The Impact of Antenatal Care and Nutrition Counseling on the Success of Exclusive Breastfeeding and Appropriate First Complementary Foods

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ABSTRACT

Background: *Proper breastfeeding and complementary feeding at the beginning of birth until the age of 24 months has an important role in optimizing nutrition for the first 1000 days of life to obtain optimal individual health status until adulthood.*

Objectives: *This study aims to analyze the impact of antenatal care (ANC) and postnatal care (PNC), especially nutritional counseling on the success of exclusive breastfeeding and appropriate complementary foods.*

Methods: *This study used a cross-sectional design from secondary data from basic health research (RISKESDAS) in DKI Jakarta Province with a total sample of 230 mothers aged 15-49 years who had children aged 6-24 months. Data were analyzed univariate, bivariate using the Chi-Square test and multivariate using multiple logistic regression tests.*

Results: *The results showed that the coverage of exclusive breastfeeding was 56.5% and proper complementary food was 39.6%. The results of the Chi Square test showed that there was a relationship between exclusive breastfeeding and maternal age (p = 0.025) (OR: 2.21 95% CI: 1.09 – 4.48), maternal education (p = 0.008) (OR: 4.80 95% CI: 1.79 – 12.8) , maternal parity (p = 0.009) (OR: 2.58 95% CI: 1.25 – 5.30), antenatal care (p = 0.000) (OR: 4.82 95% CI: 2.13 – 10.9), and postnatal counseling (p = 0.006) (OR: 2.72 95% CI: 1.31 – 5.65). Meanwhile, on the accuracy of complementary feeding, there was a relationship between maternal age (p = 0.027) (OR 2.32 95% CI 1.07-5.02), maternal education (p = 0.000) (OR 3.16 95% CI 1.67-5.98), maternal parity (p = 0.027) (OR 2.36 95% CI 1.08-5.17), received ANC (p = 0.000) (OR 4.61 95% CI 1.84-11.6), and nutrition counseling (p = 0.004) (OR 2.98 95% CI 1.38-6.43). The most dominant variable with the success of exclusive breastfeeding and complementary feeding for the first time is ANC with odds ratios of 4.82 and 4.08, respectively, after being controlled by postnatal counseling.*

Conclusion: *This study shows that the impact of ANC and PNC, especially nutritional counseling, has a role in the success of exclusive breastfeeding and the appropriateness of giving complementary foods for the first time. ANC and PNC, especially nutrition counseling, are very important for every pregnant woman and need to be socialized to relevant policy makers and pregnant women's families.*

Introduction

Optimal nutrition in the first 1000 days of life has an important role in shaping the nutritional and health status of children to adults [1,2]. The World Health Organization (WHO) and the United Nations International Children's Emergency Fund (UNICEF) recommend exclusive breastfeeding for the first 6 months of life and continued provision of complementary feeding (Complementary Food) since infants aged 6-24 months [3-5]. The transition period from breast milk alone to complementary food is a very critical period because children are vulnerable to becoming malnourished [6,7]. The failure of giving complementary feeding for the first time will have an impact on the risk of failure to thrive [8,9], poor nutritional status [10,11], risk of obesity [12,13], iron nutritional anemia [14-16], diarrhea [17-19], allergies [20], celiac [21], risk of type 1 diabetes mellitus [22,23], and cardiovascular disease [24] to cause infant death [25].

Very early complementary feeding is common in several countries including 74% of children in Canada, 31.9% in the United States, 91% in Australia, 65% in England and Italy [26-29]. The type of complementary food that was given for the first time also varied. However, it is mostly dominated by infant formula [30,31]. Incorrect introduction of complementary foods such as formula milk for the first time will result in iron deficiency and milk protein allergy in infants [32]. A study in Saudi Arabia in 2018 showed that inappropriate complementary feeding for the first time resulted in a low rate of exclusive breastfeeding coverage [33,34]. This incident also occurred in Indonesia, which was reflected in the low coverage of exclusive breastfeeding in Indonesia in 2018 of 37.3% [35], while in DKI Jakarta Province it reached 81.9% [36]. However, it decreased in 2019 by 67.7% and in 63.4% in 2020 [36,37].

Studies related to inappropriate complementary feeding for the first time in Indonesia are still local and scattered in several places including 62% of children in Serang [38], 70% in Jombang [39], 40% in Jambi [40], 63% in Bekasi City [41], 64% in Cirebon [42], 84% in Bogor [43] and 63% in Surabaya [44]. Studies that have been conducted in Indonesia regarding the causes of the low level of appropriate complementary feeding for the first time are still not widely explained apart from the ineffectiveness of exclusive breastfeeding. Studies in several countries show that the success of complementary feeding is influenced by many factors including family socioeconomic status, maternal age, area of residence, education level, premature birth, receiving formula milk after birth from the hospital and duration of exclusive breastfeeding. One of the efforts to increase the success of giving complementary foods for the first time is to increase mother's knowledge. A study in Ethiopia showed that mothers who gave appropriate complementary feeding had good knowledge and had more access to health services through repeated contact with health workers [45].

The purpose of this study was to analyze the impact of antenatal care (ANC) and postnatal care (PNC), especially nutritional counseling (NC) on the success of exclusive breastfeeding and appropriate complementary feeding for the first time.

Methods

This study uses data from Riskesdas 2018 (Indonesian Basic Health Research/IBHR 2018) with a cross-sectional survey design. Riskesdas 2018 describes population health problems in all corners of Indonesia, which are represented by residents at the national, provincial, and district/city levels. The 2018 Riskesdas sample framework consists of two types, namely Phase 1, implicit stratification of all blocks census (BC) from the 2010 population census (PC) based on welfare strata. From the 720,000 BC master frame resulting from the 2010 PC, 180,000 BC (25%) were selected by probability proportional to size (PPS) to be the sampling frame for the selection of BS. Selecting a number of CBs using the PPS method in each urban/rural strata per district/city systematically so as to produce a list of block census samples (LBCS). The total number of selected BC is 30,000 BC. Stage 2, selecting 10 households in each BC as a result of the systematic sampling with an implicit stratification of the highest education completed by the head of household (head of household), to maintain the representation of the value of the diversity of household characteristics. Individuals who were sampled at Riskesdas to be interviewed were all household members (HHM) in the selected household. Data collection is carried out by local enumerators who have been trained with technical supervision by the district/city technical person in charge (TPI) and supervision by the district/city operational person in charge (OPI) through interviews, measurements, and examinations. In data collection one team is responsible for 11 to 12 BC. One BC consists of 10 households (HHs) so that one team is responsible for 110 to 120 households. Interviews used two instruments, namely: household instruments and individual instruments.

In this study, the population was all mothers aged 15-49 years who had babies aged 6-24 years in DKI Jakarta province. The inclusion criteria for the sample were enough to be born at the age of 37-39 weeks, not having any congenital defects. While the sample exclusion criteria were data on mothers who answered "don't know" on the first question starting to give food or drinks other than breast milk, and incomplete subject data. The total sample that met the inclusion and exclusion criteria was 230 subjects.

The variables analyzed consisted of the dependent variable, namely the status of breastfeeding and the appropriate of giving complementary foods for the first time (the age at which complementary foods were first given, the type of food or drink that was first given). While the independent variables are maternal characteristics (age, education level, employment status, and parity), infant characteristics (age, sex, birth weight), ANC profile (pregnancy examination, birth attendant, place of delivery, delivery method), and PNC including postnatal nutrition counseling.

Data were analyzed by univariate, bivariate and multivariate. Bivariate analysis with Chi-Square statistical test, while

multivariate analysis with multiple logistic regression. This research has obtained ethical approval from the Ethics Commission for Poltekkes Kemenkes Jakarta II with the number: LB.02.01/I/KE/31/106/2022.

Table 1: Characteristics of Subject.

Parameters	n	%
Age of maternal (years)		
<20 or >35	55	23.9
20 – 35	175	76.1
Maternal Education		
Less than high school	72	31.3
High school and more	158	68.7
Maternal Occupation		
Working	77	33.5
Not Working	153	66.5
Maternal Parity		
> 2	62	27.0
≤ 2	168	73.0
Sex of the child		
Male	107	46.5
Female	123	53.5
Age of the child (months)		
6 – 12	104	45.2
13 – 24	126	54.8
Birth weight (grams)		
Low Birth Weight/LBW (<2.500g)	12	5.2
Normal (2.500g-4.000g)	218	94.8

Result and Discussion
Subject Characteristics
The number of research subjects analyzed were 230 mothers aged 15-49 years who had babies aged 6-24 months in DKI Jakarta Province. The results in table 1 show that most of the mothers are aged 20-35 years (76.1%), higher education level (68.7%) but there are still mothers who have low education (31.3), they are not working (66.5%), parity ≥ 2 (73.0%). Most of the babies were female (53.5%) with normal birth weight (94.8%) (Table 1).

Profile of Exclusive Breastfeeding and Complementary Foods
Table 2 shows that the proportion of infants who are exclusively breastfed has only reached 56.5%, which means that it is already above the national coverage in 2018 which is 40% and 50% in 2022 [46] but is still below the Indonesian target (60%) and the world target of 80% (Indonesia) [47]. Table 2 also shows that only 39.6% of infants received first complementary foods properly according to age of first received and type of complementary foods. Referring to the first complementary feeding, there were 43.5% of infants before the age of 6 months, the majority between the ages of two to five months (22.5%).

Fulfillment of nutrition in the first 1000 days of life is very important such as Early Initiation of Breastfeeding, exclusive breastfeeding, and providing appropriate complementary foods until the age of 24 months. However, the results of this study indicate that the coverage of mothers who provide exclusive breastfeeding and appropriate complementary foods is still low and can contribute to high nutritional problems such as stunting and obesity. This is in line with Barker and Hales in the thrifty phenotype theory, which states that babies who experience malnutrition in the womb and have made permanent metabolic and endocrine adaptations will have difficulty adapting to a "nutrition-rich" environment after birth, causing nutritional disorders such as stunting, obesity and others.

Complementary feeding that is inappropriate and too early will have an impact on the low coverage of exclusive breastfeeding. Furthermore, WHO states that inappropriate complementary feeding can cause health problems in infants such as diarrhea and allergies as well as the incidence of digestive and respiratory tract infections, which are also the cause of high infant mortality due to complementary feeding at a faster age than the recommended age. Research conducted in Tanzania proved that the introduction of inappropriate complementary feeding performed before the age of 6 months was the cause of stunting, wasting, and underweight [8].

Table 2: Profile of Exclusive breastfeeding and complementary food.

Parameters	n	%
Exclusive Breastfeeding (EBF)		
No	100	43.5
Yes	130	56.5
Age at first received complementary Foods		
0 – 7 days	31	13.5
8 – 28 days	10	4.3
29 days - < 2 months	7	3.0
2 - < 3 months	10	4.3
3 - < 4 months	12	5.2
4 - < 6 months	30	13.0
≥ 6 months	130	56.5
Type of complementary food at <6 months		
Formula milk	76	76.0
Formula/instant porridge	8	8.0
Formula porridge/filter	4	4.0
Starch water	2	2.0
Mashed Fruit	4	4.0
Rice porridge/steam rice	1	1.0
Juice	5	5.0
Type of complementary food at 6 months		
Formula milk	7	5.4
Formula/instant porridge	5	3.8
Formula porridge/filter	6	4.6
Starch water	45	34.6
Mashed Fruit	44	33.8
Rice porridge/steam rice (bubur nasi/nasi tim)	12	9.2
Juice (Sari buah)	11	8.5
Properly of the first complementary foods		
No	139	60.4
Yes	91	39.6

Profile of Antenatal Care (ANC) and Postnatal Care (PNC)
ANC is a pregnancy examination that aims to improve the physical and mental health of pregnant women optimally, so that they are able to face the period of childbirth, postpartum, breastfeeding, and the return of normal reproductive health. ANC is performed at least 4 (four) times during pregnancy, namely once in the first trimester, once in the second trimester, and twice in the third trimester [48].

Postnatal care (PNC) is the time interval starting from the birth of the baby until the next 6-week period with the recommended visit time of 6-24 hours, 3 to 6 days and 6 weeks after delivery [48]. Providing appropriate postnatal care services with skilled health personnel is an important and key strategy to reduce maternal and infant mortality, including the success of exclusive breastfeeding and appropriate complementary feeding.

WHO and UNICEF in their policy brief stated that ANC and PNC are a means to increase knowledge and change mother's behavior to monitor optimal child growth through counseling. This service became known as nutrition care or nutrition counseling which is a mandatory indicator given to mothers and families in antenatal care and postnatal care services. Nutrition counseling during the ANC and PNC periods will help mothers and their families to make decisions and actions to optimize nutritional development during pregnancy and post pregnancy [49-51].

Table 3 shows that the majority of mothers (77.0%) had a complete ANC, normal delivery method (70.9%), gave birth in a health care facility (99.1%), delivery was assisted by health personnel (99.1%) and most of the mothers received counseling complete postnatal (71.7%).

Table 3: Antenatal care profile.

Parameters	n	%
Received Antenatal Care		
Incomplete (less than 1-1-2)	53	23.0
Complete (Minimum 1-1-2)	177	77.0
Type of delivery		
Normal	67	29.1
Caesarian	163	70.9
Place of delivery		
Not in the health care facilities	2	0.9
Health care facilites	228	99.1
Birth attendant		
Traditional Health	2	0.9
Health professionals	228	99.1
Received postnatal care visit		
Tidak Lengkap (Kurang dari 3 kali)	65	28.3
Lengkap (Minimal 3 kali)	165	71.7

Exclusive Breastfeeding Based on Subject Characteristics and Antenatal Care Profile

Table 4 shows that infants who do not receive exclusive breastfeeding have a greater proportion of mothers aged <20 or >35 years (56.4%), less than high school (63.6%), and have parity > 2 children (56.5%), mothers who do pregnancy examinations were incomplete or less than 4 times (75.5%) and mothers who received incomplete postnatal counselling or less than 3 times (64.6%). The results of the Chi Square statistical test showed that there was a significant relationship between the success of exclusive breastfeeding and maternal age ($p = 0.025$) (OR: 2.21 95% CI: 1.09 – 4.48), maternal education ($p = 0.008$) (OR: 4.80 95% CI: 1.79 – 12.8), maternal parity ($p = 0.009$) (OR: 2.58 95% CI: 1.25 – 5.30), antenatal care ($p = 0.000$) (OR: 4.82 95% CI: 2.13 – 10.9), and postnatal counselling ($p = 0.006$) (OR: 2.72 95%

CI: 1.31 – 5.65).

This study found that age, education and mother's parity were variables that influenced the practice of exclusive breastfeeding. This result is in line with a study in Indonesia with a larger sample size (55,528 infants) which showed that mothers who were younger and less educated were more likely to stop breastfeeding before their babies were 6 months old [52]. Studies in China, Nigeria and Europe also found that age, educational level, parity and socioeconomic factors can indicate whether a mother breastfeeds her baby or not [53,54].

Related to studies on ANC and PNC on the success of exclusive breastfeeding, it was found in Ghana, Ethiopia, and Angola, which stated that mothers who used ANC and PNC services tended to exclusively breastfeed their babies [55-57]. ANC and PNC is the right time to provide breastfeeding and breastfeeding information to mothers and families [58]. Another study in Pakistan recommended that the practice of exclusive breastfeeding could be improved through providing nutritional counselling during ANC and PNC [59].

The First of Complementary Foods based on Subject Characteristics and Profile of Antenatal Care

Table 5 shows that infants who received inappropriate complementary foods for the first time were mothers aged <20 or >35 years (76.4%), less than high school (77.8%), parity >2 (74.2%), incomplete in ANC (86.8%) and nutrition counseling (78.5%), and non-exclusive breastfeeding (100%). Chi-Square statistical test showed that there was a significant relationship between the success of giving complementary feeding for the first time with maternal age ($p = 0.027$) (OR 2.32 95% CI 1.07-5.02), maternal education ($p = 0.000$) (OR 3.16 95% CI 1.67-5.98), maternal parity ($p = 0.027$) (OR 2.36 95% CI 1.08-5.17), received ANC ($p = 0.000$) (OR 4.61 95% CI 1.84-11.6), nutrition counseling ($p = 0.004$) (OR 2.98 95% CI 1.38-6.43) and exclusive breastfeeding ($p = 0.000$) (OR 3.33 95% CI 2.56-4.33).

This study shows that mothers who are <20 or >35 years old, have low education, and parity >2 may introduce complementary foods that are not as recommended. This is in line with research in Latin America, the Caribbean, and the East Asia Pacific which states that the mother's education level has a direct positive impact on the linear growth of the baby [60,61]. Older and younger mothers with lower educational backgrounds and a greater number of children were more likely to offer earlier complementary foods [33]. Research in Poland and India explains that the reason mothers give complementary foods the first time is faster because the baby feels hungry and can be given solid food [33,62]. Another study also found that the failure factor for proper complementary feeding was infant formula feeding [63].

Mother's knowledge has an important role in increasing the success of giving complementary food for the first time which is obtained during antenatal care visits and postnatal care or postnatal nutrition

Table 4: Bivariable analysis of subject characteristics and profile of antenatal care with exclusive breastfeeding.

Parameters	Exclusive Breastfeeding				OR (95%CI)	p-value*
	No		Yes			
	n	%	n	%		
Age of maternal (years)						
<20 or >35	31	56.4	24	43.6	2.21 (1.09-4.48)	**0.025**
20 – 35	69	39.4	106	60.6	1.0	
Maternal education						
Less than high school	44	61.1	28	38.9	2.86 (1.61-5.09)	**0.000**
High school and more	56	35.4	102	64.6	1.0	
Maternal Occupation						
Working	31	40.3	46	59.7	0.77 (0.41-1.42)	0.396
Not working	69	45.1	84	54.9	1.0	
Maternal parity						
> 2	35	56.5	27	43.5	2.58 (1.25-5.30)	**0.009**
≤ 2	65	38.7	103	61.3	1.0	
Birth weight (grams)						
Low birth weight (<2.500g)	8	66.7	4	33.3	3.06 (0.70-13.2)	0.118
Normal (2.500g-4.000g)	92	42.2	126	57.8	1.0	
Received antenatal care						
Incomplete	40	75.5	13	24.5	4.82 (2.13-10.9)	**0.000**
Complete	60	33.9	117	66.1	1.0	
Type of delivery						
Caesarian	27	40.3	40	59.7	0.97 (0.51-1.87)	0.937
Normal	73	44.8	90	55.2	1.0	
Place of delivery						
Not in a health care facilities	1	50.0	1	50.0	0.11 (0.01-1.77)	0.057
Health care facilities	99	43.4	129	56.6	1.0	
Birth attendant						
Traditional health	1	50.0	1	50.0	0.11 (0.01-1.77)	0.057
Health professional	99	43.4	129	56.6	1.0	
Received postnatal care visit						
Incomplete	42	64.6	23	35.4	2.72 (1.31-5.65)	**0.006**
Complete	58	35.2	107	64.8	1.0	

p-value Chi-Square (p<0.05)

care [49]. The results of this study indicate that the majority of mothers who do not get antenatal care visits and incomplete postnatal care tend to give inappropriate complementary feeding. This is in line with research in Ethiopia and Nigeria which states that mothers who receive nutrition care services during antenatal care and postnatal care have better knowledge about breastfeeding and proper complenetary feeding of infants and children [64,65]. The results of this study also found that the failure of complementary feeding will have an impact on the low coverage of exclusive breastfeeding.

Nutrition Counselling based on Subject Characteristics and Profile of Antenatal Care

Table 6. shows that mothers who did not receive complete nutrition counseling were mostly mothers aged <20 or >35 years (41.8%), less than high school (43.1%), maternal parity > 2 (38.7%), history of breastfeeding exclusively given for less than 6 months and the MP-ASI profile is not appropriate (36.1%), incomplete pregnancy examination (43.3%). The results of the Chi Square statistical test showed that there was a relationship between age of maternals (p = 0.012) (OR 2.28 95%CI 1.20-4.31), maternal education (p = 0.001) (OR 2.57 95%CI 1.51-5.03), maternal parity (p = 0.036), antenatal care (p = 0.007) (OR 2.46 95%CI 1.29-4.69), exclusive

breastfeeding (p = 0.000) (OR 3.37 95%CI 1.85-6.14), and properly of the first complementary foods (p = 0.000) (OR 3.19 95%CI 1.64-6.20).

This study shows that mothers aged 20-35 years, high educational background, and parity 2 tend to get more nutrition counseling than mothers aged <20 or >35 years, low education level and less parity > 2. This study is in line with several studies. studies that have been conducted noted age, maternal education level, and parity as demographic characteristics that have a major role in utilizing health services [66-68]. Mothers who have a productive age background with good education and have the ideal number of children are more likely to have formed good knowledge and attitudes and are more exposed to information during pregnancy and postpartum care, thus enabling mothers to make bigger decisions and enable them to communicate well with families to access health services.

Another important finding in this study is that antenatal care services have an impact on postnatal nutrition counseling services or postnatal care. The results of this study are in line with other studies [67-69] showing that mothers who receive good antenatal

Table 5: Bivariable analysis of subject characteristics and profile of antenatal care with complementary food profile.

Parameters	Properly of the first complementary foods				OR (95%CI)	p-value*
	No		Yes			
	N	%	n	%		
Age of maternal (years)						
<20 or >35	42	76.4	13	23.6	2.32 (1.07-5.02)	**0.027**
20 – 35	97	55.4	78	44.6	1.0	
Maternal education						
Less than high school	56	77.8	16	22.2	3.16 (1.67-5.98)	**0.000**
High school and more	83	52.5	75	47.5	1.0	
Maternal Occupation						
Working	45	58.4	32	41.6	0.77 (0.41-1.47)	0.429
Not working	94	61.4	59	38.6	1.0	
Maternal parity						
> 2	46	74.2	32	41.6	2.36 (1.08-5.17)	**0.027**
≤ 2	93	55.4	59	38.6	1.0	
Birth weight (grams)						
Low birth weight (<2.500g)	10	83.3	2	16.7	4.08 (0.74-22.6)	0.069
Normal (2.500g-4.000g)	139	59.2	89	40.8	1.0	
Exclusive Breastfeeding						
No	100	100.0	0	0.0	3.33 (2.56-4.33)	**0.000**
Yes	39	30.0	91	70.0	1.0	
Received antenatal care						
Incomplete	46	86.8	7	13.2	4.61 (1.84-11.6)	**0.000**
Complete	93	52.2	84	47.5	1.0	
Type of delivery						
Caesarian	40	59.7	27	40.3	0.98 (0.52-1.84)	0.947
Normal	99	60.7	64	39.3	1.0	
Place of delivery						
Not in a health care facilities	2	100.0	0	0.0	1.00 (1.00-1.00)	0.250
Health care facilities	137	60.1	91	39.9	1.0	
Birth attendant						
Traditional health	2	100.0	0	0.0	1.00 (1.00-1.00)	0.250
Health professional	137	60.1	91	39.9	1.0	
Received postnatal care visit						
Incomplete	51	78.5	14	21.5	2.98 (1.38-6.43)	**0.004**
Complete	88	54.3	77	46.7	1.0	

*p-value Chi-Square (p<0.05)

care services are more likely and tend to receive postnatal care or nutrition care services after birth. Failure during ANC tends to fail post-delivery nutrition care services, and has an impact on the failure of proper exclusive breastfeeding and appropriate complementary food and affects the nutritional status of children.

Multivariate Analysis
Dominant Factors on Exclusive Breastfeeding and Complementary Food Profile
This multivariate analysis was carried out to find the factors that most influenced the success of exclusive breastfeeding and the appropriateness of giving complementary foods for the first time. There are 5 variables that are candidates for multivariate modeling based on bivariate analysis, namely mother's age, mother's education level, mother's parity, antenatal and postnatal care which can be seen in table 7.

Furthermore, variable selection is carried out by removing the variable that has the largest p-value first (p> 0.05), variables with

a p-value ≤ 0.05 are retained in the modeling. Then an analysis is carried out to see changes in OR (odds ratio) > 10%, so this variable is a confounder and is maintained in the modeling. However, in this study there were no confounding variables. The next stage was a confounding test with an interaction test between the most dominant variables (antenatal care variable), with the result that there were no interacting variables so that the final model was obtained which can be seen in table 8.

Table 8 shows the most dominant variable associated with exclusive breastfeeding, namely antenatal care with an odds ratio of 4.82, meaning that mothers who carry out incomplete pregnancy checks or less than 4 times have a 4.82 times higher risk of not giving exclusive breastfeeding compared to mothers who do complete pregnancy check-up after being controlled by postnatal care. Meanwhile, in terms of the accuracy of complementary feeding, the most dominant variable was antenatal care with an odds ratio of 4.08, meaning that mothers who did incomplete or less than 4 prenatal checkups had a 4.08 times higher risk of not giving

Table 6: Bivariable analysis of subject characteristics and profile of antenatal care with nutrition counseling.

Parameters	Nutrition Counseling				OR (95%CI)	p-value*
	No		Yes			
	N	%	n	%		
Age of maternal (years)						
<20 or >35	23	41.8	32	58.2	2.28 (1.20-4.31)	**0.012**
20 – 35	42	24.0	133	76.0	1.0	
Maternal education						
Less than high school	31	43.1	41	56.9	2.57 (1.51-5.03)	**0.001**
High school and more	34	21.5	124	78.5	1.0	
Maternal Occupation						
Working	22	28.6	55	71.4	1.02 (0.56-1.88)	0.941
Not working	43	28.1	110	71.9	1.0	
Maternal parity						
> 2	24	38.7	38	61.3	1.96 (1.05-3.64)	**0.036**
≤ 2	41	24.4	127	75.6	1.0	
Birth weight (grams)						
Low birth weight (<2.500g)	3	25.0	9	75.0	0.84 (0.22-3.20)	0.794
Normal (2.500g-4.000g)	62	28.4	156	71.6	1.0	
Exclusive Breastfeeding						
No	42	42.0	58	58.0	3.37 (1.85-6.14)	**0.000**
Yes	23	17.7	107	82.3	1.0	
Properly of the first complementary foods						
No	51	36.7	88	63.3	3.19 (1.64-6.20)	**0.000**
Yes	14	15.4	77	84.6	1.0	
Received antenatal care						
Incomplete	23	43.4	30	56.5	2.46 (1.29-4.69)	**0.007**
Complete	42	23.7	135	76.3	1.0	
Type of delivery						
Caesarian	22	32.8	45	67.2	1.36 (0.74-2.53	0.327
Normal	43	26.4	120	73.6	1.0	
Place of delivery						
Not in a health care facilities	1	50.0	1	50.0	2.56 (0.16-4.15)	0.515
Health care facilities	64	28.1	164	71.9	1.0	
Birth attendant						
Traditional health	1	50.0	1	50.0	1.00 (1.00-1.00)	0.515
Health professional	64	28.1	164	71.9	1.0	

p-value Chi-Square (p<0.05)

Table 7: Initial model of multivariable analysis with multiple logistic regression.

Parameters	Exclusive Breastfeeding			Complementary Foods		
	OR	95%CI	p-value*	OR	95%CI	p-value*
Age of maternals (years)						
<20 or >35	2.21	1.09-4.48	0.025	2.32	1.07-5.02	0.027
20 – 35	1.0			1.0		
Maternal education						
Less than high school	2.86	1.61-5.09	0.000	3.16	1.67-5.98	0.000
High school and more	1.0			1.0		
Maternal Parity						
<2	2.58	1.25-5.30	0.009	2.36	1.08-5.17	0.027
>2	1.0			1.0		
Received antenatal care						
Incomplete	4.82	2.13-10.9	0.000	4.61	1.84-11.6	0.00
Complete	1.0			1.0		
Received postnatal care						
Incomplete	2.72	1.31-5.65	0.006	2.98	1.38-6.43	0.004
Complete	1.0			1.0		

p-value < 0.05

Table 8: The final model is multivariable analysis with multiple logistic regression.

Parameters	Exclusive Breastfeeding			Complementary Foods		
	OR	95%CI	*p-value**	OR	95%CI	*p-value**
Received antenatal care						
Incomplete	4.31	1.84-10.1	0.000	4.08	1.57-10.5	0.004
Complete	1.0			1.0		
Received postnatal care						
Incomplete	2.31	1.06-5.01	0.006	2.57	1.16-5.72	0.021
Complete	1.0			1.0		

***p-value < 0.05*

exclusive breastfeeding compared to mothers who did complete pregnancy check-up after being controlled by postnatal care.

Conclusions and Suggestions

This study shows that the impact of ANC and PNC, especially nutritional counseling, has a role in the success of exclusive breastfeeding and the appropriateness of giving complementary foods for the first time. ANC anda PNC, especially nutrition counseling, are very important for every pregnant woman who needs to be socialized to relevant policy makers and every pregnant woman.

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