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Assessment of Nutritional Knowledge, Practices and Packed Cell Volume (PCV) of Expectant Mothers Attending Antenatal Clinic in FMC, Abuja

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Abstract

The study aimed to assess the nutritional knowledge, practices and packed cell volume of expectant mothers attending antenatal clinic in FMC Abuja. A structured interviewer-administered questionnaire was used. The questionnaire was adequately checked and validated. It was also pretested for sensitivity of questions, ambiguity and suitability of language. A systematic random sampling technique was used to select two hundred and fifty-six (256) pregnant women attending antenatal clinic at FMC Abuja. None of the women was interviewed more than once. Ethical approval was gotten from the Health Research Ethics Committee (HREC) of FMC Abuja. The IBM SPSS statistics version 23 was used for the statistical analysis. Results were presented in tables using frequencies and simple percentages. Chi square statistics was used to determine associations between variables and significance was taken at P< 0.05%. The result shows that none of the expectant mothers had poor nutritional knowledge, 4.7% had good nutritional knowledge, while the majority 95.3% had excellent nutritional knowledge towards pregnancy and childbirth. For nutritional-related practices observed by the expectant mothers, more than half (59.4%) had excellent, 35.2% had good while about 5.5% had poor nutritional-related practices. Majority (74.6%) of the expectant mothers had normal packed cell volume, 24.5% had a moderate packed cell volume range, while the least (1.2%) had mild range. A targeted nutrition education program should be introduced to improve the practices of already acquired knowledge of nutrition amongst the expectant mothers to ensure optimal maternal and fetal wellbeing.

Keywords*: nutritional knowledge, practices, packed cell volume, expectant mothers*

Introduction

Pregnancy is a demanding period of varying physiological changes. Optimal nutrition during pregnancy has a major impact on the outcome of pregnancy and accredited as an important determinant for a healthy and successful pregnancy including life-long health of future generation.[1-8]

Appropriate nutritional practice plays a pivotal role in determining optimal health and development of infants.[9-10] There is abundant epidemiological evidence that poor prenatal nutrition predisposes the offspring to diseases in its later life. Inadequate nutrition is the predominant factor

leading to malnutrition, which can be expressed as either under nutrition or over nutrition. Under nutrition occurs when there is not only inadequate energy but also a lack or imbalance of specific food components and nutrients. There have been considerable changes in human lifestyle all over the world in the recent decades. Recent decades have marked significant global shifts in lifestyle patterns, characterized by notable changes in dietary preferences, available food choices, meal preparation techniques, and various other facets of daily life.[11] Nowadays processed foods are rapidly replacing organic food. Another change is the rapid increase in the number of restaurants and in people's tendency to eat fast food. Proper nutrition is one of the most important aspects of lifestyle.[12] Epidemiological evidence shows that there is an increased incidence of diseases such as (cardiovascular diseases, obesity, high blood pressure and cancer), which can be attributed to changes in lifestyle as well as changes in nutritional habits. Nutrition education is also one of the important aspects that play a big role in nutritional knowledge by raising awareness and ultimately the health of the society.[13] In order to remain healthy and physically active and enjoy a healthier life style it is necessary to obtain good nutritional knowledge and implement it. The knowledge, attitude and practice must be considered in expectant mothers in order to promote society health. From time immemorial it has been recognized that the pregnant and lactating women form one of the most nutritionally vulnerable segments of the population; the ill effects of maternal under nutrition affect not only the mother but also her offspring. In order to bring about change in the level of nutritional knowledge and practices prevailing people regarding nutrition, an attempt was made to ascertain the nutritional knowledge and practices as it relates to the packed cell volume (PCV)of expectant mothers attending antenatal clinic in FMC, Abuja FCT.

Research Methodology

Study Area

The study was done in The Federal Medical Centre, Abuja.

Research Design

The researcher used a cross sectional research survey design in building up this project work.

Population of the Study

The study population is all pregnant women attending antenatal clinic in Federal Medical Centre Abuja on a monthly basis.

The number of pregnant women who attend clinic in the hospital is being regulated so as to make room for other clinics and that accounts for the two hundred and fifty (1000) woman who attend antenatal clinic in Federal Medical Center Abuja on monthly bases, thus our population.

Sample size determination

Sample is the set people or items which constitute part of a given population sampling. Due to large size of the target population, the researcher used the Taro Yamani formula to arrive at the sample size of the study, thus;

$$n = \frac{N}{1+N(e)^2}$$

Where,

n = sample size

N = population size

e = level of precision or sample of error which is placed at + 5%.

Working;

n = unknown
N = 711
e = 5% which is equal to 0.05.

$$n = \frac{711}{1+711(0.05)^2}$$

$$= \frac{711}{1+711(0.0025)}$$

$$= \frac{711}{1+1.775}$$

= 711/2.7775 = 255.98 ~ 256. Therefore, n= 256
This value determines the number of questionnaires that was distributed to the respondents.

Research instrument

The questionnaire used as the research instrument was subjected to face validation. This research instrument (questionnaire) adopted was adequately checked and validated by the supervisor and other professionals in public health. Their contributions and suggestions were included into the final draft of the research instrument used.

Sampling Procedure

Systematic random sampling technique was used to select two hundred and fifty-six pregnant women attending antenatal care clinic in FMC, Abuja. The list of pregnant women attending antenatal care clinic was used to systematically select two hundred and fifty-six pregnant women from the Antenatal Care Unit of FMC Abuja, according to random starting point and a fixed periodic interval. This interval called the sampling interval was calculated by dividing the population size of the pregnant women in antenatal care clinic by the desired sample size and a starting number or integer was chosen and an interval was taken of every number, to give a sample size of respondents that were used for the study. The study was conducted within 2months and participation was voluntary and anonymous.

Data Collection

The major research instrument used in this research work was the questionnaires. This was appropriately moderated. Expectant mothers attending antenatal clinic in FMC Abuja were administered with the questionnaires to complete, without disclosing their identities. The questionnaire was designed to obtain sufficient and relevant information from the respondents. The primary data contained information extracted from the questionnaires in which the respondents were required to give specific answer to a question by ticking in front of an appropriate answer. The questionnaires contained about 71 structured questions which were divided into sections A to E.

Data Analysis

The data being collected is not an end in itself, rather, it served as a means to an end. The ultimate goal is to utilize the gathered data to comprehend various situations, aiming to provide valuable recommendations and contributions. Thus, the collected data was cleaned to remove invalid data. The correctly completed questionnaires were coded and processed with Microsoft excel 2021 and later transferred to IBM SPSS version 23 for descriptive and inferential statistical analysis, while Microsoft word 2021 was used for the writing and interpretation. To ensure a comprehensive

analysis of the collected data, we placed emphasis on utilizing absolute numbers, response frequencies, and percentages. We obtained answers to the research questions by comparing the percentage of responses from mothers to each statement in the questionnaire related to the specific question being considered.

In this study, "frequency" refers to arranging responses based on magnitude or occurrence, while "percentage" refers to arranging responses based on their proportions. The simple percentage method is being chosen due to its straightforwardness and ease of interpretation. The researcher opted for the simple percentage as the preferred analysis method.

The formula for calculating the percentage is as follows:

$$\frac{f}{N} \times \frac{100}{1}$$

Where:

f = Frequency of respondents' responses

N = Total number of responses in the sample

100 = Standardized percentage for each item in the questions

Ethical Approval

In compliance with Helsinki Declaration for investigation of human subjects ("World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subject," 2013) ethical approval was obtained from Federal Medical Centre, Abuja, Health Research Ethics Committee (HREC). Permission was also taken from the participants themselves and participants who were unwilling to continue were allowed to opt out.

RESULTS

The mean age of the expectant mothers was 31.64±6.15. A higher percentage (39.1%) of the expectant mothers were within the age range of 25-30 years, followed by 31-35 years with 24.6%, 16.4% were within 36-40 years, 11.3% were within 18-24 years, and the least (0.8%) were within the post-menopausal (46-50) years. Most expectant mothers (94.5%) were married, 4.7% were single, and the least (0.8%) were separated. A higher percentage (31.6%) of the expectant mothers were Para 1, 25.8% were Primp, 25.4% were Para 2, 13.3% were Para 3, while the least (3.9%) were Para 4 and above.

The majority (73.8%) of the expectant mothers were Christians, while the rest (26.2%) were practicing Islam. About (55.1%) of the expectant mothers attended Tertiary Institution, 23.0% attended Secondary School, 18.0% attended up to Postgraduate level, 3.1% had Primary School Certificate, and 0.8% had no Education. About 35.2% of the expectant mothers were civil servants, 34.8% were businesswomen, 25.0% were housewives, 3.9% were students, and 1.2% were engaged in other occupations. Higher (30.9%) of the expectant mothers earned between N50,001-N100,000, 19.5% earned between N100,001-N150,000, 17.6% earned between N20,000-N50,000 per month, 16.0% earned less than N20,000, 9.0% earned N200,001 and above, while 7.0% earned N150,001-N200,000 per month.

The tribe of the expectant mothers spread across the geopolitical zones in the country. A greater percentage (36.7%) of the expectant mothers was Igbo, 14.5% were Hausa, and 12.9% were Yoruba, among others listed in Table 1.

Table 1: Socio-demographic and Economic Characteristics of the Expectant mothers

Variables	Frequency	Percentage
Age (Mean ±SD=31.64±6.15)		
18-24 Years	29	11.3
25-30 Years	100	39.1
31-35 Years	63	24.6
36-40 Years	42	16.4
41-45 Years	20	7.8
46-50 Years	2	0.8
Total	256	100.0
Marital Status		
Single	12	4.7
Married	242	94.5
Separated	2	0.8
Total	256	100.0
Parity Level		
Primp	66	25.8
Para 1	81	31.6
Para 2	65	25.4
Para 3	34	13.3
Para 4 and above	10	3.9
Total	256	100.0
Religion		
Christianity	189	73.8
Islamic	67	26.2
Total	256	100.0
Educational Status		
None	2	0.8
Primary	8	3.1
Secondary	59	23.0
Tertiary	141	55.1
Postgraduate	46	18.0
Total	256	100.0
Occupation		
Student	10	3.9
Housewife	64	25.0
Civil Servant	90	35.2
Business Woman	89	34.8
Others	3	1.2
Total	256	100.0
Monthly Income		
Less than N20,000	41	16.0

N20,000-N50,000	45	17.6
N50,001-N100,000	79	30.9
N100,001-N150,000	50	19.5
N150,001-N200,000	18	7.0
N200,001 and above	23	9.0
Total	256	100.0

Table 1 cont'd: Socio-demographic and Economic Characteristics of the Expectant Mothers

Variables	Frequency	Percentage
Tribe		
Yoruba	33	12.9
Hausa	37	14.5
Igbo	94	36.7
Fulani	10	3.9
Idoma	6	2.3
Edo	4	1.6
Higgi	1	0.4
Mwagharal	1	0.4
Igala	7	2.7
Tiv	7	2.7
Nupe	2	0.8
Obudu	3	1.2
Tangale	1	0.4
Bekwarra	1	0.4
Delta	1	0.4
Ukwani	1	0.4
Gbagyi	2	0.8
Kanuri	1	0.4
Jukun	1	0.4
Basu	1	0.4
Ijaw	3	1.2
Efik	4	1.6
Kogi	1	0.4
Ogoja	1	0.4
Magogo	1	0.4
Jos	1	0.4
Kafanchan	1	0.4
Gwari	1	0.4
Afo	1	0.4
Calabar	1	0.4
Jakrot Lantang	1	0.4
Benin	4	1.6

Egbura	1	0.4
Esan	2	0.8
Urhobo	3	1.2
Isoko	3	1.2
Ebira	12	5.1
Total	256	100.0

None of the expectant mothers had poor nutritional knowledge, 4.7% had good nutritional knowledge, while the majority (95.3%) had excellent nutritional knowledge towards pregnancy and childbirth. For nutritional-related practices observed by the expectant mothers, more than half (59.4%) had excellent, 35.2% had good, while about 5.5% had poor nutritional-related practices. A majority (74.6%) of the expectant mothers had normal packed cell volume, 24.2% had a moderate packed cell volume range, while the least (1.2%) had mild packed cell volume range.

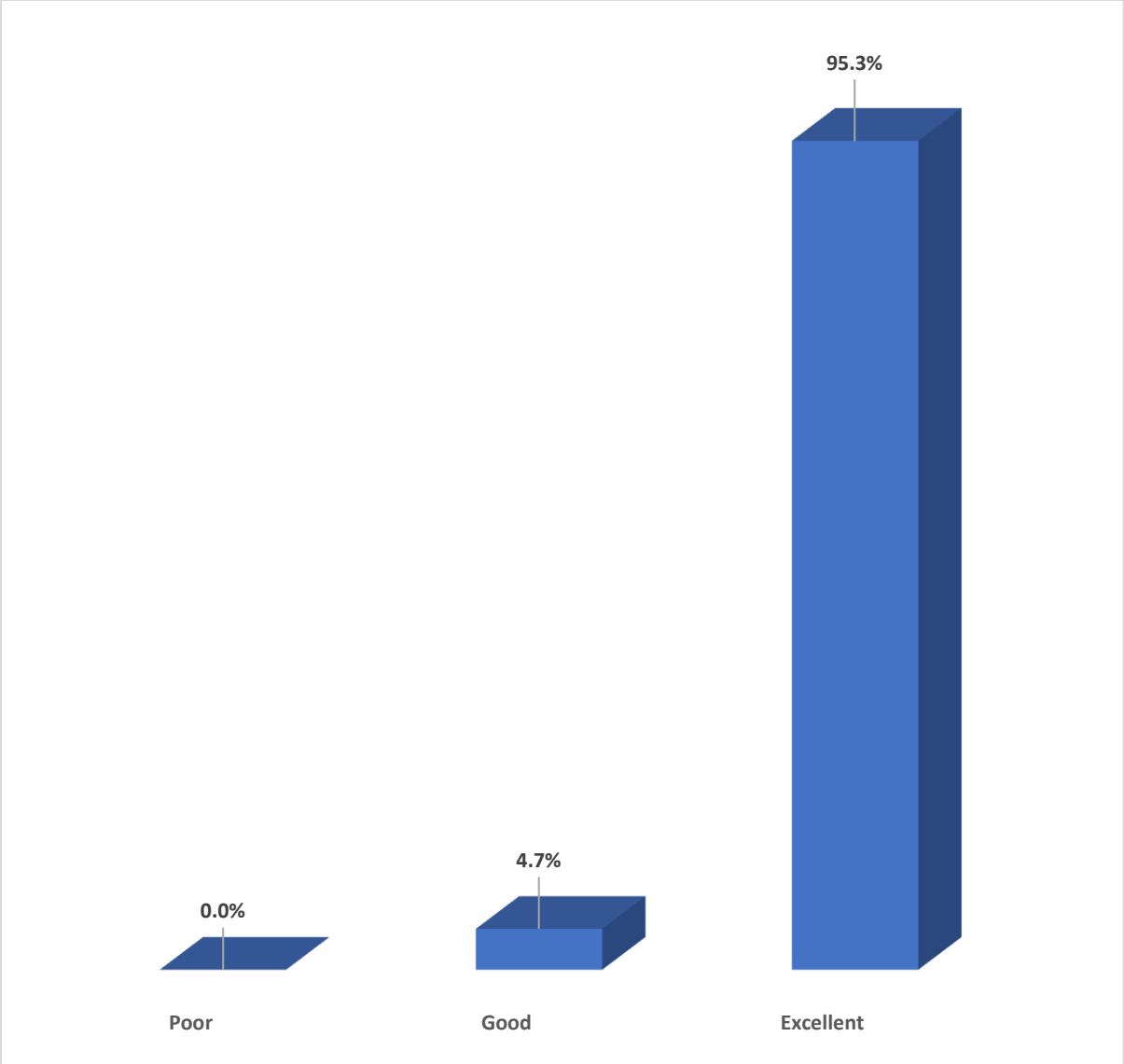

Figure 1: Nutritional Knowledge of the Expectant Mothers

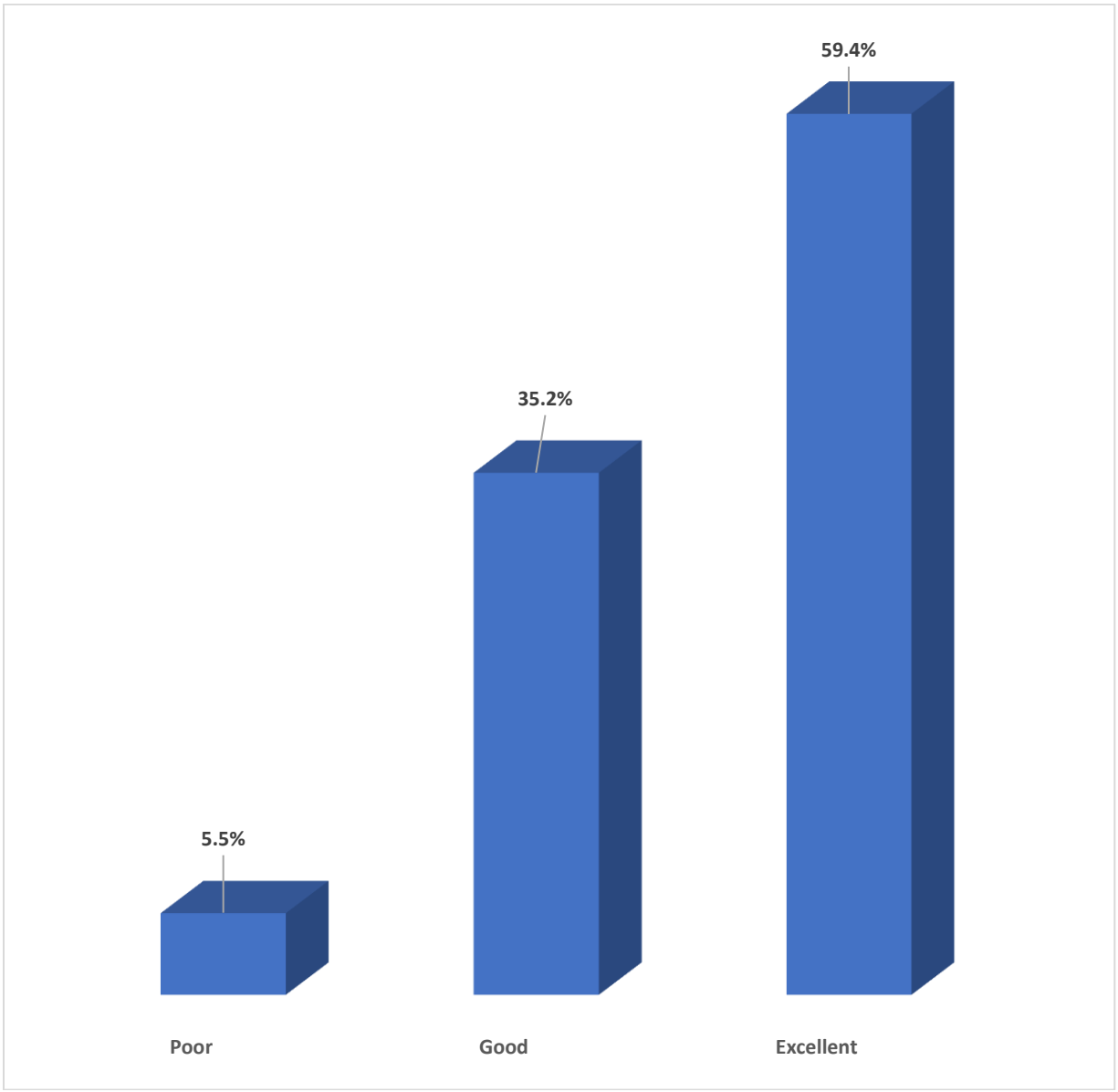

Figure 2: Nutritional-Related Practices of the Expectant Mothers

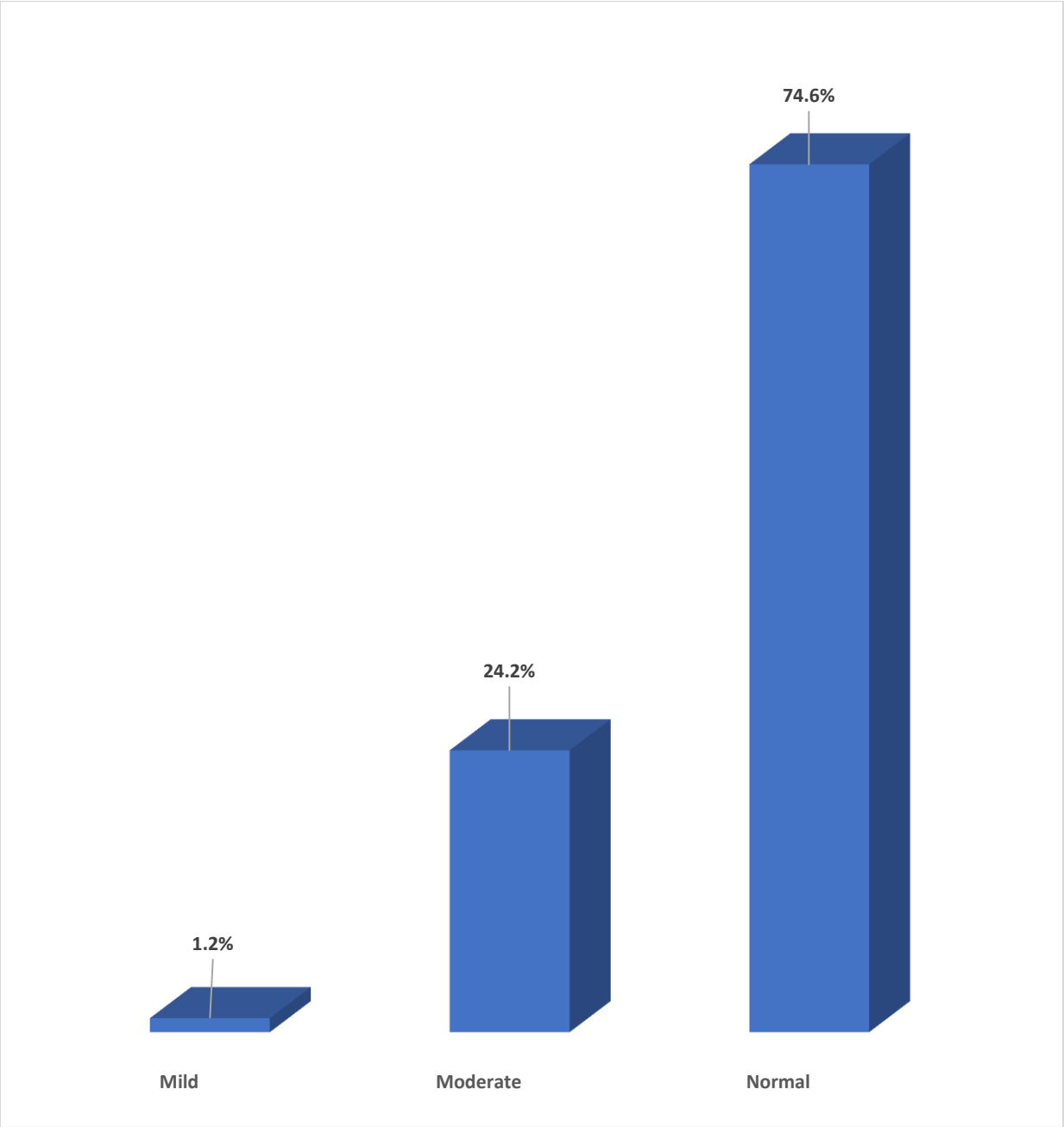

Figure 3: Packed Cell Volume Classification of the Expectant Mothers

According to Table 2, more than half (60.5%) of the expectant mothers often opted for low-fat options if they were having lunch away from home, while 7.8% never had lunch away from home. Less than half (48.8%) of expectant mothers usually avoid eating fried foods, while 51.2% do not usually avoid it. About 60% (59.4%) of expectant mothers usually eat a dessert or pudding if available, while 40.6% do not. Most (80.1%) expectant mothers eat at least one serving of fruit daily, while around 19.9%% do not.

The table also reveals that 79.3% of expectant mothers try to keep their overall fat intake down, while 20.7% do not. When buying crisps, 42.6% often choose a low-fat brand, 35.5% of the expectant mothers do not, and 21.9% never buy a crisp.A higher percentage (80.1%) of expectant mothers usually avoid eating lots of sausages and burgers, while 19.9% do not. Half (50.0%) of expectant mothers often buy pastries such as meat pie, eggrolls, or cakes; an equal proportion (50.0%) do not.

Most (82.8%) try to keep overall sugar intake down, while 17.2% do not. A higher percentage (72.3%) make sure they eat at least one serving of vegetables or salad daily, while 27.7% do not. Over half (64.5%) rarely eat takeaway meals, while 35.5% do not. It was also observed that a majority (89.9%) of expectant mothers always try to ensure they consume plenty of fruits and vegetables, while 10.2% do not.

About 33.6% often eat sweet snacks between meals, while more than half (66.4%) do not. Little above half (53.9%) usually eat at least one serving of vegetables or salad with their evening meals, while 46.1% do not.Less than half (47.3%) of the expectant mothers usually opted for diet drinks when buying soft drinks, while 52.7% did not.

More than half of the expectant mothers usually spread butter or margarine on bread thinly, 25.0% do not, while 12.1% never put butter or margarine on bread. Around 35.2% of expectant mothers usually include some chocolate or biscuits in their packed lunch, more than half (58.2%) do not, while 6.6% never have a packed lunch. A higher percentage (69.9%) of expectant mothers often choose fruit as a snack between meals, 28.1% do not, and 2.0% never eat snacks between meals.

When having a dessert or pudding in a restaurant, about 55.1% of the expectant mothers usually choose the healthiest one, 16.0% do not, and 28.9% never have dessert in a restaurant. Around 23.0% of the expectant mothers often have cream on desserts, while 34.0% do not eat cream on desserts. Less than half (44.1%) of expectant mothers eat at least three (3) servings of fruit most days, while more than half (55.9%) do not. Almost (91.0%) of the expectant mothers generally try to have a healthy diet, while 9.0% do not.

Table 2: Food Habits of the Expectant Mothers

Variables	Frequency	Percentage
If I am having lunch away from home,		
I often choose a low – fat option		
True	155	60.5
False	81	31.6
Never have lunch away from home	20	7.8
Total	256	100.0
I usually avoid eating fried foods		
True	125	48.8

False	131	51.2
Total	256	100.0
I usually eat a dessert or pudding if there is one available		
True	152	59.4
False	104	40.6
Total	256	100.0
I make sure I eat at least one serving of fruit a day		
True	205	80.1
False	51	19.9
Total	256	100.0
I try to keep my overall fat intake down		
True	203	79.3
False	53	20.7
Total	256	100.0
If I am buying crisps, I often choose a low – fat brand		
True	109	42.6
False	91	35.5
I never buy crisps	56	21.9
Total	256	100.0
I avoid eating lots of sausages and burgers		
True	205	80.1
False	51	19.9
Total	256	100.0
I often buy pastries (meat pies, egg roll) or cakes		
True	128	50.0
False	128	50.0
Total	256	100.0

Table 2 cont'd: Food Habits of the Expectant Mothers

Variables	Frequency	Percentage
I try to keep my overall sugar intake down		
True	212	82.8
False	44	17.2
Total	256	100.0
I make sure I eat atleast one serving of vegetables or salad a day		
True	185	72.3
False	71	27.7
Total	256	100.0
If I am having a dessert at home, I try to have something low in fat		
True	136	53.1
False	53	20.7
I don't eat dessert	67	26.2
Total	256	100.0
I rarely eat takeaway meals		
True	165	64.5
False	91	35.5
Total	256	100.0
I try to ensure that I eat plenty of fruit and vegetables		
True	230	89.8
False	26	10.2
Total	256	100.0
I often eat sweet snacks between meals		
True	86	33.6
False	170	66.4
Total	256	100.0
I usually eat at least one serving of vegetables(excluding potatoes) or salad with my evening meals		
True	138	53.9
False	118	46.1
Total	256	100.0
When I am buying a soft drink, I usually choose a diet drink		
True	121	47.3
False	135	52.7
Total	256	100.0

Table 2 cont'd: Food Habits of the Expectant Mothers

Variables	Frequency	Percentage
When I put butter or margarine on bread, I usually spread it on thinly		
True	161	62.9
False	64	25.0
Never put butter or margarine on bread	31	12.1
Total	256	100.0
If I have a packed lunch, I usually include some chocolate and/or biscuits		
True	90	35.2
False	149	58.2
I never have a packed lunch	17	6.6
Total	256	100.0
When I have a snack between meals, I often choose fruit		
True	179	69.9
False	72	28.1
I never eat snacks between meals	5	2.0
Total	256	100.0
If I am having a dessert or pudding in a restaurant, I usually choose the healthiest one		
True	141	55.1
False	41	16.0
I never have dessert in restaurant	74	28.9
Total	256	100.0
I often have cream on desserts		
True	59	23.0
False	110	43.0
I don't eat cream on dessert	87	34.0
Total	256	100.0
I eat atleast 3 servings of fruit most days		
True	113	44.1
False	143	55.9
Total	256	100.0
I generally try to have a healthy diet		
True	233	91.0
False	23	9.0
Total	256	100.0

4.5 Food Preferences of the Expectant Mothers

As seen in Table 3, very few (2.7%) of the expected mothers are vegan, while most (97.3%) are not. Few (4.7%) of the expectant mothers were vegetarians, while a majority (95.3%) were not. The same thing can be said about pescetarians; 4.7% confirmed that they are pescetarians, while 95.3% were not.

Table 4 shows the food allergy confirmed by the expectant mothers. Few (5.5%) were allergic to peanuts, very few (0.8%) were allergic to tree nuts, 3.5% were allergic to groundnut, 3.9% were allergic to dairy, 4.3% were allergic to shellfish, about 6% (5.5%) were allergic to fish, 2.7% were allergic to egg, very few (1.2%) were allergic to wheat gluten, 3.9% were allergic to soya, 0.8% were allergic to celery, while 3.1% were allergic to mustard.

Table 3: Food Preferences of the Expectant Mothers

Variables	Frequency	Percentage
Vegan		
Yes	7	2.7
No	249	97.3
Total	256	100.0
Vegetarian		
Yes	12	4.7
No	244	95.3
Total	256	100.0
Pescetarian		
Yes	12	4.7
No	244	95.3
Total	256	100.0

Table 4: Food Allergy of the Expected Mothers

Variables	Frequency	Percentage
Peanuts		
Yes	14	5.5
No	242	94.5
Total	256	100.0
Tree Nuts		
Yes	2	0.8
No	254	99.2
Total	256	100.0
Groundnut		
Yes	9	3.5
No	247	96.5
Total	256	100.0
Dairy		
Yes	10	3.9
No	246	96.1
Total	256	100.0
Shell fish		
Yes	11	4.3
No	245	95.7
Total	256	100.0
Fish		
Yes	14	5.5
No	242	94.5
Total	256	100.0
Egg		
Yes	7	2.7
No	249	97.3
Total	256	100.0
Wheat/Gluten		
Yes	3	1.2
No	253	98.8
Total	256	100.0
Soya		
Yes	10	3.9
No	246	96.1
Total	256	100.0
Celery		
Yes	2	0.8
No	254	99.2
Total	256	100.0
Mustard		

Yes	8	3.1
No	248	96.9
Total	256	100.0

DISCUSSIONS

In looking at all the information gathered, it is clear that expectant mothers come from different backgrounds. Most are in their mid to late twenties, married, and have different levels of education and jobs. Their monthly income varies too. In examining the socio-demographic landscape of expectant mothers, the data presents a rich blend of characteristics that may influence their understanding of nutrition. The mean age of 31.64±6.15, with a significant portion in the 25-30 age range, prompts me to consider how age might play a role in shaping nutritional awareness among these mothers. As I delve into the data, it becomes evident that marital status, with a predominant 94.5% being married, could be another key factor affecting their knowledge.

The text also touches upon the cultural and tribal spread of expectant mothers across geopolitical zones. This adds an extra layer of complexity, prompting me to reflect on how cultural affiliations might influence health behaviors. To support and deepen these observations, I find resonance with the work of Waterworth *et al*.[14] who emphasizes the interplay of socio-demographic factors in shaping health behaviors.

In exploring the nutritional knowledge and practices of the expectant mothers under study, it is promising to note that none of them demonstrated poor nutritional knowledge. Instead, a considerable 95.3% showcased excellent understanding, underlining a commendable awareness regarding pregnancy and childbirth. This aligns with the assertions of Health Education Expert (Year), who emphasizes the importance of robust nutritional knowledge in ensuring maternal and child well-being.

Furthermore, a modest 4.7% exhibited good nutritional knowledge, reflecting a positive trend in the overall awareness levels within the cohort. These findings resonate with the work of Kim & Xie [15], who highlights the varying degrees of nutritional literacy among expectant mothers.

Transitioning to the aspect of nutritional practices, the majority of expectant mothers, totaling 59.4%, demonstrated excellent practices. This is a significant and encouraging finding, reinforcing the notion that high nutritional knowledge translates into positive behaviors. Spronk *et al.* [16] similarly found a correlation between knowledge and practices in their research on maternal nutrition.

In estimating the packed cell volume (PCV) of expectant mothers, the data reveals a generally favorable scenario. A substantial 74.6% of the participants exhibited a normal PCV, indicating a healthy hematocrit level. This aligns with the findings of Fumagalli [17], who emphasizes the significance of maintaining a normal PCV during pregnancy for optimal maternal and fetal well-being.

Additionally, 24.2% fell within the moderate packed cell volume range, suggesting a range that, while not alarming, might warrant closer monitoring. This nuanced understanding is crucial, reflecting the insights of Bohn & Adeli [18], who notes the importance of identifying and addressing moderate deviations in hematocrit levels to prevent potential complications.

Interestingly, only 1.2% of expectant mothers had a mild packed cell volume range, indicating a minimal number experiencing a lower-than-normal hematocrit. This finding underscores the generally healthy status of the cohort, as emphasized by Agarwal & Rets [19] regarding the prevalence of mild hematocrit variations in pregnancy.

Conclusion

The comprehensive analysis of various aspects of maternal health, ranging from socio-demographic characteristics to nutritional knowledge, practices, and packed cell volume, paints a detailed picture of the well-being of expectant mothers. The exploration into socio-demographic factors lays the groundwork for understanding how diverse characteristics may influence nutritional knowledge, with insights drawn from established authors providing depth and credibility. This nuanced understanding forms the basis for tailored recommendations aimed at specific demographic groups.

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