



Research Article

The effectiveness of classic lecture and workshop as interventions to improve primary health care providers knowledge and skill on the management of pediatric emergencies

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ABSTRACT

A preliminary study showed that most health workers in primary health care (PHC) claimed that they need a refreshing course because of their lack of updated knowledge and skill. This study enrolled 27 primary healthcare workers recruited from the PHC. The intervention used were classic lectures and workshops. The knowledge was evaluated using a paper-based test and practice, while the skill was evaluated using a practice test. Multiple questions (pre-test and post-test) based on current emergency management for pediatric were used for paper-based evaluation. Semi-structured interviews were conducted to confirm the subject's perspective on the intervention. A paired t-test was used for evaluating the pre- and post-test results, which was confirmed by a triangulation approach. There was a significant difference between the pre- and post-test results ($p < 0.001$), and 8 of 10 subjects can demonstrate the procedure learned correctly after the intervention. A total of 14 interviewed subjects stated great effectiveness of the intervention, with several limitations on applicability in daily clinical practice. Classic lecture and workshop as an intervention in health education effectively increase health workers' knowledge and skill in PHC. This study might help other rural areas PHC apply the same method so the professionalism and quality of health workers in PHC providers can be maintained.



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INTRODUCTION

Primary Health Center (PHC) workers are the frontline of healthcare in developing countries, including Indonesia. Therefore, patients requiring emergency assistance often come there to be treated or at least managed before being referred. This concept requires motivated and well-trained frontline providers (Dugani et al., 2018). However, previous studies show that many medical workers, such as nurses, midwives, and paramedics, seldom update their medical knowledge from the latest guidelines. This matter becomes a problem when the risk of morbidity and mortality increases due to old-fashioned approaches. New knowledge in PHC is essential to address and direct adequate and appropriate many service factors (Sambala, Sapsed, & Mkandawire, 2010). As the primary health care system leader, doctors must empower their colleagues' clinical skills and medical knowledge by organizing workshops, discussions, or lectures. It is needed because some primary health care workers may have a lack of competence. For example, in Wori, only 4% of primary health care workers have sufficient basic life support skills (Dahlan, Kumaat, & Onibala, 2014). One factor that can be a reason is they also have a lack of time to attend training. This case also occurred in Pontianak, Kalimantan. A study shows that 62.7% of all Primary Health Care nurses never had any workshop or symposium (Tafwidhah, Nurachmah, & Hariyati, 2012).

The Community Health Center of Sukosewu is an example of a PHC in Indonesia that has a challenge in updating health workers' knowledge and skill. Our preliminary questionnaire revealed that this challenge occurs since the health workers almost have no time to attend symposiums or workshops due to their work schedule in community service for their rural area. Various issues were found from interviewing each department's

stakeholders in the Community Health Center of Sukosewu done by researchers. From those issues, an analysis was conducted using capability, accessibility, readiness, leverage (CARL) with urgency, seriousness, growth (USG) method, and discussions with the head of Community Health Center of Sukosewu as a primary health provider. Problem searching also focuses on finding what knowledge most health workers feel needed to improve. From the analysis and discussion, the main topic issue in the Community Health Center of Sukosewu lacked training or workshops on the pediatric emergencies skill such as resuscitation. The search for determinants of the issue using Ishikawa's fishbone diagram can be concluded that the PHC workers, especially the emergency department health workers, need to get interventions to improve their knowledge and skill on handling the pediatric in emergencies case condition.

There is yet to be a study that analyzes the intervention given to the primary healthcare workers regarding their medical knowledge based on Indonesia's latest guideline. This study aims to evaluate PHC workers' knowledge and skills improvement after the intervention method to educate PHC workers.

METHOD

Preliminary survey

The preliminary questionnaire data revealed that health clinic staff, midwives, and nurses all agreed that lecture and workshop were needed to improve their knowledge and skill. There are still health workers who have never received training, workshops, or child emergency training (30% of the total health workers). Of the total health workers who had received training, workshops, or training on a pediatric emergency before, four health workers (15%) received it more than five years ago, and 21 health workers (81%) received it between



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1-5 years ago. This result does not complete with the resuscitation recommendation from guidelines such as the Japan Society of Perinatal, American Academy of Pediatrics (AAP), American Heart Association (AHA), Neonatal Medicine, or Indonesia government (AAP & AHA, 2016; Hosono et al., 2016). The requirement said an emergency training certificate must be updated annually or at least once every five years. Other data show that of the total health workers who have received training, 21 officers (70%) have only had one workshop or training for a pediatric emergency before, during their profession in PHC. Even though the local government already gave maximum support, the interview revealed that this issue still occurs because they need to focus on community service for their rural area that often takes much time in work. Furthermore, various data above need to be highlighted, considering that 25 officers (83%) of the total health workers who filled out the questionnaire met with pediatric emergency cases. Pediatric emergency management has been chosen to be the best topic for lectures and workshops from the above facts.

The evidence suggests using various methods that allow for interaction and enable learners to process and apply information because these will be more effective for health care workers (Bluestone et al., 2013). The simple methods that provide interaction in the process and often used for this aim are classic lectures and workshops. However, no research studies the effectiveness of classic lectures and workshops held by the general practitioner to educate PHC workers until recently. Dedicating little time from the schedule to attend a small study session hosted by the local general practitioner could benefit the overall quality of the PHC provider.

Selection of participant

We design a cross-sectional design study that enrolled 27 primary healthcare workers recruited from the Community Health Center of Sukosewu, Bojonegoro, East Java, Indonesia, conducted in February 2019. This community health center was chosen based on the Bojonegoro Health Ministry recommendation and the institution's willingness. All nurses and midwives have the same responsibility for pediatric emergency cases, so the inclusion criteria are all nurses and midwives at the Community Health Center of Sukosewu and have willing to take part in the research. All of the participants were accepted about this study's purpose and signed the informed consent before enrollment.

Methodology and instruments

Researchers appointed the theme of the newest basic life-saving skills for pediatric patients according to the pre-research questionnaire. The intervention used was 30 minutes of interactive lecture and 2 hours of the workshop (for detailed description, see Supplementary Data 1). In the lecture session, we use PowerPoint slides, posters, and booklets as learning media. In the workshop session, we use mannequins, several medical instruments, and posters to explain the algorithm of pediatric emergency case management. Evaluation of knowledge gain was evaluated quantitatively using a paper-based test and practice using *Objective Structured Clinical Examination (OSCE)* setting. The researchers developed the scenario related to the management pathway (algorithm) of the topic, based on the published guidelines (Atkins et al., 2015; AAP&AHA, 2016; Ikatan Dokter Anak Indonesia (IDAI), 2015; SMF Ilmu Kesehatan Anak RSUD Dr. Soetomo Surabaya, 2016). Non-vignette multiple-choice questions (10 items each



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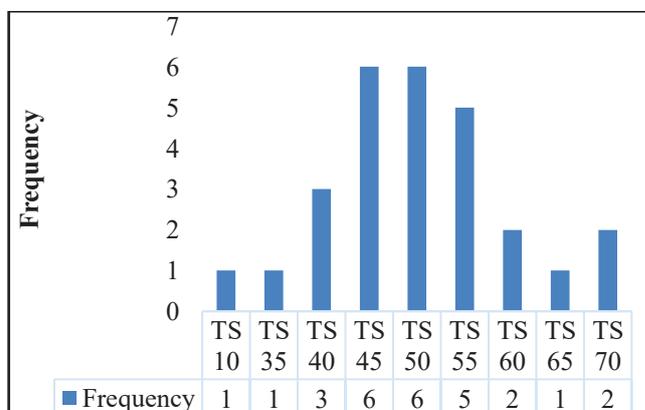


Figure 1. Results of pre-test scores among all participants (TS: total score)

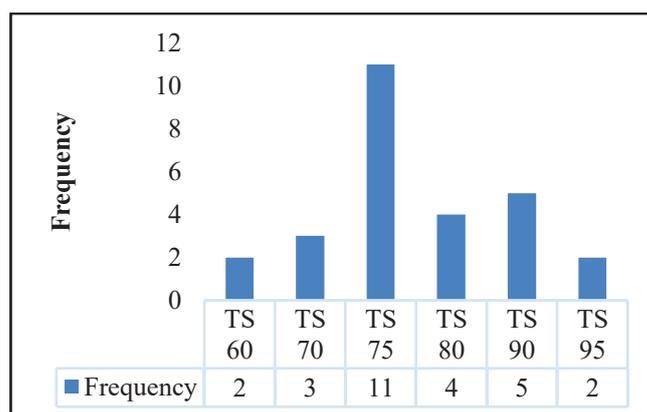


Figure 2. Results of post-test scores among all participants (TS: total score)

Post-test: paper-based and practice

The post-test score showed improvement of knowledge both in paper-based and practice.

The lowest post-test score at the post-test was 60 (2 health workers), while the highest test score was 95 (2 health workers). At the same time, most test scores were 75 (11 health workers). The average score at the post-test score was 78.83, as shown in figure 2. The result with the minimum score to pass the test revealed that only 2 participants did not pass.

The result showed that the average comparison of the post-test scores on the pre-test had a mean difference of 28.9 (standard deviation 5.3). The data shows a significant difference

in the average ratio of posttest scores to pre-test scores ($p < 0.001$). This study found a significant difference between the pre-test and post-test scores. Furthermore, from 10 health workers taken randomly to demonstrate the management of pediatric emergency cases after the classic lecture and workshop, 8 of them did the management correctly according to general practitioner evaluation.

Qualitative Analysis



Table 1. Comparison of mean post-test scores on pre-test scores

Comparison Variables	Mean ± SD	95% CI	
		Lower	Upper
Post-test total scores compared to pre-test total scores	28.9 ± 5.3 *	26.8	31.0

Paired T-test, p<0.001

Table 2. The comments and findings from the respondent in interviews

Code	1. Transcript	Themes	Interpretation
S1	<ol style="list-style-type: none"> The topic of the lecture and workshop is good and useful for PHC staff Due to the rarity of patients, so it is rarely practiced/applied. But, in order to keep in mind, there needs to be a periodic refreshment 	(1) Relevant topic; (2) Appropriate delivery method; (3) less applicable	Beneficial to improve knowledge and skill
S2	<ol style="list-style-type: none"> The workshop was good. We can understand more about managing emergency cases, such as seizures in pediatrics. The workshop provides an opportunity to do the practice. At least, there have been a few cases; although they are rare, it can be handled 	(2) Appropriate delivery method; (3) applicable	Beneficial to improve knowledge and skill
S3	<ol style="list-style-type: none"> The results are useful for PHC services and increase the knowledge of PHC colleagues, especially in workshops In the application, we are getting more alert in pediatric emergency services 	(1) Relevant topic; (2) Appropriate delivery method; (3) applicable	Beneficial to improve knowledge and skill
S4	<ol style="list-style-type: none"> The lectures and workshop had a good impact I have not received any pediatric emergency cases so far, so I cannot comment on the application 	(1) Relevant topic; (2) Appropriate delivery method;	Beneficial to improve knowledge and skill
S5	<ol style="list-style-type: none"> After the training, we felt that there was a positive change in health service Now, my colleagues are starting to use/ apply as integrated management for cases of pediatric emergencies 	(1) Relevant topic; (2) Appropriate delivery method; (3) applicable	Beneficial to improve knowledge and skill
S6	<ol style="list-style-type: none"> The practical sessions during the workshop are great; at least, we understand pediatric emergencies, especially regarding techniques for managing pediatric seizures. I am assigned to assist health services at the PHC emergency room during work hours. So, the benefits are more pronounced in my everyday clinical practice 	(1) Relevant topic; (2) Appropriate delivery method; (3) applicable	Beneficial to improve knowledge and skill
S7	<ol style="list-style-type: none"> We feel an improvement after the program Incidentally, I rarely see pediatric emergency patients. The most common cases were seizures, but most of them are stable when they arrived at the PHC 	(1) Relevant topic; (2) Appropriate delivery method; (3) less applicable	Beneficial to improve knowledge and skill
S8	<ol style="list-style-type: none"> The training that was held at that time was very beneficial for the midwives at our PHC. If the workshop duration was longer, it might be better. The good impact is especially on applications in managing childbirth and neonatal care in our PHC. 	(1) Relevant topic; (2) Appropriate delivery method; (3) applicable	Beneficial to improve knowledge and skill
S9	<ol style="list-style-type: none"> We got a good impact after the workshop For the application, we started to use the knowledge from the training in an integrated system in the case of pediatric emergencies 	(2) Appropriate delivery method; (3) applicable	Beneficial to improve knowledge and skill
S10	<ol style="list-style-type: none"> I am happy to get my knowledge updated I have already applied for it, but I am still nervous, especially about small infant emergency cases 	(1) Relevant topic; (3) less applicable	Beneficial to improve knowledge and skill
S11	<ol style="list-style-type: none"> The training has a good impact on me because if it is not updated, I might forget The results of the program can be practiced in daily health services when there are plenty of cases 	(1) Relevant topic; method; (3) applicable	Beneficial to improve knowledge and skill



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S12	<ol style="list-style-type: none"> 1. Having a good influence. It can increase our knowledge and insights, so does health service. 2. So far, there are no severe cases yet. However, thanks to the workshop provided, we are ready to provide great health service. 	(1) Relevant topic; (2) Appropriate delivery method; (3) less applicable	Beneficial to improve knowledge and skill
S13	<ol style="list-style-type: none"> 1. After participating in the Pediatric emergencies training, I was refreshed by the lecture. I had received it during college. Now, I know better because of refreshment 2. The workshop may not be too applied because, in the PHC, it is rare to encounter pediatric emergency cases 	(1) Relevant topic; (2) Appropriate delivery method; (3) less applicable	Beneficial to improve knowledge and skill
S14	<ol style="list-style-type: none"> 1. The training succeeded in increasing our knowledge and skill for health services 2. We can practice it quite well so that the PHC can provide optimal service. 	(1) Relevant topic; (2) Appropriate delivery method; (3) applicable	Beneficial to improve knowledge and skill

Evaluation of participants' perspectives towards classic lecture and workshop benefits for their professional care delivery improvements were explored by interviewing 14 previous participants in Sukosewu Primary Health Care (PHC). The interview transcripts were analyzed iteratively by the sequences of data collection, data reduction and categorization, data display, and finally composing the main findings. Main findings were identified and discussed to make a conclusion.

Every finding was analyzed from a different perspective, and the themes were reviewed several times, iteratively during the process. Three main themes were identified: relevance of the topic, delivery method, and daily practice applicability. Two authors then interpret every main finding. The interpretation shows that all respondents stated that the intervention given (lecture and workshop on pediatric emergency case management) were beneficial for their knowledge and skills improvements in delivering services of (the topics of interventions that had been previously given) and valuable in boosting self-confidence related to the topics at the PHC.

In quantitative data analysis, there was a significant increase in knowledge and skills ($p < 0.05$), and this was confirmed by the results of interviews with the subject. The qualitative data analysis from the interviews showed the participants felt benefited by the interventions

(lectures and workshops) that successfully improved their knowledge and skills on pediatric emergency management and boosted their self-confidence in current daily practices. In this qualitative data, new data also shows that there is still a lack of applicability of interventions in daily clinical practice, which is due to the unequal number of pediatric emergency cases handled by health workers in PHC.

DISCUSSION

There are more midwives than nurses in the primary health center, which is in line with data from the Human Resources Development Agency of the Ministry of Home Affairs of the Republic of Indonesia concerning Health Workers Resources information 2018. The permanent health workers in the Community Health Center of Sukosewu are mostly midwives (15 workers), the next is nurses (9 workers), while others are two general practitioners, one dentist, one administration officer, and some honourer midwives and nurses (DINKES-Bojonegoro, 2018)

To carry out daily tasks as health workers, knowledge of pediatric emergencies and resuscitation is crucial for both nurses and midwives. This because in limited health facility centers such as in rural areas, the number of doctors also limited. The health



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one rural area, only less than 5% of health workers could be concluded to have sufficient knowledge about basic life support (Dahlan et al., 2014).

From the data, we can assume that knowledge as a basic requirement for implementing basic life-saving skills for pediatric is still needed much improvement. This is important because some health workers do not know about evidence-based practice. This statement was also supported by a study that showed that 68.7% of clinic nurses did not understand evidence-based practice (Legita, 2012).

There are various methods for providing health education, including classic lectures, discussion, demonstration (workshop), and role-play (Efendi & Makhfudli, 2009).

In this study, classic lecture and workshop methods were used to provide health knowledge regarding pediatric emergencies because these are very accessible methods in rural areas because and do not require an extra effort (Hadimani, 2014).

Especially for the workshop, this intervention's importance is because some learning processes such as analyzing, making hypotheses, evaluating, and making decisions in problem-solving cannot be achieved by relying only on classical lectures (Yousefichaijan, Jafari, Kahbazi, Rafiei, & Pakniyat, 2016).

A pre-and post-test design was used to evaluate the knowledge improvements because this evaluation method is a feasible and straightforward method for health workers (Aykal et al., 2016). The pre-test is useful for knowing the knowledge of the material's recipient before they get intervention. From figure 1, we can assume that knowledge of basic life-saving for pediatric still needed improvements. Some points that showed inadequate pre-test results could be used by the curriculum provider to adjust which competencies are needed to improve. The post-

test results are useful for finding out whether the interventions are useful (as reflected in the comparison between the pre-test and post-test scores in the group) (Farjizka, 2016; Suharty et al., 2014). Table 1 shows that classic lectures and workshops are useful in intensifying their skill in terms of emergency management for pediatric significantly different. These results are consistent with the results of another study comparing the scores of a group that received health education through training using intervention lecture and workshop-like methods (Al-Tannir et al., 2018). Especially for the workshop, the result showed that up to 80% of health workers tested did the management correctly. This result is supported by a theory that workshops can change knowledge, attitudes, and practical abilities (Pourfathollah, Hosseini Divkolaye, & Seighali, 2015).

The case study approach in this study (pre-test questionnaire design, post-test, semi-structured interviews) is valuable for collecting comprehensive data about small-sized subjects/participant's experiences and obstacles in the intervention (lectures and workshops) towards a specific topic. This pragmatic strategy (with the addition of a focus group discussion) was also used in a study by Mildenberger et al. on neonatal resuscitation training in a group of midwives regarding its skills assessment. The study noted the importance of using qualitative data to increase the depth and clarification of training outcomes and to see if there were any barriers to practicing the skills (Mildenberger, Ellis, and Lee, 2017).

As the PHC system leader, doctors are still required to empower health workers' clinical skills and medical knowledge by organizing workshops, discussions, or lectures in PHC. Those are necessary to intensify their skill as health workers in PHC. The combination of classical lectures and workshops had been proven to significantly improve the-knowledge and intensifying health workers' skills in terms



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of Emergency Management for Pediatric. These results made a clear conclusion that the interventions (classic lecture and workshop) are also needed to increase the knowledge and intensify nurses' and midwives' skills as health workers in the Community Health Center of Sukosewu.

CONCLUSIONS

Classic lectures and workshops as an intervention in health education are beneficial in increasing the knowledge and intensify the skill of health workers in PHC. This combination method can be used by doctors, especially in a rural areas, so the expected result is professionalism and quality of health workers in PHC providers can be maintained.

LIMITATIONS

There are several limitations to this study. Firstly, our study only examines knowledge and skill-based on a short method that was pre- and post-test and practice test. The questions in pre- and post-test were the same. The questionnaire was based on the previous study and used for pediatricians, not primary health care providers. We used that questionnaire because the theory was in concordance with the general pediatric resuscitation theory. Secondly, the learning sessions, both theory, and practice were conducted within a short time (2 hours), unlike the usual day-long AHA BLS course or other courses.

CONFLICT OF INTEREST

There is no authors' conflict of interest to declare.

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