Relationship between Chewing Tobacco and Haemoglobin Level in Lactating Mother in Karo District, Indonesia

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Abstract. WHO states that deaths from tobacco around the world have been very worrying, namely 100 million during the 20th and 1 billion centuries during the 21st century if there were no efforts to prevent tobacco intake. The difficulty of reducing smoking habits is due to the content in tobacco that causes pleasure and addiction in tobacco users, namely nicotine, nicotirin, and myosmin. In addition to being consumed in the form of cigarettes, tobacco is also consumed by chewing on some people as a habit that has been going on for a long time such as in Karo Regency. This study was a descriptive study with a "cross sectional study" design to know relationship between chewing tobacco and haemoglobin level in lactating mother. The population was all mothers who breastfed babies aged 0-24 months with a purposively determined sample of 44 people. The chi square test used to analyse the relationship of food consumption and chewing tobacco with blood haemoglobin levels. The research conclude that there is a significant relationship between consumption of chewing tobacco and blood haemoglobin levels in lactating mothers and there is no correlation between consumption of energy, protein and iron with blood haemoglobin levels in lactating mothers. Socialization of chewing tobacco habits in lactating mother should be done by health workers at Karo District Health Office.

1. Introduction
Indonesia is one of the countries in the world with a high morbidity and mortality rate of 307 per 100,000 live births. Anaemia is the biggest cause of maternal death where the prevalence of anaemia in nursing mothers is 20%. Poor nutritional status in breastfeeding mothers has an impact on infant growth and development. This is because breast milk produced by mothers is the best food to meet the nutritional needs of children from birth to age 2.

Maternal diet and lifestyle that are applied in a healthy and good way aim to realize a good health status of mothers and children. In addition to being able to produce breast milk in sufficient quantities and good quality. Maternal food consumption while breastfeeding must meet the nutritional adequacy of both macro nutrition and micronutrients affecting the production and quality of milk. The high problem of chronic energy malnutrition (CEM) and anaemia shows the low consumption of macro nutrients and micronutrients. Anaemia is a deficiency of its main iron (Fe) nutrient with a threshold of haemoglobin levels below 12 mg/dl in adult women. The existence of habits in the community that can inhibit the absorption of nutrients can also be the cause of anaemia, especially if these habits cause barriers to the absorption of iron (Fe) so that iron becomes low.

Smoking and chewing tobacco is one of the habits in society that endangers health. The impact of smoking on health problems has been widely known from various researches. Basic health research in Indonesia in 2013 classified tobacco consumption into 2 groups, namely the cigarette group as suction smokers and the non-smokeless group of tobacco consumers [1].
This habit is widely practiced in Indonesia. In smokers suction health problems not only to smokers but also cause pollution in passive smoking and the surrounding environment. In contrast to chewing tobacco which only affects itself, the results of research have been found to have an impact on oral cancer, pancreatic cancer and dental cancer. The proportion of smokers in Indonesia is 29.3% while the proportion of smokeless (tobacco chewers) every day in Indonesia is 2.5 percent with the highest proportion being Nusa Tenggara Timur province (17.7%). The smoking ban policy has been widely made by various institutions, both health institutions and NGOs, but the policy of prohibiting tobacco chewing does not exist even though the effects of chewed tobacco are thought to be greater because nicotine in tobacco will directly enter tobacco chewers.

Karo Regency is a district in the province of North Sumatra where the habit of chewing tobacco is widely practiced by the community both mothers of old age and young age, and even done by teenagers. Chewing tobacco is a tradition that has been going on for ages and generations. The existence of local customs also supports the continuation of the habit of chewing tobacco in the community. On the other hand, the prevalence of anaemia problems in breastfeeding mothers in Karo District is not yet known exactly still based on studies that are 30-40%. Based on this, the study aimed to analyse the relationship between intake of chewing tobacco and blood haemoglobin levels of breastfeeding mothers.

2. Materials and Methods
This study was a descriptive analytic study with a "cross sectional study" design. The population was all mothers who breastfed babies aged 0-24 months in Karo District with a purposively determined sample of 44 people. Types of data collected are food consumption, consumption of chewing tobacco (number, type and frequency of meals) and blood haemoglobin levels. The chi square test used to analysed the relationship of food consumption and chewing tobacco with blood haemoglobin levels.

3. Results and Discussion

3.1. Characteristics of Lactating Mother

| No | Characteristics of Lactating mother | n  | %   |
|----|------------------------------------|----|-----|
| 1  | Age (year)                         |    |     |
|    | < 20                               | 3  | 6.81|
|    | 20 – 35                            | 32 | 72.73|
|    | > 35                               | 9  | 20.46|
| 2  | Parity                             |    |     |
|    | 1 – 2                              | 33 | 75.00|
|    | > 2                                | 11 | 25.00|
| 3  | Child age (month)                  |    |     |
|    | 0-6                                | 22 | 50.00|
|    | 7-12                               | 15 | 34.10|
|    | 13-24                              | 7  | 15.90|
| 4  | The sequence child in family       |    |     |
|    | First child                        | 13 | 29.54|
|    | Not first child                    | 31 | 70.46|
| 5  | Mother occupational                |    |     |
|    | Job in home                        | 5  | 11.37|
|    | Job outside of home                | 39 | 88.63|
| 6  | Family income                      |    |     |
|    | < regional minimum wage            | 28 | 63.63|
|    | ≥ regional minimum wage            | 16 | 36.37|

Table 1. Characteristics of Lactating Mother
From Table 1 it is known that the most breastfeeding mothers age is 20-35 years, namely 32 people (72.73%), age> 35 years as many as 9 people (20.46%) and age <20 years as many as 3 people (6.81%). The same result was obtained from study of Ref.[2] at, Ngembat Village, Sragen, showed that the proportion of nursing mothers aged 20-35 years was greater, namely 80% compared to breastfeeding mothers aged> 35 years and <20 years [2].

Based on parity, the highest proportion is in nursing mothers who have 1-2 children, namely 33 people (75%) compared to nursing mothers who have> 2 children, as many as 11 (25%). The same thing was obtained by Ref. [3] that there was a relationship between parity and attitudes toward dairy breastfeeding. Previous experience can influence attitudes in breast feeding [3].

Based on the age of the children, the highest proportion was in the age group 0-6 months, namely 22 people (50%), ages 7-12 months, as many as 15 people (34.10%) and ages 13-24 months as many as 7 people (15.90 %). Based on the order of children in the family, the highest proportion was not in the first child, namely 31 people (70.46%) compared to the first child of 13 people (29.54%).

Based on the work of mothers, mothers who worked outside the home were more than 39 people (88.63%) while mothers working at home were 5 people (11.37%). Based on family income, families who received more income below of minimum regional wage of Karo Regency amounted to 28 people (63.63%) compared to families who earned income above the Karo Regency minimum regional wage in the amount of 16 people (36.37%). This research is in line with the results of Purba Bahtera study that obtained results that families who have income below regional minimum wage are more than families who have income above regional minimum wage [4].

3.2. Haemoglobin Level of Lactating Mothers
Characteristics of respondents based on haemoglobin levels are known in Table II which shows that the majority of breastfeeding mothers who consume tobacco experience anaemia as many as 13 people (59.1%), while breastfeeding mothers who do not consume tobacco the majority have normal haemoglobin levels of 17 people (77.3%).

| Haemoglobin level | Chewing tobacco | Not chewing tobacco |
|-------------------|----------------|---------------------|
|                   | n  | %    | n    | %    |
| Normal (≥ 12 g/dl) | 9  | 40.9 | 17   | 77.3 |
| Anaemia (< 12 g/dl)| 13 | 59.1 | 5    | 22.7 |

The results of this study are consistent with research conducted by Subramoney and Gupta (2007) which states that low haemoglobin levels in mothers who consume tobacco and there is a relationship between anaemia and tobacco consumption in mothers in Mumbai, India [5].

3.3. Habit Consumption of Chewing Tobacco in Lactating Mothers
Characteristics of respondents based on the consumption habits of chewing tobacco in breastfeeding mothers are described in Table 3.

3.4. Food Consumption of Lactating Mother
Characteristics of respondents based on food consumption of breastfeeding mothers in the results of this study are described in Table 4. The results of the study in Table 4 show the majority of energy consumption is less in mothers consuming tobacco as many as 16 people (72.7%), the majority of protein consumption with fewer categories in mothers consuming tobacco as many as 20 people (90.9%), the majority of iron consumption by category more than 15 mothers consumed tobacco (68.2%). Food consumption for breastfeeding mothers who do not consume tobacco, the majority of more energy consumption as many as 15 people (68.2%), the majority of protein consumption in the category of less as many as 16 people (72.7%), the majority of iron consumption in the category of more than 15 people
Ref. [6] states that energy and protein intake in mothers who consume tobacco is low compared to mothers who do not consume tobacco.

Table 3. Habit Consumption of Chewing Tobacco

| No | Habit of Consumption of Chewing Tobacco | N  | %   |
|----|----------------------------------------|----|-----|
| 1  | Currently consumption of chewing tobacco | 22 | 50.0|
|    | Yes                                    | 22 | 50.0|
|    | No                                     |    |     |
| 2  | Length of consumption                  |    |     |
|    | < 6 months                             | 2  | 9.1 |
|    | 6 – 12 months                          | 4  | 18.2|
|    | > 12 months                            | 16 | 72.7|
| 3  | Frequency of consumption in a day       |    |     |
|    | 1 – 3 times                            | 20 | 90.9|
|    | > 3 times                              | 2  | 9.1 |
| 4  | Tobacco type                           |    |     |
|    | Yellow                                 | 9  | 40.9|
|    | Green                                  | 5  | 22.7|
|    | Black                                  | 8  | 36.4|
| 5  | Other ingredients in consumption of chewing tobacco |    |     |
|    | Betel leaf, lime, gambir                | 13 | 59.1|
|    | Betel leaf, lime, gambir, areca nut     | 9  | 40.9|
| 6  | The source of chewing tobacco          |    |     |
|    | Local market                           | 21 | 95.5|
|    | Not local market                       | 1  | 4.5 |
| 7  | Amount of tobacco consumption in a week (g) |    |     |
|    | < 100 g                                | 2  | 9.1 |
|    | 100 – 150 g                            | 12 | 54.4|
|    | > 150 g                                | 8  | 36.4|
| 8  | Chewing tobacco during lactating       |    |     |
|    | Yes                                    | 2  | 9.1 |
|    | Sometimes                              | 7  | 31.8|
|    | No                                     | 13 | 59.1|
| 9  | The fluid when chewing tobacco         |    |     |
|    | Sometime swallowed                     | 20 | 90.9|
|    | No                                     | 2  | 9.1 |
| 10 | The place where chewing tobacco do     |    |     |
|    | Home                                   | 13 | 59.1|
|    | Outside of home                        | 6  | 27.3|
|    | Home and outside of home               | 3  | 13.6|
Table 4. Food Consumption of Lactating Mother

| Nutrient     | Chewing tobacco | Not chewing tobacco |
|--------------|-----------------|---------------------|
|              | N   | %          | n    | %       |
| Energy (kcal) |     |            |      |         |
| over (> 2550) | 3   | 13.6       | 15   | 68.2    |
| good (2550)   | 3   | 13.6       | 6    | 27.3    |
| low (< 2550)  | 16  | 72.7       | 1    | 4.5     |
| Protein (g)   |     |            |      |         |
| over          | 1   | 4.5        | 16   | 72.7    |
| good          | 1   | 4.5        | 2    | 9.1     |
| low           | 20  | 90.9       | 4    | 18.2    |
| Iron (Fe)     |     |            |      |         |
| over (≥ mean) | 15  | 68.2       | 15   | 68.2    |
| good (mean 4.4) | 0  | 0.0        | 0    | 0.0     |
| low (< mean)  | 7   | 31.8       | 7    | 31.8    |

3.5. Relationship of Chewing Tobacco Consumption with Haemoglobin Levels

Based on the analysis of the relationship between consumption of chewing tobacco and haemoglobin levels can be seen in Table 5. This table describes that breastfeeding mothers who consumed chewing tobacco experienced anaemia as many as 13 people (72.2%). Breastfeeding mothers who do not consume chewing tobacco have normal haemoglobin levels of 17 people (65.4%).

Table 5. Relationship of Chewing Tobacco Consumption With Haemoglobin Levels

| Chewing tobacco | Haemoglobin Levels | P   |
|-----------------|--------------------|-----|
|                 | Anaemia            | Normal |
|                 | n   | %          | n    | %       |
| Chewing tobacco |     |            |      |         |
| Yes             | 5   | 2          | 17   | 6       |
| No              | 13  | 72.9       | 9    | 34.032  |

The results of cross tabulation in Table V shows that there is a relationship between consumption of chewing tobacco and haemoglobin level (p = 0.032). Mistry et al. [7] explains that 72% of mothers who consume tobacco experience anaemia. Ganganahalli et al also showed that haemoglobin levels were lower in mothers who consumed tobacco compared to mothers who did not consume tobacco [6].

3.6. Relationship between Food Consumption and Haemoglobin Levels

Based on the analysis of the relationship of food consumption with haemoglobin levels of breastfeeding mothers can be seen in Table VI that breastfeeding mothers with poor energy intake experienced anaemia as many as 16 people (88.9%). Breastfeeding mothers with poor protein intake experience anaemia as many as 17 people (94.4%). Breastfeeding mothers with poor iron intake experience 66.7% anaemia.

The analysis results in Table 6 show that there is no correlation between consumption of energy, protein and iron with haemoglobin levels in breastfeeding mothers. It is estimated that consumption of nutrients, energy, protein and iron that are already good in their metabolism is inhibited by the presence of nicotine that is smoked through tobacco so that the haemoglobin level becomes low.
Table 6. Relationship Between Food Consumption and Haemoglobin Levels

| Food consumption | Haemoglobin Levels | P   |
|------------------|--------------------|-----|
|                  | Anaemia n | %   | Normal n | %          |
| Energy consumption |          |     |          |            |
| good              | 2     | 11.1 | 7     | 26.9 | 0.270 |
| not good          | 16    | 88.9 | 19    | 73.1 |
| Protein consumption |         |     |          |            |
| good              | 1     | 5.6  | 2     | 7.7  | 1.00  |
| not good          | 17    | 94.4 | 24    | 92.3 |
| Iron consumption |          |     |          |            |
| good              | 6     | 33.3 | 8     | 30.8 | 1.00  |
| not good          | 12    | 66.7 | 18    | 69.2 |

4. Conclusions
There is a significant relationship between consumption of chewing tobacco and blood haemoglobin levels in lactating mothers. There is no correlation between consumption of energy, protein and iron with blood haemoglobin levels in lactating mothers.

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