Evaluation of Short Term Integrated Management of Childhood Illness Training on the Clinical Competency of Village Doctors in Yunnan, China

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Objective: *Evaluate the clinical competency in detection and management complicated pneumonia, diarrhea, and measles cases of trainees who were village doctors in Puer city of Yunnan province, China.*
Material and Method: *One hundred fifty four village doctors working in the border areas were trained for 5-day Integrated Management of Childhood Illness (IMCI) training, which was adapted to World Health Organization (WHO) guidelines. Pre- and post-training assessment based on a modified WHO package was carried out.*
Results: *Statistically significant improvements in almost all performances were observed. However, the level of post-training achievement was still low. Correct classifications of severe pneumonia, measles, and diarrhea were found in 63.0%, 54.3% and 83.5%, respectively in the post-training period.*
Conclusion: *The training package needs to be further strengthened.*

Keywords: *Village doctor, Clinical competency, Integrated management of childhood illness*

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Worldwide, 8.8 million children die every year before their fifth birthday, almost half from five countries: India, Nigeria, Democratic Republic of Congo, Pakistan, and China[1]. Despite the rapid growing economy of China, the mortality rate of children under 5 years in rural areas remains high (20.1 per thousand live births)[2]. In the early 1990s, the World Health Organization (WHO) and United Nations International Children's Emergency Fund developed the Integrated Management of Childhood Illness (IMCI) strategy. The purpose of the program was to improve the case management in an integrated fashion in order to tackle the most common childhood illnesses[3]. Several studies have proved that the strategy can improve health care quality at health facilities[4-7], nevertheless the current global coverage by IMCI case management trained health workers is low, due to high cost of training and long course duration[8].

IMCI was introduced to China in 1998 and since then has been launched as a pilot project in 46 counties of 11 provinces, with 2% of the rural area coverage[9]. Yunnan province is situated in southwest China, bordering Myanmar, Laos, and Vietnam and has a population of 42 million. It is one of the poorest and the most remote provinces of China. More than 75% of the populations reside in rural areas, under supervision of about 36,000 village doctors who have been trained for 3, 6, or 12 months. The mortality rate of children under 5-years in rural areas was 4.9 times higher than in urban areas[10], and about 70% died in the village[11].

A systematic review showed that standard IMCI training seemed more effective than shortened training, but the difference was small and the evidence was limited[12].

The objective of the present study was to test whether a five-day training course can adequately improve the clinical competency of village doctors in management of common childhood infectious diseases such as pneumonia, diarrhea, and measles.

Material and Method

The present study was approved by the Ethics Committee of the Faculty of Medicine, Prince of Songkla University.

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Study population

The intervention study was conducted among 154 in 182 (84.6%) naïve village doctors during June to November 2010, at border areas of Puer prefecture, which shares borders with Myanmar to the southwest and both Laos and Vietnam to the southeast. In addition, a number of the township hospital doctors also joined the training.

IMCI training

The 5-day training, each of eight official hours, was conducted by four experienced pediatricians. The first 3 days of classroom-based didactic teaching with multiple educational methods (lecture, video demonstration, and exercise), and the proportions of integrated assessment and severity classification/ general management/counseling and communication were a half, one-third, and one-sixth, respectively. The fourth day and fifth day were role-play with group discussion, and clinical attachment toward real pediatric patient of age less than 5 years.

Assessment of clinical competency

One month after the training, township hospital doctors visited the village doctors and discussed with them how to reinforce their skills learned during the training. Three months after the training, all the village doctors were called back to the local county hospital where they were assessed again by the principal investigator and the same set of assistant researchers using the same data collection instruments.

Three case scenarios modified from WHO health facility survey instrument were used for assessment[13], measles, pneumonia, and diarrhea. The evaluation ordinary and complicated cases included clinical classification, and appropriate management and referral, as well as the history taking, physical examination and general counseling. All these instruments were piloted with 20 village doctors from non-study areas and modified as necessary.

Data analysis

R Software was used for all statistical analysis. Descriptive statistics were used to describe the frequency and proportion of various general characteristics of the village doctors and their performance. McNemar's Chi-squared test was used to assess the level of improvement of performance. A p-value of less than 0.05 was considered statistically significant.

Results

Of 154 village doctors, there were no significant differences in demographic information between who attended only pre-training evaluation and who attended both pre- and post-training assessment. The two most common levels of education were junior medical college (3 years medical education after middle school) and middle school alone. Nearly half of all village doctors had worked more than 10 years.

Among these, 127 village doctors attended both pre- and post-training assessment, as demonstrated in Table 1. All items of assessment and counseling & communication indicator, except checking for edema of feet and palm pallor, were significantly improved. The top five items of checking for fever, cough, diarrhea, temperature, and weight, were achieved in the high proportion, as well as caretaker advised on how to administer treatment. Whereas, both index of indicators were quite low.

The ability for correct classification/proper management of severe pneumonia, measles, and diarrhea were significantly found in 63.0/55.9%, 54.3/48/8%, and 83.5/48.8%, respectively, as shown in Table 2.

Discussion

The majority of assessment indicators among post-training group were significantly improved. However, the index that had represented the completion of tasks was quite low. The improvement of some indicators (*i.e.* checking for fever, cough/difficulty breathing, and diarrhea) of 5-day training was consistent with standard 11 days and 15 days IMCI training on health workers in Northeast-Brazil and Bangladesh, of which about 80% children were assessed by these indicators[14,15].

Nutritional assessments were very poorly done. This result was similar with one study conducted in South Africa in which only 22% of health workers plotted the weight of all children[16] and another study carried out in Afghanistan in which less than 20% of children were checked for signs of anemia and edema[17]. Given that under-nutrition is an underlying cause of 53% of all deaths in children younger than 5 years[18], these data indicate further emphasis on nutritional assessment in the training.

The poor level of counseling in the present study is a cause for concern. Similar findings have also been reported elsewhere after IMCI training[14,19-21]. From international experience, there has been too little emphasis on important time spent on counseling[22].

Table 1. Comparison of IMCI achievement indicator among pre- and post- training group (n = 127)

Items	Pre-training No. (%)	Post-training No. (%)	p-value
Assessment indicators			
Check for fever	99 (78.0)	126 (99.2)	<0.001
Child's temperature checked	82 (64.6)	121 (95.3)	<0.001
Check for cough or difficult breathing	77 (60.6)	125 (98.4)	<0.001
Child weighed on the same day	72 (56.7)	96 (75.6)	<0.001
Check for diarrhea	68 (53.5)	105 (82.7)	<0.001
Check for other problems	28 (22.0)	51 (40.2)	<0.001
Check for ability to drink or breastfeed	24 (18.9)	68 (53.5)	<0.001
Check whether the child vomits everything	22 (17.3)	54 (42.5)	<0.001
Check whether the child has had convulsions	21 (16.5)	60 (47.2)	<0.001
Child's vaccination status checked	3 (2.4)	28 (22.0)	<0.001
Check for edema of feet	3 (2.4)	10 (7.9)	0.023
Check for palm pallor	3 (2.4)	7 (5.5)	0.134
Check for visible severe wasting	1 (0.8)	15 (11.8)	0.001
Child's weight checked against a growth chart	0 (0)	25 (19.7)	<0.001
Index of assessment tasks* (mean ± SD)	0.28 ± 0.13	0.50 ± 0.14	<0.001
Counseling and communication indicators			
Caretaker advised on how to administer treatment	47 (37.0)	107 (84.3)	<0.001
Caretaker advised when to return immediately	45 (35.4)	76 (59.8)	<0.001
Verify the caretaker's comprehension of management	11 (8.7)	26 (20.5)	<0.001
Care taker advised to give extra fluids and continue feeding	6 (4.7)	22 (17.3)	0.005
Index of counseling tasks* (mean ± SD)	0.22 ± 0.23	0.46 ± 0.23	<0.001

* Example of how index is calculated: if a child needed to have 10 tasks completed and only 5 tasks were completed then the index should be 0.5, range 0-1

Table 2. Case scenario for correct classification and management among pre- and post- training group

Case scenario	Pre-training No. (%)	Post-training No. (%)	p-value
Case 1 (severe pneumonia)			
Classification	0 (0)	80 (63.0)	<0.001
Management (refer to hospital)	30 (23.6)	71 (55.9)	<0.001
Case 2 (measles with severe complication)			
Classification	10 (7.9)	69 (54.3)	<0.001
Management (refer to hospital)	34 (26.8)	62 (48.8)	<0.001
Case 3 (diarrhea with some dehydration)			
Classification	44 (34.7)	106 (83.5)	<0.001
Management (give oral rehydration salts and zinc)	0 (0)	63 (49.6)	<0.001

Like many other studies, the present report, showed that misclassification of severe cases was still common. A study in Ethiopia following a 9-day training course on IMCI, of 39 children classified as having severe diseases, nine were misclassified. Among 41 children who needed referral, only 27 were referred

by health workers[23]. Horwood et al also demonstrated that less than half of severely ill children who required urgent referral to hospital were identified by 11-day IMCI trained health workers[16]. It appears that a short training course is likely to achieve the same results as long-term training on this aspect.

In conclusion, the current IMCI training could improve clinical skills of the village doctor to only a limited extent. The training package needs further enhancement.

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Potential conflicts of interests

None.

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ประเมินการอบรมระยะสั้นการจัดการโรคเด็กผสมผสานต่อความสามารถทางคลินิกสำหรับแพทย์หมู่บ้านในมณฑลยูนนาน สาธารณรัฐประชาชนจีน

ลี ชิ่วหยุน, วีระศักดิ์ จงสู่วิวัฒน์วงศ์, ภาสุรี แสงศุภวานิช, เซี่ย เสี่ยวหลิง

วัตถุประสงค์: *การศึกษาเพื่อประเมินความสามารถทางคลินิกในการตรวจพบและจัดการโรคปอดบวม ภาวะท้องเสีย และโรคหัดของแพทย์หมู่บ้านผู้ผ่านการอบรม ณ เมืองพูเอียร์ มณฑลยูนาน สาธารณรัฐประชาชนจีน*

วัสดุและวิธีการ: *แพทย์หมู่บ้าน 154 คน รับการอบรม 5 วัน เกี่ยวกับการจัดการโรคเด็กผสมผสาน อันดัดแปลงจากแนวทางขององค์การอนามัยโลก และประเมินก่อนและหลังการอบรมด้วยชุดประเมินประยุกต์*

ผลการศึกษา: *ขีดความสามารถส่วนใหญ่ดีขึ้นอย่างมีนัยสำคัญ อย่างไรก็ตามระดับการบรรลุยังต่ำ การแยกแยะโรคปอดบวม ภาวะท้องเสีย และโรคหัด หลังอบรมเท่ากับร้อยละ 63.0, 54.3 และ 83.5 ตามลำดับ*

สรุป: *ชุดการอบรมจำเป็นต้องเสริมสร้างความเข้มแข็งต่อไป*