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Impact of Nutritional Education on Service Quality in the Integrated Service Posts (*Posyandu*)

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Abstract: The success of an Integrated Service Post (*Posyandu*) program can be seen by its service quality. However, there are not many studies that analyze the impacts of nutritional education on the service quality of posyandus and the sustainability of the nutritional education program at posyandus. Thus, the objectives of this study were to analyze the posyandu cadre's perception and to see the impact of nutritional education on the service quality at the posyandus. The design of this study was a quasi-experimental one. It was conducted from January 2012 to September 2013. Four villages in Bogor, West Java were selected as the research locations. The subjects were the posyandu cadres and the toddlers' mothers in the posyandus. The results showed that counseling and supplemental feeding needed to be improved at the posyandus. The nutritional education had a significant effect to the service quality of the posyandus ($p<0.05$). After the follow-up, there was a decline in the satisfaction level of the toddlers' mothers but that was still better than at the baseline. This means that, the nutritional education and provision of the facilities are sustainable and able to improve the service quality of the posyandus when continuously given by the cadres.

Key words: Nutritional education, posyandu, service quality, sustainability

INTRODUCTION

One of the government programs to alleviate the nutritional problems among children under five in Indonesia is the establishment of an integrated service known as Integrated Service Post (Posyandu). In terms of its quantity, the growing number of posyandus is very encouraging, because in every village there are about 3-4 posyandus. At the time the posyandu was launched in 1986, there were 25.000 posyandus and in 2008 the number increased sharply to 269.202. However, in terms of its quality many problems are still found, such as completeness of the facilities and low skills of the cadres (Indonesian Health Ministry, 2011). In fact, the quality of the posyandus should be met by the government and can be a guarantee for customers to achieve an optimal health status.

Meanwhile, barriers that often occur in the implementation of posyandu programs are the weakness in Information, Education and Communication on Nutrition (IEC-Nutrition) which is one of the cornerstones in nutritional programs at the neighborhood health center. Besides the quality of cadres which is still low because they received less training, they also have a relatively low level of education so the cadres cannot provide counseling to mothers who come to posyandu.

Successfulness of a posyandu program can be seen by its service quality. Methods of five service quality dimensions (tangibility, reliability, responsiveness, assurance and empathy) are applied to assess the degree of posyandu users' satisfaction on the quality of the services provided (Parasuraman *et al*., 1996).

Up to now, few studies related to nutritional education have shown positive results for improving knowledge, attitudes and practice of nutrition, as well as nutritional status (Kabahenda *et al*., 2011; Inayati *et al*., 2012). However, not many studies analyze the sustainability of the nutritional education program. Thus, the purposes of this study were to analyze the posyandu cadre's perception and to see the impact of nutritional education on the service quality in the posyandus.

MATERIALS AND METHODS

This study was designed as a quasi-experimental one. This research was conducted from January 2012 to September 2013, in villages of Sukaluyu, Sukaresmi and Sukajaya as the intervention group and in village Sukajadi as the control group. All of the villages are located in Bogor District, West Java, Indonesia.

Data of the posyandu cadre's perception were collected in all of the villages. A total number of 18 cadres were interviewed. However, data of the service quality of posyandu were only collected in a selected posyandu in the village of Sukaluyu which consisted of 31 mothers and toddlers as well as 4 cadres as respondents.

The data on the service quality of posyandu were collected in three time periods, that is, the baseline

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(before intervention), the endline (after intervention) and the follow-up. The aim of the follow-up was to look at sustainability changes in the measured variables after no intervention.

A nutritional education was given to the cadres in the intervention group. Topics presented were: (1) basic nutrition; (2) nutrition for children; (3) food selection for children; (4) basic hygiene and sanitation; (5) food security and (6) posyandu participations. In addition, provision was also made to support the posyandus at the intervention group such as: banner, leaflet, module, flipchart, cadre's uniform shirts, registration tables, chairs, mattresses, Health Card, baby scales, child-under-five scales and microtoise.

The data were processed and analyzed using Analysis of Variance (ANOVA) by SPSS 16 software. The service quality was analyzed in regard to the level of users' satisfaction in a Likerts scale and through depth interviews.

RESULTS AND DISCUSSION

Characteristics of the cadres: The characteristics of the Posyandu cadres in the control and intervention villages showed that there were differences in values among the variables (Table 1). The explanation for each of the variables is as in the following.

Age: Some ages of the cadres in the control and intervention villages were categorized as productive ages, that is, on average 29 years and 35 years, respectively. The cadre ages were very beneficial since physically they were strong enough and mentally they were mature enough. Thus, they were strong enough to manage the posyandu activities, lift the scaling equipments etc. Accordingly, mentally they were also mature enough to make a decision connected with the posyandu activities, able to control themselves in facing problems in the posyandu, able to motivate and communicate well with mothers of children under five and pregnant mothers.

Education level: The education level of the posyandu cadres was relatively low, particularly in the intervention villages, that is, 7.5 years, while in the control village was 9 years. The Indonesian government has decided the nine-year basic education program. The goal is all Indonesian citizens are able to accomplish the nine-year education, that is, six years at an elementary school and three years at a junior high school. In general the cadres in the intervention villages did not finish their education at a junior high school or only graduated from an elementary school. This low education level was connected with the economic condition which was relatively still low when the cadres were school-aged and the education programs in Indonesia were not intensively conducted.

Income level: The income level of the cadres' household in the control village was relatively higher than that in the intervention villages, that is approximately IDR 483,250 and IDR 356, 336 per capita per month, respectively. The cadres' households were not categorized as poor, because their income existed above the poverty standard of the World Bank US $ 1 or IDR 9,000 per day. The income of the cadres' households in the control village was IDR 16,108 per day and in the intervention villages was IDR 11,878 per day.

Length of staying in the area: The length of stay in the village area for the cadres in the control village was lower than that in the intervention villages, that is, 17.3 years and 32.6 years. The figures showed that the cadres in the intervention villages in general were the

Table 1: Statistics of the cadres' socio-demographic characteristics

Variables	Control	Intervention
Age (year)	29.0±8.2	34.8±7.1
Education Level (year)	9.0±3.5	7.5±2.7
Income Level (IDR/cap/mo)	483.250±154.799	356.336±182.305
Length of staying in the village area (year)	17.3±10.1	32.6±9.1
Length of being cadres (year)	9.0±6.6	5.6±6.5

Table 2: Perceptions of the cadres on the posyandu activities necessary to be improved

	Control		Intervention	
Posyandu activities	n	%	n	%
Counseling	4	100.0	14	100.0
Supplementary feeding	4	100.0	13	92.9
Weighing children under five	3	75.0	12	85.7
Immunization	3	75.0	11	78.6
Iron-Tablet provision	3	75.0	10	71.4
Procurement of KMS	4	100.0	12	85.7
Family planning service	3	75.0	13	92.9
Pregnancy examination	3	75.0	12	85.7
Provision of vitamin A capsules	4	100.0	12	85.7

native people who from birth up to adult stayed in the rural village. On the other hand, in the control village there was a cadre coming from outside of the village. Even though the cadre was an outsider, there was no problem or refusal from the community.

Length of being a cadre: The length of being a cadre shows the experience level of the posyandu cadre. Similar to the length of staying in the area, the cadres in the control village had a higher experience as a posyandu cadre than the cadres in the intervention villages, that is 9 years and 5.6 years. Being a Posyandu cadre took place naturally, meaning that someone became a cadre started from assisting the cadres in preparing the activities at posyandu and then was invited to be a cadre by the older cadres. All were voluntary. A job as a posyandu cadre was a charity work and a work done among other works which were taken in by the cadres. The majority of the cadres were housewives (55.6%), some were sellers (22.2%), teachers of early-aged child education or PAUD (16.7%) and farmers (5.5%).

Cadre participation in the posyandu implementation: Cadres are the most important element in activating posyandu. Without cadres posyandu will not run. Cadres are also the spearhead of a health service at the village level, particularly the health of pregnant mothers, children under five and the elderly. Early detection of health problems at the community and village levels, for example, poor nutrition can be identified from the information given by the cadres to the medical officers at the sub-district level or *puskesmas* (community health center). Even many of the cadres played a role in helping the village members get an access to a hospital at the residential and provincial levels, for example applying for a health insurance, letters of free of charge for hospital expenses, taking patients to hospital etc. Cadres were the closest persons and played a central role in the posyandu activities.

The participation of the cadres in the posyandu either in the control village or in the intervention villages was very high, seen from two main indicators, that is, the high attendance in the posyandu activity and the high motivation for being a cadre.

The attendance level of the cadres in the posyandu activities was very high. Every time there was a posyandu activity held every month, all of the cadres were always present, either those in the control or those in the intervention villages. The intervention research program conducted was able to improve the cadre attendance in the intervention villages from 85.7% to 100%. If the cadres could not come to the posyandu, it was due to the condition, not because of being reluctant or lazy, but because of being sick or having a family business.

The cadre motivation to remain to dedicate themselves to the community through posyandu was also very high, almost all of the cadres expressed their wish to be cadres as long as possible. The main motivation of the cadres to take participation in the posyandu activities was an altruistic wish, that is, charity, voluntary, serving the God and getting merit from the God. As stated by the cadres, among others are: (1) to improve the rural community; (2) to help the rural community especially pregnant mothers, children under five and infants in improving their health; (3) to get some health knowledge; (4) to get merit and blessing from the God; and (5) inner motivation. Some other cadres stated that being involved in the Posyandu was due to fulfilling their spare time, getting many friends and supporting their husband's job as the head of sub-village.

Perception of the cadres on posyandu: There were many things at the posyandus which needed to be improved (Table 2). The main activities to be improved either in the control village or in the intervention villages were counseling, supplementary feeding, procurement of growth monitoring chart (KMS) and provision of vitamin A capsules. The number of KMS which were limited was not comparable with the number of children under five so the cards were provided by the cadres in a copied form, also the limited fund for supplementary food provision, the irregular counseling and the limited vitamin A stock were problems faced by posyandu.

Based on the cadre perception, there were also external obstacles which came from the community. The basic obstacle was the reluctance of the mothers to take their children under five to Posyandu, even though the number was relatively small. The reasons put forward, among others, were being ashamed of the other mothers of children under five since their children's body weight did not increase, not willing their children to be immunized and a far distance of the posyandu from their houses. The reason for the mothers not wanting their children to be immunized was after the immunization their children became fever even though in fact the midwife had given a fever-reducing medicine after the immunization.

The obstacles coming from the cadres themselves, even though they were rare, among others, were that there was a personal problem among the cadres and there was a cadre who was less active. These problems were due to miscommunication or misunderstanding among the cadres. The fact that the children were difficult to weigh or hard to please when weighed and immunized was also complained by the cadres.

The problems coming from the medical officer/midwife, according to the cadres were sometimes the midwife did not come on the stated schedule so this made the posyandu members disappointed who had gathered at the posyandu. The unfriendly medical officer was also

complained by the cadres and the posyandu members, as it happened when there was a temporary substitution of a medical officer who used to serve at the posyandu because she was on her maternal leave and her substitute was considered by the posyandu members was unfriendly and easy getting a bad temper if the body weight of the children under five did not increase.

Tangible dimensions: Tangibles or physical evidence is an ability of a posyandu to demonstrate its existence to external parties. Appearance and capabilities of the posyandu physical infrastructure and the state of the surroundings, which include the physical facilities, are living proofs of the service rendered by the service providers. The result showed that as many as 63% of mother's toddler had been satisfied with the tools that were used in the posyandu before intervention (Table 3). Procurement of the tools that support posyandu services can improve the satisfaction level of toddlers' mother up to 100%. The ANOVA showed an influence of the nutritional education and provision of the facilities to service quality of the tangible dimension ($p<0.05$). These results are similar to the previous research result that states that the tools provided by the health center improve the quality of health care (Sherr *et al*., 2013).

Meanwhile, as many as 35.8% of the mothers of children under five are not satisfied with the comfort of the weighing. Toddlers' mothers in the posyandu stated that the scale had not been clean so it was uncomfortable for her doing the weighing. After the intervention (endline), there was an increase in the mothers' satisfaction level of 41.6% from the baseline. This is because the education to the cadres can raise the awareness and responsibilities of the cadres in maintaining the cleanliness and comfort of the posyandus.

Reliability dimensions: Reliability in this case is the ability of a posyandu to deliver services accurately and reliably as promised. Performance of the cadres should be in line with expectations of the toddlers' mothers and timeliness, in sympathetic attitude and with high accuracy, as well as the cadres should provide the same service to all customers without mistakes. The baseline data showed that the reliability dimension of the service quality, standing at 82.6% on average, was in line with the expectations of toddlers' mothers.

Satisfaction levels of toddlers' mothers on the implementation of the posyandu schedule at the baseline (73.5%) increased by 23.3% at the endline. In this case, the schedule has been agreed and infrequently changed. If there was a change in the implementation of posyandu schedules, the cadres always informed the toddlers' mothers before doing posyandu's activities. Thus, the implementation of the posyandu schedule every month is considered to be good by the mothers.

In addition, 90.3% of the recording of the service results had been very good at the baseline and sustained until the end of this study (97.9%). In this case, the cadres made a note (administration) or documents correctly and accurately, such as measurements of the body height (BH), body weight (BW), head circumference in the health card.

Responsiveness dimensions: Responsiveness is the ability of cadres to assist and provide a fast and accurate service to the mother's toddler, with a clear delivery of information. Based on the responsiveness dimensions, the baseline information related to the service was still not good (58.3%). These results are similar to the previous research result by Wisnuwardani (2012), that is, the cadres were not able to provide information or explanation of the services provided such as the importance of weighing and measuring children, health card records and immunization.

The low quality will lead to customers' dissatisfaction. This will not only have an impact on the customers who have come to posyandu but it also has an impact on the others. Because the customers who are disappointed may tell it at least to 15 other people. Its impact is the potential customers will drop their choice to competitors (Lupiyoadi and Hamdani, 2006). This could mean that mothers with toddlers who are not satisfied would prefer to bring their children to a clinic than to bring them to posyandu. This will further enhance the role of posyandu in the community declined.

A related study on programs at posyandu/community-based health services was also conducted in Nepal by Sharma *et al.* (2011). The analysis of the study explained that the cadres or known as Female Community Health Volunteers/FCHV needed to be revitalized to ensure their active participation in identifying, analyzing and agreeing on measures to solve the problems related to the health of mothers, infants and children.

The ANOVA showed an influence of the nutritional education and provision of the facilities to the service quality of responsiveness dimensions ($p<0.05$). After the education, a change of 6.2% in the endline was because of the cadres' increased nutritional knowledge. These results are supported by Elu and Balthasar's study (2005) which concludes that the decision of the company to take remedial action services is an umbrella which is systematically decisive in following consumers' complaints of a failure, which in turn this can bind the consumers' loyalty.

Similarly, the cadres' dexterity in service, cadres' willingness to help visitors of posyandu and cadres' rapid response showed improvement after the intervention. However, the percentage of the mothers' satisfaction levels tend to decline at the follow-up but it is still in the range better than at the baseline. This means the extension given to cadres can improve the service quality of posyandu and its sustainability.

Table 3: Satisfaction levels of toddlers' mothers to service quality of tangible dimensions (Physical)

	Sat. levels of toddlers' mothers (%)		
Tangible dimensions	Baseline	Endline	Follow-up
Recentness of the tools	65	100.0	97.9
Comfort of the weighing	35.8	77.4	76.7
Appearance of the cadres	70.4	74.2	72.5
Appearance of other officers	67.9	100.0	92.0
Suitability of the facilities	76.3	100.0	95.8
Mean±Deviation	63.1±15.8[a]	90.3±13.3[b]	87.0±11.6[b]

Different letters in the same row show significant differences (p<0.05) by ANOVA

Table 4: Satisfaction levels of toddlers' mothers to the service quality of reliability dimensions

	Satisfaction levels of toddlers' mothers (%)		
Reliability dimensions	Baseline	Endline	Follow-up
Implementation schedule	73.5	96.8	73.5
Officers' attention to the toddlers' mothers	80.4	83.9	82.6
Reliability of the service	82.6	90.3	90.0
Time of the service	86	90.3	86.0
Recording outcomes	90.3	96.8	97.9
Mean±Deviation	82.6±6.3[a]	91.6±5.4[b]	86.0±9.0[ab]

Different letters in the same row show significant differences (p<0.05) by ANOVA

Table 5: Satisfaction levels of toddlers' mothers to the service quality of responsiveness dimensions

	Satisfaction levels of toddlers' mothers (%)		
Responsiveness dimensions	Baseline	Endline	Follow-up
Information related to services	58.3	64.5	70.7
Dexterity in services	90.3	90.0	85.0
Willingness to help the posyandu members	80.6	82.6	80.6
Speed of response	73.5	83.0	77.0
Mean±Deviation	75.7±13.5[a]	80.0±10.9[b]	78.3±6.0[ab]

Different letters in the same row show significant differences (p<0.05) by ANOVA

Table 6: Satisfaction levels of toddlers' mothers to the service quality of assurance dimensions

	Satisfaction levels of toddlers' mothers (%)		
Assurance dimensions	Baseline	Endline	Follow-up
Ability to provide consultation	48.4	61.3	52.0
Convenience of visitors	75	85.0	76.7
Patience of the cadres	80.9	87.3	80.9
Support of village officials	47.5	48.4	50.7
Mean±Deviation	63.0±17.5[a]	70.5±18.9[b]	65.1±15.9[a]

Different letters in the same row show significant differences (p<0.05) by ANOVA

Table 7: Satisfaction levels of toddlers' mothers to the service quality of empathy dimensions

	Satisfaction levels of toddlers' mothers (%)		
Empathy dimensions	Baseline	Endline	Follow-up
Cadres' attention to members posyandu	70.4	82.6	74.6
Cadres' attention to fellow cadres	73.5	77.4	75.0
Cadres' understanding to posyandu members' needs	80.0	86.7	82.6
Opening hours as needed	70.0	75.3	70.5
Mean±Deviation	73.5±4.6[a]	80.5±5.1[b]	75.7±5.0[ab]

Different letters in the same row show significant differences (p<0.05) by ANOVA

Assurance dimensions: Assurance is knowledge, courtesy and posyandu ability to foster a trust of toddlers' mothers to posyandu. The service quality of assurance dimensions, 63.0% on average, was good enough. However, there were some indicators that were not positively realized. It is characterized by dissatisfaction with the ability of volunteers to provide counseling or consultation on posyandu nutrition and health (51.6%).

This is due to the education of cadres who are still relatively low (Junior High School), cadres' feeling of inconvenience in serving toddlers' mothers, a lack of training and access to nutrition and health-related information so that the cadres have not been able to provide information to toddlers' mothers in posyandu. In fact, a cadre of posyandu is expected to be the potential driving force because she has more interaction with the community, particularly in the delivery of knowledge and nutritional messages (Penny *et al*., 2005; Agrawal *et al*., 2012).

The nutritional education given to the cadres increased their knowledge so as to increase the quality of services by 12.9%. The ANOVA showed an influence of the nutritional education and provision of the facilities to the service quality of assurance dimensions ($p<0.05$). This situation indicated that the cadres' increased knowledge can improve the quality of cadres in terms of providing education of nutrition and health in posyandu. However, the service quality at the follow-up (52.0%) decreased but it is still in the range that is better than at the baseline. This means that the education given to the cadres can improve the service quality of posyandu and it is sustainable.

According Wisnuwardani (2012), coaching to staff increases the knowledge and skills of the cadres and gives an impression that the posyandu is attentive. Additionally, it will trigger the cadres to carry out their duties and roles properly that this will directly have an impact on the performance of that result. It shows that coaching, one type of which is through education of nutrition and health and supervision of the officer or officers who have competence in accordance with the field of nutrition and health can increase cadres' interest and knowledge about posyandu.

Empathy dimensions: Empathy is providing a genuine concern and the individual or personal nature. 73.5% of the toddlers' mothers was satisfied with the services provided by the dimension of attention. The endline data showed an increase of 7% on the dimensions. However, at the follow-up the emphaty dimention decreased by 4.8% (Table 5).

The ANOVA showed an influence of the nutritional education and provision of the facilities to service quality of empathy dimensions ($p<0.05$). This means the nutritional education given to the cadres has a positive impact on the service quality in integrated service posts. Caruana (2002) has shown that the quality of customers' loyalty indirectly increased through satisfaction.

The results of this study are supported by the previous research result which states that coaching cadres affects the performance of the cadres (Puspasari, 2002). This is because the presence of the coaching staff increases the knowledge and skills of the cadres and gives an impression that posyandu is attentive. Additionally, it will trigger the cadres to carry out their duties and roles properly and this will directly have an impact on the performance of that result. This is supported by Hayati (2001) who states that the supervision of the officer to the cadres is needed to improve the cadres' motivation in order to enhance their capabilities.

Conclusions: Cadres are the most important element in activating posyandu. The participation of the cadres in the posyandu was very high, seen from two main indicators, that is, their high attendance in the posyandu activity and their high motivation for being a cadre. Counselling and supplemental feeding needed to be improved in the posyandu. The average satisfaction level of toddlers' mothers was 71.6% at the baseline and increased to 82.6% after a given intervention (endline). The ANOVA results showed that the difference between the average satisfaction level of toddlers' mothers in the baseline and endline at the level of 5%, but there was no difference between that in baseline and in the follow-up ($p>0.05$). Although there was a decline of 4.2% at the follow-up, the results were better than those before the intervention (baseline). This means that the nutritional education and provision of the facilities is sustainable and can improve the service quality of the posyandu when given continuously by the cadres.

Recommendations: Generally, the results show that in the long run it is sustainable for a nutritional education intervention to the improvement of the posyandu quality. Thus, posyandu cadres and health personnel need to perform a sustainable education of health and nutrition at posyandu. In addition, posyandu needs strong supports from various parties to improve its quality.

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