1. Background

- Four million babies die each year worldwide during the first 4 weeks of life, 99% in low and middle income countries
- Essential Newborn Care (ENC), a component of integrated management of pregnancy and child birth, provides evidence-based recommendations for the management of pregnancy, childbirth and postpartum and care during the first week of life (World Health Organization)
- Few studies have been done to evaluate the effectiveness of the ENC training on knowledge and skills

2. Overview

- This study was conducted in Zambia, a site of the Global Network for Women’s and Children’s Health Research, a multi-site network in the developing world
- In Zambia, we trained nurses in Essential Newborn Care (ENC) during the initial phase of a trial evaluating the effectiveness of training clinic nurse midwives in neonatal resuscitation
- The goal was to develop an effective tool to evaluate the ENC training course

3. Methods

Following active baseline data collection period, certified WHO trainers conducted training in an Essential Newborn Care course (5-day didactic and hands-on course) for 115 nurse midwives from 16 clinics in Lusaka and Ndola, Zambia.

4. Pre-post Evaluations

- Evaluations were done immediately before and one-day after the ENC course
- Written evaluation (22 written questions)
- Performance evaluation observation using mannequin (14 items)
- In addition, a 6 month follow-up survey in Lusaka

Development of the Instruments (Written and Performance Evaluations)

- Content specification, with sub-scales, based on ENC course
- Team of physicians, nurses and psychologist developed consensus of the content
- Evaluations piloted prior to overall initiation (n=15)
- Responses entered in data entry system and analyzed at independent data center

5. Analyses Methods (Written Evaluation)

- Descriptive analyses: the percentage of correct responses and distribution of responses. Alpha coefficients assessed the internal consistency of the test.
- Confirmatory factor analyses: confirmatory factor analyses determined if the items on the written evaluation clustered into one factor, representing overall knowledge of essential newborn care

Subscales

- Routine care
- Feeding
- Thermal regulation
- Special needs

For each scale, the alphas are higher at the post-test than the pre-test. Overall, the alphas for the four subscales at post-test are close to or above 0.70, suggesting acceptable internal consistency.

6. Evaluation Results

- 114 nurse midwives completed both the written pre and post test
- 98 completed both the pre and post skills evaluation
- 52 completed the 6-month survey (only conducted in Lusaka)

Evaluation Scores Pre-post ENC Course (% Correct)

<table>
<thead>
<tr>
<th></th>
<th>Mean ± SD</th>
<th>Median (range)</th>
<th>Post ENC</th>
<th>Mean ± SD</th>
<th>Median (range)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written</td>
<td>65 ± 15</td>
<td>68 (14–95)</td>
<td></td>
<td>77 ± 16</td>
<td>81 (14–100)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Performance</td>
<td>65 ± 16</td>
<td>65 (10–100)</td>
<td></td>
<td>84 ± 22</td>
<td>95 (50–180)</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

Participants’ Change in Scores Pre-post ENC Course (Written Evaluation)

<table>
<thead>
<tr>
<th>N (%)</th>
<th>Average Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased</td>
<td>89 (78%)</td>
</tr>
<tr>
<td>Unchanged</td>
<td>8 (7%)</td>
</tr>
<tr>
<td>Decreased</td>
<td>17 (15%)</td>
</tr>
</tbody>
</table>

Participants’ Change in Scores Pre-post ENC Course (Performance Evaluation)

<table>
<thead>
<tr>
<th>N (%)</th>
<th>Average Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased</td>
<td>81 (81%)</td>
</tr>
<tr>
<td>Unchanged</td>
<td>4 (4%)</td>
</tr>
<tr>
<td>Decreased</td>
<td>13 (13%)</td>
</tr>
</tbody>
</table>

Six Month Follow-up Evaluation

At six months, a survey assessed Lusaka participants’ perception of improvement (n=53):
- 99% perceived benefit from the training
- 83% perceived benefit in routine care of baby at delivery, 77% in the knowledge of breastfeeding (77%), 77% in the skill of care of newborn baby
- Lack of resources in clinics to follow many ENC guidelines was the primary limitation to implementing guidelines

7. Conclusions

- ENC written evaluation was validated
- ENC, as taught in this course, improved both the knowledge and skills of the trainees overall
- Trainees also perceived an improvement in their knowledge and skills
- Lack of resources limited the ability to implement the ENC recommendations, as perceived by clinic nurses

8. Speculation

- ENC training improves knowledge and skills - will this translate into reduced neonatal mortality and morbidity?
- Does an adapted WHO ENC training program effectively translate across countries/regions?
- What are the most cost-effective methods for conducting this training course?

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