
TWO MODELS OF IN-SERVICE TRAINING TO IMPROVE MIDWIFERY SKILLS: HOW WELL DO THEY WORK?

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ABSTRACT

This program evaluation compared the knowledge, confidence, and skills of Indonesian village midwives who attended an intensive in-service training with midwives who received an internship program and midwives who attended no program. The five key skills compared were prevention of infection, use of the partograph, manual removal of placenta, bimanual uterine compression, and neonatal resuscitation. Midwives from the intensive in-service that combined competency-based skill training with peer review and continuing education scored higher on the knowledge test and demonstration of the five key skills and reported managing complications better than midwives who attended no training program. Midwives from the internship program scored intermediate between the intensively trained and the untrained midwives. Overall, skill scores were 71% for midwives in the intensive program, 62% for the interns, and 51% for midwives with no in-service training. Village midwives from the intensive program scored significantly higher in the practical demonstration of manual removal of placenta, bimanual compression, and neonatal resuscitation than the interns, but the scores on infection prevention and use of the partograph were not different between the two groups. Differences in the volume of training opportunities between the two programs could be responsible for the different outcomes. *J Midwifery Womens Health* 2001;46:217-25 © 2001 by the American College of Nurse-Midwives.

THE VILLAGE MIDWIFE TRAINING PROJECT

In 1989, Indonesia launched a Safe Motherhood initiative to reduce maternal mortality. To address the strong Indonesian preference for home birth, the government planned to place a trained midwife in every village. To prepare the large number of village midwives needed, preservice training programs that included varying lengths of nursing training were developed, followed by 1 year of midwifery training. In 1993, the Indonesian Ministry of Health (MOH), under pressure to place newly graduated midwives in the villages as quickly as possible, began deploying the first of 54,600 village

midwives trained through this program. However, these young women were found to have little practical experience in conducting deliveries or managing complications (1).

To improve the knowledge and skills of the village midwives, the MotherCare/Indonesia Project worked in partnership with the Indonesia Ministry of Health and the Indonesian Midwifery organization (IBI) from 1995 to 1999. Two in-service training programs were implemented in South Kalimantan province. Technical assistance from the American College of Nurse-Midwives (ACNM) to develop and implement the training was provided through MotherCare in the form of a long-term resident advisor, a training advisor based in the main project office in the United States, and several consultants. To supplement the ACNM's *Life-Saving Skills for Midwives* (LSS) Manual (2), which addresses the management of obstetric complications, MotherCare and ACNM staff and consultants developed another two-volume manual, *Healthy Mother Healthy Newborn Care* (3), to reinforce the normal aspects of antenatal, labor and delivery, and postpartum care, and to focus on the management of postpartum hemorrhage and neonatal asphyxia. The new manual was developed after a training needs assessment conducted in 1996 indicated that many village midwives conducted too few deliveries per month to maintain the more complex skills included in the LSS manual.

MotherCare began the in-service training in three districts in the South Kalimantan province (Hulu Sungai Selatan, Banjar, and Barito Kuala), identified by the MOH. Life Saving Skills (LSS) training centers in these districts were designated on the basis of their ability to support competency-based training, particularly the availability of adequate clinical experiences for each participant (at least 15 deliveries per trainee). Each hospital underwent a week of site preparation, during which the training program was introduced and clinical protocols were revised as needed, after the agreement of all relevant staff. It was very important for the protocols used in the training centers to be consistent with those in the training manuals. In addition, procedures for use of

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the partograph and infection prevention were established. A "Mini Life Saving Skills" training was also conducted for all staff on the antenatal, labor and delivery, and postpartum wards at each center to ensure that the whole facility was using the same skills and techniques that would be taught to the trainees.

Five midwives were chosen from each center to be trained as "LSS trainers." They received a 2-week intensive "Training of Trainers" (TOT) clinical skills course and a 1-week TOT for teaching and training skills in March–April 1996. All training materials were translated into Indonesian, and the translators served as interpreters for the ACNM staff members during the TOT. Three additional midwives were included in the TOT at the third training site, resulting in a total of 18 LSS trainers working at the three centers.

The 11-day trainings of village midwives were con-

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ducted from November 1996 through September 1998. A total of 284 village midwives from the three districts were trained. By March 1999, 52% of the village midwives in the three MotherCare districts had received LSS training, including 93% from Hulu Sungai Selatan, 39% from Barito-Kuala, and 35% from Banjar (4).

The village midwife training was complemented by other supporting activities. In September 1997, two 2-day mini-LSS workshops were conducted for doctors and midwives who had not received LSS training at their district hospitals and health centers in the three "MotherCare" districts. An overview of LSS training with special emphasis on infant resuscitation, infection prevention, use of the partograph, and control of postpartum hemorrhage was presented. In addition, Peer Review (PR) and Continuing Education (CE) Programs were organized for the trained village midwives. These were developed jointly by MotherCare and the Indonesian midwifery organization (IBI) and were managed by IBI.

Health facility midwives in the three districts were trained in LSS and Peer Review. Twice a year, they were expected to visit each other and the village midwives who received the in-service training. Through these visits, the clinical practice of each midwife was reviewed on the basis of the standards and protocols taught during the training. Midwives also received additional support and information as needed. The results of the Peer Reviews were discussed in semiannual district meetings and used to plan future continuing education courses. Continuing education was conducted by specially trained midwives at regularly scheduled IBI chapter meetings. The Indonesian MotherCare staff, based in South Kalimantan, monitored and provided support to these activities as needed.

THE LSS INTERNSHIP PROGRAM

In mid-1997, the provincial MOH in South Kalimantan asked the MotherCare Project to establish LSS training centers in the other six districts in South Kalimantan Province, so that more midwives could be trained. However, the volume of deliveries in these "non-MotherCare" districts was too low for any of their hospitals to be designated as an LSS training center; none could provide at least 15 births per trainee. Therefore, MotherCare and ACNM worked with the MOH to develop an LSS Internship Program at these six hospitals. The internship program allowed midwives to work in the hospital under the guidance of a clinical instructor to fill gaps in knowledge and skills. The recommended time was 1 month, but in reality, the time interval was defined by the hospital. The preparation of the hospitals to be LSS internship sites involved procurement of new equipment and supplies, orientation of hospital directors and district-level MOH staff to LSS training, and LSS train-

TABLE 1
Content of Two In-Service Training Programs for Midwifery Skills, South Kalimantan, Indonesia (5)

<i>Life Saving Skills Training, Peer Review, and Continuing Education Program</i>	<i>Internship</i>
1. Problem solving	1. Infection prevention*
2. Infection prevention	2. Normal labor and delivery care (stage I, II, and III and use of partograph)
3. Normal antenatal care	3. Infant resuscitation
4. Normal labor and delivery care (stage I, II, and III and use of partograph)	4. Bimanual compression for management of hemorrhage
5. Normal postpartum care for mother and baby	5. Manual removal of placenta
6. Infant resuscitation	
7. Bimanual compression for management of hemorrhage	
8. Manual removal of placenta	
9. Working with community	
10. Using IEC materials	

Note: Skills included in the evaluation are in bold typeface.

ing of four midwife “clinical instructors” from each hospital at one of the established training centers in October 1997. The district hospitals in which the internship programs were established each received mini-LSS workshops, site preparations, and an orientation to the LSS Internship program. The MotherCare Long-Term Advisor, an ACNM midwife intern, and the LSS trainers from the three training centers formed teams to visit each district hospital for 1 week to conduct these activities in June through August 1998.

Table 1 displays the content of the two in-service training programs: intensive in-service and internship.

THE PROGRAM EVALUATION

In 1999, the MotherCare-ACNM training advisor and the long-term resident advisor designed and conducted a program evaluation to compare the contribution of the two training programs to improving the skills of the midwives. The Indonesian MOH wanted to know whether the shorter, less-intensive internship could replace the longer and more costly intensive in-service training program followed by peer review and continuing education (LSS & PR/CE). This program evaluation was conducted in August 1999.

METHODS

Village midwives who received different levels of in-service training and support were compared. Village midwives from the “MotherCare” districts of Banjar, Barito Kuala, and HSS who had attended LSS training were randomly selected from training participant lists and invited to participate in the evaluation. Village midwives from three “non-MotherCare” districts (Tanah Laut, Hulu Sungai Tengah, and Tapin) who had partici-

pated in the internship program or who had no in-service training received letters from the Ministry of Health requesting their participation.

Because no baseline performance assessment of the village midwives had been conducted, the village midwives who had not participated in either in-service training program were designated as the comparison group. Their knowledge and skills were assumed to represent those of village midwives before the trainings.

Power analysis was performed, and it was determined that a sample size of 30 in each group was needed to detect an increase from 10 to 45% in the percentage of midwives who scored “competent” on the performance of the essential skills ($P \leq .05$, 80% power, and 95% two-tailed confidence level).

Evaluation Tools

Three evaluation tools were created to measure changes in the village midwives’ knowledge, confidence, and skills.

- *The knowledge test* consisted of 26 questions, each dealing with a case scenario that tested the application of knowledge. Questions focused on five areas: infection prevention, antenatal care, care during labor and delivery, postpartum care, and family planning. The test took 30–40 minutes to complete.
- *The “level of confidence in skills” rating* was designed to quantify the midwife’s self-reported confidence level in 50 specific maternal and neonatal skills. The midwives were asked to answer each question with a “yes” (2 points), “a little” (1 point), or “no” (0 points). The categories of skills included were infection prevention, interpersonal communication and counseling, antenatal care, intrapartum care, newborn care, and

postpartum care. Completion of the self-reported confidence checklist took 10–15 minutes.

- *Skills assessments* used case scenarios and clinical simulations to assess the performance of five essential skills that midwives needed to learn to reduce maternal and perinatal mortality. The five skills were prevention of infection during delivery (including preparation of equipment for next delivery), use of the partograph, manual removal of the placenta, bimanual uterine compression, and neonatal resuscitation. Competency in performing these skills was determined to be low during the training needs assessment. The skills assessments were carried out by using checklists adapted from the training materials. Each action in the skill checklist was assigned a value of 2 points if done correctly, 1 point if done partially correctly or after prompting, and 0 points if done incorrectly or not done at all. The partograph case study included 10 observations that were plotted four times and, thus, were assessed four times on the skill checklist. This was taken into consideration when allocating points. Questions that assessed participants' ability to interpret the partograph and to suggest management were also included. The skills assessment was the longest component of the evaluation and took approximately 1.75 hours per participant.

In addition to the quantitative evaluation tools, each midwife was interviewed individually and asked to tell her "story" about a complication that she had managed. An interview guide was used to assist with data collection. These data added a qualitative component to the results and were used to gain a better understanding of the complications that these midwives encountered and how they managed them. Completion of the one-on-one interviews took 10–15 minutes.

Evaluation Process

Evaluation of the village midwives was conducted at a central site in South Kalimantan Province over a 5-day period. Senior Indonesian midwives from the IBI National Office and the Midwifery Academy in Jakarta who had been trained in LSS through another project served as evaluators. The evaluators were blinded to the participants' training status. Five stations were set up for the skills assessments, and the complications interview was conducted at a sixth station. Information from the complications interview was translated from Indonesian and analyzed by one of the authors (DB). To reduce interobserver variations in the skills scores, each midwife evaluator remained at the same skill station throughout the evaluation.

TABLE 2
Number of Deliveries Reported by Midwives During 2 Months Before the Training Evaluation, South Kalimantan Indonesia, August 1999

	<i>LSS & PR/CE*</i> (N = 33)	<i>Interns</i> (N = 28)	<i>Untrained</i> (N = 47)
Number of deliveries (June and July 1999)			
Mean (SD)	5.5 (5.6)	3.3 (1.3)	3.6 (3.5)
None	1	0	4
1–5	19	26	36
6–10	11	2	5
11–15	1		1
>15	1		1

* LSS & PR/CE = Life Saving Skills Training, Peer Review, and Continuing Education Program.

Analysis

Mean percent scores were calculated for the knowledge test, level of confidence rating, and demonstration of each clinical skill. An overall score for the level of confidence was obtained by adding points for each skill on the list. An overall score for the clinical skill assessments was obtained by averaging the percent mean score for each of the five skills, hence giving each skill equal weight in the overall score. Because the mean scores were not normally distributed, a nonparametric statistic (the Kruskal-Wallis test), which does not require a assumption of normal distribution, was used to determine statistically significant differences. Statistical significance was set at $P < .05$.

Mean scores alone provide information about differences between the programs, but they do not give information about the midwives' competency at performing required skills. To evaluate the in-service training programs' contribution to increasing competency in essential midwifery skills, a mean percent score of at least 70% was chosen to represent competency for the five skill assessments. The percentage of providers who achieved a score of at least 70% was used to measure differences between the programs. Statistical significance was again set at $P < .05$.

RESULTS

Description of Participants

Table 2 contains the number of village midwives who participated in the evaluation, their training status, and the number of women for whom the midwives reported providing care around the time of delivery in the 2 months before the evaluation (June and July 1999).

The mean number of deliveries was highest for the trained village midwives (5.5), whereas the interns and

TABLE 3
Percent Mean Knowledge Scores and Level of Confidence Scores for Village Midwives with and Without Intensive In-Service Training, South Kalimantan Indonesia, August 1999

	Total Points	LSS & PR/CE* (N = 33) (%)	Untrained (N = 47) (%)	P Value
Knowledge test	48	65	59	0.006
Infection prevention	6	86	73	0.01
Antenatal	13	59	49	0.003
Intrapartum	12	63	62	0.72
Postpartum	12	65	60	0.21
Family planning	5	64	53	0.03
Confidence level	100	62	57	0.14
Infection prevention	6	64	55	0.01
Counseling	12	69	66	0.50
Antenatal	24	64	61	0.48
Intrapartum	24	58	51	0.03
Newborn	12	63	59	0.57
Postpartum	22	58	54	0.49

* LSS & PR/CE = Life Saving Skills Training, Peer Review, and Continuing Education Program.

village midwives who did not receive in-service training reported an average of 3.3 and 3.6 deliveries, respectively. Very few village midwives reported no deliveries in the 2-month period before the evaluation.

Midwifery Knowledge, Confidence and Skills

Village midwives with and without LSS and PR/CE. Table 3 presents the knowledge, confidence, and skills scores of the LSS & PR/CE midwives compared with the midwives with no in-service training. Overall, LSS & PR/CE village midwives scored significantly higher in the knowledge test. Statistically significant differences were found in knowledge scores for infection prevention, antenatal care, and family planning. No differences in overall confidence levels were detected between LSS & PR/CE village midwives and village midwives with no in-service training. However, when skills categories were compared, LSS & PR/CE village midwives were more confident about skills related to infection prevention and intrapartum care.

Figure 1 presents the mean percent skill scores for the three groups of midwives. LSS & PR/CE village midwives scored significantly higher overall and on all five skills assessments compared with village midwives with no in-service training. The differences in percent means scores ranged from 10 to 15% for infection prevention, bimanual compression, and partograph to 34–35% for manual removal of placenta and neonatal resuscitation.

Figure 2 compares the competency scores on the five essential skills among the three groups of midwives. Compared with midwives with no in-service training, a significantly higher percentage of LSS & PR/CE mid-

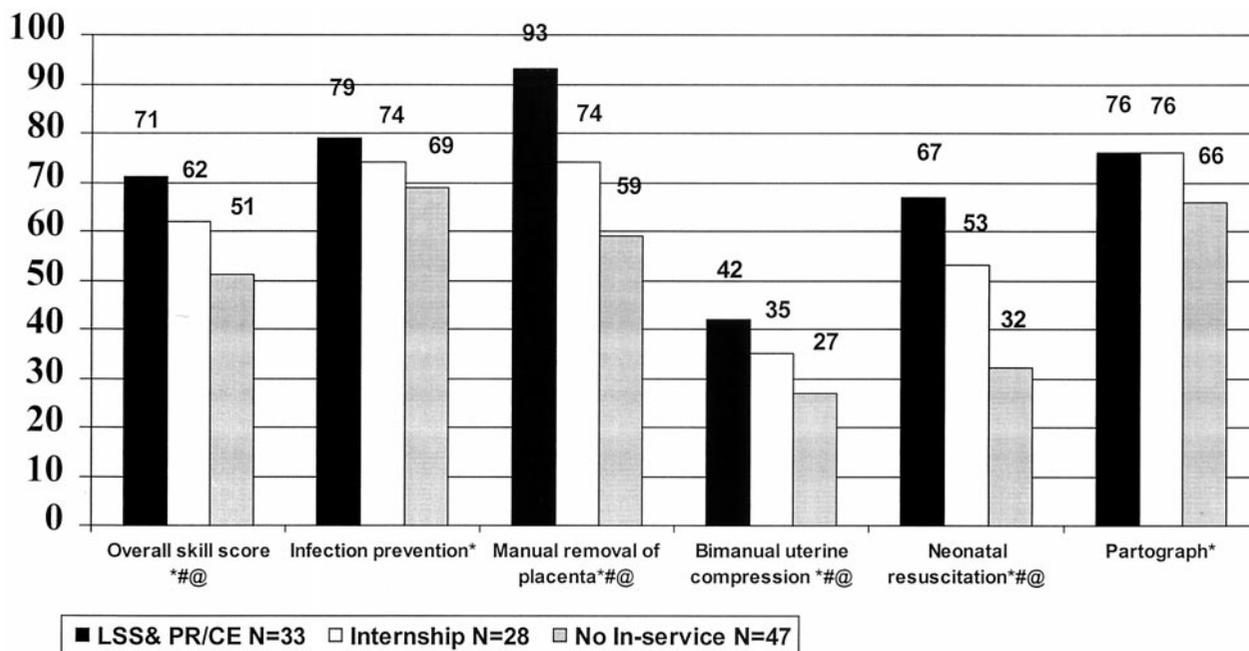


FIGURE 1

Mean percent skill score for village midwives by participation in in-service training program, South Kalimantan, Indonesia August 1999. *p < 0.001-LSS & PR/CE vs No In-service. #p < 0.006-Intens vs No In-service. @p < 0.009-LSS & PR/CE vs Intens.

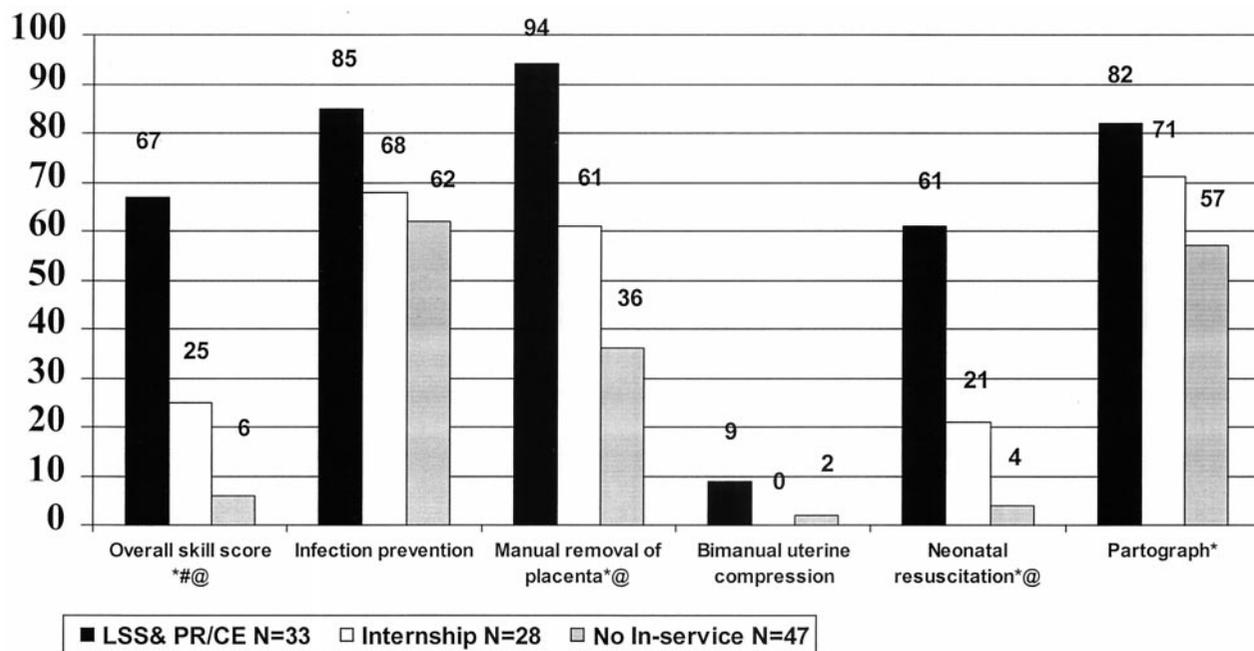


FIGURE 2

Percentage of village midwives "competent" (mean score at least 70%) by participation in in-service training program, South Kalimantan, Indonesia August 1999. * $p < 0.05$ -LSS & PR/CE vs No In-service. # $p < 0.05$ -Interns vs No In-service. @ $p < 0.05$ -LSS & PR/CE vs Interns.

wives achieved competency (eg, scored $\geq 70\%$) on manual removal of placenta, neonatal resuscitation, and use of the partograph. Only 6% of the midwives with no in-service training had an overall skill score of "competent," compared to 67% of LSS & PR/CE village midwives.

TABLE 4
Percent Mean Knowledge Scores and Level of Confidence Scores for Village Midwives with and Without Internship In-Service Training, South Kalimantan, Indonesia, August 1999

	Total Points	Internship (N = 28) (%)	Untrained (N = 47) (%)	P Value
Knowledge test	48	62	59	0.12
Infection prevention	6	79	73	0.22
Antenatal	13	52	49	0.26
Intrapartum	12	68	62	0.18
Postpartum	12	64	60	0.56
Family planning	5	51	53	0.73
Confidence level	100	65	57	0.12
Infection prevention	6	70	55	0.004
Counseling	12	78	66	0.02
Antenatal	24	69	61	0.24
Intrapartum	24	57	51	0.25
Newborn	12	69	59	0.07
Postpartum	22	60	54	0.28

Village midwives with and without internship. Table 4 presents the knowledge, confidence, and skills scores of the internship midwives compared with the midwives with no in-service training. There were no differences in the knowledge scores; however, the internship midwives were more confident in skills related to infection prevention and counseling.

However, differences were observed in the skill assessment. Compared with the village midwives with no in-service training, the internship village midwives scored significantly higher on overall skill assessment and on manual removal of the placenta, bimanual uterine compression, and neonatal resuscitation. See Figure 1. Differences in percent means scores ranged from 7 to 19%. A higher percentage of internship village midwives achieved an overall skill score of "competent," but no differences were detected in the competency scores for the individual skills. See Figure 2.

Village midwives with LSS and PR/CE versus internship. Table 5 reports the knowledge and confidence scores for the LSS & PR/CE midwives versus the internship midwives. The overall knowledge test mean score and the mean scores for most content areas did not differ between the two groups. The only area in which LSS & PR/CE midwives scored significantly higher in knowledge was family planning. The confidence level of

TABLE 5
Percent Mean Knowledge Scores and Level of
Confidence Scores for Village Midwives, South
Kalimantan, Indonesia, August 1999

	Total Points	LSS & PR/CE* (N = 33) (%)	Interns (N = 28) (%)	P Value
Knowledge test	48	65	62	0.24
Infection prevention	6	86	79	0.37
Antenatal	13	59	52	0.15
Intrapartum	12	63	68	0.34
Postpartum	12	65	64	0.50
Family planning	5	64	51	0.01
Confidence level	100	62	65	0.51
Infection prevention	6	64	70	0.38
Counseling	12	69	78	0.07
Antenatal	24	64	69	0.55
Intrapartum	24	58	57	0.45
Newborn	12	63	69	0.32
Postpartum	22	58	60	0.77

*LSS & PR/CE = Life Saving Skills Training, Peer Review, and Continuing Education Program.

the interns did not differ significantly from that of the LSS & PR/CE village midwives.

The overall skills score for the LSS & PR/CE village midwives was significantly higher than that of internship village midwives. See Figure 1. LSS & PR/CE village midwives scored significantly higher than interns on skills assessments for manual removal of placenta, bimanual uterine compression, and neonatal resuscitation. The two groups had similar skills scores for infection prevention and use of the partograph.

Significantly more LSS & PR/CE village midwives scored "competent" in overall skills and in manual removal of placenta and neonatal resuscitation. See Figure 2. No difference was detected between the percentage of LSS & PR/CE and internship village midwives who scored "competent" in infection prevention, bimanual uterine compression, and use of the partograph.

Case Stories

More than 90% of the village midwives in each group were able to describe a complicated case. In approximately half of the cases, the midwife reported being called in to assist a traditional birth attendant, usually after the baby was delivered. The most frequently described complications were retained placenta (23 cases), newborn asphyxia (20 cases), postpartum hemorrhage (13 cases), and prolonged labor (12 cases). Both LSS & PR/CE and village midwives with no in-service training reported cases of anemia, which were usually associated with uterine atony or retained placenta.

In recounting their management of complicated cases, LSS & PR/CE and internship village midwives described providing more consistent, appropriate management and feeling more confident than village midwives with no in-service training. LSS & PR/CE and internship village midwives said they succeeded in performing manual removal of the placenta more frequently than village midwives with no in-service training. Village midwives with no in-service training reported keeping mothers at home longer before referral. They also reported using more unsafe practices [(eg, oxytocin before delivery and failure to refer mothers to hospital with a variety of complications, including prolonged active phase labor, severe anemia (hemoglobin of 4 g) with antenatal bleeding (placenta previa), and twin pregnancy with hypertension)].

DISCUSSION

In-service training has been the traditional strategy to improve the performance of health care providers. As awareness of the poor quality of obstetric and midwifery care in many developing countries has increased (5,6), attention has focused on improving midwifery skills for those who provide maternity care. Two different models of in-service training were developed in South Kalimantan province, adapted to the number of deliveries available at local training sites. Few evaluations of such programs are available, and the current evaluation may be the first effort to quantify and compare in-service programs designed to improve and maintain midwifery skills.

In this program evaluation, village midwives who participated in a competency-based skills training program with peer review and continuing education (LSS & PR/CE) scored higher on a knowledge test and all five skills assessments and reported managing complications better than midwives who did not participate in a formal in-service training program. In addition, significantly more LSS & PR/CE midwives scored "competent" in knowledge and in demonstrating the essential skills of manual removal of placenta, neonatal resuscitation, and use of the partograph.

LSS & PR/CE midwives also scored significantly higher in the skills assessment of manual removal of placenta, bimanual compression, and neonatal resuscitation than the internship midwives. The more intensive program may have been more effective in teaching essential lifesaving skills because of the higher volume of deliveries in the LSS training sites compared with the district hospitals. Midwives in the intensive training program had more opportunities to manage complications and emergencies than the internship midwives. The similar scores achieved by LSS & PR/CE and internship midwives on infection prevention and use of the partograph may indicate that these two skills, which are used

with all laboring women, can be effectively taught in settings with lower patient volume.

It was disappointing that none of the programs increased the competency scores for certain midwifery skills to acceptable levels. Even after training, fewer than 10% of the midwives scored "competent" in bimanual uterine compression to control postpartum hemorrhage due to uterine atony. Competence in neonatal resuscitation was slightly higher, but competency levels among the interns remained below 22%. However, compared with midwives with no in-service training, midwives from both training programs were more likely to achieve competency on manual removal of placenta, a skill that is used frequently and for which a certain level of competency already existed. The highest percentage of midwives who achieved competency were the LSS & PR/CE midwives (94%), followed by the internship midwives (61%), and finally the midwives without in-service training (36%).

The inability to draw strong conclusions from this program evaluation is due to several limitations in its design and implementation. First, the program evaluation was planned after the training was implemented. As a result, no quantitative baseline skill levels for the midwives had been assessed. Village midwives who did not receive either in-service training program were used as a baseline comparison group. However, these midwives did have contact with the programs' content. During the evaluation sessions, many midwives with no in-service training were observed reading the training manuals while waiting to be assessed. If this reading improved their knowledge, the differences in mean scores between participants and nonparticipants may have underestimated the programs' impact. Another limitation was that the contribution of peer review and continuing education over and above that of LSS training could not be estimated. This was because no village midwives received LSS training alone, because a package of interventions was implemented in the three MotherCare districts.

Ideally, the program evaluation would have begun with baseline assessments and then compared random samples of midwives from the two training groups as they applied the skills taught in real-life clinical settings. Unfortunately, it was not possible to achieve this ideal. An alternative design was chosen by using case scenarios and simulations to assess the midwives' ability to carry out the skills taught. The evaluators reasoned that if a midwife could demonstrate a skill and explain its application during a simulation, she would be likely to apply it effectively in a real clinical situation. For all its limitations, this design allowed the evaluation to go beyond an assessment of a change in knowledge, which is the usual benchmark in international training evaluations.

Selection bias was another potential limitation of this evaluation and might have occurred in several ways.

Although the evaluation was designed to randomly select participants from each of the three groups, it is unclear how randomly the final participants were chosen. Self-selection and logistical difficulties (eg, transportation problems) made it very difficult to achieve random selection under field conditions.

It is difficult to know how much of the difference in skill scores between the LSS & PR/CE midwives and the internship midwives can be attributed to differences in their training programs. Even with true random sampling, selection bias could have occurred in the original selection of participants, or because of differences in skills levels among village midwives in different districts, due to volume of clinical experience or other factors. The midwives' reports of their deliveries during the 2 months before the evaluation revealed that the LSS & PR/CE midwives attended more births than the interns and the village midwives with no in-service training. The higher number of births reported by the LSS & PR/CE midwives may reflect greater confidence in their ability due to the training or may be due to an overall higher volume of deliveries in the three districts in which they practiced.

How to quantify competency in a skill remains a perplexing question for program evaluators. How well does a simulated skills assessment correlate with a midwife's ability to manage a real-life complication? In this evaluation, a score of 70% was chosen to define a level of knowledge or skill that would be considered competent or generally safe. Although this cutoff can be debated, it was chosen after the evaluations were completed and was unknown to the Indonesian midwife evaluators who assigned the scores. This contrasts favorably to educational program evaluations in which the passing score is known by teachers and students at the onset and may influence the grade assigned. In future evaluations, a more concise skill checklist that includes only the essential actions in the required order might provide more objective information. However, defining these essential components would still be likely to generate debate.

Despite its limitations, the evaluation methodology used had several strengths. First, scoring bias was reduced by blinding the evaluators to the training status of midwives and by keeping the same midwife evaluator at the skill assessment station. Second, a series of tools to assess knowledge and application of skills was used. Although several of the tools relied on self-report, the information obtained with them may fill some gaps left by the more quantitative tools. Because most of these midwives work in villages far removed from easy access to health facility resources, it is important that they feel confident and empowered to provide immediate management of common complications, to reduce maternal and neonatal mortality. Third, the descriptions of compli-

cated cases provided important information that was not available from a knowledge test or skills assessment. These stories described the types of complications the village midwives encountered, their ability and comfort level in managing them, and additional factors that influenced their ability to provide the needed care. However, the limitations of using one case to assess application of skills are recognized.

CONCLUSION

Indonesia took a bold step to address its high maternal mortality ratio. The government listened to women and respected their desire to remain at home for delivery. The MOH endeavored to make home delivery safer by increasing access to professional midwives at the village level.

The Indonesian government and the professional midwifery association recognized that the rapid deployment of village midwives trained under their Safe Motherhood Initiative did not allow them to fully develop their midwifery skills. The MotherCare and ACNM in-service programs were built on previous experience gained during family planning training in Indonesia and were developed and implemented in partnership with local midwives, medical staff, health officials, and the Indonesian midwifery association. There was an explicit goal that the activities would continue after the MotherCare project ended. In the same spirit, the internship program was created to provide in-service training for village midwives in districts that could not support full training centers.

This evaluation attempted to provide information to the Indonesian Ministry of Health about the effectiveness of two approaches to improve the quality of midwifery care. Although the evaluation was not definitive, it did provide enough information to support the provincial level of the MOH in their decision to continue the two programs (with some modifications), after the completion of the MotherCare project in South Kalimantan. The Peer Review and Continuing Education programs are also being continued by the professional midwifery association (IBI) supported by their own fund-raising efforts and the provincial MOH. Other provinces in Indonesia are also adapting these models.

However, this evaluation also highlighted the limitations of short in-service courses in preparing midwives to become fully competent in the essential skills needed to provide care for women during delivery. The midwife evaluators, who were chosen from among Indonesian midwifery leaders and educators, were able to see first-hand the strengths and limitations of village midwives with and without additional in-service training. Hopefully, this experience will provide a strong motivation to incorporate basic and essential skills into midwifery training programs and to make competency in these skills

a requirement for graduation. More competent new graduate midwives would provide safer care for mothers and babies.

When the MotherCare team presented the evaluation results to the LSS trainers from the three training centers, further discussion and problem-solving occurred. These midwives have greatly increased their own self-confidence due to their experiences as LSS trainers, peer reviewers and continuing educators, and they are now more assertive in discussing problems and potential solutions with the general physicians and obstetricians in their province, approaching them as colleagues rather than as subordinates. It is difficult to quantify the heightened confidence and status of the midwife-trainers and their increasing ability to dialogue with health planners and administrators about midwifery training needs. Yet in the long run, this legacy of empowered midwife teachers and trainers may well prove to be the MotherCare/Indonesia Project's most important contribution to improving maternal and newborn health.

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