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Exclusive Breastfeeding Prevalence and Feeding Patterns of Children Living at Rural Areas in Serba Jadi Sub District, Indonesia

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Abstract: ***Exclusive breast feeding (EBF) is the most effective strategy to prevent deaths. It is estimated 13% of children deaths live in low resources setting prevented by EBF. However, the coverage of EBF is still low at rural areas. Deploying midwives at villages is one of the strategy to improve EBF. The challenges come from the manufacturing solid foods. The aim of study was to find out the prevalence of exclusive breastfeeding practice and feeding patterns of children in rural areas of Serbajadi sub-district. This is a population based, cross-sectional study with questionnaire-based interview of mothers selected purposively. A total 949 children from eligible households were obtained to be the sample. Only 16.5% mothers breastfed exclusively infants <6 months. The lowest prevalence found in two villages (2.5% and 5.0%) and the highest is in Serbajadi village 56.0%. Sixty three percent of mothers had introduced solid foods for their babies <4 month of age. Maternal education and family income was significantly as the predictors to exclusive breastfeeding and introducing solids food (p<0.03;p<0.04 respectively). The result concludes that exclusive breastfeeding practicing was still rare, in contrast the introduction of manufactured solid foods was so intensive. The skill of village based midwives in promoting EBF have to be enhanced through peer counselling and home based couselling.***

Keywords: exclusive breastfeeding, village midwives, manufacturing solid foods, rural areas

1. Introduction

Exclusive breastfeeding (EBF) is the most effective strategy to prevent infant deaths. It is estimated 13% of children deaths live in low resources setting prevented by exclusive breastfeeding (Jones G. *et all*, 2003). World Health Organization (WHO) and UNICEF recommend the initiation of breastfeeding within the first hour after birth (WHO, 2003). WHO also advocates for breastfeeding as the best source of food to get optimal infant growth and development until 6 months of age. Mothers should be exclusively breastfed their babies and no other foods or liquids besides breast milk (Kramer, M.S., Kakuma, R, 2004; WHO, 2017). However, the challenges come from solid foods manufacturers. They have encouraged mothers to combine solid foods with breast milk living in rural areas. The infant formula industry has been considered to have a significant adverse impact on breastfeeding rates as a result of some of the marketing tools it has used, targeting not only mothers live in urban areas but also in rural areas (Arminda *et. all*., 20105). The consequences, exclusive breastfeeding coverage has decreased to vary substantially across the countries. World Health Organization (WHO) estimate the proportion of infants under 4 months currently receiving breast milk exclusively does not exceed 20% in most African countries (WHO, 1996). While in several industrial contries, breastfeeding continuation up to 6 months tended to be higher; in Southwestern Ontario 22.8% (Clifford, T.J . *et all.,* 2006), in Alberta 37.2% (Yang, Q, *et all*., 2004) and in Montérégie, Quebec 32% (Halek, L.N. *et all*., 2007). The prevalence of exclusive breastfeeding at 6 month however is much lower in Canadian women. Millar & Maclean reported that only 17,0% of women in Canada conform with the 6-month exclusive breastfeeding recommendation of the WHO (Millar, WJ and Maclean, H., 2005; Al-Sahab, *et.all*, 2010).

A current national nutritional assessment survey, found 29.5% mothers breastfed exclusively infants until 6 months (Kemenkes RI 2016), while district health office reported that in the last five years the prevalence of breastfeeding initiation ranged from 45-60% (Dinkes Kab. Serdang Bedagei, 2015). However, this acheiving still does not guarantee that infants who were receiving their mother's milk have not received other foods at various times since birth.

In improving the exclusive breastfeeding coverage, Indonesian government deploys midwives to work at villages to run maternal child health progran. At present, each village has at least one midwife to implement maternal and child health program (Kemenkes RI, 2015). This is one of the strategy to meet the target of 50% exclusive breastfeeding (Indrayani, 2017). This descriptive study intended to find out the prevalence of exclusive breatfeeding and feeding patterns of infants.

2. Methods

Study area

Serba Jadi-sub district part of Serdang Bedagei District, Indonesia. Serdang Bedagei district is divided into 17 sub districts, 237 villages and 1,130 sub-villages which is the lowest form level of administration. It is situated about 40 km from Kualanamo International Airport.

At the time of study, total population of Serba Jadi sub-district was 22,713 in which 1997 were children under five year live in 1820 households. There were 15 midwives working at village health posts. In each village, there was at least one midwife, depends on the population density. Based on the annual district health report, 45-60% mothers had been conducting breastfeeding initiation within an hour after birth. More than eighty percent pregnant mothers visited to village health post to have routine check-up.

Around 50% of fathers engaged in commercial and non-commercial agriculture at rubber and palm oil plantation and 30% parents worked as farmers. The average monthly income of a familiy was 2.5 million rupiahs, similar to 220 USD (1 USD=11.300 IDR)

Study design

This present study was a descriptive, cross-sectional study design conducted between January - February 2017. The location took place in ten villages of Serba Jadi namely; Serba Jadi, Kuala Bali, Karang Tengah, Tambak Cekur, Manggis, Kelapa Bajohom, Sibahdua-dua, Tanjung Harap, Pulau Tagor and Pulau Gambar.

Sample calculation

Sample size was calculated using formula :

$$n = \frac{z^2 1-\alpha 2P(1-P)N}{d^2(N-1)+z^2 1-\alpha 2P(1-P)}$$

n = 870.

Based on the following considerations: 95% confidence; 5% maximum deviation, 29.5% proportion of exclusive breastfeeding from previous survey; 1997 number of population (N). This formula presented the minimum sample size (n) of 870, inflated by 10% to make it 957 because the possible mobility of respondents living at rural areas settlements.

To meet this total sample, around fifty percent of the total children underfive in ten villages were recruited and the distribution of sample in each village as shown in Table 1. The sample was selected purposively based on selection criterias including : (1) normal delivery; (2) living in a nuclear family; (3) absence of chronic disease in the last three month; (4) lived in the village more than one year. Thus, 949 eligible household were enrolled. Participation of respondent was voluntary and the oral informed consent obtained from mothers. Detail sampling processes is presented in figure 1.

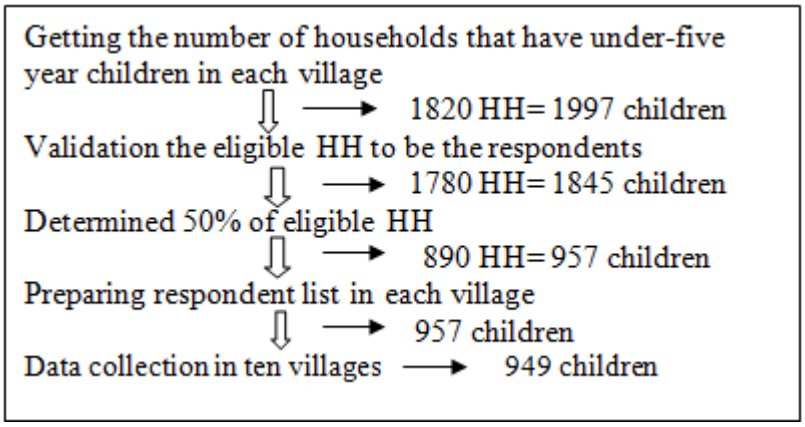

Figure 1: Illustration of sampling proceses

Enumerators and Data collection

Twenty field interviewers recruited from Academy of Nutrition, with prior experience in nutritional data collection. A 5-day training was conducted prior to study implementation. The training content included the study objectives, data collection techniques, interview guides and recalling infant food patterns.

A structured questionnaire was used used to obtain the quantitative data. The duration of interview was ±45 min, took place at mothers' home. The questionnaires were divided into four major parts which included: demographic information, birth and child feeding and maternal knowledge and beliefs about breastfeeding. If a family had two underfive children, the questionnaires were focused to the youngest child.

In collecting data, twenty enumerators were divided into four teams. Each team consisted of five enumarators and a supervisor. The starting point was the house of village leader. Every three days, the full team conducted a meeting to do an evaluation at sub-district office.

Focus group discussions

Focus group discussion was conducted in each village, the participants were community health volunteers, mothers of child-bearing age and leaders of village women group. Pretested focus group guidelines were used to elicit perceptions and beliefs about exclusive breastfeeding, initiation of breastfeeding, initiation of formula, solids foods, benefits and disadvantages of breast-feeding, beliefs, attitudes and taboos regarding infant feeding, and the types solid food introduced. The information obtained was used to validate the quantitative data obtained from the questionnaire-based interviews, but it was not analysed and presented here.

Variables

All variables were collected from self-reported questionnaire. The outcome variable was prevalence of

breastfeeding initiation, duration of exclusive breast feeding, introduction of solid foods. The measures included the kinds and time for introducing of solid food : types of manufacturing products, how to prepare porridge, first of introducing solid foods <4 months. Study variables included variables related to both parents and infant. Maternal factors included: socio-demographic, attachment, and feeding factors. Socio-demographic factors included questions to ethnicity, age, educational level, occupation.

Data analysis

Data were checked for normality and means. Several characteristics variable; maternal age, maternal educationlevel, mother's occupation, family monthly income and parity were tested to find the predictors of exclusive breastfeeding praticing and introduction of solid food. Data processing was carried out with SPSS version 17.0.

3. Result/Discussion

3.1. Result

3.1.1. Socio-demographic characteristics of respondents and sample

Of total 978 participants were eligible to be included in present study, 949 was obtained. The majority (42.5%) of mothers were in age group 25-29 years. The mean age of mothers was 26.5 years. The highest percentage of mothers education was grade 10-12 (36.9%), only 4.9% mothers had higher education level. Most mothers (81.87%) worked as a housewife, to do daily activities at home. Out of 919 fathers, 68.3% of them worked in commercial agriculture and farmers. Only 1.8% had occupation as the pblic servents. The average of family montly income was Rp. 2,500,000 (220 USD). This income was a bit higher than regional minimum salary.

Out of 949 children included, fifty five percent were children aged 24-59 months and 27% belonged to the 0-23 months. Almost half (49.0%) of respondents were Javanese and 30.0% Bataknese. These two etnichs were majority in the present study location.

3.1.2. Feeding patterns of infants

Table 2 demonstrated the patterns of child feeding. It was summarized from mothers' answers to the questionnaires. Out of 949 mothers, only 16.5% breastfed their babies exclusively from birth to 6 months. Others (83.5%) did not exclusively breastfed their children, and of which almost two third (65.4%) of mothers fed infants with the combination of solid foods and breastfeeding and 18.1% mothers gave formula milk.

3.1.3. Prevalence of exclusive breastfeeding across villages

Figure 1. shows that among ten villages, Serbajadi demonstrated the highest prevalence of exclusive breastfeeding at 6 months (56.0%). The rate in Manggis and Bah Sidua-dua, on the other hand was the lowest (2.9% and 2.5% respectively)

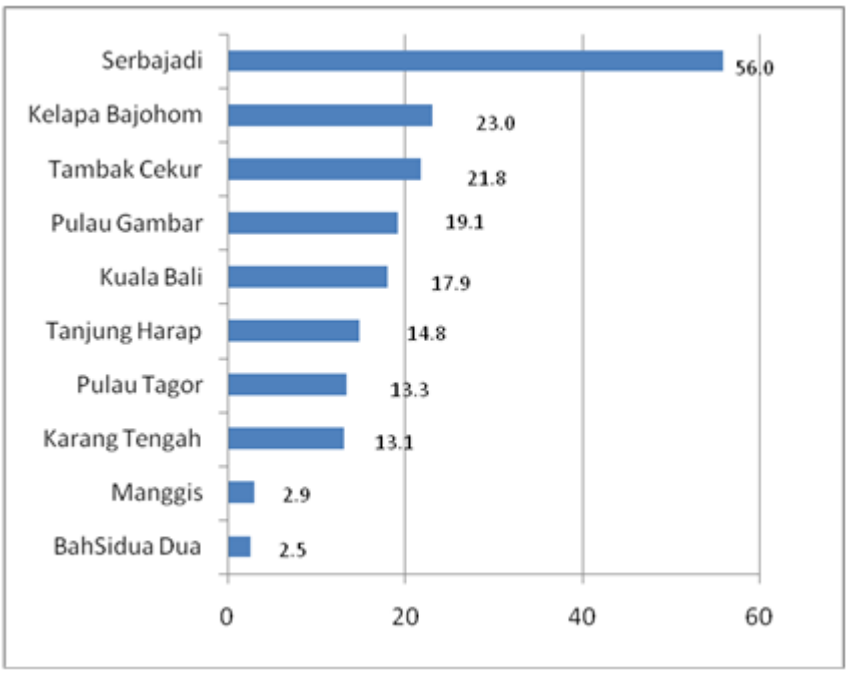

Figure 2. Prevalence of exclusive breastfeeding across the villages

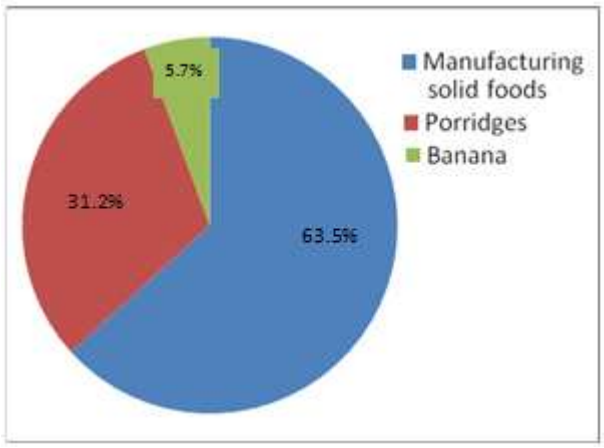

Figure 3. Types of first sample of solid foods introduced to infants ≤4 months (n = 621)

3.1.4. Types of solids foods first introduced to ≤4 months infants

In study location, there were three kinds of pre-lacteal foods mostly introduced as the first sample of solid food; banana, porridge and manufactured gluten-containing foods. As seen in table 3, amazingly more than half (63.5%) of children received manufactured solids foods by 4 months and only 5.7% mothers introduced banana.

Table 4. shows that among five potential predictors, only maternal education and family income had significanly effect to exclusive breastfeeding and early introduction of solid food (p< 0.03; p<0.04, respectively).

3.2. Discussion

The present study aimed to find the patterns of child feeding in rural areas. The patterns of infant feeding play important part in child growth. The incidence of malnutrition strongly related to patterns of infant feeding and it is started since the initiation of breastfeeding. District Health Office reported that in the last five years, 45-60% mothers had been practicing the breastfeeding initiation within an hour after delivery. This findings were similar to several studies in rural areas in Tanzania, 52% and Ethiopia 52%, Nigeria 45% and Ghana 41%, Kenya 37%. Our study pointed out that in study location only 16.5% of mothers breastfed their infants exclusively, while the rests (83.5%) of children were not exclusively breastfed. It was lower compared to the current Provincial Nutritional Assessment that found 29.5% of women conform with the 6-month exclusive breastfeeding[8]. This study also proved that 63.5% infants had been fiven solid foods <4months. The similar situation also happened for the infants in Scotland, 64% of mothers had introduced solid foods by 3 months. It meant that the chidlren in the present study location might suffered from subsequent health and higher level of morphometric features characteristic of cardiovasculer risk.

The result in our study is almost similar to other studies in developing countries and develop countries as reported by World Health Organization. It was estimated, not exceed 20% mothers in most African countries breastfeed their child exclusively and around 22-37% develop countries. The present result was broadly in line with the finding of Millar and Maclean twelve years ago in Canada, found only 17% Canadian women breastfed their 0-6 monht infants exclusively.

It can be assumed that the acheiving of breastfeeding initiation does not guarantee that mothers will do EBF. The possible reason of the declining from 45-60% early initation of breastfeeding to 16.5% exclusively breastfeeding and the earlier introduction of solid foods to infants might be not only due to maternal education and family income. Problems faced by village midwives and the massive marketing of manufactured babies foods through midwives and health providers might be potential causes. Indrayani and Makowiecka stated that village based midwives face several problems including langguage and communication, understanding of promotion, workload, compensation and rewards and lack of experience. The lack of village based midwives work in village is also need to be solved.

Actually, there are many actions that midwives and other health providers can take to improve EBF, such as home-based intensive counselling and peer-counselling, baby friendly public health center based initiative, mother support group. This study also pointed out that low education mothers was significantly affected to EBF practising. It was in line with Kalsum analysis of data from National Indonesian Demographic and health survey 2014, whicht low education mothers had 4.2 more likely to exclusively breastfeed their infants.

We speculate that low EBF coverage and early introduction of solid foods due to the inconsistency of promotion of EBF given by village based midwives. In one side they promote EBF, but in other side they needs fee from formula milk company. Although we observed some encouraging signs in several villages, the breastfeeding patterns in rural areas are still far from norm recommended by WHO and UNICEF. We also observed that there was a lack knowledge of both mothers and midwives regarding introduction of solid foods

4. Conclusion

The present study revealed that exclusive breastfeeding practicing is still rare. The presence of village based midwives still did not effectively improving the coverage of EBF. There is a clear need to enhance the skills of village midwives to run peer counselling and home based counselling. Further research is needed to measure the work burden of village midwives in relation to the promoting of exclusive breastfeeding.

5. Future Scope

There is a need to investigate how midwives recruited prior to deploying at community level. Skill in conducting breastfeeding promotion is a compulsary. Limitation of present study was involving children aged >24 months made it difficults to recall infant feeding patterns.

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Appendixes.

Table 1. Socio-demographic characteristics of participants and infants in Serbajadi, n=949

Variable	n	%
Age of child (months)		
0-5	124	13.1
6-11	133	14
12-23	170	17.9
24-35	143	15.1
36-59	379	39.9
Sexof child		
Boys	491	51.7
Girls	458	48.3
Age of mother (in years)		
19-24	329	34.7
25-29	399	42
30-34	221	23.3
Ethnicity		
Javanese	465	49
Bataknese	285	30
Melayunese	113	11.9
Others	86	9.1
Maternal education level		
Grade 6	219	23,1
Grade 7-9	333	35.1
Grade 10-12	350	36.9
Grade > 12	47	4.9
Fathers' education level		
Grade 6	223	24.3
Grade 7-9	295	32.1
Grade 10-12	364	39.6
Grade > 12	37	4
Maternal occupation		
House wife	777	81.9
Governent employee	11	1.2
Merchant	30	3.2
Farmer	31	3.3
Commercial agriculture	93	9.8
Skill Labour	7	0.7
Fathers' occupation		
Government employee	17	1.8
Merchant	123	12.1
Farmer	137	14.4
Commercial agriculture	512	53.9
Skill Labour	137	14.4
Others	23	2.4
Income (monthly)		
< Rp. 2,500,000	467	49.2
> Rp. 2,500,000	482	50.8
Parity		
4-Jan	552	68.2
>4	397	31.8

Table 2: Estimated frequency distribution of feeding patterns of infants

Feeding patterns	n (%)
Exclusive breastfeeding for ≥6 months	156 (16.5)
Combination of formula & breastfeeding	124 (13.0)
Formula alone from birth	48 (5.1)
Combination of solid foods & breastfeeding	621 (65.4)

Table 3. Summarizes of statistical test for potential predictors for exclusive breastfeeing practice and introduction of solid foods

	Exclusive breastfeeding	Introduction of solid foods
Maternal Age	0.66	0.72
Maternal occupation	0.03	0.06
Maternal education	0.03*	0.43
Family income	0.59	0.04*
Parity	0.63	0.74

*Chi-square test with *p*-value significant at 0<0.05