (coded "M") and educators and primary nurses (coded "N"). Through semi-structured interviews, the researchers concluded three primary dimensions of the competency evaluation model: knowledge and experience, skill and capability, and characteristic and quality. The main ele-

Table 1. Demographic Characteristics of Panel Members (N = 14)

Demographic Characteristics	Value
Gender	
Female	14
Male	0
Level of education	
Master	2
Bachelor	8
College	3
Secondary nursing school	1
Major	
Nursing	9
Midwifery	5
Discipline	
Nursing management and administration	6
Nursing education	2
Nurse	6
Work experience	
Less than 10 years	3
10 to 20 years	7
No less than 20 years	4
Titles	
Director of Nurse	4
Deputy director of nurse	1
Nurse manager	2
Nursing Specialist	1
Charge nurse	4
Registered nurse	2

ments of each primary dimension are as follows.

Knowledge and experience

professional knowledge of maternal and neonatal nursing, humanistic knowledge related to maternal and neonatal nursing, work and life experiences.

Skill and capability

operating skills in obstetrical nursing, clinical thinking and clinical judgment, risk assessment and intervention, coordination and adaptability, health education and training, and interpersonal communication.

Characteristic and quality

professional quality, service consciousness, learning and development, and self-efficacy.

Phase 2 a two-round Delphi method

The initial assessment tool was constructed through two rounds of consensus discussions with topic experts in a Delphi-like fashion as described [15]. The topic experts consist of 5 experts in clinical nursing, 9 in nurse management (7 ward nurse managers, 1 department nurse manager, and 1 director of the nursing department), and 1 obstetric nurse education faculty. Demographic information of these experts is shown in **Table 2**. The items were revised through a series of discussions. Irrelevant items were discarded, and new items were added and revised, until consensus was achieved on 58 items, which included 3 first-tier dimensions, 12 second-tier dimensions, and 43 third-tier items. A 5-point Likert-like rating scale with "5-very important, 4-more important, 3-important, 2-less important and 1-not important at all" was agreed upon [16].

In addition, we applied an analytical hierarchal process (AHP) to obtain the value weighted index for each items. In brief, the Delphi experts systematically evaluated key items via comparison, two at a time, with respect to their effect on a higher-tier item. Then, the AHP was used to convert these evaluations to numerical values which were processed and compared over the assessment tool range. Finally, numerical priorities were calculated for each item. Based on AHP, a linear model was established as follows:

$$Y = 0.425X_1+0.384X_2+0.191X_3$$

$$X_1 = 0.232X_{11}+0.075X_{12}+0.118X_{13}$$

$$X_2 = 0.148X_{21}+0.047X_{22}+0.053X_{23}+0.048X_{24}+0.045X_{25}+0.043X_{26}$$

$X_3 = 0.109X_{31}+0.037X_{32}+0.044X_{33}$. (Wherein, Y represents the comprehensive evaluation score; X_1, X_2, and X_3 are scores for the 3 first-tier. For X_n, n is the score for an individual item).

The linear model has advantages when important decision elements are difficult to quantify or compare, or where communication among team members is impeded by their different specializations, terminologies, or perspectives. In our study, integrated application of AHP and Delphi helped to obtain the index weights for each item in the competency assessment tool.

Table 2. Demographic characteristics of participants in Delphi stage

Demographic Characteristics	Value[a]
Age	
30-39 years	6 (40.00)
40-49 years	7 (46.67)
50 and up	2 (13.33)
Major	
Nursing	13 (86.67)
Midwifery	2 (13.33)
Level of education	
Secondary nursing school & college	5 (33.33)
Bachelors	8 (53.33)
Masters	1 (6.67)
Doctorate	1 (6.67)
Title	
Charge nurse	8 (53.33)
Deputy director of the nurse	6 (40.00)
Nurse director	1 (6.67)
Primary nurse	5 (33.33)
Nurse manager	7 (46.67)
Position	
Nurse manager	7 (46.67)
Nurse manager of the department	1 (6.67)
Director of the nursing department	1 (6.67)
Nursing education faculty	1 (6.67)
Work experience	
10-15 years	5 (33.33)
16-20 years	4 (26.67)
21-25 years	4 (26.67)
More than 25 years	2 (13.33)
Clinical nursing related work experience	
1-5 years	0 (0)
6–10 years	3 (20)
11–15 years	10 (66.67)
More than 15 years	2 (13.33)
Nurse management related work experience	
1-5 years	2 (13.33)
6-10 years	2 (13.33)
11-15 years	3 (20.00)
More than 15 years	3 (20.00)
Nursing education related work experience	
0	14 (93.33)
1-5 years	0 (0)
5-15 years	0 (0)
> 15 years	1 (6.67)

[a]Data presented as No. (%).

A good assessment tool must be not only reliable and valid but also feasible. Based on the 3 tier, 58-item tool including the psychometric properties explored in this study, we developed a questionnaire (**Appendix 1**) that we consider more feasible for competency assessment in a clinical setting.

Phase 3 field testing of the competency tool

Of the 246 questionnaires distributed, 213 questionnaires (86.6%) were returned. Twenty-four questionnaires did not meet inclusion criteria, yielding 189 effective questionnaires (88.7%). All participants are female.

Reliability

Cronbach's alpha coefficient (α) was used to evaluate questionnaire reliability; values greater than 0.7 indicated good internal consistency. The α values for each item in the present study were between 0.60-0.83, which indicated satisfactory internal consistency of our questionnaire.

Validity

CRVA: We then investigated the correlation between our competency assessment tool and a perceived ability-job fit scale developed by Abdel-Halim [17]. The correlation coefficient values of sub-categories (knowledge/experience; skills/abilities; and characteristics/traits) and total score were 0.41, 0.76, 0.44, and 0.63, respectively ($P < 0.001$). Notably, "skills/capabilities" assessment had the highest correlation coefficient (0.76). These results confirm that our assessment tool has satisfactory criterion-related validity.

EFA: EFA is a complex, multi-step process. The Kaiser-Meyer-Olkin Test of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity were first used to evaluate whether our dataset was suitable for factor analysis. For our data, Bartlett's Test is highly significant ($\chi^2 = 1478.03$, $df = 66$; $P < 0.001$); the KMO value is 0.872, which falls into the range of "great" based on the interpretation of KMO values as characterized by Kaiser and Rice [18]. Both tests demonstrated that factor analysis is appropriate for these data and should yield distinct and reliable factors.

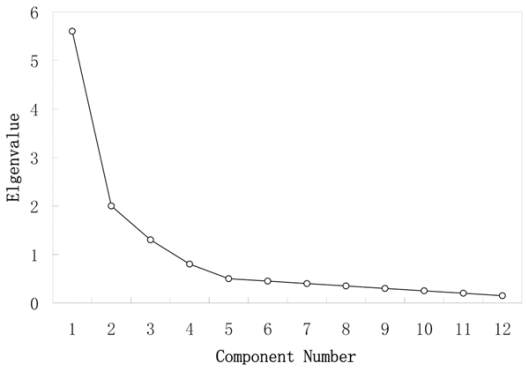

Figure 1. Scree plot.

To extract initial common themes of the assessment tool, Principle Component Analysis (PCA) and a Scree plot procedure were used. The initial factor loading matrix was obtained, followed by orthogonal rotation (Varimax). After varimax, all factors with eigenvalues > 1 were extracted, which leaves us 3 factors. In addition, the Scree plot (**Figure 1**) indicated the curve began to tail off after 3 factors before a plateau was reached. Therefore, we could justify retaining 3 factors because both eigenvalues and the Scree plot suggested the same number of factors.

The rotated component matrix (a matrix of the factor loadings for each variable onto each factor), contains the same information as the component matrix except that it is calculated after rotation. The rotation of the factor structure clarified things considerably, and helped us to confirm question content that loads onto the same factor for identification of common themes. Questions that load highly on factor 1 include (a1) mother and newborn care expertise, (a2) mother and newborn care related humanistic knowledge, and (a3) work and training experiences; their loading was between 0.62-0.78, and they explained 46.12% of total variance. The questions that load highly onto factor 2 include (b1) mother and newborn care skills, (b2) clinical judgement and critical thinking, (b3) risk and intervention capability, (b4) coordination and response capabilities, (b5) health education and training capacity, and (b6) interpersonal and communication skills; their loading was between 0.71 and 0.84 and they explained 16.64% of total variance. The questions that load highly onto factor 3 include (c1) professional quality and spirit of service, (c2) learning and development, and (c3) self-efficacy; their loading was between 0.72 and 0.81, and they explained 10% of total variance. These three factors explained 73.32% of total variance.

CFA: Based on the EFA results from first batch of 95 questionnaires, we used CFA on the second batch of 94 questionnaires. Indices including χ^2/df, P, comparative fit index (CFI), adjusted goodness of fit index (AGFI), goodness of fit index (GFI), and root mean square error of approximation (RMSEA) were analyzed to reflect the model fit. We model gave $\chi^2 = 57.397$, df = 51, P = 0.250, and χ^2/df = 1.125 which is less than 2. Because χ^2 values closer to zero indicate a better fit and smaller differences between expected and observed covariance matrices, the χ^2 test indicated an unsatisfactory model fit. However, the GFI, CFI, and AGFI values were 0.947, 0.986, and 0.901, respectively (values greater than 0.9 indicate acceptable model fit); RMSEA was 0.03 (values less than 0.06 indicate acceptable model fit). Therefore, our hypothesis of a 3 factor model was acceptable (**Figure 2**).

Correlation analysis of our assessment tool

In addition to reliability and validity analysis, correlations analysis was conducted and data show that both the total score and scores for each individual dimension from our self-assessment tool correlated well with those from the perceived ability-job fit scale and peer assessment ($P < 0.001$). In addition, the score for each individual dimension correlated well with the total score ($P < 0.01$).

Multivariate analysis

To investigate which personal factors affect competency assessment results, multivariate analysis was performed and multiple factors affecting the self-assessment, perceived ability-job fit scale, and peer assessment results were identified. These factors included age, major, having had a child, working in teaching hospital or not, and hospital rank. Other factors, such as the highest level of education, title, years of nursing, marital status and being an only child did not significantly affect competency assessment results.

Discussion

A reliable competency assessment tool can help establish and measure competencies of

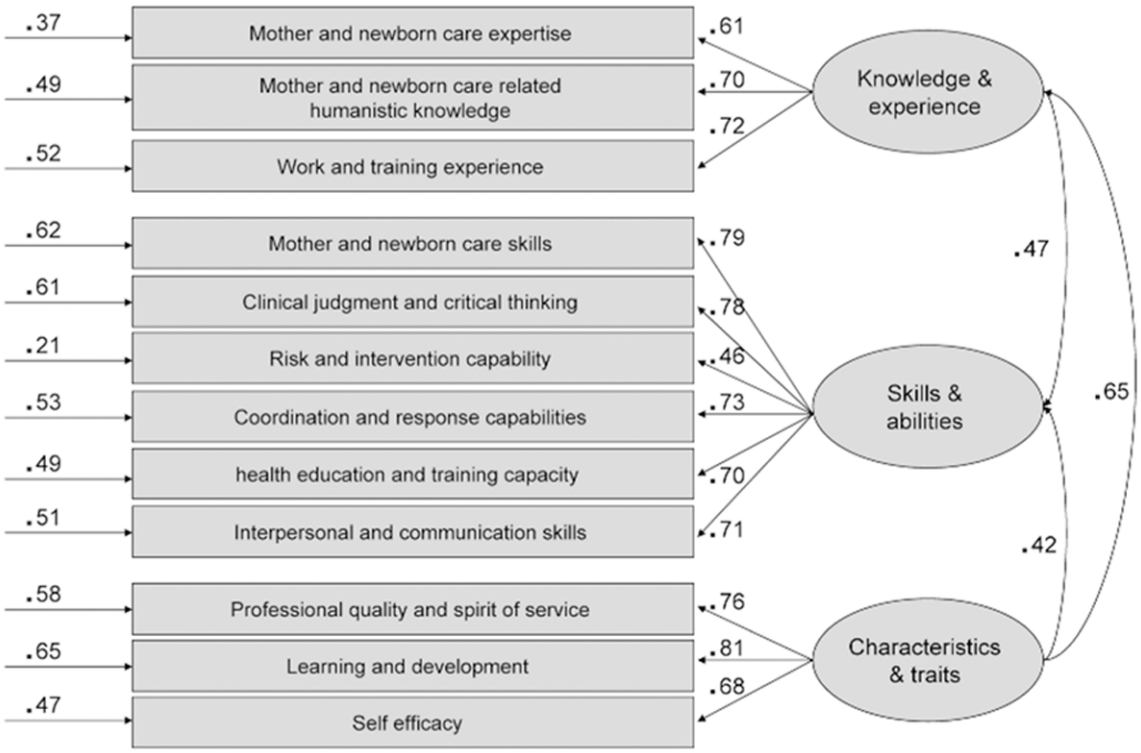

Figure 2. Three-factor model.

nurses and to evaluate outcomes of various educational programs. We define competency as having skills, knowledge, attitudes, beliefs, motives, and traits that enable successful job performance for which "successful" is understood to be in keeping with the organization's strategic functions (e.g., vision, mission, uniqueness, future-orientation, success, or survival [19]. International Confederation of Midwives (ICM) attended "Essential Competencies for Basic Midwifery Practice, 2010", in which competencies were defined as knowledge, skills, and behaviors required of the midwife for safe practice in any setting.

Here we attempted to establish China's Obstetric Rooming-in Ward Nurses Competency Assessment Tool. Based on nurse position requirements, we conducted an SSDI with senior nurse managers, educators, and primary nurses with extensive hospital nursing experiences. All key informants understood obstetric nursing and were representative of the field. Two rounds of Delphi reviews were conducted with 15 experts and AHP was applied to obtain the value weighted index for each tier of items. The established linear evaluation model was scientifically and theoretically sound and provided a solid basis for development of more practical and feasible competency assessment tool.

After in-depth interviews and a two-round Delphi consult, we developed a competency assessment framework which includes 3 first-tier dimensions, 12 second-tier dimensions, and 43 third-tier items. The first tier dimensions of this model include knowledge, skills, and traits, and the questions related to each dimension were organized similar to "Essential Competencies for Basic Midwifery Practice". During the Delphi consult, some items were deleted. For example, because no evidence proves that being an only child leads to lack of caring experience, three topic experts suggested that this be removed from the draft. Further model analysis confirmed that being an only child did not contribute to or detract from nurses' competencies. Therefore, this item was deleted. Some items were revised. For example, in the first-round Delphi, four topic experts suggested to remove "whether or not given birth to child" from the initial assessment tool but further model analysis confirmed that this item contributed significantly to competencies.

Therefore, this item was included in the final draft. The items identified for inclusion in the final draft competency tool were: knowledge/experiences (3 second-tier dimensions), skills/abilities (7 second-tier dimensions), and characteristics/traits (2 second-tier dimensions).

The competency assessment tool was tested for reliability and validity. The tool had good internal consistency. In the process of constructing the model, we conducted an extensive literature review, policies analysis, interviews with panel members, and two rounds of topic expert reviews to finalize the competency evaluation model. The tool is content valid. PCA identified three main components for the rooming-in ward nurse competency evaluation model and these agreed with the Scree plot, and explained 73.32% of the total variance. Further CFA also confirmed that our questionnaire has satisfactory construct validity. Correlation analysis (correlation coefficient 0.76) between our tool and a well-established perceived ability-job fit scale eliminated any bias caused by evaluators.

A multivariate analysis identified multiple factors that affected the self-assessment, which included age, major, given birth to child or not, type of hospital (teaching hospital or not), and hospital rank. However, Lu's group reported that the greatest education, major, rank of hospital, and training experiences did not affect midwife core competencies significantly [20]. Although participants had different job function, both studies identified age a significant contributor to core competency. The inconsistent effect of education between these two studies may also suggest that competency assessment should be based on clinical nursing practice instead of education.

Limitation

This study was performed with participants from 24 obstetric rooming-in wards in 10 hospitals in Shanghai using self-assessment and nurse manager-assessment forms. For field testing, we only recruited rooming-in ward primary nurse and conducted self-assessments. Also, we did not compare improvements in competency before and after the training courses.

Conclusion

This competency assessment tool can be used as a framework for professional development of rooming-in ward nurses to assess their skills and knowledge in the care of mother and newborn babies in a rooming-in setting. Competency assessment cannot be undertaken adequately until instruments are valid and reliable. Our work offers a competency assessment tool specially designed for obstetric rooming-in ward nurses with a sound theoretical basis that is valid a reliable. Because it is a self-assessment, it is easy to implement in a clinical setting. This will be a useful tool for nurse managers and administrators to define and quantify competent nursing practices to offer better nursing interventions and outcomes.

Clinical implications

Being the leading research in this area, this study was implemented under the background of health care reform. To meet the demand of nursing post-management pilot projects, the competency evaluation model aims at promoting scientific management of nursing human resources and objective evaluation of primary nurse competency, which improves nurses' working enthusiasm and provides a strong theoretical and scientific basis for stabilizing the nursing staff. As most of the delivery and perinatal care were done by obstetrical nurses rather than professional midwives in China, foreign capacity standards for midwives cannot be directly adopted. Therefore, this localized evaluation model is of great significance for future clinical nursing management. With comprehensive evaluation indexes including knowledge, experience, skills capacities, characteristics, and qualities, the competency model may identify qualified staff, offer continuous development for professional nurses, performance appraisal and incentives.

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Disclosure of conflict of interest

None.

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Appendix 1

Obstetric rooming-in nurses competency self-assessment tool

	Strongly agree	Agree	Neither	Disagree	Strongest disagree
1. I am very familiar with the knowledge of maternal health and normal newborn care and am able to provide quality care independently	5	4	3	2	1
2. I have mastered the knowledge of breastfeeding, and am able to answer relevant questions and provide consultation independently	5	4	3	2	1
3. I am very aware of my job responsibilities, and carry out maternal and child care according to standard operation protocols	5	4	3	2	1
4. I am familiar with, “Mother and Child Health Law,” “Medical Malpractice”, “Nurse Regulations”, “Tort Liability Act”, and can effectively apply the guidelines in my work	5	4	3	2	1
5. I am able to apply my psychological knowledge in self-regulation, and to promote mothers’ and their families’ psychological health	5	4	3	2	1
6. My knowledge of computers and literature searching can be skillfully applied at work	5	4	3	2	1
7. My training experiences are useful to fulfill my job	5	4	3	2	1
8. My work experiences are very useful to fulfill my job	5	4	3	2	1
9. Within 2 hours after delivery, I will regularly inspect the ward and know exactly what to observe and what needs more attention during care	5	4	3	2	1
10. I am always able to complete the mother’s life care, breast care, perineal care, and medication for uterine recovery independently with high quality	5	4	3	2	1
11. I have been able to independently care for postpartum hemorrhage, maternal wound infection, and neonate vomiting, rashes and etc	5	4	3	2	1
12. I am skillful in newborn bathing, massage, vaccinations, hearing screening and other operations	5	4	3	2	1
13. I have mastered the art of breastfeeding techniques and can provide guidance on breast feeding to the mother and their families independently	5	4	3	2	1
14. I am very familiar with the equipment and instruments commonly used in obstetrics, and can operate confidently	5	4	3	2	1
15. I am able to independently collect maternity health information, make appropriate postpartum rehabilitation plan and neonatal care plan	5	4	3	2	1
16. In the process of maternal and child care, I can promptly justify the feasibility of operation and observe the change of the clinical signs	5	4	3	2	1
17. In nursing practice, I am able to use evidence-based methods to obtain evidence to solve the problems in maternal and child care	5	4	3	2	1
18. I am very familiar with the characteristics of disease progression in mother and child, and can identify the progression in a timely manner	5	4	3	2	1
19. I can always evaluate the risk of the potential complications in mother and baby and take appropriate precautions	5	4	3	2	1

20. I always try to identify the causes for nurse-patient conflict and for post-treatment complications; and take effective targeting measures to solve the problems	5	4	3	2	1
21. In response to unexpected events, I can coordinate the personnel, equipment and resources; and communicate with the mother and the families about the situation	5	4	3	2	1
22. I keep calm in emergencies	5	4	3	2	1
23. I am familiar with the ward's emergency plan and first-aid equipment. In the case of emergency, I can ensure the effective initiation and implementation of the emergency plan	5	4	3	2	1
24. I independently organized training for mothers and the families on postpartum recovery, breast feeding, and newborn care and the results were satisfactory	5	4	3	2	1
25. I am capable of mentoring and supervising junior nurse, training nurse and nursing students in clinical nursing	5	4	3	2	1
26. I am able to give health advice to maternal and their families, ask them to be compliant and keep the ward in normal work order	5	4	3	2	1
27. I communicate with maternal and their families mutually, smoothly and effectively	5	4	3	2	1
28. I am very aware of my manners and never had conflict with patients because of my inappropriate manners	5	4	3	2	1
29. I always show empathy during talking. I listen carefully. I always use good communication skills to achieve the goal of effective and therapeutic communication	5	4	3	2	1
30. I keep my promises, take responsibilities, and build a harmonious relationship with mutual trust with other people	5	4	3	2	1
31. I always believe that it is my responsibility and obligation to take care of the maternal and their families, and to maintain mother and child health and safety	5	4	3	2	1
32. I always respect and safeguard the legitimate rights and interests of patients and their families	5	4	3	2	1
33. I consider myself a rigorous worker and am always compliant with the standard operation protocol and job description	5	4	3	2	1
34. I can always focus on maternal and child health and safety regardless of misunderstanding and incorporation of the maternal and their families	5	4	3	2	1
35. I always take the initiative to consider the needs of women and their families and proactively provide quality service	5	4	3	2	1
36. I can sacrifice my own interest to make the mother and their families satisfied	5	4	3	2	1
37. I am very clear about my career path and future development	5	4	3	2	1
38. I can make reasonable plans for learning and working; and make adjustments of the plan when needed	5	4	3	2	1
39. I continuously improve my professional skills and scientific research ability, and got rewarded	5	4	3	2	1
40. I can always control my emotion and behavior in the workplace	5	4	3	2	1
41. I am determined to face the challenges at work	5	4	3	2	1
42. I can always find solutions for the problems in work	5	4	3	2	1
43. In difficult times, support from supervisors and management prevents me from resigning	5	4	3	2	1

2. Perceived ability-job fit chart

Items	Strongly disagree	disagree	Neither	Agree	Strongest agree
44. I feel that my work utilizes my full abilities	1	2	3	4	5
45. I feel competent and fully able to handle my job	1	2	3	4	5
46. My job gives me a chance to do the things I feel I do best	1	2	3	4	5
47. I feel that my job and I are well matched	1	2	3	4	5
48. I feel I have adequate preparation for the job I now hold	1	2	3	4	5
49. I feel that my work is highly appreciated by pregnant women and their families	1	2	3	4	5
50. I feel that my work is highly appreciated by supervisors and management	1	2	3	4	5
51. I feel that my work is highly appreciated by my co-workers	1	2	3	4	5

3. Personal information

52. Age: _____Years
53. Highest education level: (1) □ secondary school (2) □ college (3) □ undergraduate (4) □ graduate (5) □ doctorate or professional degree
54. Titles: (1) □ nurse (2) □ senior nurse (3) □ advanced practice nurse (4) □ deputy director of nurse (5) □ nurse director
55. Major: (1) □ Nursing (2) □ Midwifery
56. Work experience in nursing: (1) □ ≤1 year (2) □ 1~3 year (3) □ 3~5 year (4) □ 6~10 year (5) □ ≥11 year
57. Have you give birth to a child: (0) □ No (1) □ Yes
58. Your marriage status: (0) □ never married (1) □ married (2) □ divorced (3) □ widow
59. Are you only child in your family?: (0) □ No (1) □ Yes
60. What type of hospital are you working in: (1) □ specialized hospital; (2) □ general hospital
61. The level of your hospital: (1) □ Grade II class B hospital (2) □ Grade II class A hospital (3) □ Grade III class B hospital (4) □ Grade III class A hospital
62. Is your hospital a teaching hospital?: (0) □ No (1) □ Yes

Other comments_____
_____
_____