



## Food consumption and household income of pregnant and lactating women<sup>☆</sup>



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### KEYWORDS

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### Abstract

**Objective:** To look at the relationship between food consumption patterns and household income in pregnant and lactating women, in Malili District, East Luwu Regency, South Sulawesi. **Method:** This study was an analytical survey, using a cross-sectional approach with 128 respondents consisting of 42 pregnant women and 86 lactating mothers. Data collection using questionnaires with interview techniques. Data analysis using bivariate analysis using the chi-square test and fisher exact test.

**Results:** Of the total respondents there were high-risk age <20 years and >35 years 20%, low education 47%, housewives 84%, and low income 45%, high income 55%. The results showed that nutritional intake obtained a value of  $p=0.002$  ( $p<0.05$ ) which showed that there were differences in fat intake in pregnant women and breastfeeding mothers, whereas in energy, protein, carbohydrate, vitamin C, and FE intake there were no differences. In the consumption pattern, fruit intake, vegetable intake has no relationship with household income but the chi-square test on staple foods obtained a value of  $p=0.03$  ( $p<0.05$ ) which indicates that there is a relationship between food consumption and income.

**Conclusion:** There is a relationship between staple food consumption and household income in pregnant and lactating women.

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### Introduction

In Indonesia, nutritional problems are the cause of indirect maternal and child deaths which can still be prevented. Pregnant women are one of the groups prone to malnutrition because of an increase in nutritional needs to meet the needs of mothers and fetuses conceived.<sup>1</sup> The low

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nutritional status and the wrong diet for pregnant women can result in nutritional disorders including anemia, lack of weight gain in pregnant women, and fetal growth disorders.<sup>2</sup> Maternal intake has an important role in fetal growth, health and survival of the baby and long-term health and development of the child. During the critical period of the first 100 days of life (conception to 6 months) the mother is the only source of nutrition for developing children; first in the womb and then during the first 6 months of life when exclusive breastfeeding is highly recommended. In Lancet 2013 it identified maternal malnutrition during pregnancy as a major determinant of poor fetal growth and one of the causes of stunting.<sup>3</sup>

Calorie requirements for healthy and normal weight women with a moderately active lifestyle, experience a moderate increase during pregnancy, which can be fulfilled by slightly increasing energy intake, in a balanced balance between macronutrients in recommendations for nutrition guidelines. In addition, during breastfeeding only a moderate increase in maternal energy needs is needed for breast milk production.<sup>4</sup>

The most common micronutrient deficiencies in women are iron, vitamin A, iodine, folate and zinc. It is known that iron deficiency has an adverse effect on productivity and cognition in the general population and is a major cause of anemia during pregnancy, contributing 20% of all maternal and perinatal deaths and low birth weight. The prevalence of appropriate micronutrient deficiencies based on inadequate intake is estimated to be high. The high burden of nutrition for women has been recognized by the UN Sustainable Development Goals with the aim of addressing the nutritional needs of teenage girls, as well as pregnant and lactating women, by 2030.<sup>5</sup>

Mothers die from complications during pregnancy, childbirth and childbirth. Complications that occur certainly cannot be separated from the poor nutritional status of the mother and ultimately affect the health condition as well as the condition of the fetus born. Therefore, an analytical survey was conducted which aims to see the relationship between food consumption and household income among pregnant and lactating women, in East Luwu Regency, South Sulawesi, Indonesia.

## Method

This study was an observational analytic study with a cross-sectional study design. This research was conducted from April to June 2019 which is located in East Luwu Regency with 4 regions (Malili District, Korea, Korea Village, Baruga Village, and Wewangriu Village), South Sulawesi, Indonesia. Research subjects are all pregnant and lactating women who can provide information. Sampling was done by cluster random sampling, with a total sample of 128 people consisting of 42 pregnant women and 86 nursing mothers. Variables include mother's age, mother's occupation, father's occupation, income and mother's education. Data was collected by an undergraduate enumerator using a questionnaire with a 24-h recall. Data entered using SPSS 24 software program, the test used is the Chi-Square/Fisher Exact Test and presented in tabular form.

**Table 1** Frequency distribution of characteristics of pregnant and lactating mothers.

Characteristics	Pregnant women		Lactating mothers	
	<i>n</i>	%	<i>n</i>	%
<i>Mother's age</i>				
At risk (<20 years and >35 years)	9	21.4	17	19.8
Not at risk	33	78.6	69	80.2
<i>Mother's occupation</i>				
Work	9	21.4	12	14
Doesn't work	33	78.6	74	86
<i>Father's occupation</i>				
Entrepreneurs	19	45.2	49	57
Traders	2	4.8	6	6.9
Fisherman	4	9.5	12	14
Farmer	3	7.1	7	8.1
Laborer	14	33.3	12	14
<i>Income</i>				
High	17	40	28	32.5
Low	25	60	58	67.4
<i>Mother's education</i>				
High	28	66.7	40	46.5
Low	14	33.3	46	53.5

## Result

A total of 128 respondents were involved in this study which consisted of 2 groups: 42 pregnant women and 86 nursing mothers. Table 1 shows the frequency distribution data characteristic of pregnant and lactating women.

Table 2 shows the category of nutritional adequacy which evaluates the elements of food intake that must be available in sufficient quantities. The results of the study on the components in the adequacy category showed significant differences between the groups of pregnant and lactating mothers in the components of the fat food group.

Table 3 shows that consumption patterns consist of the first 3 categories which are said to be good when consuming with 4 types of food, namely staple foods, side dishes, vegetables, and fruits. The results showed that a value of  $p = 0.030$  ( $p < 0.05$ ) was found in the staple food. This shows that there is a relationship between staple food and income.

## Discussion

The nutritional situation of pregnant women is influenced by the type of food consumed that is not balanced nutritional intake, portions, and frequency of food, trust, and acceptance of food such as abstinence and like or dislike food. Besides infectious diseases and socioeconomic conditions can also cause nutritional disorders. This can affect the nutritional status of pregnant women who tend to lack certain nutrients such as Chronic Energy Deficiency and will result in stunted fetal growth and babies born with LBW.<sup>6</sup>

**Table 2** Categories of adequacy between pregnant and lactating mothers.

	Pregnant		Lactating		
	<i>n</i>	%	<i>n</i>	%	
<b>Energy</b>					1.000 <sup>b</sup>
Enough	2	4.8	4	4.7	
Less	40	95.2	82	95.3	
<b>Protein</b>					0.619 <sup>a</sup>
Enough	13	31	23	26.7	
Less	29	69	63	73.3	
<b>Carbohydrate</b>					0.750 <sup>b</sup>
Enough	3	7.1	9	10.5	
Less	39	92.9	77	89.5	
<b>Fat</b>					0.002 <sup>a</sup>
Enough	12	28.6	6	7	
Less	30	71.4	80	93	
<b>Vitamin C</b>					0.717 <sup>b</sup>
Enough	2	4.8	7	8.1	
Less	40	95.2	79	91.9	
<b>Iron (Fe)</b>					0.328 <sup>b</sup>
Enough	1	2.4	0	0	
Less	41	97.6	86	100	

<sup>a</sup> Chi-square test.<sup>b</sup> Fisher exact test.**Table 3** Relationship between consumption patterns and household income in pregnant women and lactating mothers.

	Income				<i>p</i> value
	High		Low		
	<i>n</i>	%	<i>n</i>	%	
<b>Consumption pattern</b>					0.275 <sup>a</sup>
Good	3	30	12	16	
Enough	7	70	51	68	
Less	0	0.0	12	16	
<b>Staple food</b>					0.030 <sup>b</sup>
Good	10	100	50	67	
Enough	0	0.0	25	33	
<b>Vegetable intake</b>					0.400 <sup>b</sup>
Enough	0	0.0	1	1	
Less	10	100	74		
<b>Fruits intake</b>					1.000 <sup>b</sup>
Enough	1	10	3	4	
Less	9	90	72	96	

<sup>a</sup> Chi-square test.<sup>b</sup> Fisher exact test.

Scores in the nutritional adequacy category indicate that there is a lack of fulfillment of energy, protein, protein, vitamin C, and iron (Fe) between the two groups. The low intake of nutrients in the category of nutritional adequacy is a factor in the low quality of the diets in both groups. This is supported by a cohort study of pregnant women in Canada in 2017 also showing results that the intake of iron, vitamins,

fat, and fiber is very low below the recommended intake figures.<sup>7</sup> Likewise in southern Ethiopia very few pregnant women consume eggs, meat and fruits.<sup>8</sup> Figures for nutritional adequacy indicate that fat intake in nursing mothers is higher in needs than in pregnant women. But the results obtained in Table 2 show that fat intake in pregnant women is higher than breastfeeding mothers. That is because the average pregnant woman in east luwu district more often consumes foods that contain high-fat content such as fried foods. Fat functions as a source of calories in preparation for labor and to metabolize vitamins A, D, E, and K.

According to Joyomartono (2004) economic factors related to the level of income or purchasing power of a person or group in meeting their needs. If income is limited it is likely to be less able to meet food needs, especially to meet nutritional needs. The level of income can determine diet. Revenue is the most determining factor in the quality and quantity of dishes. The higher the income, the greater the percentage of that income to buy fruits, vegetables, and several other types of food.<sup>9</sup>

Out of 128 respondents, only 85 can be analyzed. Table 3 shows the results on consumption patterns, vegetable and fruit intake not related to household income, but staple food is related to household income with a value of  $p = 0.030$  with the acquisition of good food intake for high income 100%. This is because high-income people are able to meet the necessary food needs. Thus, high or low income affects the purchasing power of daily food families. This study is in line with the Yang study in 2016 which said that female household income in the high-income subgroup consumes more energy and nutrition during pregnancy compared to those in the low subgroup.<sup>10</sup> Also supported by Moran's research (2013) which says that there is a decrease in the quality of the diet in pregnant women caused by socioeconomic factors including education, employment, and low income.<sup>11</sup>

## Conclusion

Income plays an important role in fulfilling nutritional adequacy in a household and this study the consumption patterns in pregnant women and lactating mothers especially in basic food intake are related to household income.

## Conflict of interest

The authors declare no conflict of interest.

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