

LITERATURE REVIEW: PREGNANT WOMEN NUTRITION DURING A PANDEMIC

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Abstract

Pregnant women's nutrition is an important factor that must be met and taken into account during their pregnancy. Pregnant women and their fetuses benefit greatly from good nutrition during pregnancy. Nutritional intake throughout pregnancy is still something that should be considered for the womb's health. Pregnant women should get a good nutritional intake that includes four healthy five perfect foods in order to keep the mother and fetus immune during the pandemic. The purpose of this study is to look into the literature on pregnant women's nutrition. This study is a sort of literature review conducted using electronic databases such as PubMed and Google Scholar. Each data-based publishing year is limited to the last ten years, beginning in 2011-2021. The publications obtained through the search include articles that include both international and national articles, and they will be then evaluated. The findings revealed that a pregnant woman during this pandemic requires additional nutrition since the mother must better maintain the immunity of the body and the fetus in her womb during this pandemic. If a pregnant woman normally requires 80.000 calories during pregnancy, the needs during the pandemic must be increased and presumed once more. During the pandemic, pregnant women should require some additional nutrients such as daily nutritional needs, supplements, iron, vitamin C, and macronutrient demands containing carbohydrates, proteins, and fats. To address the nutritional demands of pregnant women during a pandemic, pregnant women are recommended to eat breakfast every day, eat high-fiber foods, and enhance nutrient intake.

Keywords: *Pregnant Women Nutrition, Pregnancy, Nutritional Intake, Covid-19*

1. INTRODUCTION

Nutritional requirements of pregnant women are essential and must be provided and considered during pregnancy. Good nutrition during pregnancy is essential to the health of pregnant mothers and their fetus. For the health of the mother, consideration must continue to be given to nutritional intake during pregnancy. Pregnant women should consume a proper nutrition consisting of four healthy and five perfect food groups. Reliance of growth, development, and health on the quantity and quality of nutrients consumed. During pregnancy, the mother provides the child's development with all nutrients. The life support system of the fetus grows and develops during pregnancy. Pregnant women require adequate nutrition for the growth and development of their fetus; thus, a varied food is required to meet the nutrient requirements of these foods (Sutriningsih & Lasri, 2017).

The number of vitamins and minerals needed by pregnant women will alter from what it was during normal times or before the pregnancy. Due to the changes in the woman's body

during pregnancy, nutritional needs increase (Effendi, 2019). Pregnant women gain weight during their pregnancies due to physiological changes that occur during pregnancy, such as increased plasma volume, increased food reserve supply, increased uterine blood flow, increased fetal weight, amniotic fluid, and placenta (Zhang et al., 2021). The typical female weight gain will be 12.5 kg. Prenatal nutrition begins in the first, second, and third trimesters of pregnancy. This is necessary to ensure that pregnant women can give birth to healthy, normal-weight babies and that their pregnancies can proceed normally and securely. The consumption of vitamins and minerals is one of the nutritional requirements that must be modified during pregnancy (Autoridad Nacional del Servicio Civil, 2021)

The nutritional intake of pregnant women is driven by a variety of internal and external factors, including low levels of knowledge, social factors, and household income (Bartoshuk et al., 2016). A household's income has a significant impact on the amount and quality of food (McDonald et al., 2020). A large income affords a greater choice of food of greater quality and quantity. Because it is directly proportionate to the purchasing power of the family, family income has a role in determining the health state of a person, especially pregnant women. Depending on their monthly income, families can afford to purchase groceries. The larger the income, the greater the expenditures (Najoan & Manampiring, 2011)

The coronaviruses are a large family of viruses that can infect both animals and humans and result in sickness in either host. Corona has been linked to a variety of respiratory illnesses in humans, ranging from the common cold to more serious conditions like the Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). As a result of the fact that this virus has the potential to take people's lives, the coronavirus is now considered to be a pandemic (Anggraini & Anjani, 2021).

The COVID-19 pandemic has had an influence on all areas, especially the economic field, where many people have lost their employment or experienced a reduction in income. The decline in household income has reduced the capacity to meet fundamental necessities, notably food requirements. During the COVID-19 pandemic, it is crucial to meet nutritional requirements and maintain a balanced diet (Lidia et al., 2020).

Antenatal care is essential, particularly in the phase of adjusting to new behaviors that still exists in the COVID-19 pandemic. According to research conducted by Uwambaye et al. (2020), The Pregnancy Health Service seeks to ensure that every pregnant woman has access to quality health care so that she can have a healthy pregnancy, give birth safely, and have a healthy baby as well as nutrition instruction for pregnant mothers throughout the pandemic (Kelahiran et al., 2016).

Pregnant women's nutrition is an important factor that must be met and taken into account during their pregnancy. Pregnant women and their fetuses benefit greatly from good nutrition during pregnancy. Nutritional intake throughout pregnancy is still something that should be considered for the womb's health. Based on the background above, this research aims to look into the literature on pregnant women's nutrition in current pandemic condition.

2. RESEARCH METHOD

This research is done using the literature review research method, wherein the author will later conduct a detailed analysis of the literature that he or she obtained from a variety of sources using various research methods and has a connection to the subject of the study. The inclusion criteria and keyword-based document selection are "Nutritional status of pregnant women during a pandemic."

By using literature review using several databased electronic media such as PubMed, Google scholar. The publication year of each data-based is limited to the last 10 years, starting from 2011-2021. The articles obtained in the search are articles consisting of international articles and national articles and then a review is carried out.

3. RESULT AND DISCUSSION

For pregnant women, the intake of nutrients and nutrients that enter their body is of utmost importance, as each phase of pregnancy has a significant impact on the health of the unborn child and the health of the mother. As a result, the nutritional needs of pregnant women vary daily. The daily nutritional requirements of pregnant women must be balanced and in accordance with their gestational age. Since the fetus is growing and developing inside the mother's womb, nutritional needs during pregnancy will differ from those of non-pregnant women. During the ongoing Covid-19 pandemic, a pregnant woman requires more protein or nutrition than usual to ensure the health of both herself and the unborn child she is still carrying. During the Covid-19 pandemic, pregnant women require guidance for balanced diet in order to prevent the transmission of the corona virus and boost their resistance through balanced nutrition.

Based on the investigations utilizing PubMed and Google scholar, it was obtained 11 articles that use the subject of determining the nutritional status of pregnant women during the pandemic, which can be seen as follows.

Table 1 Article relating nutritional status of pregnant women during the pandemic

No.	Title of Article	Method	Sample	Data Analysis	Result
1.	Relationship of Family Income with Nutritional Intake of Energy, Protein, Iron, Vitamin A pregnant women at the Umban Sari Health Center in Pekanbaru City (Saputri et al., 2014)	The type of research to be carried out is analytical research with a cross-sectional research design	40 pregnant women	Data analysis by univariate and bivariate analysis.	From the results of the study, it is revealed that there is no meaningful relationship between the family income of pregnant women and the nutritional intake of vitamin A in pregnant women (p value = 0.231). The results showed that respondents who had sufficient

					income were not always followed by sufficient protein nutritional intake, which proven by 9 respondents who turned out to be with sufficient income turned out to be as many as 1 person (11.1%) had a lack of vitamin A nutritional intake
2.	Knowledge and Economic Status Related to the Nutritional Status of Pregnant Women at the Watampone Health Center (Metasari & Kasmiati, 2020)	This study uses an analytical type with a Cross Sectional approach, namely independent variables and dependent variables are measured at the same time	75 people.	Data analysis using chi-square test	The results showed that there were 45 (93.8%) people who had good nutritional status while 3 (95.3%) people had sufficient knowledge. Less knowledge of 11 (40.7%) people who had a moderately poor good nutritional status 16 (59.3%) people. Meanwhile, the economic status is less than 15 (46.9%) people who have good nutritional status while bad 17 (53.1) people. Thus, there is a relationship between knowledge, economic status and nutritional status of pregnant women with a value of $p = 0.001$.

**PHARMACOLOGY, MEDICAL REPORTS, ORTHOPEDIC, AND
ILLNESS DETAILS
(COMORBID)
VOLUME 1 ISSUE 3 (2022)**

3.	Nutritional Requirements of Pregnant Women During the Covid-19 Pandemic	literature review.	-	Analytical methods that identify, review, evaluate, and systematically develop existing research with a focus on certain topics that are appropriately relevant	The results obtained that the nutritional needs of pregnant women during the pandemic should be improved more than normal conditions because the mother must take good care of the state of body immune.
4.	Factors Related to Nutritional Status in Pregnant Women in the Workplace of the Olak Kemang Health Center in Jambi City in 2013 (Mulyati, 2016)	Descriptive analytics by using a cross sectional approach	The population in this study were pregnant women in the II and III trimesters from January-July 2015 as many as 186 people and the sample in this study was 37 people	The analysis used is univariate and bivariate analysis.	The results of the study showed that as many as 23 respondents (62.2%) the nutritional status of pregnant women was good, as many as 24 respondents (64.9%) had a non-risky age, many 22 respondents (59.5%) had eating habits not good, as many as 20 respondents (54.1%) have poor knowledge about the nutritional status of pregnant women, there is a relationship between age and nutritional status in pregnant women in Workplace of Olak health center of Kemang Jambi City. There is a relationship between eating

					<p>habits and nutritional status in pregnant women in the Olak Kemang Health Center Workplace, Jambi City. There is a relationship between knowledge and nutritional status in pregnant women. Thus, it is hoped that health workers can provide information and counseling about nutritional status in pregnant women and create a program such as cooking demos, nutritional monitoring of pregnant women who are in their work area</p>
5.	<p>The Effect of Socioeconomic Status and Diet on the Nutritional Status of Pregnant Women in the Mattombong Health Center Workplace, Mattiro Sompe District, Pinrang Regency (Umar et al., 2021)</p>	<p>analytics with cross sectional study design</p>	<p>50 Pregnant women</p>	<p>The analysis used is univariate analysis</p>	<p>The findings shows that energy intake, protein intake, socioeconomic status, as well as the level of knowledge do not have a significant impact on the nutritional status of pregnant women (p=0.000). It is recommended that pregnant women continue to maintain and meet the daily nutritional intake.</p>

**PHARMACOLOGY, MEDICAL REPORTS, ORTHOPEDIC, AND
ILLNESS DETAILS
(COMORBID)
VOLUME 1 ISSUE 3 (2022)**

6	A Study On Nutritional Status Of Pregnant Woman In South-West Region Of Bangladesh (Rahman et al., 2013)	cross sectional	400 pregnant women were sample respondents in the Southwest region (Khulna division).	-	It was postulated that the nutritional situation in Southwest of Bangladesh's region has not improved satisfactorily as an educational environment and requires more attention and community-based strategies for improving the nutritional status of mothers. This study is useful in understanding the severity of the nutritional status of pregnant women and increasing awareness of pregnant women in achieving their physical, mental and academic achievements.
7	Factors Related to Nutritional Status of Pregnant Women in the Working Area of Baiturrahman Health Center Banda Aceh (Husna & Andika, 2019)	surveys with descriptive design of analytics and case control	80 people		Indicates that knowledge (P = 0.015, OR = 4.608), attitude (P = 0.008, OR = 7.933), family support (P = 0.035, OR = 3.857), family income level (p = 0.598, OR = 1.593). Multivariate analysis showed the most dominant variable

					<p>associated with the nutritional status of pregnant women was attitude (OR = 8,576). Therefore, there is a connection between family knowledge, attitudes, and support and the nutritional status of pregnant women. Meanwhile, the level of family income is not related to the nutritional status of pregnant women. Attitude variables are the dominant risk factor for SEZ</p>
8	<p>Factors Related to the Nutritional Status of Pregnant Women in the Working Area of the Sakti Health Center, Sakti District, Pidie Regency in 2020 (Zaitun et al., 2020)</p>	<p>analytical survey with Cross-sectional approach</p>	<p>All pregnant women</p>	-	<p>There is an influence of predisposing factors (knowledge, diet), on the nutrition of pregnant women in the work area of the Sakti Health Center, Sakti District, Pidie Regency in 2020</p>

**PHARMACOLOGY, MEDICAL REPORTS, ORTHOPEDIC, AND
ILLNESS DETAILS
(COMORBID)
VOLUME 1 ISSUE 3 (2022)**

9	Pregnant Women during the COVID-19 Pandemic in Indonesia: Knowledge, Anxiety and Motivation (Nugraheni et al., 2021)	correlational quantitative	Pregnant women members of the <i>Sekolah Komplementer Cinta Ibu</i>	-	Based on the results of the analysis obtained, there is a significant relationship between knowledge and motivation (p = 0.039). There is a significant association between anxiety and motivation (p=0.004). There is a relationship between knowledge and anxiety and motivation (p=0.004). Pregnant women in Indonesia have good knowledge about COVID-19, the knowledge they have can reduce the level of worry and still have the motivation to come to health workers to monitor pregnancy
10	Efforts to Improve the Nutritional Status of Pregnant Women during the Covid-19 Pandemic	Field Survey	4-5 times the meeting to pregnant women, namely the provision of material on	-	The majority of participants in this activity responded positively to the question of understanding the nutritional

	through the Outpatient Counseling Program (PENYURAJA) at the Mojosari Health Center, Mojosari District Mojokerto County (Hety et al., 2021)		nutrition for pregnant women during the Covid-19 pandemic		requirements of pregnant women during the Covid-19 pandemic, which is encouraging.
11	The Importance of Nutrition in Pregnant Women During the Covid 19 Pandemic (Bohari & Gaffar, 2021)	counseling.	20 participants	-	Of the 20 participants for the pretest questions, the results obtained were 65% of the total correct answers answered by the participants. As for the posttest, 94% results were obtained. Judging from the increase in posttest results, it can be seen that mothers get some knowledge related to pregnant women during the Covid-19 pandemic, because of the increase from 65% to 94%. Conclusions from counseling activities about the importance of nutrition in pregnant women during the COVID-19 pandemic have a positive impact on the community, so that the community

**PHARMACOLOGY, MEDICAL REPORTS, ORTHOPEDIC, AND
ILLNESS DETAILS
(COMORBID)
VOLUME 1 ISSUE 3 (2022)**

					understands the importance of nutrition in pregnant women.
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The nutritional quality of pregnant mothers during the pandemic must receive additional protein, minerals, vitamins, and energy for the success of pregnancy. Pregnant women are strongly advised to consume iron-containing tablets or foods including liver, spinach, and other sources of iron. Anemia, which lowers the body's resilience and makes it more susceptible to different infections, including the covid-19 infection and the symptoms it produces, can be caused by iron deficiency in pregnant women. Furthermore, anemia during pregnancy will raise the baby's low birth weight, which will undoubtedly raise the chance of stunting.

The energy consumption of pregnant women is still low, specifically the subconscious energy needs during pregnancy. This is based on the amount of food consumption is still lacking, especially in terms of quantity, as well as the quality of food that varies in consumption, specifically there are carbohydrate source foods such as rice and sago, protein source foods such as fish, eggs, and chicken meat, as well as the consumption of vegetables and fruits, but the amount of food consumed is still relatively limited. Pregnant women must change their eating habits, even if they believe they already eat well. If they are on a diet, then the food diet must also follow a diet for pregnant women, because during pregnancy, mothers require a higher intake of protein, calories (for energy), vitamins, and minerals for the development of their babies and themselves. Knowledge of the mother plays a vital part in raising the intake of pregnant women; increasing maternal knowledge will aid in reaching nutritional status (Anggraini & Anjani, 2021).

It is impossible for people to consume food that they cannot afford, hence income is the most significant factor influencing the quality of the menu. Inadequate income leads to a lack of purchasing power, as a result of which it has not been able to purchase the needed amount of food. This condition is extremely dangerous for family health and can have a negative effect on the nutritional status of pregnant women. Socioeconomic status determines a person's diet. This refers to the satisfaction of a family's needs, particularly the satisfaction of the desire for nutrient-rich food. Consequently, socioeconomic status is the most influential factor in determining the quality and amount of food (Umar et al., 2021).

Indeed, pregnant women are susceptible to contracting any virus, including the Corona virus. This circumstance causes pregnant women to experience respiratory tract disorders when infected with any type of virus; changes in the immune and cardiovascular systems in pregnant women have the potential to suffer from severe diseases if infected with the corona

virus with any cause that is more than 38 degrees at the age of the first trimester content will increase the number of congenital abnormalities of pregnant women with comorbidities, such as diabetes mellitus. There is still no clinical evidence regarding the transmission of the Covid-19 infection from mother to fetus in the womb, miscarriage, or fetal death when pregnant women are positively infected with Covid-19. However, pregnant women are more vulnerable than other women because of the increased risk of the infection. As a result, one of them is to pay attention to the nutritional requirements of pregnant women and their fetuses in order to keep pregnant women and their fetuses in good health. Pregnant women's nutritional requirements must be higher than usual during the Covid-19 pandemic in order to boost their bodies' immunity. Their nutrition will follow a pattern of four healthy, five perfect nutrients. Pregnant women and their fetuses can benefit greatly from good nutrition and nutrition during pregnancy in terms of maintaining their health. The consumption of good nutrients, as well as the quantity and quality of nutrients consumed, are necessary for good growth, development, and health (Praharsini, 2021).

Pregnancy checkups are essential for a healthy pregnancy and are required for all pregnant women. Regular antenatal care can assist in identifying and mitigating risks to women and infants throughout pregnancy. Pregnancy screening is a component of Antenatal Care (ANC), which attempts to improve the quality of antenatal care by giving nutritional education to pregnant women during a pandemic. This will reduce the risk of maternal death due to pregnancy, among other complications. Lack of ANC visits and knowledge of the risk indications of pregnancy can be harmful to the mother and fetus, as evidenced by bleeding during pregnancy due to the failure to recognize the danger signals of pregnancy early and the lack of nutrition's during the pandemic (Tahir et al, 2018).

According to Azizah and Fatmawati (2020)(Azizah & Fatmawati, 2020) with a study entitle "pregnancy nutrition during the COVID-19 pandemic". The findings of this study indicate that the assistance provided to the community, particularly pregnant women, during a pandemic can meet the daily nutritional requirements, supplement with vitamin C to boost immunity, and ecological studies indicate that the level of intake of relevant micronutrients, particularly vitamins D, C, B12, and iron, can maintain nutritional and micronutrient status. Health Improvement with Supplements and Balanced Nutrition in the Covid-19 Pandemic Era, which is expected to be in the form of increased knowledge about balanced nutrition consumption and rational supplement consumption during the Covid-19 pandemic, still needs to be evaluated, but similar activities must be initiated. Because it is part of health promotion and contributes to the socialization program to improve health by consuming balanced nutrition during the Covid-19 pandemic, meeting nutritional requirements and maintaining a proper nutrition are crucial for pregnant women, particularly in relation to food consumption and nutrition. A nutrition that is healthy and balanced can improve the immune system and lower the risk of chronic and infectious diseases (Azizah & Fatmawati, 2020).

4. CONCLUSION

According to the findings of this study, a pregnant woman needs additional nutrition during this pandemic. Since mothers need to better maintain the immunity of the body and the fetus while it is still developing in the womb, if a pregnant woman normally needs 80,000 calories during pregnancy, then the needs during the pandemic must be further increased and considered again. During the pandemic, pregnant women have additional nutrient requirements, including daily nutritional needs, supplements, iron, vitamin C, and macronutrient needs containing carbohydrates, proteins, and fats. Hence, it is absolutely essential that pregnant women receive these additional nutrients. In order to meet the nutritional needs of pregnant women during a pandemic, it is recommended that pregnant women have breakfast every day, consume foods that are high in fiber, and boost their nutrient intake.

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