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Consciousness level determination of red meat consumption of pregnant women, Giresun/Turkey province

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ABSTRACT

In this study, meat consumption and the nutritional status of pregnant women living in Giresun province of Turkey were investigated. The study was carried out at Giresun University, the Maternity and Pediatrics Training and Research Hospital between February-March 2019. The study group consisted of 218 pregnant women aged 18 to 49 years, who benefited from polyclinic services and agreed to participate in the survey. A questionnaire consisting of 12 questions was used, and the findings were evaluated using SPSS to generate descriptive statistics and t-tests or ANOVAs. The majority of participants stated that red meat is beneficial during pregnancy (71.1%) and this benefit is due to its nutrients (69.1%). Educational level was positively related to a balanced diet during pregnancy. Although the pregnant women in this study have knowledge about nutrition during pregnancy, nutrition programs can be further strengthened to increase their level of knowledge.

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Introduction

The daily intake of nutrients needed by the body is defined as “nutrition”. Nutrition, which is a basic condition of a healthy life, is important for the maintenance of the individual and community health and for recovery from disease [1]. Pregnancy is considered to be a period related to maternity with mandatory additional nutrient requirements [2]. Nutrition, before and during pregnancy, affects both the health of the mother and the growth of the fetus, as the fetus meets its dietary needs from the foods the mother consumes [3].

Pregnancy in a woman's life is a “transition” in which physiological, biological, emotional, and social changes are experienced [4]. During pregnancy, feeding and lifestyle choices have a great impact on both the mother’s and the fetus’s health. Inadequate basic nutrition during critical periods of fetal development can lead to reprogramming of fetal tissues, making newborns vulnerable to chronic conditions [2]. Specifically, the nutritional status and behavior of the pregnant mother can affect the immune system and health of the child's life through epigenetic modifications, but also via the continuation of pregnancy [5]. The purpose of prenatal nutrition then is to promote a healthy maternal and uterine environment for fetal growth. The ideal prenatal diet should regulate maternal consumption and prevent fetal malnutrition [2].

According to studies on nutrition, women who are pregnant for the first time can be divided into three groups: (1) women who feel like mothers from the moment they know they are pregnant, (2) women who feel like mothers at later periods of pregnancy, and (3) women who do not feel like mothers yet. Each group has been studied with respect to their specific dietary behaviors [6]. Pregnant women in the first group use more informational sources than those in the other groups, benefitting from current websites, books, and the experiences of friends. Those in the second group benefit from brochures distributed by the midwives or health institutions, while those in the last group act in ways based on their own feelings and senses. Therefore, while the first group typically has a balanced and sufficient diet, the other two groups require to briefing and orientation. Because sufficient nutrition for the

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development of the fetus is important, maternity educators closely follow nutrition protocols in order to improve the mother's and fetus's nutritional quality [7].

As part of a balanced nutritional diet, adequate protein intake is essential, with inadequate meat protein intake causing a low birth weight, and inadequate milk protein intake causing a low placental weight, with birth weight decreasing 3.1g as a result of decreased consumption by 1 gram of meat protein taken in the later period of pregnancy [8]. Fallah et al. [9] reported that the level of awareness of pregnant women about healthy nutrition increased from 3% to 31% following a nutritional education initiative. They further noted that this considerable increase was not related to the mother's obesity, education level, or age. However, Nucci et al. [10] evaluated the risk factors caused by obesity and negative pregnancy outcomes among women in Brazil and found that obesity was more common in women who had given birth previously and had a low level of education.

Deficiencies of any critical dietary factor can have ill-effects during pregnancy. For example, mineral and vitamin deficiency during pregnancy causes hypertension, low birth weight, congenital anomaly, intrauterine fetal growth retardation, and risk of miscarriage [11,12]. Improper eating habits affect pregnancy and the newborn baby's health negatively. The risk of premature birth, growth retardation, low cervical infant, and death due to imbalanced nutrition and undernourishment increases in pregnant women with nutritional deficiency before and during pregnancy [13]. Although pregnant women usually receive nutrition information and follow a healthier diet for their babies [4], maternal nutrition during pregnancy can be specific to the socio-economic state and culture [6]. As a result of inadequate and imbalanced nutrition, child and infant deaths, growth, development and mental retardation in children, and low resistance to infections have been noted. Children undernourished during pregnancy do not become overweight and thus need more food to grow. Thus, pregnant woman need to pay careful attention to nutritional intake, as undernourished babies are more likely to suffer serious side effects, including vulnerability to disease and inadequate development [14]. For example, women need to be informed that proteins from meat are superior to vegetable proteins since they contain balanced and sufficient essential amino acids, which are highly digestible in the body. Consumption of 6 to 10 g protein per day is generally recommended for pregnant women [15].

Getting adequate nutritional information during pregnancy can help prevent complications and ensure the mother's and baby's health [16], and multinational research has demonstrated the benefits of nutrition training programs during pregnancy, including how one's diet can affect the infant's health [9,17,18]. In Turkey, studies investigating the eating habits of pregnant women, especially with regard to meat consumption, are sparse. For this purpose, we investigated the awareness of the importance of red meat consumption of pregnant women using a 12-item questionnaire to collect and evaluate responses.

1. Materials and Methods

1.1. Sample

This study assessed the awareness of the importance of red meat consumption of pregnant women who visited Giresun University, the Obstetrics and Gynecology Training and Research Hospital. We received ethical approval for the project from the Republic of Turkey, Giresun University, the Ethics Committee (19/12/2018-08-06). A questionnaire consisting in 12 items was used to survey 218 pregnant women.

2. Results

2.1. Description of the sample

Table 1

Demographic data, aspects of red meat consumption, and educational level of the sample of pregnant women from Giresun province of Turkey

As shown in Table 1, the average age of the sample was 28.1 years (±5.52). In addition, the monthly average red meat consumption was 1.13 kg (∓0.68). Approximately 30% of the women graduated from the university, about 25% from the secondary school, and about 16% from the primary school.

Weekly Food List	**N**	Minimum	Maximum	Mean	Std. Deviation
Age	218	23.00	45.00	28.09	5.52
Number of People	218	2.00	5.00+	3.23	1.05
Revenue (₺)	218	1,400.00	5,000.00+	2,953.21	1,152.12
Food Budget (₺)	218	250.00	1750.00	592.89	275.17
Red Meat Budget (₺)	218	0.00	250.00	119.50	67.02
Red Meat Consumption (kg)	218	0.00	4.00	1.13	0.68

Educational Level	Frequency	Percentage	Total Percentage
Elementary School	35	16.06%	16.06%
Secondary School	55	25.23%	41.28%
High School	63	28.90%	70.18%
University	65	29.82%	100.00%
Total	218	100.00%	

2.2. Survey results regarding meat consumption during pregnancy

ANOVA was used to investigate whether budget levels differed between women of different educational levels in terms of red meat consumption, with budget difference being statistically significant ($F = 4.681; p = 0.003$). Using the Tukey post hoc test, respondents who graduated from the university (143.85 ± 8.80) consumed more red meat than primary school graduates (98.57 ± 10.54) and others ($p = 0.006; p = 0.049; p = 0.031$). There was no significant difference between secondary and high school graduates in terms of the budget for red meat (Table 1).

Table 2

Why is red meat good for you?

Why is Red Meat Good for You?	Frequency	Percentage	Total Percentage
Contains Beneficial Nutrients	143	69.08%	69.08%
High Digestibility	2	0.97%	70.05%
Delicious Taste	6	2.90%	72.95%
Doctors' Advice	38	18.36%	91.30%
Habit	7	3.38%	94.69%
Others	11	5.31%	100.00%
Total	207	100.00%	

Red meat consumption also varied according to level of education, as determined by ANOVA ($F = 3.461; p = 0.017$). As a result of the Tukey Test, university graduates (1.34 ± 0.10) consumed significantly more red meat during pregnancy than secondary school graduates (0.98 ± 0.07) ($p = 0.021$), but there was no significant difference between the latter group and respondents who graduated from primary (1.00 ± 0.07) and high school (1.11 ± 0.09). When queried why red meat is beneficial, most women (69.1%) identified its nutrients as the reason, but a considerable number cited (18.4%) doctors' recommendations.

Table 3

Are you aware of the importance of red meat consumption during pregnancy?

Are you Aware of the Importance of Red Meat Consumption During Pregnancy?	Frequency	Percentage	Total Percentage
Yes	155	71.10%	71.10%
No	63	28.90%	100.00%
Total	218	100.00%	

Table 3 shows that the majority of women (71.1%) understand the importance of red meat consumption during pregnancy. Group differences in the response to this question were related to allocated budget for red men and amount of red meat consumption. When the t_test results is considered it is seen that, while the groups were not different from each other regarding meat budget ($p = 0.065$), groups were different regarding meat consumption ($p = 0.008$).

Table 4

Where did pregnant women learn about the importance of red meat consumption?

Where did pregnant individuals learn about the importance of red meat consumption?	Frequency	Percentage	Total Percentage
Books	9	5.81%	5.81%
Blogs on the Internet	67	43.23%	49.03%
Newspapers	5	3.23%	52.26%
Social Media	11	7.10%	59.35%
Others	63	40.65%	100.00%
Total	155	100.00%	

Table 4 indicates that most women (43.2%) obtained information about the effects of red meat consumption from Internet blogs, but other sources were also used (40.7%).

Table 5

What are the consequences of red meat consumption?

Problems with Red Meat Consumption	Frequency	Percentage	Total Percentage
Nausea	43	19.82%	19.82%
Financial Impossibility	6	2.76%	22.58%
Dislike	26	11.98%	34.56%
Others	142	65.44%	100.00%
Total	217	100.00%	

Table 5 shows that while most women (65.4%) list various problems with red meat, 19.8% of women complained about nausea and 2.8% of complained about an insufficient budget to buy meat, and 12% did not like red meat.

Table 6

How do pregnant women prepare a weekly meal list?

Weekly Meal List	Frequency	Percentage	Total Percentage
I only consume seasonal vegetables and fruits	38	17.51%	17.51%
Balanced Diet	134	61.75%	79.26%
Other	45	20.74%	100.00%
Total	217	100.00%	

Table 6 indicates that while more than half of the women (61.8%) tried to have a balanced diet during pregnancy, 17.5% consumed only seasonal vegetables and fruits.

Discussions

Mothers having a university education differ from all other educational levels in their budget for red meat; other respondents did not differ. Other mothers' groups may not have differed because many families do not allocate a specific budget for red meat since they produce their own food throughout the year and are not dependent on having to acquire food from others.

Dietary and nutritional guidelines for pregnant women depend on the Food Guide Pyramid. Due to the need for additional protein, a higher consumption of meat, fish, and eggs is recommended. Red meat consumption is also highly recommended as an important source of iron (Fe) [19].

The proportion of pregnant women who think that red meat consumption is good for the health of their baby because it contains beneficial nutrients was 69%, indicating that most pregnant women understood its important nutritional contribution. In addition, more than half the women pay attention to ensuring a balanced diet (61.75%).

Most pregnant women believe that consumption of protein-rich foods such as cheese, meat, and milk is important for the growth and development of the fetus [20]. About 50% state that they consumed red meat 1-3 times in a week and 17% consumed even greater amounts [21]. Consistent with these findings, our data indicate that pregnant Turkish women are also conscious about the importance of red meat consumption during pregnancy (71.10%).

An insufficient maternal nutrition is globally common, even within high-income countries, despite the fact that a balanced diet may be accessible. This can cause health problems for the mother and fetus both during pregnancy and into infancy [22]. Our sample of Turkish women also found that most (61.75%) prepare their weekly nutrition programs in a balanced way.

Although many pregnancy-related applications (apps) are available, few are high quality and focused only on pregnancy-nutrition issues. It is important to be aware of the limitations of applications when taking dietary advice regarding pregnancy [23]. Chan et al. [24] concluded that social media and mobile healthcare apps have potential to be widely used to improve maternal welfare during prenatal and postnatal periods. According to their findings, pregnant women benefited from blogs (43.23%) and social media (7.10%) on the internet.

In Turkey, red meat prices are relatively high, which may limit its consumption during pregnancy, so a specific budget should be allocated for meat acquisition during this period. In order to increase the awareness of the nutritional content of the red meat and ensure a high consumption rate during pregnancy, pregnancy training programs should be organized or added to existing programs.

Limitations of Case Studies

The face-to-face survey method used in our study provided advantages over other data collection methods in terms of accuracy of data collection. However, it required more resources than other methods, and some women refused to participate because of lack of privacy and anonymity. Since the study was conducted in Giresun province of Turkey, that has only one maternity hospital, the scope of the sample was limited.

Conclusions

During pregnancy women need to pay attention to nutrition and a healthy diet. Since the fetus uses maternal resources for growth and maturation, proper nutrition during pregnancy is crucial for both maternal and fetal health.

Over the past years, substantial research on pregnant mothers has focused on a variety of issues, such as eating habits, smoking, anxiety and depression, hypertension, sleep apnea, sexuality, obesity, breastfeeding and breast milk, and folic acid use in pregnancy. However, we could not find any studies assessing women's awareness of the need for red meat consumption during pregnancy. Since our sample was drawn from a specific region of Turkey where nutrition habits and educational levels differ from others, comparisons with other studies in the literature may be limited. Nevertheless, level of education was among the most important factors regarding knowledge of proper nutrition during pregnancy.

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