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Home Science

FOOD CHOICES OF VEGETARIAN AND NON-VEGETARIAN MOTHERS DURING PREGNANCY - AN INVESTIGATIVE STUDY IN MADHYA PRADESH

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ABSTRACT Nutrition is a science which focuses on the overall nourishment of the body and impacts health. A well-balanced diet is very important for pregnancy, which is rich in nutrients and good for normal birth weight and fetal health. Nutritional deficiency during pregnancy is very common and it results in extreme neonatal and pregnancy outcomes. Hence, this study was conducted with an aim to study the food choices of vegetarian and non-vegetarian mothers during pregnancy in Madhya Pradesh. This study explores dietary habits of various pregnant women and suggest vital nutrients for healthy pregnancy and offspring. A self-structured questionnaire was used to conduct an online survey on pregnant mothers to determine their food habits and dietary patterns. The questionnaire included various closed-ended questions based on 5-point Likert scale. The survey responses have been interpreted and analyzed using SPSS software and Excel spreadsheet. It is observed that pregnant women consumed average Indian food in their diet like lentils, rice, beans, salt, oils, roots, etc. during the study period. None of them consumed carbonated beverages or alcohol. Milk was the only source of vitamin B12 which they consumed every day. They also consumed non-vegetarian food items like eggs, meat, fish, chicken, etc. occasionally. Their dietary intake was highly affected by religious and cultural factors, lack of food, and financial constraints.

KEYWORDS : nutrition, pregnant women, balanced diet, dietary habits, healthy pregnancy, nutritional deficiency

INTRODUCTION

Food is the most vital source of nutrients for survival of human body that comes from both plants and animals. In contrast, nutrition is a science which studies how food impacts overall health and nourishes the body (Thompson & Byers, 1994). Nutrition also focuses on type of food consumed, factors affecting diet and eating habits, and providing guidelines on how much food should be consumed, and address issues related to food safety and global food security. Pregnancy is a natural physiological process when more nutrients are needed than normal. A well-balanced diet is needed during pregnancy for good neonatal and maternal health. The blastocyst and fertilized ovum are nourished by fallopian tubes even before implementation and after fertilization. The endometrium gland produces healthy fluid for fetus along the first 10 weeks. Reduced consumption of vegetables, fruits, and meat results in deficiency of micronutrients. It affects the overall nutritional health of the mother and the offspring "(Lowensohn et al, 2016).

Along with overall health of a mother, dietary patterns also affect the development and growth of offspring during pregnancy, which ultimately determines child's health. Vegan diets are free of all eggs, meat, dairy, and even honey (Pawlak, 2017). On the other side, vegetarian diets avoid fish, meat, animal byproducts, or seafood, but include cheese, milk, and eggs (Craig & Mangels, 2009). According to the "Academy of Nutrition and Dietetics (AND)", a lacto-vegetarian, vegan, and lacto-ovo vegetarian diet is ideal for all stages of life like lactation and pregnancy (Melina et al, 2016). According to the "German Nutrition Society", proper amount of nutrients is hard to obtain from vegetarian diet and lactating women, children, infants, or pregnant women should not go for vegan diet (Richter et al, 2016). AND has given evidence that vegetarian diet is related to serious risks for offspring due to nutritional deficiency (Cofnas, 2018). Vegetarian diets have received a lot of attention all over the world in recent years because of ethical reasons, health and environmental concerns. Around half of Indian population is vegetarian (Stahler, 2015).

According to a Nutrition Counselor (Apollo, Kolkata), Ms. Arunima Saha, consuming non-vegetarian diet is not at all harmful for pregnant women. They can consume chicken, egg, fish, etc. unless they are allergic. They can take a portion of either of a non-veg item daily for healthy growth of offspring as it provides vital fatty acids to the body of the mother. However, they should avoid preparing food with too much spices as they increase acidity level during pregnancy (NDTV, n.d.).

Literature Review

Unlike omnivorous mothers, vegetarian mothers are usually deficient in some nutrients needed for neurological balance. There is still an information gap on the effect of vegetarian diet on cognitive function of offspring. Crozier et al. (2019) investigated the association between vegetarianism and pregnancy with changed nutritional status of mother and cognitive function at 6 to 7 years. This study was conducted on women aged 20 to 34 years in a prospective observational survey which collected their blood samples and dietary data in early pregnancy or late pregnancy. Vegetarian women were found with reduced blood concentrations of "docosahexaenoic acid, arachidonic acid and cobalamin" in early and late stages of pregnancy.

Vegan and vegetarian diets have gained a lot of popularity. But there is a lack of systematic review on vegetarian and vegan diets on pregnancy. Piccoli et al. (2015) conducted a study excluding studies and case reports on vegetarian and vegan diets in malnutrition and poverty. They found limited and heterogenous evidence on vegetarian and vegan diets in pregnancy. Due to lack of randomized trials, they were restricted to differentiate the effects of diets with confusing factors. This way, "vegan-vegetarian diets" are known to be safe in pregnancy, given that vitamin is focused.

Kesary et al. (2020) explored the association between pregnancy outcomes and vegan/vegetarian diets with an online, retrospective study in 2017. Women who had delivery 4 years before the enrolment could participate. They were assigned to three groups as per their diet during pregnancy – vegans, vegetarians, and omnivores. Some of the outcomes of interest were "birthweight centile, small for gestational age (SGA), large for gestational age (LGA), preterm birth (PTB), maternal excessive weight gain (EWG) and gestational diabetes (GDM)" to be compared among groups. Maternal vegan diet prevents EWG but it is related to higher risk of lower birthweight centile and SGA. Maternal BMI has mediated the association between fetal growth and vegan diet.

Vegetarian diet has been very popular in the west. There is a lack of research on health effects of those diets in pregnancy. Yisahak et al. (2021) examined the association between vegetarianism with neonatal and maternal outcomes. During pregnancy, vegetarian diets were related to smaller neonatal size, probably through reduced gestational weight gain of mothers. In addition, there was no association between vegetarianism and morbidities related to gestational stage or other extreme outcomes.

Saintila et al (2021) compared the knowledge of nonvegetarian and vegetarian dietitians in Peru related to vegetarian diet in various stages of life. They conducted a cross-sectional study with an online questionnaire as per the existing dietary guidelines on over 400 registered dietitians. Total 179 responses have been collected, including 107 nonvegetarians and 72 vegetarians. The chi-square test was used to analyze the data with 5% as level of significance. Most of the sample included women population. The participants had proper

and complete knowledge of vegetarian diets. Most of the participants were vegetarians who had right answers on the benefits and risks of vegetarian diet. Dietitians didn't show complete and proper knowledge of vital nutrients from vegetarian diet and have lack of awareness on eating disorder risks due to vegetarian diet.

There is a conflicting and divergent data on the appropriate vegetarian diets in case of pregnancy as well as the effect of anthropometric measurements of offspring. Ferrara et al. (2020) compared anthropometric measurements of three children's groups as per their mothers' dietary patterns in pregnancy. In addition, this study was aimed to determine the cultural implication of vegetarian diet. When expressed in percentiles of growth and in grams, birth weight of children of vegan mothers is lower than children of omnivorous mothers. There was no significant difference in the comparison of cranial circumference, length, and BMI at birth among three groups." There are statistically significant differences in birth weight among omnivorous and vegan mothers' children. Hence, it is recommended to plan any diet as per experts' guidance to ensure physiological growth of fetus.

Research Gap

Most studies have focused on the impact of vegan and vegetarian diets during pregnancy and lactation. This study fills the most important research gap by focusing on the impact of vegetarian and non-vegetarian diet during pregnancy as proper protein intake is also required for healthy mother and offspring.

Research Objectives

- To investigate the impact of food choices on vegetarian and non-vegetarian mothers during pregnancy
- To discuss the intake of vital nutrients that are required during pregnancy

Hypothesis

H1 – There is a significant impact of food choices among vegetarian and non-vegetarian mothers during pregnancy
H2 – There is a significant impact of nutrient intake among vegetarian and non-vegetarian mothers during pregnancy
H3 – There is a significant correlation in food choices among vegetarian and non-vegetarian mothers during pregnancy
H4 – There is a significant correlation in nutrient intake of vegetarian and non-vegetarian mothers

Research Methodology

This study is based on primary data to fulfil the objectives of this study, which has been collected through an online survey using a self-structured questionnaire. The questionnaire included closed ended questions based on 5-Point Likert scale.

The study was conducted on pregnant women in various districts of Madhya Pradesh, who were following both vegetarian and non-vegetarian diets. The primary data has been collected from 150 pregnant mothers about their nutrient intake and food choices. Survey data has been analyzed and organized using SPSS Software 22.0 and Excel spreadsheet. One sample t-test and Pearson Correlation tests have been conducted for hypothesis testing.

Data Analysis

In this study, "96 (64%) women are 18 to 25 years old, 28 (19%) women are 26 to 30 years old, and 26 (17%) participants are 31 to 40 years old (Table 1) (Figure 1).

Table 1 – Age Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 to 25 years	96	64.0	64.0	64.0
	26 to 30 years	28	18.7	18.7	82.7
	31 to 40 years	26	17.3	17.3	100.0
	Total	150	100.0	100.0	

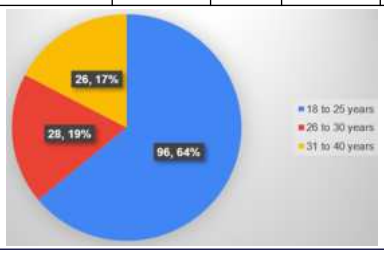

Figure 1 – Age Group

There are 75 (50%) participants who have completed bachelor's degree, 17 (11%) participants have completed diploma, and 58 (39%) participants have completed high school education (Table 2) (Figure 2).

Table 2 - Academic Qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor's Degree	75	50.0	50.0	50.0
	Diploma	17	11.3	11.3	61.3
	High School	58	38.7	38.7	100.0
	Total	150	100.0	100.0	

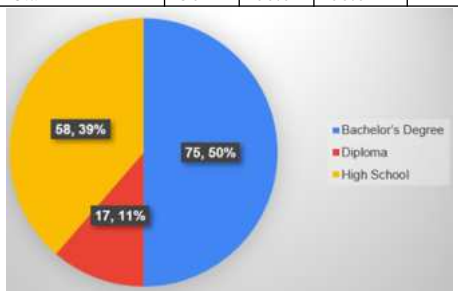

Figure 2 – Academic Qualification

When it comes to annual income, around half (51%) of women have family income below Rs. 1 Lakh per annum, while 44 (29%) women have annual income of Rs. 2 to 5 lakh, 26 (17%) women had 6 to 10 lakhs of annual income, and only 4 (3%) female participants had annual income above Rs. 10 lakhs (Table 3) (Figure 3).

Table 3 - Annual income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 to 5 Lakh	44	29.3	29.3	29.3
	6 to 10 Lakh	26	17.3	17.3	46.7
	Above 10 Lakh	4	2.7	2.7	49.3
	Below Rs. 1 Lakh	76	50.7	50.7	100.0
	Total	150	100.0	100.0	

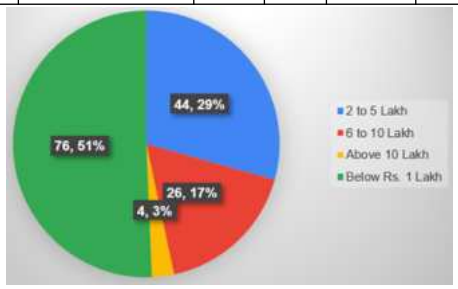

Figure 3 – Annual Income

When it comes to type of diet, there are 78 (52%) female participants who are vegetarian and 72 (48%) participants are non-vegetarian (Table 4) (Figure 4).

Table 4 – Type of Diet

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Non-vegetarian	72	48.0	48.0	48.0
	Vegetarian	78	52.0	52.0	100.0
	Total	150	100.0	100.0	

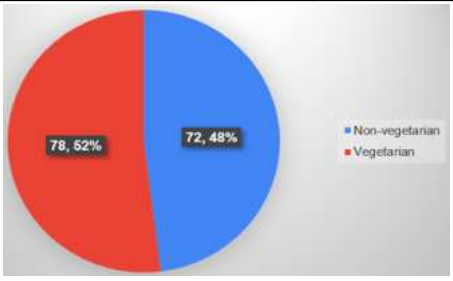

Figure 4 – Type of Diet

Food Choice

There are 90 (60%) participants who strongly agree and 30 (20%) participants who agree that they consume fresh fruits and vegetables every day, while 15 (10%) women neither agree nor disagree, 12 (8%) pregnant mothers strongly disagree and 3 (2%) participants disagree (Table 5) (Figure 5).

Table 5 - You consume fresh fruits and vegetables every day					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	12	8.0	8.0	8.0
	Disagree	3	2.0	2.0	10.0
	Neutral	15	10.0	10.0	20.0
	Agree	30	20.0	20.0	40.0
	Strongly Agree	90	60.0	60.0	100.0
	Total	150	100.0	100.0	

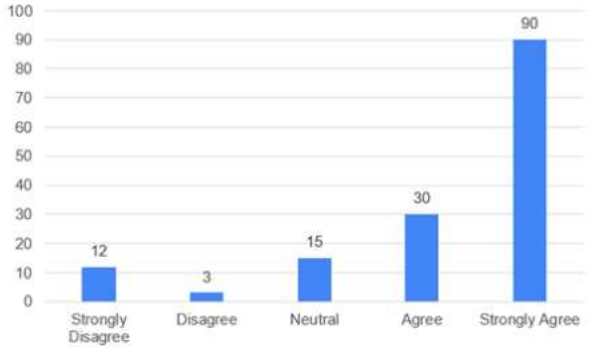

Figure 5 – You consume fresh fruits and vegetables every day

There are 79 (53%) women who strongly agree and 43 (29%) women who agree that they consume milk and other dairy products more than once a day, while only 10 (7%) disagree and 8 (5%) women strongly disagree, and 10 (7%) participants neither agree nor disagree (Table 6) (Figure 6).

Table 6 - You consume milk and other dairy products more than once in a day					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	8	5.3	5.3	5.3
	Disagree	10	6.7	6.7	12.0
	Neutral	10	6.7	6.7	18.7
	Agree	43	28.7	28.7	47.3
	Strongly Agree	79	52.7	52.7	100.0
	Total	150	100.0	100.0	

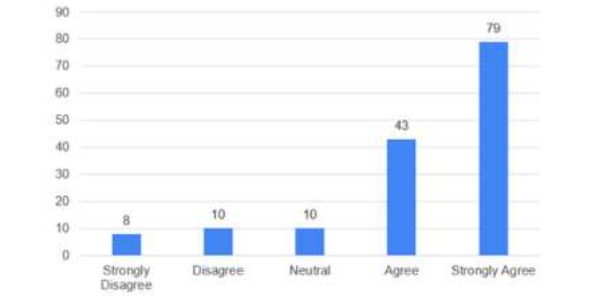

Figure 6 - You consume milk and other dairy products more than once in a day

There are 81 (54%) women who strongly agree and 39 (26%) participants agree that they crave for sweets and desserts at least once a day, while 21 (14%) participants strongly disagree and 9 (6%) participants were neutral (Table 7) (Figure 7).

Table 7 - You crave for sweets and desserts at least once in a day					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	21	14.0	14.0	14.0
	Neutral	9	6.0	6.0	20.0
	Agree	39	26.0	26.0	46.0
	Strongly Agree	81	54.0	54.0	100.0
	Total	150	100.0	100.0	

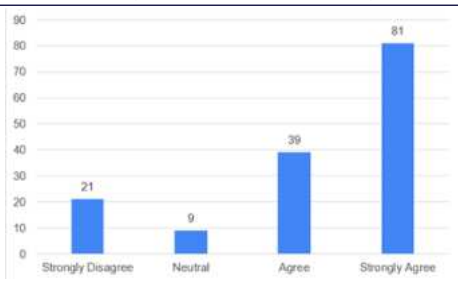

Figure 7 – You crave for sweets and desserts at least once in a day

There are 38 (25%) women who agree and 26 (17%) women who strongly agree that they get cravings for snacks several times a day, while 39 (26%) women neither agree nor disagree, 21 (14%) women disagree, and 26 (17%) women strongly disagree (Table 8) (Figure 8).

Table 8 - You get cravings for snacks several times in a day					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	26	17.3	17.3	17.3
	Disagree	21	14.0	14.0	31.3
	Neutral	39	26.0	26.0	57.3
	Agree	38	25.3	25.3	82.7
	Strongly Agree	26	17.3	17.3	100.0
	Total	150	100.0	100.0	

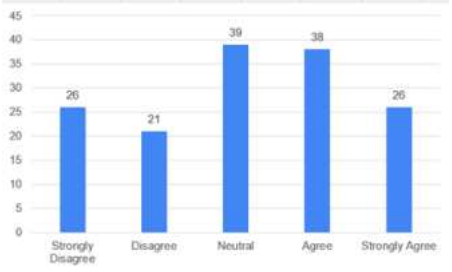

Figure 8 – You get cravings for snacks several times in a day

There are 88 (59%) women who strongly agree and 32 (21%) women who agree that they manage to control cravings for unhealthy food by focusing on other things, while 15 (10%) women neither agree nor disagree, 13 (9%) women strongly disagree, and 2 (1%) women disagree (Table 9) (Figure 9).

Table 9 - You manage to control cravings for unhealthy food by focusing on other things					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	13	8.7	8.7	8.7
	Disagree	2	1.3	1.3	10.0
	Neutral	15	10.0	10.0	20.0
	Agree	32	21.3	21.3	41.3
	Strongly Agree	88	58.7	58.7	100.0
	Total	150	100.0	100.0	

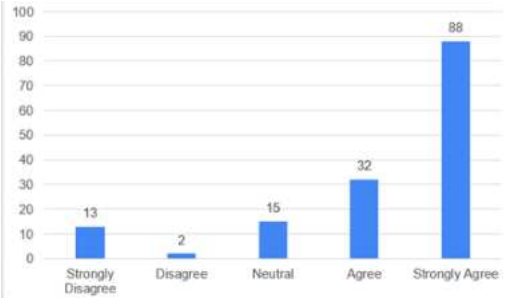

Figure 9 – You manage to control cravings for unhealthy food by focusing on other things

There are 76 (51%) non-vegetarian mothers who strongly agree and 43 (29%) women who agree that they consume meat and meat products every day, while 9 (6%) mothers disagree and 11 (7%) women strongly disagree (Table 10) (Figure 10).

Table 10 - You consume meat and meat products every day					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	11	7.3	7.3	7.3
	Disagree	9	6.0	6.0	13.3
	Neutral	11	7.3	7.3	20.7
	Agree	43	28.7	28.7	49.3
	Strongly Agree	76	50.7	50.7	100.0
	Total	150	100.0	100.0	

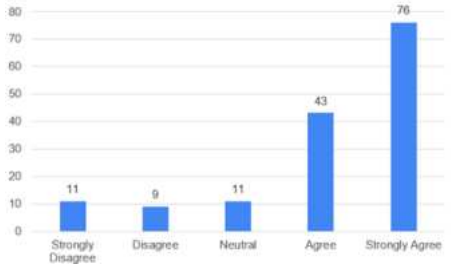

Figure 10 – You consume meat and meat products every day

There are 80 (53%) non-vegetarian women who strongly agree and 38 (25%) women who agree that they consume eggs or breakfast made of eggs to start their day, while 12 (8%) women neither agree nor disagree, and 20 (13%) women strongly disagree (Figure 11) (Table 11).

Table 11 - You consume eggs or breakfast made of eggs to start your day					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	20	13.3	13.3	13.3
	Neutral	12	8.0	8.0	21.3
	Agree	38	25.3	25.3	46.7
	Strongly Agree	80	53.3	53.3	100.0
	Total	150	100.0	100.0	

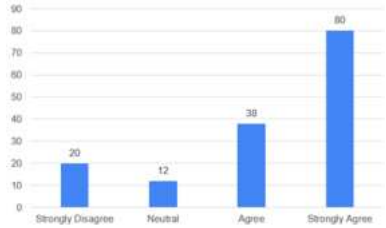

Figure 11 – You consume eggs or breakfast made of eggs to start your day

Nutrient Intake

There are 24 (16%) women who strongly agree and 40 (27%) women who agree that following vegetarian diet can fulfill your nutrient needs every day, while 46 (31%) women neither agree nor disagree, 17 (11%) women disagree, and 23 (15%) women strongly disagree (Table 12) (Figure 12).

Table 12 - Following vegetarian diet can fulfill your nutrient needs every day					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	23	15.3	15.3	15.3
	Disagree	17	11.3	11.3	26.7
	Neutral	46	30.7	30.7	57.3
	Agree	40	26.7	26.7	84.0
	Strongly Agree	24	16.0	16.0	100.0
	Total	150	100.0	100.0	

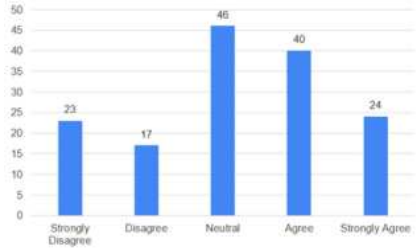

Figure 12 – Following vegetarian diet can fulfill your nutrient needs every day

There are 26 (17%) women who strongly agree and 38 (25%) women who agree that they fulfill their protein requirements through lentils, grains, beans, etc., while 39 (26%) women neither agree nor disagree, 21 (14%) women disagree, and 26 (17%) women strongly disagree (Table 13) (Figure 13).

Table 13 - You fulfill your protein requirements through lentils, grains, beans, etc.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	26	17.3	17.3	17.3
	Disagree	21	14.0	14.0	31.3
	Neutral	39	26.0	26.0	57.3
	Agree	38	25.3	25.3	82.7
	Strongly Agree	26	17.3	17.3	100.0
	Total	150	100.0	100.0	

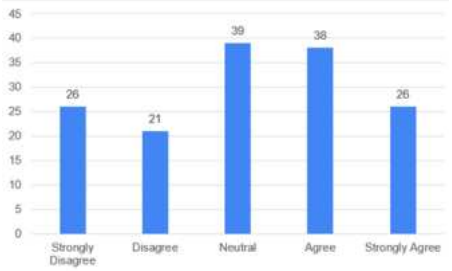

Figure 13 – You fulfill your protein requirements through lentils, grains, beans, etc.

There are 82 (55%) who strongly agree and 43 (29%) women who agree that they consume flax seeds and other sources to get enough omega-3 for their daily needs, while 17 (11%) women were neutral and 8 (5%) women strongly disagree (Table 14) (Figure 14).

Table 14 - You consume flax seeds and other sources to get enough omega-3 for your daily needs					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	8	5.3	5.3	5.3
	Neutral	17	11.3	11.3	16.7
	Agree	43	28.7	28.7	45.3
	Strongly Agree	82	54.7	54.7	100.0
	Total	150	100.0	100.0	

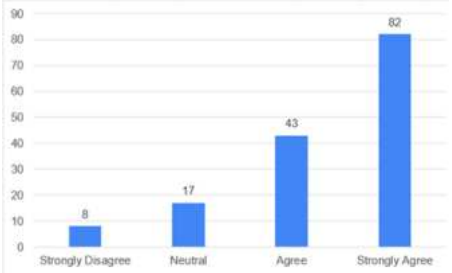

Figure 14 – You consume flax seeds and other sources to get enough omega-3 for your daily needs

There are 47 (31%) women who agree and 52 (35%) women who strongly agree that they consume enough dairy products to fulfil their calcium needs, while 35 (23%) women neither agree nor disagree, 4 (3%) women disagree, and 12 (8%) women strongly disagree (Table 15) (Figure 15).

Table 15 - You consume enough dairy products to fulfill your calcium needs					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	12	8.0	8.0	8.0
	Disagree	4	2.7	2.7	10.7
	Neutral	35	23.3	23.3	34.0
	Agree	47	31.3	31.3	65.3
	Strongly Agree	52	34.7	34.7	100.0

	Total	150	100.0	100.0	

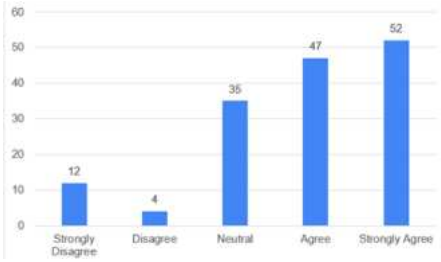

Figure 15 - You consume enough dairy products to fulfill your calcium needs

There are 47 (31%) women who agree and 45 (30%) non-vegetarian mothers who strongly agree that they consume eggs and chicken every day to fulfill their daily protein requirements, while 37 (25%) women who neither agree nor disagree, while 16 (11%) women who disagree and 5 (3%) women who strongly disagree (Table 16) (Figure 16).

Table 16 - You consume eggs and chicken every day to fulfill your daily protein requirements

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	3.3	3.3	3.3
	Disagree	16	10.7	10.7	14.0
	Neutral	37	24.7	24.7	38.7
	Agree	47	31.3	31.3	70.0
	Strongly Agree	45	30.0	30.0	100.0
	Total	150	100.0	100.0	

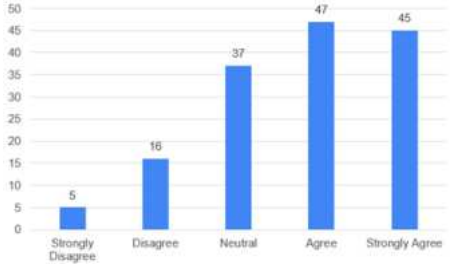

Figure 16 - You consume eggs and chicken every day to fulfill your daily protein requirements

There are 48 (32%) non-vegetarian mothers who agree and 8 (5%) women strongly agree that they consume fatty fish to get enough vital nutrients for the health of their baby, while 41 (27%) women neither agree nor disagree, 37 (25%) women who disagree and 16 (11%) women who strongly disagree (Table 17) (Figure 17).

Table 17 - You consume fatty fish to get enough vital nutrients for the health of your baby

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	16	10.7	10.7	10.7
	Disagree	37	24.7	24.7	35.3
	Neutral	41	27.3	27.3	62.7
	Agree	48	32.0	32.0	94.7
	Strongly Agree	8	5.3	5.3	100.0
	Total	150	100.0	100.0	

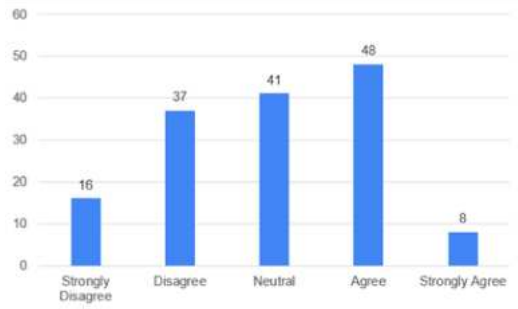

Figure 17 – You consume fatty fish to get enough vital nutrients for the health of your baby

Impact of Food Choice

When it comes to impact of food choice, it is observed that the value of significance for all items is 0.000 ($p<0.005$). Hence, H1 is accepted, i.e., there is a significant impact of food choices among vegetarian and non-vegetarian mothers during pregnancy (Table 18).

Table 18 - One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
You consume fresh fruits and vegetables every day	42.755	149	.000	4.220	4.02	4.42
You consume milk and other dairy products more than once in a day	44.400	149	.000	4.167	3.98	4.35
You crave for sweets and desserts at least once in a day	36.373	149	.000	4.060	3.84	4.28
You get cravings for snacks several times in a day	28.588	149	.000	3.113	2.90	3.33
You manage to control cravings for unhealthy food by focusing on other things	42.142	149	.000	4.200	4.00	4.40
You consume meat and meat products every day	41.193	149	.000	4.093	3.90	4.29
You consume eggs or breakfast made of eggs to start your day	36.771	149	.000	4.053	3.84	4.27

Impact of Nutrient Intake

When it comes to impact of food choice, it is observed that the value of significance for all items is 0.000 ($p<0.005$). Hence, H2 is accepted, i.e., there is a significant impact of nutrient intake among vegetarian and non-vegetarian mothers during pregnancy (Table 19).

Table 19 - One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Following vegetarian diet can fulfill your nutrient needs every day	30.506	149	.000	3.167	2.96	3.37
You fulfill your protein requirements through lentils, grains, beans, etc.	28.588	149	.000	3.113	2.90	3.33
You consume flax seeds and other sources to get enough omega-3 for your daily needs	50.539	149	.000	4.273	4.11	4.44
You consume enough dairy products to fulfill your calcium needs	39.776	149	.000	3.820	3.63	4.01
You consume eggs and chicken every day to fulfill your daily protein requirements	41.576	149	.000	3.740	3.56	3.92
You consume fatty fish to get enough vital nutrients for the health of your baby	32.981	149	.000	2.967	2.79	3.14

Difference in Food Choice

When it comes to difference in food choice, the value of significance is 0.186 between vegetarian and non-vegetarian participants, i.e., below 0.2 level, which is considered as weak. Hence, it is observed that H3 is rejected. It means there is no significant correlation of food choices among vegetarian and non-vegetarian mothers (Table 20).

Table 20 - Correlations

		Vegetarian Food Choice	Non-Vegetarian Food Choice
Vegetarian Food Choice	Pearson Correlation	1	.109
	Sig. (2-tailed)		.186
	N	150	150
Non-	Pearson Correlation	.109	1

Vegetarian Food Choice	Sig. (2-tailed)	.186	
	N	150	150

Difference In Nutrient Intake

When it comes to difference in nutrient intake, it is observed that value of significance is 0.220, i.e. ranging from 0.2 to 0.39, which is considered weak. Hence, H4 is rejected. It means there is no correlation between nutrient intake of vegetarian and non-vegetarian mothers (Table 21).

Table 21 - Correlations

		Vegetarian nutrition intake	Non Vegetarian nutrition intake
Vegetarian nutrition intake	Pearson Correlation	1	.101
	Sig. (2-tailed)		.220
	N	150	150
Non Vegetarian nutrition intake	Pearson Correlation	.101	1
	Sig. (2-tailed)	.220	
	N	150	150

DISCUSSION AND CONCLUSION

In this study, it is observed that there is a significant impact of both nutrient intake and food choices among vegetarian and non-vegetarian mothers, while there is no correlation between these two variables among vegetarian and non-vegetarian mothers. Hence, it is highly recommended to increase nutrient intake among vegetarian mothers because they are somehow deficient in vital nutrients like vitamin D3, protein, and omega-3" as they don't consume non-vegetarian sources. There is also a need to increase awareness among vegetarian mothers about rich sources of high-quality protein and other nutrients to fulfill their nutrition needs during pregnancy.

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