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# EFFECT OF THE USE OF SIMULATION METHOD TO INCREASE THE KNOWLEDGE AND BEHAVIOR OF TRADITIONAL BIRTH CAREGIVERS IN MATERNITY CARE SERVICES IN THE JEMBER DISTRICT, EAST JAVA PROVINCES, INDONESIA

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## ABSTRACT

**Background:** The role of the traditional birth caregiver in the assistance delivery is very significant in the rural area of Jember District. This particular tradition is strongly influenced by socio-economic factors and local culture.
**Objective:** The purpose of this research work is to analyze the effectiveness of training traditional birth caregivers through simulation game method is to increase the knowledge of the traditional birth attendants to improve their performance in maternity services.

**Methods:** The method of this study was "the random pretest-posttest design with intervention and control group". The research samples were categorized into four groups. The first group was provided with a method of simulation, the second group is given a lecture, while the third and fourth groups were not given any treatment. This study was done in community health center of Jember District.

**Result:** The result of this study showed that there is a significant difference in the behavior of traditional birth caregiver before and after the understanding of simulation methods; there is also a significant difference of knowledge after lecture method; and there is also a significant difference of knowledge between the groups given treatment and the control groups before and after simulation and lectures method. But there was no significant difference between groups given simulation methods and the group provided with lecture method. Moreover from the observations it was evident that the groups as a whole showed a higher increase in knowledge and enhancement of behaviors with simulation methods than the group provided with lecture method.

**Conclusion:** It was found that the intervention of simulation method was more effective to improve knowledge and behavior of the traditional birth caregiver in health care system of maternity and community health nursing services and should be strongly referred in high risk cases.

***Keywords****: Simulation Lectures, Maternity Care Services, Traditional Birth Caregiver.*

## INTRODUCTION

Amidst the high technological advancements of today, the traditional care givers continue to live with their conventional mode of treatment. The number of traditional birth caregiver in Indonesia still quite high, but the exact number is not known, because most of them do not have any official record as well as new traditional birth caregiver are arise every other day (Budiharso, 1985). The role of Traditional Birth Attendants (TBA) are very significant in the community because in general they come from local community which have recognized old values, symbol and long-established beliefs using the local language. Referring to trust it can be said according to the reports that traditional birth caregiver do not only help during delivery but also play a part in local ceremonies, charity and super natural activities giving pleasure to the local inhabitants patient and all these actions attributed to mode of human life (Foster, 1986).

Society perception towards trained traditional birth caregiver and midwives comes from their ability, patience, experience of defrayal which is related to factor like norm, confidence, attitude and knowledge which help the common man to choose the right and able person to help during the labor period of the mother (Notoadmojo,

1988). Since year 1951 traditional birth attendance trainings have been conducted to assist the practice of the traditional Birth Caregiver and midwives to increase their knowledge in treatment of pregnancy, prenatal care, delivery assistance, care towards nursing mothers, infant and children as well as their therapeutics. Beside it is expected that traditional Birth Caregivers are easily available and can be summoned quickly specially for high risk cases. Nevertheless the knowledge of the traditional Birth Caregiver still disputed (Sarwono, 1993).

Meanwhile the mortality rate of mother presented by WHO (2004) indicated the health status of the community. Mortality rate of mother in Indonesia according to the data obtained from the hospital references between the years 1977-1980 showed that mortality of the mother at the time of delivery was 37.4 per thousand with a range of 6.9-11.4. There are three complications which causes many maternal deaths namely haemorrahage, eclampsia and infection. Meanwhile according to the survey of 1986 household mortality rate of mother were 4.5 per thousand live birth (Budiarso, 1985).

In the sub-province of Jember, the Maternal Mortality Rate (MMR) was found to be 33 per a thousand and Infant Mortality Rate (IMR) was 112 infant per a thousand live births. The number of registered midwives in the Health Department of Jember enlisted for duty was 1047, scattered among 49 Community Health Centres of the Sub-Province. The figure still indicates poor quality of maternal and child health care (MCH) in Jember. The Arjasa Community Health Center is one of the renowned community health center in the region has a population of, 1 per a thousand infant mortality rate and IMR of 13 infants per thousand live births, with 39 TBAs in five villages in the region of Puskesmas Arjasa Community Health Center (PKP Jember District Health Office, 2006).

Based on the above description it can be said that the number of TBA must be increased in Jember Arjasa health centers in general in order to reduce MMR and IMR. By the active role of traditional birth attendants in the context of a referral system for high-risk cases of deliveries such an optimal state can be achieved in the Arjasa Community Health Center. One of the methods that were found to be effective to increase the knowledge of the traditional Birth Caregiver is through the demonstration of the treatment methods by simulation system related to problems of high risk case in the community health center done for the midwives and or community health nurse in the villages (Doak, Doak, and Root, 1996).

## METHODOLOGY

This study is a Quasi Experimental study to draft "The Non Randomized Control Pretest Posttest Design". The research sample is separated into six groups namely the group given simulation practice, the group given training methods (lectures) and the control group was given no training at all. Preliminary tests was conducted in all the groups and at the end of the study a final test was done to compare the level of knowledge and behavior of the TBAs in high risk cases and referral centers. Besides that comparison was done for the knowledge and attitudes among the TBAs.

The sample of this research consisted of trained traditional Birth Attendants working in the clinics of Arjasa community health center. All these individuals included in this research were actively working in the health center at the time of this survey. The research was done on 30 individuals from the Arjasa community health center. Data collection tool or instruments used in this study were: (1) Simulation model; (2) Guidelines for interviews to determine the knowledge and behavior of TBAs (3) List observations as behavioral test of the traditional Birth Attendants. TBAs reference card has been developed by the Ministry of Health which is used to check the number of referrals TBAs. The numbers of referrals are seen by the prospective 3 months after training.

Data which have been collected from field are processed by the computer. The analyses used are

(1) For the analysis of data before and after practice Wilcoxon Signed Rank Testwas used;

(2) To compare knowledge and behavioral differences between the groups simulation practice was used along with Wilcoxon Sum Rank Test;

(3) For analysis of data for the effects of exercise between groups, Kruskal-Wallis test was used. Level of Significance is 0.05.

To compare difference of behavior and knowledge of the traditional Birth Attendants training by the method of simulation and analysis were given by means of lectures. Knowledge of the TBAs was measured by the goodness

of the answer given by them. If the correct answer by the TBA was more than 50% then knowledge was excellent, when traditional Birth Attendants get 30 - 50% ten knowledge was sifficient, while knowledge is considered less if the answered question was less than 30%. Same criteria is applied in the case of measuring behavior of the TBA.

## RESULT AND DISCUSION

i. Characteristic Respondents

The respondents of this study were 30 registered and active TBAs who were working in the Health Centres of Arjasa Health Center. Characteristics of respondents can be seen in table 1.1 below.

***Table 1.1Responder Characteristic Distribution***

| No. | Responder Characteristic | N | Percentage |
|---|---|---|---|
| 1 | Age (year)31-35 | 2 | 6.7 |
| | 36-40 | 3 | 10.0 |
| | 41-45 | 4 | 13.3 |
| | 46-50 | 3 | 10.0 |
| | 51-55 | 6 | 20.0 |
| | 56-60 | 8 | 26.7 |
| | 61-75 | 3 | 10.0 |
| | 76-80 | 1 | 3.3 |
| 2 | Religion | | |
| | Islam | 30 | 100 |
| 3 | Work | | |
| | Labor | 3 | 10.0 |
| | Entrepreneur | 22 | 73.3 |
| | Farmer | 5 | 16.7 |
| 4 | Education | | |
| | Not School | 2 | 80.0 |
| | Elementary School | 46 | 20.0 |
| 5 | Income/month | | |
| | Less than 750 thousands rupiah | 29 | 96.7 |
| | 750 thousand – 1.5 million rupiah | 1 | 3.3 |
| 6 | Responsibility family burden | | |
| | Less than 4 people | 16 | 53.3 |
| | 4 – 6 people | 10 | 33.3 |
| | More than 6 people | 4 | 13.3 |

From table 1.1 it is evident that majority of respondents were 56-60 years of age (26.7%), with Islam as the religion of the majority (100%), majority did not complete primary school education (80%). The average income level of respondents (96.7%) is less than 750 thousand, majority of respondents (73.3%) work as self-employee. Responsibility family burden in majority of the houses (53.3%) is less than four people.

***Table 1.2 Traditional Birth Attendants Characteristic***

| No. | Characteristic | N | Percentage |
|---|---|---|---|
| 1 | Time of becoming traditional Birth Attendants (years) | | |
| | Less than 5 | 3 | 10 |
| | 6-10 | 3 | 10 |
| | 16-20 | 5 | 16.7 |
| | 21-25 | 1 | 3.3 |
| | 26-30 | 5 | 16.7 |
| | More than 30 | 13 | 43.4 |
| 2 | Education of traditional Birth Attendants | | |
| | Yes | 26 | 86.7 |
| | Never | 4 | 13.3 |
| 3 | Experience of traditional Birth Attendants | | |
| | Heredity | 30 | 100 |
| 4 | Reason becoming traditional Birth Attendants | | |
| | Herself | 2 | 6.5 |
| | Culture | 28 | 90.3 |

From tables 1.2 it was seen that majority of the Traditional Birth Attendants had an experience of 30 years (43.4%), 86.7% followed training given by the Traditional Birth Attendants. Majority of the Traditional Birth Attendants inherited the profession (100%) and primary reason (about 90.3%) for becoming Traditional Birth Attendants was due to cultural background.

***Table 1.3Mother Health Care References by Traditional Birth Attendants***

| No. | Characteristic | N | Percentage |
|---|---|---|---|
| 1 | Reference | | |
| | Done | 21 | 70 |
| | Not Done | 9 | 30 |
| 2 | Places of referral | | |
| | Midwives | 26 | 86.7 |
| 3 | The number of births attended (month) | | |
| | 1 delivery | 4 | 12.9 |
| | 2-3 delivery | 16 | 51.6 |
| | 4-6 delivery | 9 | 29 |
| | More than 6 delivery | 1 | 3.2 |

From tables 1.3 can it is seen that Traditional Birth Attendants majority of them attend pregnant mother case (70%), with 100% of them were countryside midwives and majority of the Traditional Birth Attendants did Service delivery and referrals is 2-4 delivery per month ( 51.6%).

## RESULT

### Knowledge and Behavior Traditional Birth Attendants

i.Knowledge of Traditional Birth Attendants

Knowledge of Traditional Birth Attendants before and after the game simulation method is very different in the case of referral cases of the community health center. The following table represented the results of the research.

***Table 1.4 Knowledge of Traditional Birth Attendants that was analyzed with Krusal Wallis***

| Pre Test | Post Test |
|---|---|
| H = 2,37 | H = 13,043 |
| DF = 2 | DF = 2 |
| P = 0, 30 | P = 0,001 |
| Alfa 0,05 P > 0,05 | Alfa 0,05 P < 0,05 |

From tables 1.4 it can be concluded that there no difference of knowledge of Traditional Birth Attendants between group. It can be concluded that the clustering of respondents did not distinguish the level of knowledge among TBAs. After Treatment (Post Test) showed that the alpha 0.05 P<0.05 which means there are difference of knowledge among Traditional Birth Attendants between groups.

***Table 1.5 Difference of Traditional Birth Attendants Knowledge Pre and Post Test that each sample analyzed with Wilcoxon Sigened Rank Test.***

| Group | Result | P | Analyze |
|---|---|---|---|
| Simulation | z = 3,357 | 0.01 | Alfa 0.05 P< 0.05 |
| Control | z = 1,682 | 0.45 | Alfa 0.05 P> 0.05 |
| Discourse | z = 3,116 | 0.02 | Alfa 0.05 P< 0.05 |
| Control | z = 0,552 | 0.14 | Alfa 0.05 P> 0.05 |

From table 1.5 it can be concluded that there are difference of knowledge among Traditional Birth Attendants before and after good workout simulation or lecture method (P <0.05). While in the untreated group there was no difference in knowledge among the pre-test and post-test (P> 0.05).

***Table 1.6 Difference of Traditional Birth Attendants Knowledge between who trained by simulation method and discourse method analyzed by Wilcoxon Rank – Sum Test***

| Result | P | Analyzed |
|---|---|---|
| Z = 4,796 | 0.000 | Alfa 0.05 P < 0.05 |

From tables 1.6 it can be concluded that there are difference of knowledge between group given simulation method exercise and lectures.

***Table 1.7 Improvement of Knowledge of Traditional Birth Attendants before and after the training of simulation method and Lectures***

| Method | Knowledge | | | Improvement Knowledge | | |
|---|---|---|---|---|---|---|
| | Less | Enough | Good | Less | Enough | Good |
| Simulation | | | | | | |
| (pre test) | 6,20 | 12,01 | 15,05 | 1,30 | 1,49 | 5,95 |
| (post test) | 5,50 | 13,50 | 11,00 | | | |
| Discourse | | | | | | |
| (pre test) | 13,17 | 13,90 | 18.25 | 2,11 | 6,06 | 6,11 |
| (post test) | 11,28 | 19,98 | 14,36 | | | |

Note: Number in Percentage

ii. Behavior of Traditional Birth Attendants

Traditional Birth Attendants behavior before and after game of simulation method is very different in the case of high risk jobs referred from the community health center.

***Tabel 1.8 Traditional Birth Attendants Behavior with Pre test dan post Test Analyzed by Krusal Wallis***

| Pre Test | Post Test |
|---|---|
| H = 0.14 | H = 1,198 |
| DF = 2 | DF = 2 |
| P = 0.993 | P = 0.054 |
| Alfa 0.05 P > 0.05 | Alfa 0.05 P< 0.05 |

From table 1.8 it can be concluded that pre-test cases showed no difference in the behavior of traditional birth attendants. So it can be concluded that subdividing the respondent do not differentiate the behavior of Traditional Birth Attendants. After treatment (Post Test) it showed that at alpha 0.05 P<0.05 there are behavioral difference of Traditional Birth Attendants between groups, so practice was able to improve Traditional Birth Attendant's behavior.

***Tabel 1.9: Behavioral difference of Traditional Birth Attendants Pre and Post Test Analyzed by Wilcoxon Sigened Rank Test.***

| Group | Result | P | Analyed |
|---|---|---|---|
| Simulation | z = 3,638 | 0.00 | Alfa 0.05 P< 0.05 |
| Control | z = 1,965 | 0.59 | Alfa 0.05 P> 0.05 |
| Discource | z = 4,796 | 0.00 | Alfa 0.05 P< 0.05 |
| Control | z = 0,567 | 0.65 | Alfa 0.05 P> 0.05 |

There are behavioral difference of Traditional Birth Attendants before and after good practice with simulation method and also P<0.05 after lectures. While group which does not give any treatment do not show any behavioral changes at the time pre test and also at post test (P>0.05).

***Table 1.10 Behavioral difference of Traditional Birth Attendants Between Group with Good Practice of Simulation and Discourse Analyzed by Wilcoxon Rank – Sum Test.***

| Result | P | Analyzed |
|---|---|---|
| Z = 4,670 | 0.00 | Alfa 0.05 P < 0.05 |

There are behavioral difference between groups given exercise with simulation method and lectures.

*Tabel 1.11 Improvement of Knowledge of the Traditional Birth Attendants Pre test and Post test as result of Simulation Method and Lectures*

| Method | Knowledge | | | Improvement Knowledge | | |
|---|---|---|---|---|---|---|
| | Less | Enough | Good | Less | Enough | Good |
| Simulation | | | | | | |
| (pre test) | 15,00 | 15,20 | 15,58 | 7,50 | 1,30 | 0,05 |
| (post test) | 7,50 | 16,50 | 15,63 | | | |
| Discourse | | | | | | |
| (pre test) | 14,46 | 15,89 | 14.78 | 2,44 | 0,88 | 1,20 |
| (post test) | 12,0 | 15,01 | 15,98 | | | |

Note: Number in Percentage

## DISCUSSION

From tables 1.4 it was evident that there are differences of knowledge among the Traditional Birth Attendants before and after practice and exercise. So it can be concluded that exercise and practice can improve Traditional Birth Attendants behavior and knowledge through good simulation method and also through lectures. When described in percentage (tables 1.7) it was seen that improvement of the respondent was more as a result of training by lecture method (6.11%), as they revealed good knowledge. While training by simulation revealed good knowledge with a percentage of 5.95%. The level of knowledge referred to in this discussion is the expected level of knowledge (100%).

Despite increased in knowledge achieved by using simulation methods, but still it has not reached the expected level. This is partly because it is known that the ability of adults diminishes, as students as they get older. Also in accordance with the opinion of the Lunadi (1987) the adult people as learner face various physiological deficiencies and also have separate characteristic make-up.

According to the research work of Notoatmodjo (1988) in the District of Pasar Rebo simulation game method is more effective in increasing knowledge, especially in the study group who had entered the stage of consciousness (interest). However, this is different from the opinion of Greebalt (1977) which revealed that more simulation game method is more effective s in teaching and giving instructions during health education.

From survey result of is tables it is evident from table 1.9 that there are behavioral difference of Traditional Birth Attendants before and after practice. When the representative described the changes as depicted in Table 1.11, it was seen that in the case of pre-test by simulation method, behavior development was less with 15%, sufficient with 15.20% and 15.58% as good behavior. At post test behavioral improvement was seen which was represented as, less improvement with 7.50%, sufficient with 16.50% and good with 15.63%. This improvement gradually increased as less was with a percentage of 7.50%, 1.30% to be behavioral enough and 0.05% as good behavior

As a result of practice of lecture method pre-test results showed that 14.46% with less behavioral changes, 15.89% behaved reasonably and 14.78% were well behaved. At post-test, there was improvement in behaviors as depicted by 12.02% with less changes, 15.01% behaved sufficiently and well-behaved to be 15.98%. This gradually increased to 2.44% with less behavioral changes, 0.88 with sufficient behavioral changes and 1.20 with good behavior changes. Level of behavior referred to in this discussion is the expected level behavior Tertiary (100%).

Based on the statistical analysis it can be said that there was no marked behavioral difference of the Traditional Birth Attendants as a result of practice with simulation method and also due to lectures (tables 1.10). Differences occur only in behavior before and after treatment with both simulation methods as well as the lecture method as described above. Thus we realize that behavioral change does not impact directly but is experienced gradually.

However it is known that the observation skill of traditional birth attendants is higher in the detection of

high-risk pregnancy and ways to deal with high risk cases than the method referred by lectures. The number of referrals of pregnancy and childbirth cases is also higher in the group given exercise with simulation methods. The procedure of dealing cases are precise and early (on time) in the simulation method. This happens partly because in some simulations TBAs can see clearly how the high risk cases are dealt with practically with sufficient time and they can execute the job more efficiently due to the knowledge gained during the exercise. The experience is embedded in his memory due to close practical observation of behavior referral. Though the results in these cases were not so high, but the reference data have progressed steadily in respect to the previous condition (Mckinlay, 1981).

The characteristics of high-risk pregnancy are influenced by age, height / weight, number of children and so the matter should be dealt after going through the references before delivery. Referral should be implemented if TBAs are trying to cope with the matters alone with no progress. The matter should be under control once there is a new reference simulation exercise at this stage conducted by hospital trained midwivese and after the birth the responsibilities should be handed back to traditional birth attendants (Watts, 1990).

Having observed the lack of a reference depth among TBAs it can be said that it is not only a fault of the TBAs themselves, but also by the people themselves who do not want to be referred to the health center on cost grounds, the location, and the notion that reference is made only in cases that are too severe. This is consistent with the theory of Health belief model where someone will perceive the vulnerability of a disease on the basis of action or behavior of the patient to seek the prevention and treatment of the disease. While Mchinlay (1981) pointed out that, the quest for health care consists of several phases, the first phase consist of patient's experience regarding the symptoms of the problem and then look for both the reactions and symptoms using and then seek the civil lay health nurse (Lay concultation). If TBAs are not able to handle the next phase of the case as midwives then they should refer to the modern health services. While Foster (1986) pointed out that treatment begins after the symptom phase, role of pain and authentication from family hereinafter for the treatment to be carried by health care centre (Lay Consultation). As a result there is always a shortage of time. At consultation lay phase it is expected on the part of midwives to quickly refer the cases of high risk deliveries. Exercises using simulation games at times to strengthen supervision of the quack midwife referral behavior in accordance with the expected health outcome can weaken the power of knowledge because playing with human life regardless of age at this time is not required (Fuzard, 1995).

After knowing this, Arjasa Community Health Center conduct some interventions related to Mother and Child Health programs such as Family Medicare program, by increasing spreading the in the remote areas. This way they will promote the Movement Loving Mother and Baby, among others, by expanding the intervention strategies gradually in all districts, thereby expanding the scope of activities, so that high-risk pregnant women receive the best delivery assistance, as quickly and as accurately as possible, with a maternal mortality rate retreating.

Society still seeks help from traditional birth attendants due to many factors such as experience and socioeconomic conditions. This matter according to research conducted by Effendi (1997) in Dimension Jakarta East revealed that decision is influenced by socio-demographic factors along with primary education. The groups with per capita incomes above and below the poverty line had different decision regarding engagement of midwives. The score was higher in the group with per capita income above the poverty line and thus it can be concluded that the general behavior TBAs consumer is different for a midwife in prenatal care, postnatal care, family planning and immunization (Notoadmojo, 1993).

Health Provider like the nurses must conduct willingness and ability of itself tests in the community, with a persuasive approach towards the prominent individuals of the society. This will help to evaluate and monitor the on duty community health center personnel, as well as making TBAs partners in any pregnancy and childbirth cases in order to reduce the number of maternal and infant mortality (Azwar, 1995).

TBAs empowerment can be achieved through specialized training by methods such as simulation. Simulations done through the game are related to high-risk cases that require further referral. TBAs are given information and a demonstration of how to refer pregnant women to the health centers if classified properly as high-risk cases. Guidance is given in the form of active

education facilitates optimal and real knowledge to help learners to achieve expected competencies.

According to Effendi (1997), the purpose of community midwives is to increase the independence of the community and families in the health sector so that people can contribute in the improvement of health status. Having adequate empowerment over specific goals such as increasing public knowledge in the areas of health, enhance the ability of communities in the maintenance and improvement of their own health status, improve the utilization of health care facilities by the public, and realization of the institutionalization of public health efforts at the field level.

## CONCLUSION

1. The knowledge of midwives increased after getting training with simulation methods when compared with the lecture method.

2. Traditional birth attendant's behavior differs before and after getting practice as a result of simulation method.

3. Statistically there is no difference in the behavior of TBAs before and after practice. So practice is always required for the midwives to improve behavior. Besides, secondary data and observation showed that there is no difference in behavior of the referrals TBAs after giving training with simulation methods or lecture method. Referral pregnancy was higher than the reference childbirth as the midwives are taught how to refer the new birthing stage.

## RECOMMENDATION

1. Improvement is necessary for the traditional birth attendant's behavior and knowledge in the case of high risk maternity in an integrated manner.

2. Some simulations at high risk cases after further refinement and properly adapted to the local area, can be extended more easily with practical use formulated in the spare time.

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