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ORIGINAL RESEARCH

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THE IMPACT OF HOSPITAL BASED INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS TRAINING ON PEDIATRIC NURSE COMPETENCY

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Abstract

Background: Although the WHO strategy integrated management of childhood illness (IMCI) for primary care has been implemented in over 100 countries, there is less global experience with hospital-based IMCI training. Until recently, no training had been done in Indonesia, and globally there has been limited experience of the role of IMCI in rebuilding health systems after complex emergencies.

Objective: We aimed to examine the effect of hospital-based IMCI training on pediatric nurse competency and explore the perception of Indonesian doctors, nurse managers and pediatricians about IMCI training and its development in West Aceh, a region that was severely affected by the South-Asian tsunami in December 2004.

Methods: This study used stepped wedge design. Training was conducted for 39 nurses' staff, 13 midwives, 6 head nurses, 5 nurse managers, 5 doctors, 1 pediatrician, and 3 support facilities (nutritionist, pharmacist, laboratory) in Cut Nyak Dien (CND) Hospital in Meulaboh, West Aceh, Indonesia. The IMCI training was developed based on the WHO Pocketbook of Hospital Care for Children. A nurse's competency questionnaire was used based on the guideline of assessment of the quality of child health services at the first level reference hospitals in districts / municipalities issued by the Ministry of Health in 2007. A linear mixed model was used for data analysis.

Results: The hospital based IMCI training improved the competences of nurses pediatric in assessing emergency signs of the sick children, management of cough and difficulty breathing, diarrhea, fever, nutritional problems, supportive care, monitoring, discharge planning and follow-up. The assessment highlighted several problems in adaptation process of material training, training process and implementation in an environment soon after a major disaster.

Conclusion: Hospital based IMCI training can be implemented in a setting after major disasters or internal conflict as part of a rebuilding process. The program requires strong management support and the emergency phase to be subsided. Other pre-requisites include the existence of standard operating procedures, adequate physical facilities and support for staff morale and well-being. Improving the quality of pediatric care requires more than just training and clinical guidelines; internal motivation and health worker support are essential.

Keywords: pediatric nurses; competencies; hospital; integrated management of childhood illness training; Aceh; IMCI

INTRODUCTION

WHO strategy integrated management of childhood illness (IMCI) for primary care has been implemented in over 100 countries. On the basis of IMCI guidelines, 10-20% of sick children seen in primary care will need referral to the first-referral level hospitals. These are the children who are most seriously ill, who will need prompt and good quality care management for their survival. In most of these hospitals' nurses, medical assistants, or non-specialist doctors provide most of the care for seriously ill children. Observational evidence suggested there is considerable scope for improving the quality of hospital care for severely ill children in many developing countries, including in Aceh Indonesia.

Inadequate triage and assessment, poor treatment and insufficient monitoring have been identified ([Haryanti, 2010](#)) and may adversely affect the outcome of a significant proportion of hospitalized children, and result in unnecessary suffering or avoidable death for many children each year. In other settings over-hospitalization, over-diagnosis of severe illness and over-medication has adverse consequences for health outcomes and in wasted health expenditure.

In response to the problems identified above, and the potential for impact from improving hospitals, the WHO produced comprehensive guidelines for the clinical management of children in hospitals with limited resources. These guidelines extend the IMCI approach from primary care to hospital level ([WHO, 2001](#)). They are designed for use by health personnel (doctors, senior nurses and other senior health workers) in first referral care (such as the district or provincial hospital), where facilities are available for inpatient and outpatient management. The WHO guidelines provide an outline of the management of the seriously ill child from the arrival to the hospital until discharge home, with appropriate plans for follow-up. The guidelines contain flow charts and tables that describe the diagnostic and treatment process.

They include illustrations of practical procedures that are commonly required for the safe management of seriously ill children. The guidelines emphasize the importance of the processes or stages of care: triage, emergency treatment, history and examination, differential diagnosis, monitoring and supportive care, discharge planning and follow-up ([WHO, 2005](#)). These processes of care are relevant to all serious illnesses.

There is less global experience with hospital-based IMCI training. Until recently, no training had been done in Indonesia, and globally there has been limited experience of the role of IMCI in rebuilding health systems after complex emergencies. Trauma not only affects lab-based measures of cognitive abilities, but also impact everyday cognitive functioning. Tsunami has an impact on Cut Nyak Dhien (CND) hospital and on attitudes / willingness to adopt new practices. Thus, to inform the implementation process of hospital-based IMCI guidelines in Indonesia, this study aimed to examine the effectiveness on key competencies of pediatric nurses, and the perception of Indonesian doctors, nursing managers and pediatricians about this training in West Aceh, a region which was severely affected by the south-Asian tsunami in December 2004.

METHODS

Study design

This study used stepped wedge design ([Hussey & Hughes, 2007](#)).

Setting

This study was conducted at Cut Nyak Dhien Hospital in Meulaboh, West Aceh from August 2007 to July 2008. Several wards were used as observation sites, namely in Emergency room, Children ward, ICU, VIP class ward and Main class ward. The reason for the selection of these wards was because they provided child health services.

Sample

To evaluate nurse's competency, we observed participants who fulfilled with the inclusion criteria: had nursing education background, nurse practitioner who gave nursing care to children in the ward, and followed original IMCI dissemination. From those criteria, there were 31 subjects chosen as follow: Emergency Room 8 nurses, Children ward 8 nurses, VIP class ward 6 nurses, Main class ward 5 nurses and ICU 4 nurses.

Intervention

The WHO Pocketbook of Hospital Care for Children and a training course based on a CD were adopted and adapted for Indonesia. We started by conducting Focus Group Discussion by doctors who trained and untrained, nurse manager, and comments from pediatricians as facilitator. The process of translation and adaptation of the WHO Pocketbook of Hospital Care for Children was carried out by a joint team involving working groups of Indonesian Pediatric Society, Indonesian MoH and WHO Indonesia. Several workshops were conducted to follow the process, particularly in regard to the adaptation process, which was required long time discussion to be fitted with local/ Indonesian setting. A group of pediatricians from Gajah Mada University had been appointed by WHO Indonesia to work on translation of the CD into Indonesian version.

Once the process of translation and adaptation of the WHO Pocketbook of Hospital Care for Children done, then the training was conducted for 76 nurses and doctors in Cut Nyak Dien (CND) Hospital in Meulaboh as part of IMCI implementation in West Aceh between Gadjah Mada University, Indonesian Ministry of Health and Royal Children Hospital Australia. On June 2007, a meeting with responsible persons in CND Hospital and discussed the training plan. On July 2007, a six consecutive days meeting has been done to disseminate the concept of Integrated Management of Childhood Illness (IMCI) to 75 health staff in CND Hospital including doctors, nurses, and midwives. They were divided into 3 separate groups in which each

group have been trained for two days. The nurses or midwives came from different departments in hospital based on their responsible for taking care the child health services. Some nursing staffs of the hospital have jointed the same training as well. On December 2007, a workshop followed by TOT for facilitator has been conducted in Department of Child Health Dr. Sardjito Hospital for pediatricians and nurses' staff from Nursing School. The aim of the workshop was to review and asking for their inputs to finalize the design of training and content of training materials, before its being trialed in Aceh.

Two or three cases were covered each day. The cases included: cough or difficult breathing, diarrhea, fever and coma, infections in young infants, severe malnutrition, children with HIV/AIDS, low birth weight newborns, trauma and burn. Other important sessions were communicating the results of: assessments of the quality of care conducted in hospitals in the country (on the first morning), and discussions of participants barrier to improve the quality of care in their hospital, region or country (on the last day). Discussions of how hospitals can work together with the health system and other sectors to contribute to greater equity, child rights and community development.

The training began with self-introduction of participants and trainers. Some workshop guidelines have agreed upon by trainers and participants to make most effective use of time and to enhance the learning environment. These could include: attendance at each sessions every day, arrival on time, participation in all activities, work co-operatively and show respect for each other, complete the tasks for each given day. In the introduction trainers described the course of how it will be run and what can be achieved.

The case discussions began with a participant reading out the case history. Participants were encouraged to ask questions, and trainers alert to complex areas within cases that participants might not understand initially. Trainers

explained unfamiliar concepts in several ways where possible, and seek confirmation from participants of their understanding. Participants should be encouraged to use the Pocketbook to answer all questions during the presentation of the cases, to continually refer to these resources so they became familiar with their layout and content.

Video clips were shown during classes that illustrated specific clinical signs or procedures: Emergency and priority signs: short clinical videos (Chapter 1), Signs of serious neonatal illness: clinical photographs (Chapter 3), Respiratory case videos: bronchiolitis, asthma, etc. (Chapter 4), The diagnosis and management of wheeze (Chapter 4), Dengue fever (Chapter 6), and how to give oxygen (Chapter 10).

Practical clinical work used the WHO guidelines to work through similar problems in clinical cases on the wards. This helps reinforce knowledge and skills, thus providing an opportunity to practice developing management plans in real clinical situations, using the Pocketbook as the technical resource. Participants were encouraged to systematically work through the *processes of care* with each clinical case seen, and to use the Pocketbook to make a diagnosis, suggest differential diagnoses, and to decide on treatment, the type of monitoring and supportive care were required for that patient.

The participants were given an evaluation form at the end of the last session. This was anonymous and consisted of a self-administered questionnaire to know their views on the course and suggestions. Feedback from the participants was considered when further developing the implementation training.

Instrument

There were two instruments used in this study as the following: First, an instrument for assessing individual characteristics (including individual skills) and nurse motivation ([Uno, 2008](#)). Internal motivation dimension

consisted of: the dimensions of responsibility in carrying out the task, performing tasks with clear targets, having clear and challenging goals, always trying to outperform others, having a feeling of pleasure in working, and prioritizing the achievements of what he/she does. The dimensions of external motivation consisted of: the dimension of always trying to meet the needs of life and work needs, being happy to get praise from the work, working with the hope of getting incentives, and working in the hope of getting the attention of friends. Face validity and pre-testing the instrument were performed to obtain a common understanding of the items. Cronbach's alpha value was 0.633, which was generally acceptable.

Second was nurses competency instrument, adapted from the guideline of assessment of the quality of child health services at the first level reference hospitals in districts / municipalities ([MoH, 2007](#)). Content validity was performed with Indonesian nursing experts resulted in good category of the instrument. The dimension of nurses' competency (94 items) included competency in cough management, fever and diarrhea management, discharge planning, emergency, nutrition, monitoring, and supportive care competency. For competence of assessing emergency and priority signs of the sick children, the focus of assessment was the ability of doing triage. While for management of cough and difficulty breathing, diarrhea, fever, and nutritional problem competence, the focus of assessment was the ability of nurses to assess, classify, and choose the best intervention based on the guidelines of IMCI hospital. For the competence of supportive care, the assessment focused on the abilities of supporting nutrition need and breastfeeding promotion. The competence of monitoring emphasized planning and recording the development of patient's health status, while the competence of discharge planning and follow-up comprised the nurse's ability to educate patient about the home care needed by the patient and the follow-up plans.

The assessments were done every month by three assessors. The assessment process was done by observing directly the nurses when they deliver nursing care to ill children whose the main symptom is cough and/or fever, diarrhea, and nutrition problem. The assessment process includes three aspects: knowledge, psychomotor, and affective. Overall Cronbach's alpha value was 0.92.

Ethical consideration

This study was approved by the Commission of Ethics in Research, Faculty of Medicine, Universitas Gadjah Mada Indonesia. The researchers have confirmed that all participants in this study have obtained an appropriate informed consent.

Data analysis

A linear mixed model was used for data analysis.

RESULTS

There were 76 participants in this project, however; only 31 participants were being observed. (Educational background: SPK 9, D3=22; Sex: Female=22, Male=9; Married =22, Unmarried=9; Age 21-30 years = 19, 31-40 years= 21, >40 years= 1, Working experience: 1-5 years= 11, 6-10 years= 11, > 10 years= 9).

Based on quantitative measurement, the trainings have improved the eight competencies of nurse pediatrics. These are capability for assessing emergency signs of the sick children, management of cough and difficulty of breathing, diarrhea, fever, nutritional problems, supportive care, monitoring, discharge planning and follow-up. However, the most significant score is the capability of nurses to recognize the

emergency and priority signs. Also, this competency had the most significant improvement per month compare with the other competencies.

From FGD, nurse managers and doctors maintain that nurse pediatrics become more aware with the emergency and priority signs. They also contend that nurses become more confidence for dealing with the patients. Furthermore, the facilitators argued that compare with other competencies, recognizing emergency and priority signs is the most important competency for nurses to be applied in the clinical practice. There was a slight improvement in nutritional problem and fever competencies because of the lack of supporting equipment such as thermometer and the broken scale measurements, etc.

Furthermore, the participant reported the lacks of motivation since there was no supervision for providing the support and giving the sufficient feedback. Likewise, the nurse managers also reported that they had not given enough supervision since they did not really understand the procedure to provide the sufficient assistance. The lack of reward and unrewarded system also contributed to the compliance of nurses. They only applied the knowledge under supervision not improved their daily performance.

Figure 1 shows the observations on the competence of nurses in assessing signs of childhood sickness, cough management and difficulty breathing, diarrhea management, fever management, and malnutrition management.

While Figure 2 shows the observation of the nurse's competence in performing supportive care, monitoring the pediatric patient, and preparing the patient for home and follow-up after care.

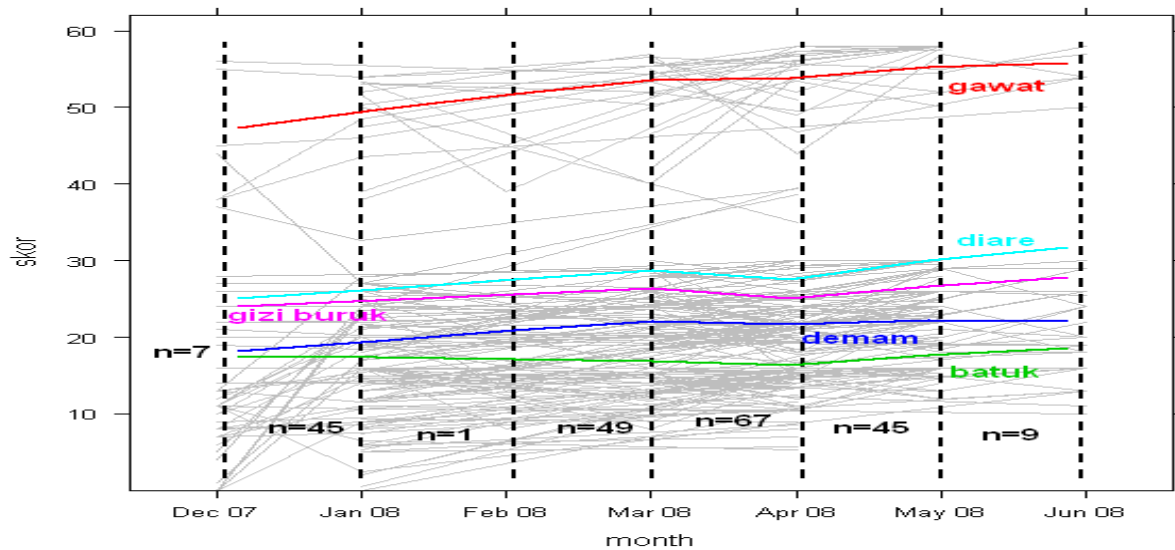


Figure1 Observation results of the pediatric nurses' competencies

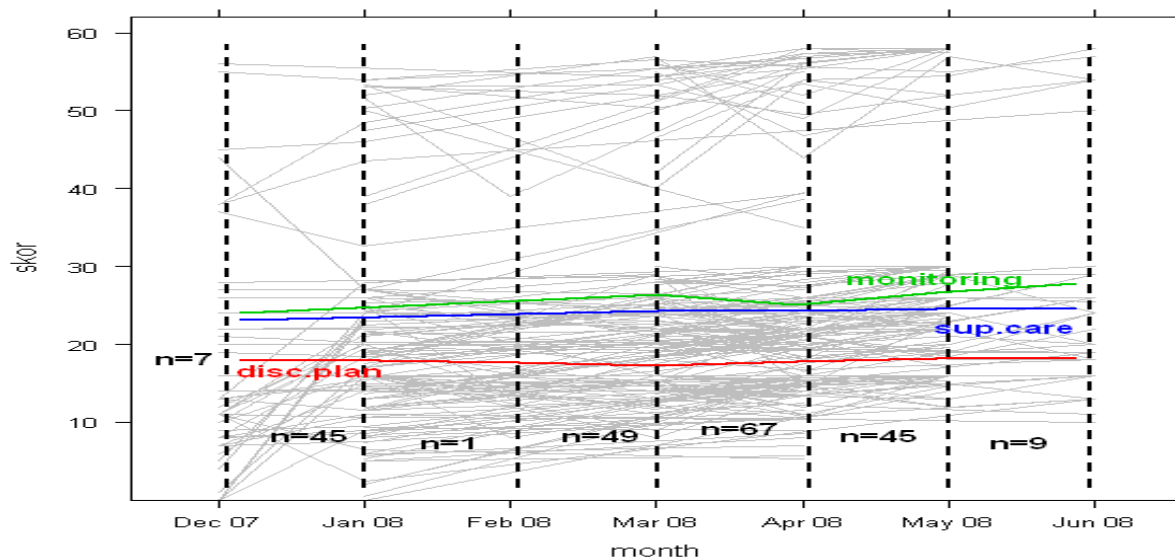


Figure 2 Observation result of pediatric nurses' competencies

Note:

Gawat = assessing emergency signs of the sick children

Batuk = management of cough and difficulty breathing

Diare = diarrhea

Demam = fever

Gizi buruk = nutritional problems

Sup. Care = supportive care

Monitoring = monitoring

Disc plan = discharge planning and follow-up

n= the total number of observations made from December 2007 to June 2008. The assessment of this competency was performed by the nurses themselves (self), peers and nurses' supervisors.

DISCUSSION

This assessment was designed as a starting point for improving the quality of child health services, especially in district hospital in West Aceh post disaster and internal conflict. The assessment highlighted several problems in clinical care, human resources, health financing, referral systems and ongoing education and training. Studies in other developing countries have highlighted similar problems in pediatric care ([Auto, Nasi, Ogaoga, Kelly, & Duke, 2006](#); [English et al., 2004](#); [Nolan et al., 2001](#)). This current study and the initiatives that have followed it demonstrate the link between such assessment, child health policy and quality improvement activities.

As well as the multiple problems, the study identified many undoubted strengths of the health service, most notably the commitment of nurses. There were many instances where nurses worked without pay for weeks or months, or worked night shifts in a hospital when they had also been on throughout the day. Most nurses worked in unsupported environments and with inadequate resources, and most had received no training in child health after graduation, despite many being solely responsible for pediatric care in their hospital.

There is major shortage of skilled child health nurses. Most nurses felt insufficiently skilled to manage many of illnesses they were seeing, and all reported there was an urgent need ongoing training in child health. Ideally, there should be at least one skilled child health nurse in every large health center and several in each hospital. It is logistically difficult and costly to train large numbers of nurses in postgraduate course. Developing a national postgraduate course in child health nursing is the longer-term solution this problem. Ideally, this would be a combined midwifery and child health course emphasizing the inseparable association between maternal and child health. There would need to be accompanying recognition of the qualification and incentive to work.

There will need to be a substantial and ongoing investment in hospital infrastructure and services, with basic maintenance of buildings and equipment, and funding for essential utilities. An effective referral system should be supported by better communication between health facilities.

These interventions of training for nurses and doctors, provincial supervision, introduction of standardized evidence-based treatment, auditing outcomes, a single balanced child health plan and a structure for overall management and review will be important for CND hospital if it is to achieve the MDG for child survival 2015. It is important for providing supervision and the availability of the standard operational procedure as the adequate legal aspect for nurses.

CONCLUSION

Hospital based IMCI training can be implemented in a setting after major disasters or internal conflict as part of a rebuilding process. The program requires strong management support and the emergency phase to be subsidized. Other pre-requisites include the existence of standard operating procedures, adequate physical facilities and support for staff morale and well-being. Improving the quality of pediatric care requires more than just training and clinical guidelines, internal motivation and health worker support are essential.

Declaration of Conflicting Interest

None declared.

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Author Contribution

All authors contributed equally in this study.

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