

Development of Clinical Training Models for Comprehensive Emergency Obstetrics and Neonatal Care (Ceonc/Ponek) and Facilitative Supervision for Improving Hospital Performance

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Abstract

Training investments and provision of facilities can only mobilize a part of healthcare production machines, and will be successfully drive it if they are fully supported by the local institutions / government and clinical training quality assurance system. In medical education and clinical training, the behaviours and attitudes modeled by professional practitioners are a special mechanisms in which participants will implicitly "learn" various aspects of their professional positions in the future.

This study aim is to assess the educational management of a competency-based clinic training of Comprehensive Emergency Obstetric and Neonatal Care (CEONC/PONEK) followed by model simulation and the influence of facilitative supervision as an effort to improve hospital performance. Improving the quality of health services are expected to have significant leverage to reduce morbidity and mortality rates of mothers and neonates in Indonesia.

The research was conducted in Dr Kariadi Central Hospital Semarang and Umu Rara Meha Waingapu General Hospital at East Sumba Regency (East Nusa Tenggara Province) from 2012 to 2016. The research and evaluation conducted only in the process of educational management, so change towards a better state are expected after the intervention.

The research was conducted through observational single cohort of pre-posttest design using performance assessment appraisal forms, direct and retrospective assessment which have been prepared for this research, and using primary data taken from the Hospital Management and Information System (SIMRS) database.

CEONC skills training with simulation followed by facilitative supervision significantly improves the input and process in both maternal and neonatal hospital service ($p < 0.05$). Training also has a significant impact on improved team performance ($p < 0.05$), as well as compliance of health personnel to maternal care standards, although it has not had a significant impact on neonatal health services in both hospitals..

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INTRODUCTION

Bandura's social learning theory (1986) argues that "individuals learn behavior through a mechanism called observation and imitation". According to Bandura (1977) "learning from a behavioral model will not only lead to an understanding of how certain behaviors are carried out, but also provide guidance for observers to guide similar actions in the future". In this sense, social learning theory has provided an excellent framework for assessing students' perceptions of clinical skills training based on students' experiences in clinical situations modeled by their clinical trainers. In medical education and training, behaviors and attitudes modeled by professional practitioners are a special mechanism by which clinical skills trainee will implicitly "learn" various aspects of their professional position in the future, compared to explicit and formal instructions. (Wright dkk. 1997; Wright et.al. 2002: 638; Finn G., 2010: 814; Lempp H., 2004: 770; Reuler J.B., 1994; Battle J.C., 2004; Kenny N.P. et.al. 2003)

Although there is no single definition for professionalism, there are certain teachings offered consistently by the literature on what is called professionalism in the medical field. These characteristics, attitudes and behaviors include (although not only limited to): honesty, integrity, patient advocacy, high ethical behavior, altruism (the belief that doing something good for others is good and right), prioritizing the interests of patients, affection, empathy, high quality interpersonal skills, teamwork in carrying out care, community involvement, and excellence in clinical knowledge, are often referred to as components that shape professionalism in the medical field. (Dyrbye L., et.al. 2010; Epstein R.M., et.al. 2002; Camp C., et.al. 2010)

Most maternal and neonatal deaths can be prevented, but in reality there is a fact that Maternal Mortality Rate (MMR) is increasing and Neonatal Mortality Rate (NMR) has not changed much, although at present many programs and policies have been implemented by various sectors and programs and the increasing number of service facilities provided by government and private sectors. In addition, there are often clients who have to travel from a hospital to other

hospitals to get help, which indicates that there is no communication system between the facilities. There are also clients who arrive at the hospital in severe conditions that indicate the unpreparedness of the community or referral facilities in providing efficient and effective referral services. Therefore, a joint effort to save mothers and babies is needed, through collaborative management efforts between health facilities at the primary level and referral.

Preventive and promotive efforts in the form of prevention of pregnancy through contraceptive use are expected to have an impact on the reduction of MMR and Infant Mortality Rate (IMR), showing the achievement of national Contraception Prevalence Rates (CPR) is still low, namely 57.4% for the modern method and 61.4% for all methods (IDHS, 2007), and a slight increase to 62% in the 2012 IDHS. During the period 2003-2007, contraceptive use did not show a significant increase, especially when referring to the CPR in 1991 - 2003 (1.1% versus 3.5%). As a result, the decline in the MMR in Indonesia is not in line with what is expected in accordance with the 2015 Millennium Development Goals target.

WHO estimated 15-20% of pregnant women are classified as high risk for complications of pregnancy, childbirth and postpartum so that around 711,111 - 948,148 Indonesian women and girls are included in the group. In Indonesia, around 80% of maternal deaths are caused by direct obstetric causes such as bleeding, sepsis, unsafe abortion, preeclampsia / eclampsia, and dystocia or obstructed labor. Another 20% due to indirect causes, namely diseases that are exacerbated by pregnancy or childbirth. Although most of the causes of maternal death can be prevented, the problems of education, social stigma and limited access to health services cause millions of Indonesian women being at high risk for fatal complications of pregnancy / childbirth due to public ignorance of pregnancy and childbirth danger signs.

If the proportion of delivery coverage by health personnel, the ratio of delivery in health facilities to childbirth at home, the percentage of competent health providers and the ability of facilities to provide quality services are still like the current conditions, efforts to accelerate the decline of MMR and IMR Millennium

Development targets (Millennium Development Goals) in 2015, as well as maintaining the 2030 Sustained Development Goals (SDG's) for Indonesia will be very difficult to achieve.

Delivery Preparedness and Prevention of Complication Program (*Program Persiapan Persalinan dan Pencegahan Komplikasi - P4K*) of the Directorate General of Public Health Development (*Bina Kesehatan Masyarakat - Binkesmas*) of the Ministry of Health of the Republic of Indonesia is an innovative intervention that will provide high efficiency results, if implemented appropriately and supported by all parties concerned. Key interventions to reduce MMR are clean and healthy behaviors and early recognition of pregnancy / childbirth danger signs, family planning programs, focused antenatal care, prevention of unsafe abortion, delivery assistance by skilled providers, early-on-time referral of obstetric emergency cases, and immediate help - adequate obstetric and neonatal emergency cases at referral hospitals. The last three things have very important values, as evidenced by the results of the study of the risk of death during childbirth in Matlab-Bangladesh (2005) which states that the risk of maternal death is 100 times on the first day and 30 times on the second day of labor (Rahman M. 2010).

The Directorate of Specialistic Medical Services - Sub Directorate Non-Teaching Hospital of the Republic of Indonesia (2010) argues that the successful improvement of clinical training to produce competent health providers and the ability of health facilities to provide quality services needs to be supported by a quality assurance system, in order to improve performance and quality services. The improvement in performance and quality of health services is expected to have significant leverage to reduce maternal and neonatal morbidity and mortality in Indonesia.

The aim of the research was to assess competency-based PONEK clinical skills training conducted nowadays, developing a competency-based learning methods followed by simulation and facilitative supervision on health personnel training in PONEK as an effort to improve service performance in maternal and neonatal emergencies, assessing performance

improvements based on compliance with standards in maternal and neonatal health services, assessing hospital performance improvement after the training and evaluation / supervision activities thereafter.

Competency-based training methodology offers a more structured and compact training to master skills in obstetric and anesthetic services. The use of simulations with anatomical models are an effective tool for transferring skills, and is interesting for trainees. Facilitative supervision is one of the elements of the management system, where supervisors at every level of an institution strive to facilitate for maintaining the quality of performance and meet the needs for the process through empowering objects of supervision. The most important part of supervisory activities is empowering supervised objects to carry out the process of quality improvement, meeting client needs (client satisfaction), and achieving the goals desired by the institution. The main purpose of collaborative improvement is to get meaningful benefits and maintain continued service quality. After getting results in the participating regions (including the area of distribution), the challenge for the health system is how to maintain achievement when the collaborative structure and support ends.

This research was only developed in 2 (two) referral hospitals. The characteristics and behavior of health providers and community responses will not always describe the same results when carried out in other regions of Indonesia, but it is hoped that there will be a basic strategy of education management for developing and maintaining of quality health services, which will become the main components in the quality of the maternal and neonatal health service system.

METHODOLOGY

This is an experimental research study, which has been approved by the Medical and Health Research Ethics Committee of the Faculty of Medicine Diponegoro University / Dr. Kariadi Central Hospital Semarang, using descriptive analysis methods for initial PONEK clinical skills training assessment, development of PONEK clinical skills training followed by simulation and facilitative supervision and assessment of hospital

performance improvement. Observational single pre-posttest design cohort were used to evaluate the development PONEK clinical skills training in 2 (two) hospitals where the study was conducted. Patient's readiness and written information from all of the subjects were collected prior to the study.

For data collection, a performance indicator and retrospective or direct concurrent assessment form that have been prepared in advance for this research is used. Data collection was also carried out using primary data taken from the Hospital Management and Information System (SIMRS) database of patient management in each hospital. The study population was health providers related to PONEK services, hospital management and referral systems for maternal and neonatal health services, as well as the community using PONEK services in the place / area of the study.

The study was conducted at the Central General Hospital Dr. Kariadi Semarang (Central Java Province) and Umbu Rara Meha Waingapu Regional General Hospital East Sumba District (East Nusa Tenggara Province) during 2012 - 2016. The subjects of research were selected hospitals and then periodically facilitatively supervised and facilitate to improve collaboration efforts. The research subject was chosen based on the consideration that the research and evaluation carried out was in the process of education management, so any similar initial conditions would be expected to change after an intervention effort was made.

Data collection was carried out directly by using 1) Form of Comprehensive Emergency Obstetrics Service Performance Indicators, 2) Forms of Comprehensive Emergency Obstetrics Services Direct Assessment, 3) Forms of Comprehensive Emergency Obstetrics Service Obstetrics Assessment Data Collection, 4) Forms of patient management data collection.

FINDINGS AND DISCUSSION

General maternal and neonatal input standards in both hospitals have shown improvement. The combined values of maternal and neonatal input standards show an increase from 2012-2016, even though Umbu Rara Meha Regional Hospital Waingapu Infection prevention efforts, Resuscitation Areas in the Emergency

room, Maternity room, Operating room, Breastfeeding area, Incubator washing area and Monitoring / Maternal and Neonatal Management checklist has not reached 85% and in Dr Kariadi General Hospital Semarang Infection prevention efforts, Maternity Room, Intensive Care Unit, Neonatal Monitoring / Management Checklist, Breastfeeding Areas, Incubator Washing Areas and Maternal Monitoring / Management Checklists have not reached 85%.

Health provider compliance to health service standards in both hospitals has shown improvement and this provides assurance that health procedures have been carried out properly. Standard of care in Caesarean section is taken as a sample for assessment, because Caesarean section is the most commonly performed and almost daily procedure. The Concurrent Assessment of Preterm Neonates was chosen because of the large number of cases, although they were often not observable in actual circumstances, but were observed through records in medical records. From the assessed observations there have been an increase compliance of health providers to the standard steps in health service delivery.

At Umbu Rara Meha Regional Hospital, the maternal mortality rate in severe cases of preeclampsia provide a fairly low maternal mortality in 2012-2016, with an increase in 2014 (CFR 47.05%). Infant mortality in severe cases of preeclampsia showed a fairly good decrease trend from 2012 - 2016. Maternal mortality in cases of eclampsia showed a fairly low maternal mortality rate in 2012 - 2016 (CFR 0.0 - 16.67%), although it was still higher than death due to severe preeclampsia. Infant mortality in cases of eclampsia shows fluctuations from 2012 - 2016 (CFR 0.0 - 16.67%).

At Dr. Kariadi Central Hospital Semarang maternal mortality in severe cases of preeclampsia provides a low maternal mortality rate in 2012-2016 (CFR 1.53 - 5.06%). Maternal mortality in cases of eclampsia illustrates the high maternal mortality rate in 2012 (CFR 4.87%) and 2016 (CFR 5.06%). Increasing the ability of health providers to carry out stabilization efforts with the provision of MgSO₄ in cases of preeclampsia and eclampsia and a good referral system will have a positive impact on the control of severe

preeclampsia and prevention of the incidence of eclampsia. Prevention of the development of severe preeclampsia into eclampsia has also been stated in various literature as an effort that must be done to prevent an increase in maternal mortality rate.

At Umbu Rara Meha Hospital, maternal and infant deaths of postpartum hemorrhage showed a low mortality rate in 2012 - 2016 (CFR 0.0 - 3.57%). In Dr Kariadi Central Hospital Semarang postpartum haemorrhage also showed a low maternal and infant mortality in 2012 - 2016. The ability to increase stabilization efforts in the form of Active Management in Third Stage of Labor (AMTSL), efforts to prevent continued postpartum hemorrhage in the form of emergency simulations of postpartum hemorrhage, skills improvement of health providers to administer uterotonic drugs, provide internal and external bimanual compression, abdominal aortic compression, installation of balloon catheters and referral management still need attention in PONEK training as an effort to reduce deaths from postpartum hemorrhage. Intrapartum infection cases provides also a low maternal mortality rate in 2012 - 2016 (CFR 0.0 - 42.86%). Infant mortality in cases of intrapartum infection showed an increase in 2015 and 2016 (CFR 66.7 - 80%). The maternal mortality rate of postpartum infection illustrates the high maternal mortality rate in 2012 - 2016 (CFR 0.0 - 100%), although there was a tendency to decline in 2015 - 2016 (CFR 28.57 - 33.33%). Infant mortality of postpartum infection is low from 2012 - 2016.

At Dr. Kariadi Hospital, Semarang, maternal deaths of intrapartum infection showed a low maternal mortality rate in 2012 - 2016. Infant mortality of intrapartum infection showed an increase in 2015 and 2016.

Management of infections in mothers and newborns is one of the strengthening strategy that should be done in PONEK training by improving the skills of health care providers and compliance to the standard infection prevention procedure.

Occurrence of Low Birth Weight (LBW) and preterm neonates which remain as a major cause of infant mortality in both hospitals tend to increase from 2012 – 2016. Preventing the incidence of LBW and preterm labor should be done by recognition and prevention of pregnancy

complications that have an impact on the incidence of LBW and preterm labor, and improvement of maternal conditions before and during pregnancy should be done as a pre-hospital promotive and preventive effort.

At Umbu Rara Meha Regional Hospital, the number of infant deaths due to mild asphyxia showed a decrease from 2012-2016 (CFR 2.98 - 3.51%), while infant mortality in severe asphyxia did not show a significant decrease from 2012 - 2016 (CFR 54.28 - 31.82%). Infection factors are still the main cause of infant mortality from 2012 - 2016 and have not shown a significant decline.

At Dr. Kariadi Hospital Semarang the data on neonatal and perinatal mortality was only obtained from 2014-2016 and there was a tendency of moderate to severe asphyxia, Very Low Birth Weight (VLBW) neonates and breathing disorders to be the main cause of neonatal death. Theoretically the three main causes can be a series of events and are interconnected. VLBW neonates can be a cause of asphyxia and eventually become a breathing disorder, although the incidence of neonatal death will not always follow the path. The situation in these two hospitals illustrates that strengthening the referral system requires better resuscitation measures at health facilities where asphyxia occurs. Asphyxia can be prevented by avoiding complications in pregnancy and childbirth, the risk of infant mortality due to mild asphyxia can be reduced by good management and resuscitation. Severe asphyxia is an advanced complication in infants that often affects conditions that increase the risk of infant death due to infection, seizures and breathing disorders.

At Umbu Rara Meha Waingapu Regional Hospital there was a statistically significant increase ($p < 0.05$) in overall maternal performance, improvement of the resuscitation area, operating room, the process of monitoring and management as well as the compliance of health providers in Standard of Care Procedures for Caesarean section. There was a significant correlation between improving maternal performance and compliance with the agreed service standards (Standard of Care C-section Procedures) and statistically significant improvement ($p < 0.05$) in overall neonatal performance, improvement of infection

prevention efforts, resuscitation areas, Neonatal High Care Unit, the process of monitoring and management and compliance of health providers in the Concurrent Assessment Procedure for Management of Preterm Newborns.

In Dr Kariadi General Hospital Semarang there was a statistically significant ($p < 0.05$) increase in overall maternal performance, improvement of infection prevention efforts, Operating room, the process of Monitoring and Management and compliance of health providers in Standard of Care Cesarean Procedures. There was a significant correlation between improvement in maternal performance and compliance with the agreed service standards (Standard of Care C-section Procedures) and a statistically significant improvement ($p < 0.05$) in overall neonatal performance, improvement of the resuscitation area, Neonatal High Care Unit, and the process of monitoring and management and compliance of health providers in the Concurrent Assessment procedure for management of preterm neonatal cases.

In both hospitals there was no significant correlation between improving the performance of neonatal performance and the compliance of health providers with the agreed service standards (Concurrent Assessment Procedures for Management of Preterm Neonatal Cases), although there was a correlation between the results of neonatal performance achievement and improvement of health providers compliance with neonatal service standards.

This research is also complemented by filling out a post-training survey as an effort to find out and assess whether the material in the training provides benefits in the daily activities of maternal and neonatal health care providers and above 80% of respondents from both hospitals stated that they could use information, knowledge and skills acquired in daily work. All trainees expressed their desire to be able to provide PONEK services in hospitals with the knowledge and skills acquired, felt sufficient, very comfortable and confident (more than 85%), although there were still some who felt they only mastered a little clinical skills (0 - 37.50 %).

Some of the participants after PONEK training still wanted additional training in Neonatal Resuscitation (0 - 43.75%), PONEK

(6.25%). Some training outside maternal and neonatal emergencies which were also in demand are such as Normal Childbirth Care (6.25 - 12.5%), Contraception Update (6.25 - 12.5%), Management of Low Birth Weight Babies (12.5 - 18.75%).

Limited number of skilled workers (56.25 - 68.75%) and the number of beds (12.50 - 31.25%) is still a constraint felt by health providers in both hospitals in carrying out maternal and neonatal emergency services.

Most respondents stated that facilitative supervision was not interrupted by other work and it was easy to make time for this activity, in need to solve problems, not leave time for other clinical services, did not feel more depressed in doing the work, and not wasting of time. In general, most supervisor respondents actually provide support and enthusiasm to do the work, provide opportunities to reflect on what has been done, solve problem more constructively, provide advice and opportunities for discussion, and provide many positive things to improve respondent performance.

CONCLUSION

PONEK emergency clinical skills training improves basic knowledge and skills of health providers. Increased input and hospital facilities based on standards and improved mechanisms at the time of receiving and stabilizing patients with emergencies provide an opportunity for hospitals to provide maternal and neonatal health services to the maximum in accordance with the standards of service that have been set.

Emergency simulations in clinical skills training improve the competence, skills and confidence of trainees in dealing with real emergencies. Compliance of health service providers towards agreed service standards is one way to measure the success of achieving PONEK clinical training goals, emergency simulations in teamwork and facilitative supervision carried out in an effort to improve and maintain the quality of maternal and neonatal health service performance at the hospital level. Team collaboration must start from the time the risk of complications is found up to the provision of health services in accordance with the level of ability of the health

care provider in the form of a well-organized referral system.

Facilitative supervision has an impact on improving the performance of comprehensive obstetric and neonatal emergency clinical services at the respective trainees' workplaces in the form of improving the capacity and performance of health providers, which has an impact on improving the performance of maternal and neonatal health services in hospitals.

PONEK training which includes a simulation method, together with facilitative supervision will improve clinical procedures for emergency obstetric and neonatal standards, team performance, fulfillment of trained and skilled health providers, high quality clinical skills training for health providers, and improvement of maternal and neonatal health service performance.

Increased inputs and health facilities have significantly improved the quality of processes in maternal and neonatal health services, but have not been able to produce significant impacts on maternal and neonatal health service outputs. The role of pre-hospital conditions in the form of preventive promotive efforts might provide significant benefits in reducing MMR and IMR, although further research is needed. A simple analogy states that maternal and infant mortality is a direct impact of pregnancy complications that occur before, during pregnancy and after childbirth, so if a pregnancy that has a possibility of complication can be anticipated, reduced or prevented before the pregnancy occurs, the maternal and infant morbidity or mortality can be avoided.

The development of the facilitative supervision and Collaborative Improvement model in Quality Assurance of PONEK Clinical Training is expected to increase the success rate of a clinical training to create competent health providers and improve the ability and performance of health facilities to provide better services. The improvement of the quality of health services is expected to have significant leverage to reduce maternal and infant morbidity and mortality in Indonesia.

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