A remote training of maternal knowledge and children health center: A multi-user application implementation

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Abstract. The aim of this study was to compare the improvement of nutritional knowledge of maternal and children health centre cadres in Tamansari, Bandung through entrepreneurship and nutritional training. This was an analytical study with cross sectional approach that held while conducted a community service. Nutritional knowledge among the cadres measured using questionnaire pre and post the first phase of the training. The comparison analysed using Stata with dependent T-test. This study revealed that 24 cadres completed both pre and post questionnaire, other 3 cadres only returned one questionnaire. Based on the statistical analysis, there was a significance improvement on the level of nutritional knowledge after the training. The study concluded that entrepreneurship nutritional training can improve knowledge level on maternal and children health centre cadres.

1. Introduction
Children get both macro and micronutrients from the breastmilk up to the age of 6 months. After that, the nutritional level in breastmilk will continue to decrease. Therefore, up to the age of 2 years, children are vulnerable to catch nutrients deficiency especially micronutrition such as iron, iodium, folic acid, vitamin A and Zinc [1,2]. Based on this condition, at this time children need adequate nutrition from complementary foods [3].

Based on that reason, Indonesian Government has established A First Thousand Days of Life Program, based on the Scale up nutrition (SUN) program by the World Health Organization (WHO) [4]. The activity on this program is divided into specific and sensitive interventions. Specific interventions intended specifically to mothers and children under two years old, while the sensitive interventions held for public who has specific impact on children’s grow and development process. One of the activities of sensitive intervention is nutritional education for public [4].

Indonesia has developed a maternal and children health center called Posyandu since 1975. Posyandu is a form of community-based health unit that has been done from, by and for community especially for mothers and children under five. Usually there are 5 voluntary cadres on each health center, mostly are the housewives. Their main task as agent of change is to help community especially mother and children to promote and maintain their health [5].

Tamansari, Bandung is one of the areas that is nurtured by medical faculty, Bandung Islamic University. Based on that reasons, the social service team from public health department, medical faculty, Universitas Islam Bandung decided to conduct a community service in the form of entrepreneurship nutritional training for maternal and children health center (Posyandu) cadres. The aim of the community service was to increase the nutritional knowledge especially about complementary
feeding for children under two and stimulates entrepreneurship motivation of the cadres. This study was a part of the community service that was held in the first phase of the training. This study conducted to measure the improvement of nutritional knowledge of the cadres in Tamansari, Bandung.

2. Methods
This was an analytical study with cross sectional approach. It was a part of community service funded by Research and Community Service Institution, Bandung Islamic University in 2017/2018 academic years.

This community service was an entrepreneurship nutritional training consisted of 2 phases. The first phase was nutritional training, while the second phase was entrepreneurship training. The training was held on April-May 2018. Before the first phase of training, cadres were asked to complete a questionnaire containing 10 true-false nutritional statements. The statements were about nutrition for children under five and the ideal complementary foods. The result of this pre-test was used to measured nutritional prior knowledge of the cadres. Then, the cadres were given two lectures about nutrition for children under two. They were also given a demonstration of how to cook variety healthy porridges for children under two and they were asked to imitate and brought their porridge on the second phase of the training. Last, they must complete post-test that were the same as the pre-test. This time, it was used to measure the improvement of the nutritional knowledge.

On the second phase of the training, the cadres came with their version of healthy porridge to be judge by nutrition expert. They were also introduced to basic entrepreneurship to stimulate the entrepreneurship motivation among the cadres.

This study only measured the results of the first phase of the training. The sample was 27 cadres, invited from 22 maternal and children health center spread in Tamansari, Bandung. Sample chose by purposive sampling. The data were counted using Microsoft Excel 2016 to have the average value of pre and post-test. The value then statistically analyzed using Stata software and presented using descriptive and inferential statistic dependent t-test with the level of significance set at 0,05.

3. Results
The cadres who attended the first phase of the training were 27 people, but the cadres who completed both of the pre and post questionnaire were only 24 people. Three other cadres only filled out one of the questionnaires therefore their knowledge level data could not be analyzed. The characteristics of all cadres shown in Table 1.

| Table 1. Characteristics of cadres. |
|-------------------------------------|-----|-----|
| Characteristics                     | n   | %   |
| Age                                 |     |     |
| 35-39                               | 1   | 3.7 |
| 40-44                               | 4   | 14.8|
| 45-49                               | 7   | 25.9|
| 50-54                               | 8   | 29.6|
| 55-59                               | 2   | 7.4 |
| 60-64                               | 1   | 3.7 |
| 65-69                               | 3   | 11.1|
| 70-74                               | 1   | 3.7 |
| Education                           |     |     |
| Junior High School                  | 3   | 11.1|
| Senior High School                  | 21  | 77.8|
| University                          | 2   | 7.4 |
| Occupation                          |     |     |
| Housewives                          | 23  | 85.2|
| Working women                       | 2   | 7.4 |
| Unclarified                         | 2   | 7.4 |
Table 1 shows that most of the cadres were reproductive age women (44.4%). Most of them (77.8%) were moderate educated, and 85.2% were housewives.

The distribution of the level of nutritional knowledge pre and post training data was analyzed using Saphiro Wilk and the result was normal distribution. The average value for pre-test was 4.6 point, while the average value for post-test was 5.9. These values then analyzed by Stata using dependent T-test with alpha value 0.05. The result showed p value = 0.01, which was lower than 0.05. Based on the statistical calculation, the study showed that the level of nutritional knowledge of the cadres in Tamansari increased after the training.

4. Discussion
Complementary feeding is defined as the provision of foods or fluids to infants in addition to breastmilk. It is recommended to be introduced at age 6 months. It is important because the nutrient in breastmilk has no longer sufficient to meet the requirements for optimum growth and development of infants [6]. Many factors have contributed to malnutrition in children under two year. Lack of nutrition and food-related knowledge during the first two years of life have been identified as major cause insufficient quality and quantity of healthy diets [3].

First of all, the study showed that all the cadres involved are women. According to International Food Policy Research Institute, providing women with culturally sensitive nutrition and health topics is important to strengthen their social capital [7]. Sunguya defines nutritional training as any formal nutrition course in the form of in-service training, continuing professional education, short courses, or seminars, aimed to improve nutrition knowledge or practices of health workers [8].

This study showed that entrepreneurship nutritional training could improve nutritional level of knowledge among the cadres. This study is in line with the study that conducted by Sunguya et al. He conducted a literature review for published randomized controlled trials (RCTs) and cluster RCTs. The results showed that training of health workers can help improve feeding practices of children under two years. Nutritional training proven can increase or refresh nutritional knowledge and as agent of change, the cadres can transfer the knowledge to mothers who has children under two years. A total of 18 studies that were reviewed showed significant post-test training improvements in knowledge level. Suguya et al also showed that in service nutrition training improved skill and competence of the respondents, therefore they could improve the nutritional status on children [8].

Other literature research conducted by Ling Shi et al showed that educational interventions improved positive impact on knowledge and behaviors. Education intervention gives an opportunity for the respondents to upscale the knowledge and skills that important to stimulate behavior change, make them aware the importance of behavior change and increasing the social support from family and community to boost behavior change [3].

As a part of community service, this study can be compared to a study that was conducted by Inayati et al in Nias island, Indonesia. Both of the study was a part of social service. Inayati conducted nutrition education activities in two groups of cadres. The first group was given intensive nutrition counseling and education once a week for one month. The second group was given nutrition counseling and education only once a month. Both groups were given a pre and post education test to assess the outcomes of the educational activities [9].

The results obtained from Inayati's research on Nias Island showed that the pre-test value from both groups was not significantly different, but after nutrition counselling and education, different post-test scores were obtained. Both groups showed improvement in nutritional knowledge level, but groups of cadres who received intensive counselling and education showed more significant improvement compared to group that received only one counselling and education activities [9].

5. Conclusion
This study was involved 27 cadres, but only 24 cadres that were count because the other three were excluded for only completed one questionnaire. All of the cadres were women, mostly on their reproductive age. This study showed that the average value of post training test was increased compared
to the pre-test. Statistically, using dependent T-test the improvement was significant. All in all, it is concluded that entrepreneurship nutritional training could improve nutritional knowledge on maternal and children health center cadres in Tamansari, Bandung.

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