

# MULTILEVEL TRAINING ON CHILDHOOD CANCER: EFFECTIVENESS OF THE MASTER TRAINING TO INCREASE MEDICAL STAFF'S AND CADRE'S KNOWLEDGE OF CHILDHOOD CANCER EARLY DETECTION

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## ABSTRACT

Delayed diagnosis is one of problems in treating childhood cancer in Indonesia. Lack of knowledge and recognition of the disease by health providers are the major risk factors. Therefore, YKAKI organized childhood cancer training that consists of three level of health promotion. Level-1: training to medical staff and cadre, level-2: training to their colleagues, and Level-3: public education. On February 2017 level-1 training was successfully conducted to medical staff (316 participants) and cadre (218 participants) from Depok and Bekasi (West Java) and East Jakarta and North Jakarta (DKI Jakarta). This study aimed to evaluate the implementation of level-1 training. Quantitative approach through pre and post-test design were applied to all participants. Data were then analyzed by paired t-test and ANOVA. There was a significant increase in mean score of pre and post-test among cadre ( $p < 0.000$ ) and medical staff ( $p < 0.000$ ). Among cadre, there were no significant difference of pretest ( $p < 0.978$ ) and post-test mean score ( $p < 0.066$ ), they were within the area. Among medical staff, pre-test score was significantly different between Bekasi and North Jakarta, post-test score was significantly different between Depok and North and East Jakarta, and Bekasi North and East Jakarta. There were significant difference of the gain score between Bekasi and East Jakarta, and Depok and East Jakarta. In conclusion, we can state that level-1 training was proven to increase knowledge of the medical staff and cadre about childhood cancer early detection. It is an important step since all the trained participants will train their colleagues in the next level-2 training.

**Keywords:** *Childhood cancer, Health promotion, Cadre, Medical staff, Indonesia,*

## BACKGROUND

Morbidity of childhood cancer occurred worldwide. In developed countries, approximately 1 in 600 children develop cancer before they are 15 years old. International Agency of Research Center (IARC) showed that 80% of children diagnosed cancer originally from developing countries. One out of 600 children in the world under 16 years old had cancer and estimated 9 million death caused by cancer/year within 10 year. Meanwhile, International Confederation of Childhood Cancer Parent Organization (ICCPO) estimated more than 1,00,000 children with cancer died every year or more than 250 children/day, 10 children/hour.

In Indonesia, approximately 11,000 cases of childhood cancer has been occurring per year and 650 of them in Jakarta (Tehuteru, 2015). Within 2010-2013, among any other reported childhood cancer at Dharmais

Cancer Hospital, incidence of leukemia was the highest, 163 cases, followed by lymphoma, 55 cases. This was considered as the most common childhood cancer in Jakarta and it showed an increased trend over the years. Meanwhile, for the fatality rate is concerned, around 91 cases of leukemia patient in 2010-2013 were unable to survive (Tehuteru, 2015).

American Cancer Society explained the sign and symptoms of cancer in children are an unusual lump or swelling, unexplained paleness and loss of energy, easy bruising, an ongoing pain in one area of the body, limping, unexplained fever or illness that doesn't go away, frequent headaches (often with vomiting), sudden eye or vision changes, and sudden unexplained weight loss (American Cancer Society, 2015).

The often ambiguous nature of cancer symptoms and the relative rarity of malignant diseases in childhood, make it

difficult to immediately consider a diagnosis of cancer. In consequence, most children with cancer are symptomatic or have clinical evidence of disease for a period of time before the illness is recognized and a diagnosis is made (Dang-Tan *et al.*, 2010). Unfortunately, late presentation and delayed diagnosis of childhood cancers remain a problem in developing countries.

Study conducted by James *et al.* in Ibadan, Nigeria (2009) found that factors contributing to delayed diagnosis included delayed referral by doctors, seeking health care from alternate sources and financial constraints. Parental factors contributing to delayed diagnosis after contact with the health system include seeking health care through alternative means such as “parental self-medication”, patent medicine dealers, traditional healers and churches. Other factors that contributed to the health system delay were financial constraints faced by the parents and the need to travel to a referral center that is far from the city of residence of the family (James *et al.*, 2009)

Delayed diagnosis was also found in Indonesia, since many children with cancer treated medically had entered an advanced stage (Satria, 2014). As mentioned by Dang-Tan & Franco (2007), lack of knowledge and recognition of the disease by health providers were taken into account as causes of that circumstance. Therefore, it is important for health professionals to identify signs and symptoms of childhood cancer due to the absence of children's ability to express what they felt.

The role of parents, communities, health professional and cadres are important to recognize the signs and symptoms of cancer in children, so the possibility of immediate treatment and cure rates becomes much greater. Community participation and empowerment is also considered as one of cancer control effort (Motalebnejad *et al.*, 2009). It is implemented through the development of partnership and multidisciplinary, cross program and cross sector cooperation network. The principal activities of the cancer disease control in Indonesia are increasing communication, information and education through socializing and strengthening of existing community health volunteers (cadre).

One activity in increasing medical staff and community awareness of childhood cancer was Basic orientation on childhood cancer that organized by Indonesia Care for Cancer Kids Foundation (Yayasan Kasih Anak Kanker Indonesia/YKAKI) and supported by Ministry

of Health and Dharmais Hospital. It is supported by a number of experts, namely Hematologist, Oncologist, Neurologist, Orthopedic, and Ophthalmologist and attended by health professional (doctor, nurse or midwife at primary health care) or cadre. Then the trainees must arrange plan of action (PoA). Therefore, the study was aimed to assess the change of childhood cancer KAP (knowledge, attitudes and practices) among level-1 training participants (medical and non-medical staff).

## METHOD

This study is a part of Basic Orientation on Childhood Cancer, involving Level-1 Training (Master Training) on Childhood Cancer, Level-2 Training (Echo Training) on Childhood Cancer and Level-3 Public Education on Childhood Cancer. However, within this report we are focusing on evaluation of Level 1 (Master Training).

Research design was prepared for level-1 training using quantitative approach, studies utilized cohort prospective design. Evaluation of level-1 training applied intervention design that employed pre- test, prior to the orientation started and post- test at the end of the orientation.

## Population and Sample

Population of this study is basic orientation on childhood cancer participants, which is, during every orientation, approximately 80 participants attended from each medical staff and non-medical staff. Number of source population is 320 participants (80 level-1 training participants x 2 groups x 2 districts). Sample of this study is orientation of participants who attended a full day seminar. Thus total sampling is performed to obtain the respondents.

Before the orientation is started, all participants are asked to fill questionnaire as a pre- test. After the last session of the orientation, all eligible participants are re- asked to answer questionnaire as post-test. Data gained by self administered-questionnaire and collected directly by researchers.

Within this study we evaluated the changing score on participants' knowledge of childhood cancer. There are several variables has been observed for evaluation of orientation and implementation through questionnaire that consists of risk factor of childhood cancer, prevention of childhood cancer, type of cancer occurred in children, sign and symptom of childhood cancer.

Treatment should be received by the patient. Each questions are equally weighted. The more score obtained, the better KAP of the respondents.

**Statistical Analysis**

Data in the level-1 training is analyzed into bivariate relationship. The difference of numerical data, is used for independent sample t- test, ANOVA and post hoc analysis.

**Study Permit**

Since the study has been involving community as respondents, legal permit was obtained from authority. This permit is entirely obtained from Ministry of Internal Affairs, West Java Province, and District of Bekasi and Depok.

**RESULT**

This chapter describes the evaluation of Cancer Basic Orientation to Children. The result of evaluation is classified into the evaluation of cadre and the evaluation of medical practitioners. The findings from the evaluation has been discussed under the same sub chapter.

Level-1 training (master training) was 1-day training that attended by cadre and medical staff in a separate day. About 268 cadre followed the training fully since the first session until the session in the afternoon. Training for cadre was held on 25 February 2017 in Auditorium Dharmais Hospital.

Meanwhile, there were 316 medical staff attended the level-1 training (master training) that was held on 26 February 2017 for DKI Jakarta Province (East and West Jakarta) in Dharmais Hospital and 27 February 2017 for West Java (Depok and Bekasi District) in Auditorium Ministry of Health RI.

**Cadre**

The description of pre and post test results for cadre

**Table 1. The Description of Evaluation Result for Cadre**

Group	n	Mean	Median	SD	Min	Max	Mean Difference (95%CI)	p value
Pre test	268	7.21	7.00	1.43	1	10	-1,59	0,000
Post test	266	8.81	9.3	1.19	4	10	(-1,78--1,40)	

Based on the test result in the abovementioned table, the mean for pre-test score is 7,2127, and the post-test score is 8,8109. Thus, the post-test score is higher than pre-test score. Further, the scores achieved by the cadre group show that the minimum score in pre-test is lower than that of post-test. The result of t test presented in output above, the value of t is -16,665 with p value 0,000. Since p value (0,000) < 0,05, it is considered as significant. It implies that the pre-test and post-test score have significant difference. It shows that the social program about the cancer education for children is considered effective in increasing the KAP score of the training participants

Cadres attended in level-1 training were originated from four different area. We then identified the distribution of pre-test and post-test score among these area and is presented in Table 2.

**Table 2. The Distribution of Pre and Posttest Scores in Four Activity Locations**

Locations	Pretest score			Posttest score		
	Mean	SD	p value	Mean	SD	p value
Depok	7.17	1.62	0.978	8.57	1.34	0.066
Bekasi	7.18	1.19		9.20	0.88	
East Jakarta	7.23	1.27		8.87	1.24	
North Jakarta	7.26	1.55		8.80	1.07	

Table above shows that the mean of pre-test score in DKI Jakarta area is higher than West Java. However, according to the ANOVA test, the difference is not statistically significant (0.978). Distribution of the post-test score showed the interesting result, where the highest score was obtained by the cadre from Bekasi area (9.20). The result implies that the acceptance of learning material by Cadre from Bekasi is better than does by the cadre from other area. The range mean score of post-test among these areas were not significantly different (p 0.066).

The next step is ANOVA test to find out whether each locaton has the different score. The result of ANOVA test is presented in table 4.6 below.

**Medical Practitioners**

Master training is also performed to medical practitioners who consist of doctors, nurses, and midwives. The description of pre and post test results for medical practitioners is presented in table 3 below.

**Table 3. The description of pre and post test results for medical practitioners**

Group	n	Mean	Median	SD	Minimum	Maximum	P value
Pre test	316	6.10	6.33	1.26	1.67	8.67	0.000
Post test	313	8.11	8.33	1.02	4.33	9.67	

Based on the test result in the abovementioned table, the mean for pre-test score for medical practitioners is 6.10, and the post-test score is 8.11. Bivariate test aiming at figuring out the significance of score deviation for pre-test and post-test is performed by using paired t-test analysis. Based on the result of t test presented above, the value of t is -26.455 with p value 0.000. Since p value (0.000) < 0.05, it is significant. It implies that the pre-test and post-test score have significant difference. It shows that the social program about the cancer education for children is considered effective in increasing the KAP score of the training participants.

The advanced test is done to identify the meaning of score difference between regions. The analysis that is applied is ANOVA test and the result of ANOVA test is presented in table 4.

**Table 4. The result of ANOVA Pre and Post test for Medical Practitioners in Four Locations**

Group	n	F	p value
Pre test	316	5.140	0.002
Post test	313	36.504	0.000

Based on the result of ANOVA test, it can be revealed that the pre-test examination, the F calculation is for 5.140 with p value is for 0.002. It means that there is significant difference for pre-test score in each region. In post-test examination the value of F calculation is for 36.504 with p value is for 0.000. The mean post-test score is statistically different among each area. To see which region that gives different effect, the post hoc test is done with Tukey test.

**Table 5. Post Hoc Test of Pretest Score**

(I) region	(J) region	Mean Difference (I-J)	p Value	95% Confidence Interval
Depok	Bekasi	0.44	0.12	-0.07 – 0.94
	East Jakarta	-0.05	0.99	-0.54 – 0.44
	North Jakarta	-0.36	0.30	-0.88 – 0.16
Bekasi	Depok	-0.44	0.12	-0.94 – 0.07
	East Jakarta	-0.48	0.06	-0.98 – 0.01
	North Jakarta	-0.79*	0.00	-1.32 – -0.26
East Jakarta	Depok	0.05	0.99	-0.44 – 0.54
	Bekasi	0.48	0.06	-0.01 – 0.98
	North Jakarta	-0.31	0.42	-0.82 – 0.21
North Jakarta	Depok	0.35	0.30	-0.17 – 0.88
	Bekasi	0.79*	0.00	0.26 – 1.32
	East Jakarta	0.31	0.41	-0.21 – 0.82

From the above table, it can be revealed that the difference in pre-test score is only between Bekasi and North Jakarta (p 0,000). This means that there is a significant difference of pre-test score between those regions.

For the Post Hoc test of the post-test score, the result shows (Table 6) the different score among Depok and North and East Jakarta. It is also found among Bekasi and North and East Jakarta (p < 0.05).

**Table 6. Post Hoc Test of Posttest Score**

(I) region	(J) region	Mean Difference (I-J)	p Value	95% Confidence Interval
Depok	Bekasi	0.34	0.07	-0.016 – 0.70
	East Jakarta	-0.86*	0.00	-1.21 – -0.50
	North Jakarta	-0.81*	0.00	-1.19 – -0.44
Bekasi	Depok	-0.34	0.07	-0.69 – 0.02
	East Jakarta	-1.19*	0.00	-1.55 – 0.85
	North Jakarta	-1.16*	0.00	-1.54 – 0.78
East Jakarta	Depok	0.86*	0.00	0.50 – 1.20
	Bekasi	1.19*	0.00	0.85 – 1.55
	North Jakarta	0.04	0.99	-0.34 – 0.41
North Jakarta	Depok	0.82*	0.00	0.44 – 1.19
	Bekasi	1.17*	0.00	0.78 – 1.54
	East Jakarta	-0.04	0.99	-0.41 – 0.34

In order to know the effectivity change of practice toward the score change, the deviation score between pretest and post test needs to be identified. Table 7 shows the distribution of score change in each research location.

**Table 7. The Score Change in Medical Worker in Four Area**

Region	n	Mean	Std Deviation	p value
Depok	81	1.68	1.07	0.000
Bekasi	78	1.79	1.45	
East Jakarta	86	2.47	1.49	
North Jakarta	63	2.17	1.16	
Total	308	2.03	1.35	



Based on the table, it can be seen that the average deviation of pre-test and post- test score in East Jakarta is the highest compared to the deviation score in other regions. The p value is yielded from the ANOVA test to reveal whether the difference of score deviation is meaningful statistically. The result revealed that in test of deviation score in four regions, the *p* value is for 0,000. There is significant difference for score deviation in each region.

**Table 8. Post Hoc Test Gain Score**

(I) region	(J) region	Mean Difference (I-J)	<i>p</i> Value	95% Confidence Interval
Depok	Bekasi	-0.11	0.96	-0.65 – 0.43
	East Jakarta	-0.79*	0.00	-1.31 - -0.26
	North Jakarta	-0.49	0.12	-1.06 – 0.08
Bekasi	Depok	0.11	0.96	-0.43 – 0.65
	East Jakarta	-0.68*	0.00	-1.21 - -0.15
	North Jakarta	-0.38	0.32	-0.96 – 0.19
East Jakarta	Depok	0.79*	0.00	0.26 – 1.31
	Bekasi	0.68*	0.00	0.15 – 1.21
	North Jakarta	0.29	0.52	-0.27 – 0.86
North Jakarta	Depok	0.49	0.12	-0.08 – 1.06
	Bekasi	0.38	0.32	-0.19 – 0.96
	East Jakarta	-0.29	0.52	-0.86 – 0.27

The aforementioned table revealed that the difference of score change only applies among selected area, which are Depok and East Jakarta, and Bekasi (*p* value 0.000).

**DISCUSSION**

The evaluation of the master training among cadre shows that the post-test score was higher than pre-test score. This result supports Kirkpatrick model (2009) on the level 2 evaluation known as learning. The evaluation in level 2 aims at measuring the understanding of participants on the training material. It also measures to what extent the participants are able to absorb the material given. A training program is considered successful when the participants gain significant improvement. It is usually measured by comparing the participant's understanding before and after the training. A common measurement device is a written test which is used to figure out the knowledge and attitude levels of the participants. The test is usually conducted before and after the program in order to figure out the improvement level of certain aspects. Rukmi, Novirani & Sahrul, (2014) had conducted a research focusing on training evaluation by using Kirkpatrick (2009) model to 20 participants of Training Foreman Development Program. The result of research showed that the pre-test

mean was 46,58%, and the post-test mean was 58,50%.

According to Tupamahu and Budi (2005) , training evaluation level 2 (learning) of Kirkpatrick model consists of three competence domains (knowledge, skills and attitudes), which are usually thought in a training (2009). Thus, the evaluation in this level emphasizes on how far learning process on training material can improve the competence of training participants. The evaluation is important because attitude changes will never occur if the participants are unable to comprehend the training material well. To assess whether a participant has understood training material, pre-test and post- test are usually performed and the testing material is usually similar or even the same. If the result of post test is higher, it is assumed that the participants have attained better understanding after attending the training.

The research of Kasule (2011) entitled Medical Student KAP Regarding Cancer Prevention was conducted on the first year and second year medical students with 87 KAP variables which included cancer location, symptoms. Risk factors, prevention method, opinion and attitude, and prevention attitude. The result of this result showed high KAP score (for those who give correct and perfect response on KAP variables). 30 variables got score ranging from 91-100. 21 variables got score ranging from 81-90, and 25 variables got score ranging from 51-80. Only 11 variables got score lower than 50. Usually, senior students had higher knowledge level than new students. Meanwhile, there was no significant difference on opinion, attitude and behavior in seeking for medical service in both senior and new students.

Edwards (2016) had conducted research on the curriculum innovation and cancer education in a training for nursing students (Edwards *et al.*, 2016). This research also focuses on the effect on knowledge, attitude and self-confidence in treating cancer patients. After a new model was elaborated during the training program, it was found that knowledge, attitude and self-confidence in treating cancer patients of the participants had increased. This finding supports the theory of medical behavior, postulated by Pollyrian (2009). He argues that the changes in medical behavior can be accelerated by fostering knowledge and confidence, improving self-capability and skill, and providing social facilities.

The deviation score of pre and post test is different meaningfully between medical workers who live in East Jakarta and the medical workers who live in Depok and Bekasi. This study shows that the deviation score for medical workers in Jawa Barat is different with the deviation score for medical workers in East Jakarta. The difference of knowledge level related with cancer in children caused by the age variable and the length of working (Sepang, Gunawan & Pateda, 2013). The high of score change of the knowledge of cancer in children at East Jakarta caused by the workers have been exposed more about cancer in children.

## CONCLUSION

The level-1 training was proven to increase knowledge of the medical staff and cadre about childhood cancer early detection. It is an important step since all the trained participants will train their colleagues in the next level-2 training. We are also recommending that this type of training should be conducted sustainably. The result shows that level of acceptance of the learning material among cadre was homogenous, which implies that district characteristic (urban/rural) did not affect the level of cadre's knowledge regarding childhood cancer. As delayed diagnostic is main problems in treating childhood cancer, therefore increasing level of knowledge and awareness will be beneficial in order to face the problem and to detect childhood cancer earlier.

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