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Knowledge and Attitudes Regarding Omega-3 supplementation Among Pregnant Women

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Abstract

Background: Omega-3 supplementation is an important intervention to avoid complications during pregnancy on the women and fetus. Aim**:** To assess level of Knowledge and attitude of pregnant women regarding omega-3 supplementation. Design**:** Descriptive design was used in the study. Setting**:** The study was conducted in Antenatal clinic at Aswan university Hospital. Sample**:** Purposive sample included one hundred pregnant women. Tools**:** Three tools were used to collect data. Tool I: A structured interviewing questionnaire. Tool II: Pregnant women's knowledge assessment questionnaire sheet. Tool III: pregnant women's attitudes sheet. Result**:** Less than two third of pregnant women having low level of knowledge regarding omega-3 supplementation, while the more than half of pregnant women had negative attitudes regarding omega-3 supplementation during pregnancy. Conclusion**:** Less than two third of pregnant women had unsatisfactory level of knowledge and more than half of pregnant women had negative attitudes regarding omega-3 supplementation. Recommendation**:** Development instructional guidelines to increase awareness of pregnant women regarding omega-3 supplementation

Keywords: Knowledge and Attitude, Pregnancy, Omega-3 Supplementation.

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1. Introduction

Pregnancy is a term used to describe the period in which a fetus develops inside a woman's uterus. Pregnancy duration is lasts about forty weeks or just over nine months as measured gestational age from first day of last menstrual period to delivery. Best care during pregnancy is important for the health of pregnant women and development of the unborn fetus, affecting the healthy growing of fetus mother's healthy fetus and awareness regarding supplementation of omega-3 especially in the first trimester of pregnancy [1]. Omega-3 long-chain polyunsaturated fatty acids (LC-PUFA), especially docosahexaenoic acid (22:6 n-3) (DHA), are the structural components of cell membranes, especially in the central nervous system. Contribute to neuronal growth and differentiation, synapses, visual acuity, or even the regulation of gene expression. In addition, they regulate anti-inflammatory and oxidative stress systems [2]. Benefit associated with the omega-3 supplement is the prevention of preterm births. highly important, considering that preterm births accounts for more than 85% of all perinatal mortality and complications, in addition to accounting for a greater requirement of intensive care unit resources and a higher risk of early comorbidities, with potential consequences throughout life [3]. Pre and post-registration midwives usually report an awareness of healthy (GWG) guidelines and sufficient knowledge on the optimal gestational weight gain (GWG) ranges, they are usually not prepared for weight, dietary and physical activity management interventions and feel they are not experienced enough to promote healthy eating and appropriate weight management. Therefore, they might rely on general nutritional knowledge, or on support from dietitians of which access may be limited [4].

Elements of antenatal care are complete history taking (personal history, menstrual history, family history, past history of previous pregnancy, obstetric history about take omega-3 supplementation, present), physical examination (general and local).Assess pregnant women level of knowledge regarding omega-3 supplementation and assess pregnant women attitudes regarding omega-3 supplementation as definition of omega-3 supplementation, food sources of omega-3 and the benefits of using omega-3 during pregnancy [5]. Nurses educate the pregnant woman to maintain a healthy weight gain. Too much or little weight during pregnancy increases the risk of problems for both the pregnant woman and the fetus. Following a healthy diet and regular physical activity can help within the recommended weight gain guidelines [6].

1.1 Significance of the study

Omega-3 fatty acids have positive effects on the pregnancy itself. Increased intake of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) has been shown to prevent pre-term labor and delivery, lower the risk of preeclampsia, and may increase birth weight. Omega-3 deficiency also increases the mother's risk of depression [7]. World Health Organization

Surrounding Omega-3 Consumption during Pregnancy representing attitudes, knowledge and prescribing patterns collectively was 69.48% for the sub-domains included attitude 68.33% knowledge 71.40% and prescribing patterns 68.31% [8]. In Egypt descriptive study was done on pregnant women attending Antenatal care clinic in Minia city this research showed that (82.9%) of participants had adequate knowledge, (58.9%) had a positive attitude and (58.7%) had good practice about omega -3during pregnancy [9].Therefore, The Researcher is highlight necessary assessment of knowledge and attitudes of pregnant women regarding omega-3 supplementation.

1.2 Aim of the study

The aim of this study is to assess knowledge and attitudes of pregnant women regarding omega-3 supplementation through the following objectives.

1. 1-Assess pregnant women level of knowledge regarding omega-3 supplementation.
2. 2-Assess pregnant women level of attitudes regarding omega-3 supplementation.

1.3 Research Questions

1- What is the level of knowledge of the studied pregnant women regarding omega-3 supplementation?
2- What is the attitudes of the studied pregnant women regarding omega-3 supplementation?

2. Subject and methods

2.1 Research Design

A descriptive design was used to conduct the study.

2.2 Study Settings

The current study was conducted in Antenatal clinic at Aswan university Hospital.

2.3 Study sample

A convenient sample was used in the current study.

2.4 Sample size

(100) pregnant women who attended an antenatal clinic through the study period 3 months from the beginning of October 2022 to the end of December 2022.

Three tools for data collection

2.4.1 1st tool: A Structured interviewing questionnaire

This tool was designated by the researcher after a literature review [10]. It was written in a simple Arabic language, including the following three parts:

2.4.1.1 Part 1: Socio-demographic characteristic

This part was used to assess the personal characteristics of pregnant women, consisted of six closed ended questions such as: (woman age, age of marriage educational level, residence, occupational, sources of omega-3 information).

2.4.1.2 Part 2: Medical & surgical & Family History

This part was used to assess the medical, surgical, family history of pregnant women consisted of five closed ended questions including (suffering from chronic diseases, chronic diseases present, previous surgeries, drug sensitivity, family history).

2.4.1.3 Part 3: Obstetric & Menstrual & Current History

This part was used to assess the obstetric, menstrual history consisted of four closed ended question (age of menarche, menstrual interval, duration of blood flow, rhythm), and obstetric history consisted of six closed ended question (number of gravidity, number of parity, mode of delivery, number of abortion) current pregnancy, five question including (Gestational age, used omega-3 during pregnancy, Timed used omega-3, present complication during pregnancy).

2.4.2. 2nd tool: Pregnant women's knowledge assessment questionnaire regarding omega-3 supplementation

To assess pregnant women about omega-3 supplementation it adapted from (judgel et al., 2021)and modify by researcher.it was written in a simple Arabic language was including the following items (definition(4), importance of omega-3 supplementation(8), sources of foods rich in omega-3(3) and dose(2) & (1)time of omega-3 ,deficiency of omega-3 on both mother(4) and fetus(2), (1)risk factor for deficiency) consisted of 25 close-ended question questions.

2.4.2.1 Scoring system

All variables were weighted according to items included 25 close-ended question consisting of incorrect=1, and correct=2, total knowledge level was scores ranges are (50).

2.4.2.2 Total knowledge scores

Satisfactory knowledge: ≥60%:38 pregnant women. Unsatisfactory knowledge:<60%:62pregnant women (Iradukunda & Ngomi., 2020).

2.4.3 3rd tool: pregnant women's attitudes regarding omega-3 supplementation

To assess pregnant women attitudes about omega-3 supplementation adopted from [11]. It was written in a simple Arabic language by using five point Likert Scale in order to rate the extent to which have the attitudes toward intake omega-3 supplementation during pregnancy consists of 6 close-ended question about omega-3 supplementation.

2.4.3.1 Scoring system

All variable was weighted according to items included 6 close-ended question (consisting of: strongly disagree = 1, somewhat disagree = 2, neutral = 3, somewhat agree = 4, and strongly agree = 5) or weighted multiple choice questions total attitudes level was scored ranges are (6–30) [11].

- Total attitude score was divided into:
- Positive attitudes: ≥60% : 40 pregnant women.

Negative attitudes :<60%: 60 pregnant women. [13].

2.4.4 Reliability

The tool was assessed by tools knowledge & attitude to check the internal consistency and it was as follow Tool II entitled " Pregnant women's knowledge assessment questionnaire regarding omega-3 supplementation (0.895),

which refers to be reliable, tool III: entitled " pregnant women's attitudes regarding omega-3 supplementation (0.832).

2.4.5 Tools reliability

Cronbach's Alpha was used to determine the internal reliability of the tools reliability in knowledge and attitude when alpha Cronbach was > 0.5.

2.4.6 Validity

Validity was tested through a jury of three experts in maternity & newborn health nursing, who reviewed the content of tools. Opinions elicited regarding the format, layout, consistency, accuracy and relevancy of the tools to measure the content validity of the tool.

2.5 2 Ethical Considerations

The research approval was obtained from the Scientific Research Ethics Committee. Faculty of Nursing, Helwan University. Participation in the study was voluntary and subjects were given complete full information about the study and their role before obtaining informed consent. The ethical considerations included explaining the purpose and nature of the study, stating the possibility to withdraw at any time, and confidentiality of the information where it was not accessed by any other party without taking permission of the participants and having no harm or risks to them. Ethics, values, culture, and beliefs were respected.

2.6 Pilot study

The pilot study was done on 10 % (7 pregnant women) of the sample to examine the clarity of questions and time needed to complete the study tools. Pregnant women participate in the pilot study were included in the study.

2.7 Fieldwork

- The study was conducted in antenatal clinic in Aswan university hospital. Data were collected during the period from the beginning of october2022 to the end of December 2022, after getting official permission. Data collection was done at the previous mentioned setting two days for9 pregnant women per week (Saturday and Tuesday) by the researcher in the morning shift between 10.00 AM to 1.00 PM. Each woman took about 35-40 minutes for interviewing and completing the required data.
- In the beginning, the researcher introduced herself and explained the purpose of the study to pregnant women to gain their confidence and trust to convince them to participate in the study.
- The researcher distributed a questionnaire to the pregnant women and explained tool I, the first part to collect data about personal characteristics and the second part to assess the obstetric history of pregnant women. This tool was fulfilled in about (15-20) minutes.
- Then the researcher assessed knowledge and attitude of pregnant women about omega-3 supplementation by using tools II and III. This tool took about (20-30) minutes to be filled by the researcher from each subject.

2.8 Statistical Analysis

Statistical presentation and analysis of the present study was conducted, using the mean, standard deviation, chi-square test was used to compare between groups in qualitative and linear correlation coefficient was used for detection of correlation between two quantitative variables in one group. By (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.).

Significant level: >0.05 Non significant, <0.05* significant, <0.001* High significant.

3. Results

Table (1) In assessing the characteristics of the studied pregnant women, it's notable that a significant portion falls within the age group of 30 to 35 years (47.0%). Marital age is evenly distributed, with 42.0% marrying both under 20 years and between 20 to 24 years. The residence is almost evenly split between urban more than half (52.0%) and rural (48.0%) areas. The majority (81.0%) of women are housewives, and educational diversity is observed, with more than one third (36.0%) having secondary education and the minority 20.0% having a university degree. less than two thirds (62.0%) health staff is the predominant source of information about omega-3. Figure (1) shows that, nearly one quarter of the studied pregnant women (62%) their source of information about omega-3 during pregnancy was health staff, while only 9% their source of information was relative. Table (2) reveals that, more than two thirds (72.0%) of the studied women didn't suffered from chronic conditions, while 28.0% suffering from chronic diseases. Among those suffering from chronic diseases, more than one third of them (35.7%) had diabetes mellitus, and also nearly third of them (32.2%) had hypertension. In relation to drug sensitivity, a small proportion (21.4%) of respondents had reported drug sensitivity, while the rest of them (78.6%) hadn't reported drug sensitivity. Regarding surgical history, this table shows that, more than three quarters (79.0%) of respondents had a positive surgical history. And the minority family members with diabetes (7%), hypertension (5%) and Heart disease respiratory disease was (2%). Table (3): reveals that, regarding menstrual history, an equal percentage of the studied women (39.0%) their age at menarche was 11-13 and 13-15 year, added that less than half of them (46.0%) their menstrual interval was 21-27 days, and more than two thirds of them (70.0%) their duration of blood flow was 3-5 days. Moreover (72.0%) had a regular rhythm of menstruation. Table (4) reveals that, In relation to obstetric history, less than half 43.0% of the studied women had a more than two times of pregnancy, and less than half 45.5% of them had more than two times of delivery, moreover, more than two thirds of them (69.3%) their mode of delivery was caesarean section, and nearly half of them (49.0%) had a history of one-time abortion. As regard to the outcome of the first pregnancy, more than two thirds of them (69.0%) had a live birth and (36%) was 20-23 years aged group at first pregnancy. Table (5) Less than three quarters of pregnancies are beyond 27 weeks gestational age (73.0%), less than two thirds (61.3%) omega-3 supplementation is most commonly used during the first trimester, and more than half (55%) complications are present of current pregnancies Also more than one quarter(25.5%) for nutritional imbalance, about less than nearly one quarter(23.6%) preterm labor, more than one quarter(29.1%) maternal depression, and about less than nearly one quarter (21.8%) pre-eclampsia.

Table (6): Demonstrates that participant responses regarding omega-3 knowledge. more than two thirds (70%) incorrect answer about definition of omega-3, less than two thirds(63%) not understanding the benefits & importance of omega-3 supplementation during pregnancy, less than two thirds (63) incorrect answer about Source of foods rich in omega-3, more than two thirds(68) incorrect answer about dose & time of pregnant women intake omega-3, more than half(60) incorrect answer about deficiency of omega-3 affect the pregnant woman and less than two third(61%) incorrect answer about risk factor for omega-3 deficiency, less than two thirds(62)incorrect answer about pregnant woman risk for pre-eclampsia and also less than two thirds(63) incorrect answer about pregnant woman risk for nutritional imbalance. Figure (2): illustrated that less than two thirds (62%) of the studied women had unsatisfactory level of knowledge regarding omega-3 supplementation, while the rest of them (38%) had a satisfactory level of knowledge with Mean±SD (17.45±3.26). Table (7) shows that more than one third (36%) of the pregnant women strongly disagree with that adequate Omega- 3 intake is vital for maternal wellbeing. Adds that 30% & 25% of them strongly disagree with the following statement; Sufficient time to advise pregnant patients adequately regarding their nutrition and importance of dietary Omega 3 fatty acid intake is for pregnant women. Moreover, 26% & 34% of them disagree with the following statement; Adequate Omega 3 intake is vital for fetal development, reading articles about the importance of Omega3 fatty acid intake during pregnancy. Figure (3): illustrated that more than half (60%) of the studied women negative attitude regarding omega-3 supplementation, while the rest of them (40%) had a positive attitude with Mean±SD (12.74±2.84). Table (8) shows the relationship between socio-demographic characteristics of woman and their total knowledge regarding omega-3 supplementation, this table reveals that There were a highly statistically significant differences between women total knowledge and and their socio-demographic characteristics; namely women age (X2 = 10.436 & p-value = 0.015), age of marriage (X2 = 8.157 & p-value = 0.043), residence (X2 = 29.810 & p-value = 0.001), women occupation (X2 = 9.214 & p-value = 0.002), women educational level (X2 = 18.978 & p-value = 0.001).

Table (9) shows the relationship between socio-demographic characteristics of woman and their total attitude regarding omega-3 supplementation, this table reveals that There were a highly statistically significant differences between women total attitude and their socio-demographic characteristics; namely women age (X2 = 13.011 & p-value = 0.005), age of marriage (X2 = 12.579 & p-value = 0.006), residence (X2 = 29.087 & p-value = 0.001), women occupation (X2 = 19.103 & p-value = 0.001), women educational level (X2 = 30.246 & p-value = 0.001) and husband occupation (X2 = 13.053 & p-value = 0.002). Table (10) illustrates that there was strong positive correlation between Total attitude and total knowledge regarding omega-3 supplementation with (r= 0.895 & p-value = <.001), which mean that, an increase in women's knowledge will be associated with an increase in women's attitude.

4. Discussion

Pregnancy is associated with intense anatomical, physiological, biochemical, and endocrine changes that affect many organs and systems of pregnant women in order to nurture and accommodate the developing Fetus It has been found that maternal dietary intakes of protein, fat, and carbohydrates in pregnancy were positively associated with child dietary intakes of these same nutrients later on. At the end of the first trimester, the fetus weighs 30g; in the following six months of pregnancy, the maximum growth rate for the maternal plasma volume, uterine blood flow, and fetal weight [14]. Omega-3 fatty acid is deemed to be essential during pregnancy for the development of the fetus as it could not be produced independently. In addition, that the maternal tissue store for fatty acid can slightly decrease during prenatal period. For this reason, n-3 fatty acids supplementation is often recommended during pregnancy [15]. Nutritional needs of women increase during pregnancy and breastfeeding to support all of these changes, prepare the body for delivery and for breastfeeding, and to ensure the normal development of the fetus/baby, [16]. The current study aimed to assess knowledge and attitudes of pregnant women regarding omega-3 supplementation during pregnancy regarding the studied pregnant women's characteristics, in relation to age, the current study showed that, about half of the studied women were in age group from 30 to 35 years.

In addition to, the findings of present study was not similar with [17].Who indicated in a longitudinal observational study in southwest China about "Prevalence of anaemia and sociodemographic characteristics among pregnant and non-pregnant women" that majority of studied women were in age group from 20 to 30 years. From the researchers' point of view, this finding may be explained that MAS study supports this fact as more than half of the migrants are youth under 35 years, according to Population Situation Analysis, [18]. As regards age of marriage, an equal percentage of women less than half got married both in age less than 20 years and between 20 to 24 years, a smaller proportion got married between 25 to 35 years the minority. The finding of present study matched with [17-18]. In their recent study titled "Knowledge and Attitudes of Pregnant Women Towards Dietary Supplements and Alternative Medicine for the City of Mosul" at Al Khansa, Al Salam, Al-Batool, and Mosul General hospitals in Mosul city, and indicated that about two thirds of the Study Sample got married between 21-30 years. From the researcher point of view, it may be related to that because most female the countryside marry at an early age for fear of delaying their marriage and spinsterhood. Concerning education level of the wife, the present study revealed that more than third of them had a secondary education. The finding of currents study was congruent with [19]. Who conducted a study in prenatal clinics at six health centers in Port Said, about "Daily dietary habits and nutrition attitude of pregnant women in port-said city" and revealed that more than two fifths had secondary school. From the researcher point of view, it may be related to because in remote areas always have customs and traditions that do not care about women's education and that only have married life and raising children. In relation to Source of information about omega-3 during pregnancy of the studied women the present study illustrated that, less than two thirds of the studied pregnant women their source of information about omega-3 during pregnancy was health staff, and an equal percentage the minority of them their source of information were mass media and relative. While only the minority of their source of information was friends. The current results in the same line with study of Omega-3 fatty acids to prevent preterm birth at Australian pregnant women's [20].

Table 1: Distribution of the studied pregnant women's according to their demographic characteristics (n=100).

Items	N	%
Woman age		
Less than 20 years	5	5.0
From 20 to 24 years	22	22.0
From 25 to29 years	26	26.0
From 30 to 35 years	47	**47.0**
Mean±SD	26.2±4.76	
Age of marriage		
Less than 20 years	42	**42.0**
From 20 to 24 years	42	**42.0**
From 25 to29 years	10	10.0
From 30 to 35 years	6	6.0
Residence		
Urban	52	52.0
Rural	48	**48.0**
Occupation of the woman		
Worker	19	19.0
House wife	81	**81.0**
Education level of the woman		
Secondary.	36	**36.0**
University.	20	20.0
Read and write.	32	32.0
Do not read or write.	12	12.0

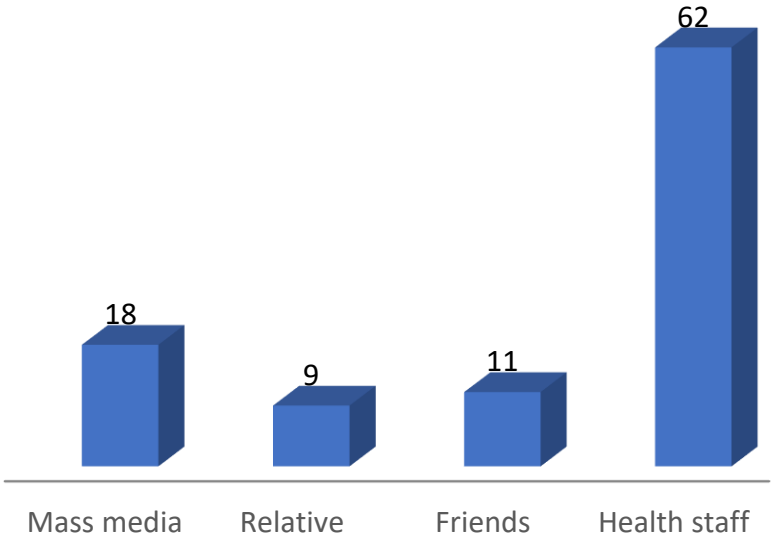

Figure 1: Distribution of the studied pregnant women according to source of information about omega-3 during pregnancy (n=100)

Table 2: Distribution of studied pregnant women's according to their medical history & surgical history of the studied sample (n=100)

Items	N	%
Pregnant women suffering from any chronic diseases		
Yes	28	28.0
No	72	72.0
Chronic diseases suffering from pregnant women		
Diabetes Mellitus	10	35.7
Hypertension	9	32.2
Heart disease	3	10.7
Respiratory disease	6	21.4
Drug sensitivity		
Yes	6	21.4
No	22	78.6
previous surgeries pregnant women performed		
Yes	79	79.0
No	21	21.0
Pregnant family history of chronic disease:		
Diabetes Mellitus	7	7
Hypertension	5	5
Heart disease respiratory disease	2	2

Table 3: Distribution of studied pregnant women's according to their menstrual history of the studied sample (n=100).

Items	N	%
Age at menarche (years)		
9-11	15	15.0
11-13	39	39.0
13-15	39	39.0
15-17	7	7.0
Mean±SD	14.26±3.65	
Menstrual interval (days)		
Less than 21 day	18	18.0
21-27 day	46	46.0
28-35 day	33	33.0
More than 35 day	3	3.0
Mean±SD	24.65±5.8	
Duration of blood flow (days)		
3-5 days	70	70.0
5-7days	27	27.0
More than7days	3	3.0
Mean±SD	4.22±2. 7	
Rhythm of menstruation		
Regular	72	72.0
Irregular	28	28.0

Table 4: Distribution of studied pregnant women's according to their obstetric history of the studied sample (n=100).

Items	N	%
Number of gravidity		
Once	36	36.0
Twice	21	21.0
More than twice	43	**43.0**
Number of parity		
Once	33	37.5
Twice	15	17.0
More than twice	40	**45.5**
Mode of delivery		
Normal vaginal	24	27.3
Caesarean section	61	**69.3**
Vaginal with instrumentals	3	3.4
Number of abortions		
Once	49	**49.0**
Twice	6	6.0
More than twice	0	0
Outcome of the first pregnancy		
live birth	69	**69.0**
Stillborn	18	18.0
Induced abortion	13	13.0
Neonatal death	0	0
Age at first pregnancy (years)		
Less than 20years	25	25.0
20-23 years	36	**36.0**
24-27years	24	24.0
28-30 years	6	6.0
More than 30years	9	9.0

Table 5: Distribution of studied pregnant women's according to current pregnancy of the studied sample (n=100).

Items	N	%
Gestational age		
12 week	12	12.0
13 to 26 week	15	15.0
More than 27 week	73	**73.0**
Used omega-3 supplementations in pregnancy		
Yes	31	31.0
No	69	**69.0**
Timed used omega-3		
First trimester	19	**61.3**
Second trimester	0	0
Third trimester	12	38.7
Present complication through current pregnancy		
Yes	55	**55**
No	45	45
From complication through current pregnancy		
Nutritional Imbalance	14	25.5
Preterm labor	13	23.6
Maternal depression	16	**29.1**
Pre-eclampsia	12	21.8

Table 6: Distribution of studied pregnant women's according to their knowledge regarding omega-3 supplementation of the studied sample (n=100).

Knowledge	Correct		Incorrect	
	N	%	N	%
Definition of omega-3:				
Omega-3 fatty acids polyunsaturated fatty acid necessary for optimal functioning the brain	**36**	36	64	64
Omega-3 long chain polyunsaturated fatty acids structural component of cell membranes	32	32	68	68
Prenatal vitamin containing (DHA) Omega 3 fatty	30	30	70	**70**
Omega-3 supplements recommended especially diet not include fish	33	33	67	67
Importance of omega-3 on both mother and fetus:				
Omega-3 fatty acid effective in prevention of many diseases	41	41	59	59
Importance of omega-3 fatty acids in fetal brain development	42	42	58	58
Omega-3 essential for visual development the baby	40	40	60	60
Omega 3 fatty acids reduce postpartum depression	39	39	61	61
Omega-3 important component neural and retinal membranes	37	37	**63**	63
Benefit omega-3 supplement in prevention of preterm births and pre-eclampsia	**45**	45	55	55
Proper nutrition during pregnancy prevent nutritional imbalances	44	44	56	56
Omega-3 fatty acids essential for cellular and metabolic activities	43	43	57	57
Source of foods rich in omega-3:				
Omega-3 fatty acids primarily derived from marine sources such as seafood and algae	37	37	**63**	63
Fish and other seafood contain omega-3 fatty acids	**41**	41	59	59
Fish oil supplementation shown beneficial in oncological processes reduced breast cancer	38	38	62	62
Dose &time of pregnant women intake omega-3 :				
Pregnant women consume at least 200mg of omega-3 per day acids	32	32	**68**	68
Prenatal vitamins contain 200 to 300mg of omega-3	34	34	66	66
Omega-3 supplementation starting before 20 weeks during pregnancy	**35**	35	65	65
Deficiency of omega-3 affect the fetal:				
Maternal omega-3 deficiency affect cognitive function of the fetal	40	40	60	**60**
Low maternal status of omega-3 reduced cord blood omega-3 levels and impact neurodevelopment of the fetal	**42**	42	58	58
Deficiency of omega-3 affect the pregnant woman				
Pregnant women risk for preterm labor	40	40	60	60
Pregnant women risk for pre-eclampsia	38	38	62	**62**
Pregnant women risk for depression	42	42	58	58
Pregnant women risk for nutritional imbalance	37	37	63	**63**
Risk factor for omega-3 deficiency:				
Vegetarians and vegans pregnant women have low omega-3	**39**	39	**61**	61

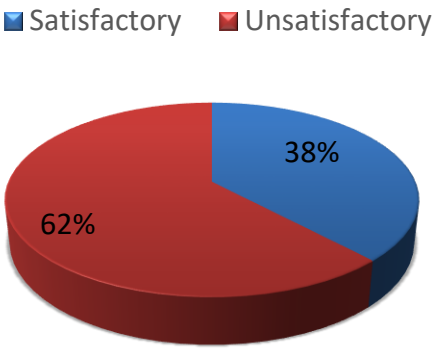

Figure 2: Distribution of the studied women according to their knowledge level regarding omega-3 supplementation (n=100).

Table 7: Distribution of studied pregnant women according to their attitude regarding omega-3 supplementation of studied sample (n=100).

Attitudes (6–30)	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
	N	%	N	%	N	%	N	%	N	%
Adequate Omega 3 intake is vital for maternal wellbeing	11	11	20	20	12	12	21	21	36	**36**
Adequate Omega 3 intake is vital for fetal development	14	14	23	23	18	18	26	**26**	19	19
Sufficient time to advise pregnant patients adequately regarding their nutrition	12	12	19	19	16	16	23	23	30	**30**
Read articles about the importance of Omega3 fatty acid intake during pregnancy	10	10	18	18	10	10	34	**34**	28	28
In the last six months, approximately how many hours of continuing education had regarding Omega 3 supplements for obstetric patients?	9	9	15	15	20	20	30	**30**	26	26
Important do think dietary Omega 3 fatty acid intake is for pregnant women.	16	16	23	23	17	17	19	19	25	**25**

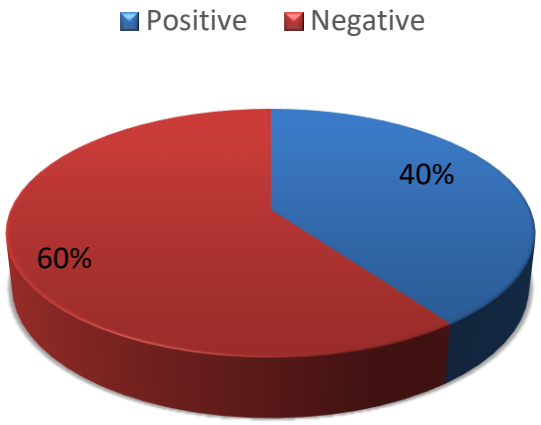

Figure 3: Distribution of the studied women according to their attitude level regarding omega-3 supplementation (n=100).

Table 8: Relation between socio-demographic characteristics of woman and their total knowledge (n=100).

Items	Total knowledge					
	Satisfactory		Unsatisfactory		Chi-square	
	N	%	N	%	X^2	P-value
Woman age						
Less than 20 years	0	0.0	5	100.0	10.436	**0.015***
From 20 to 24 years	9	40.9	13	59.1		
From 25 to29 years	5	19.2	21	80.8		
From 30 to 35 years	24	51.1	23	48.9		
Age of marriage						
Less than 20 years	10	23.8	32	76.2	8.157	**0.043***
From 20 to 24 years	18	42.9	24	57.1		
From 25 to29 years	6	60.0	4	40.0		
From 30 to 35 years	4	66.7	2	33.3		
Residence						
Urban	33	63.5	19	36.5	29.810	**<0.001***
Rural	5	10.4	43	89.6		
Occupation of the women						
Worker	13	68.4	6	31.6	9.214	**0.002***
House Wife	25	30.9	56	69.1		
Education level of the women						
Secondary	11	30.6	25	69.4	18.978	**<0.001***
University	16	80.0	4	20.0		
Read and Write	8	25.0	24	75.0		
Do not read or write	3	25.0	9	75.0		

***Statically significance**: X2 = Chi-Square Test P-value: level of significance P> 0.05 (non-significant) *P ≤ 0.05 (significant) **P <0.01(Highly significant)

Table 9: Relation between socio-demographic characteristics of Woman and Total attitude regarding omega-3 supplementation (n=100).

Items	Total attitude					
	Positive		Negative		Chi-square	
	N	%	N	%	X^2	P-value
Woman age						
Less than 20 years	0	0.0	5	100.0	13.011	**0.005***
From 20 to 24 years	7	31.8	15	68.2		
From 25 to29 years	6	23.1	20	76.9		
From 30 to 35 years	27	57.4	20	42.6		
Age of marriage						
Less than 20 years	9	21.4	33	78.6	12.579	**0.006***
From 20 to 24 years	20	47.6	22	52.4		
From 25 to29 years	7	70.0	3	30.0		
From 30 to 35 years	4	66.7	2	33.3		
Residence						
Urban	34	65.4	18	34.6	29.087	**<0.001***
Rural	6	12.5	42	87.5		
Occupation of the woman						
Worker	16	84.2	3	15.8	19.103	**<0.001***
House Wife	24	29.6	57	70.4		
Education level of the woman						
Secondary	14	38.9	22	61.1	30.246	**<0.001***
University	18	90.0	2	10.0		
Read and Write	7	21.9	25	78.1		
Do not read or write	1	8.3	11	91.7		

***Statically significance:** X2 = Chi-Square Test P-value: level of significance P> 0.05 (non-significant) *P ≤ 0.05 (significant) **P <0.01(Highly significant)

Table 10: Correlation between the studied women total attitude and total knowledge regarding omega-3 supplementation (n=100).

	Total attitude	
	R	P-value
Total knowledge	0.895	**<0.001***

The most common sources of information were health professionals the majority and information from friends and family members less than half when asked about who has the greatest influence on their decision to take or not take nutrient supplements during pregnancy, respondents nominated health professionals, and friends and family members more than three quarters. The findings of present study was contraindicated with [21]. Who conducted a study in turkey, about "attitude and preferences of consumers towards functional foods enriched with omega -3fatty acid" and illustrated that more than two fifths had obtained information from television, more than one third from school, the minority from the internet, minority from doctors, and minority from newspapers. The remaining participants had received information from food engineers, dieticians, or other sources, such as family members, friends, and books. Regarding to medical history of the studied pregnant women's, the present study revealed that, more than two thirds of the studied women didn't suffer from chronic conditions, while more than one quarter suffering from chronic diseases. Among those suffering from chronic diseases, more than one third of them had diabetes mellitus, and nearly a third of them had hypertension. In relation to drug sensitivity, a small proportion of respondents had reported drug sensitivity, while the rest of the studied pregnant more than three quarters hadn't reported drug sensitivity.

The findings of present study was congruent with [22]. Who carried out a study among the community in different cities of Ethiopia, about "Community awareness, attitudes and patterns of use toward fish oil and cod liver oil in Ethiopia" and demonstrated that minority of the studied pregnant women had suffered from chronic diseases. From the researcher point of view, it may be related to due to the fact that in rural areas they do not have the different pressures of life as in the capital and their dependence on sleeping early and eating healthy. Relating to surgical history, more than three quarters of respondents had a positive surgical history the minority for family members with diabetes, hypertension, Heart disease, respiratory disease. Regarding menstrual history, an equal percentage of the studied women more than one third their age at menarche was 11-13 and 13-15 year, added that less than half of them their menstrual interval was 21-27 days, and more than two thirds of them their duration of blood flow was 3-5 days. Moreover had a regular rhythm of menstruation. In relation to obstetric history, less than half of the studied women had a more than two times of pregnancy, and less than half of them had more than two times of delivery, moreover, more than two thirds of them their mode of delivery was caesarean section, and nearly half of them had a history of one-time abortion. As regard to the Outcome of the first pregnancy, more than two thirds of them had a live birth, more than one third of the studied women their age at first pregnancy ranged between 20-23 years.

The findings of present study was similar to [23]. And found that half of the delivery was caesarean section, more than half of the studied women had a more than two times of pregnancy, more than half had a history of one-time abortion. From the researcher point of view because they do not have the culture of reading and paying attention to health information, and also because of ignorance and lack of health awareness from institutions and community bodies. According to current pregnancy of the studied pregnant women's, showed that regarding current pregnancy, about more than two thirds of studied women had a gestational age more than 27 weeks, only less than one third of them used omega-3 supplementations during their current pregnancy, while the rest of them didn't. among those who used omega-3 supplementations: more than half of them used it in the first trimester and more than one third used it in the third trimester .revealed that more than half of them experienced complications during their current pregnancy. Among those who experienced, about three quarters of them had complications in the third trimester. The current results was similar to [24]. Who carried out a study entitled''Omega-3 fatty acids to prevent preterm birth'': at Australian pregnant women's over half of the respondents reported they had already changed their diet during pregnancy and a substantial majority indicated they had consumed a dietary supplement during their current pregnancy. Similarly high rates of supplement use during pregnancy have been reported in a previous study conducted in Melbourne, Australia most of. Demonstrates that participant responses regarding omega-3 knowledge. more than two thirds incorrect answer about definition of omega-3, less than two thirds not understanding the benefits & importance of omega-3 supplementation during pregnancy, less than two thirds incorrect answer about Source of foods rich in omega-3, more than two thirds incorrect answer about dose & time of pregnant women intake omega-3, more than half incorrect answer about deficiency of omega-3 affect the pregnant woman and less than two third incorrect answer about risk factor for omega-3 deficiency.

Moreover, the present study findings were supported by [25]. Tehran University of Medical Sciences studies regarding the effect of omega-3 supplementation in pregnancy, lactation, and infancy and thus provided an overview of health outcomes of omega-3 supplementation in these three populations. According to the evidence, we found high certainty evidence for the favorable effect of omega-3 supplementation against pre-eclampsia in low-risk (apparently healthy) pregnant women. The present study findings are in line with [26]. Omega-3 fatty acids to prevent preterm birth: Australian pregnant women's preterm birth awareness and intentions to increase omega-3 fatty acid intake, this suggests that preterm birth awareness needs to be increased in Australia. Less than a fifth of the women were eating the amount of fatty fish required to meet the recommended omega-3 fatty acid intake to prevent preterm birth. These low levels of fish intake in Australian pregnant women A high proportion of respondents most of had heard of omega-3. Omega-3 fatty acid containing supplements had been consumed by more than one third of respondents in the 12 months prior to conceiving and less than one third indicated that they had consumed an omega-3 fatty acid containing supplement during their current pregnancy. Less than a third of the women surveyed were eating at least two serves of fish a week and the minority indicated they never ate lean or fatty fish during their pregnancy. The present study findings was disagreed with [27].And showed that, the most common response was decreasing heart attack risk less than one third. Overall, about less than nearly one quarter of the participants were aware of the health benefits ofomega-3 fatty acids on the immune system and the minority were familiar with health benefits during pregnancy and brain and eye development of infants. Furthermore, the minority participants were aware of the effect of omega-3 fatty acids on prevention of hypertension and the minority on their use in the treatment of depression and behavioral disorders.

Regarding to knowledge level omega-3 supplementation of the studied women, illustrated that less than two thirds of the studied women had unsatisfactory level of knowledge regarding omega-3 supplementation, while the rest of them more than one third had a satisfactory level of knowledge with Mean±SD (17.45±3.26).The present findings was in agreement with [28]. And stated that more than three quarter of the studied women had unsatisfactory level of knowledge related to nutrition during pregnancy while, only less three quarters of the studied women had satisfactory level. Regarding to pregnant women attitude regarding omega-3 supplementation of studied sample. The current study showed that more than one third of the pregnant women strongly disagree with that adequate Omega- 3 intake is vital for maternal wellbeing. Added that less than one third respectively of them strongly disagree with the following statement: Sufficient time to advise pregnant patients adequately regarding their nutrition and importance of dietary Omega -3 fatty acid intake is for pregnant women. Moreover, more than one quarter & more than one thirds of them disagree with the following statement: Adequate Omega -3 intake is vital for foetal development, reading articles about the importance of Omega-3 fatty acid intake during pregnancy.

The present findings was similar with a study conducted by [29].In Kigeme Refugee Camp, Rwanda entitled" Knowledge, Attitude, and habits towards Nutrition and Influencing Factors among Pregnant and Lactating Women " and stated that most of the studied women disagree fatty acid supplementations as omega- 3 in diet and had poor nutrition intake during pregnancy. Also, the studied women disagree Adequate Omega- 3 intake is vital for maternal wellbeing and importance of Omega3 fatty acid intake during pregnancy. Conversely, The current findings was contracted with [30]. Who conducted a study in Morogoro municipality, Tanzania, about "Knowledge, practices and intention to consume omega-3 and omega-6 fatty acids among pregnant and breastfeeding women" and reported that more than half of respondents agreed that consumption of omega- 3 and omega- 6 fatty acid rich foods prior and during pregnancy may result into having a healthy baby(s). Also, more than half agreed that omega -3 and omega -6 fatty acid rich foods are good for their health and less than one third of them believed that omega -3 and omega-6 fatty acid rich foods are good for weight management. From the researcher's point of view, The current findings may be explained That's maybe explained by the fact that women had poor readiness or willingness to act and follow healthy nutrition to maintain a healthy pregnancy, and a healthy foetus, and avoid any complications from malnutrition. In addition, health care professionals cannot play an important role in influencing women's habits including compliance with diet and supplementation. Also, The present findings was discordances with [31].Who reported in a study in Australia, about "Omega-3 fatty acids to prevent preterm birth: Australian pregnant women's preterm birth awareness and intentions to increase omega-3 fatty acid intake" that a high proportion of respondents indicated they were willing to increase their omega-3 fatty acid consumption during pregnancy. While about a third of women said they would prefer to increase their omega-3 fatty acid intake through food sources, less than a fifth of the women were eating the amount of fatty fish required to meet the recommended omega-3 fatty acid intake to prevent preterm birth.

Moreover, the present findings was not matched with a study by [32]. In United states, about "Omega-3 fatty acid intake of pregnant women and women of childbearing age in the United States: potential for deficiency" who found that only the minority of non-pregnant women of childbearing age in the United States use omega-3 fatty acid-containing supplements Additionally, the study found that the inclusion of omega-3 fatty acids in prenatal vitamins is not standard. Furthermore, the study result supported by [33]. In Germany, about "Omega-3 fatty acids in pregnancy the case for a target omega-3 index. Nutrients" and found that vegetarian and vegan pregnant women have been observed to have low plasma levels of EPA and DHA, which are omega-3 fatty acids. suggests that may be a need for women to supplement their diets with omega-3 fatty acids to ensure adequate intake. The study also suggests that determining the Omega-3 Index, a measure of omega-3 fatty acid status, may help increase the number of pregnant women who choose to supplement with omega-3 fatty acids.

Overall, while there may be some pregnant women who are not aware of the importance of omega-3 supplements or who may overestimate their own omega-3 fatty acid status, there is evidence to suggest that many pregnant women have a positive attitude towards these supplements. Increased education and awareness about the benefits of omega-3 supplements during pregnancy may help improve attitudes and increase uptake among pregnant women.Regarding to pregnant women their attitude level regarding omega-3 supplementation. The current study illustrated that less than two thirds of the studied women negative attitude regarding omega-3 supplementation, while the rest of them less than half had a positive attitude with Mean±SD (12.74±2.84). Finding was similar with a study conducted by [34]. Who stated that most of the studied women have been a negative attitude and poor nutrition intake sources of oils and fish during pregnancy. The poor nutrition attitude was influenced by the limited sources of food and limited knowledge level. Also, The present findings were contraindicated with [35]. At an Egyptian study entitled "Knowledge, attitude and practice regarding nutrition among pregnant women, Minia City, Egypt". The study showed that most of the studied women had a positive attitude toward maternal nutrition during pregnancy as omega -3 supplements sources. The majority of women had a positive attitude towards preparing omega -3 rich foods especially riches in fish and oils. In contrast, finding was disagreed with [36].Who conducted a study in Port-Said city, Egypt, about "Daily Dietary habits and Nutrition Attitude of Pregnant Women in Port-said city" and revealed that most of the studied women had positive attitude level related to nutrition as fatty acid sources (omega 3 & 6) during pregnancy. Their attitude was positive regarding increasing their nutrition during pregnancy, eating a suitable diet is important during pregnancy, including minerals including omega- 3. Furthermore, finding was not harmony with [37].Who reported that most of the participants showed positive attitude towards omega -3 and omega -6 fatty acid food sources. From the researcher's point of view, this suggests that there may be a lack of awareness or understanding about the importance of omega-3 fatty acids in pregnancy. This further supports the idea that there may be a need for increase education and awareness about the benefits of omega-3 supplements during pregnancy.

The current study revealed that there was strong positive correlation between Total attitude and total knowledge regarding omega-3 supplementation which mean that, an increase in women's knowledge will be associated with an increase in women's attitude. The present study finding was strongly agreed with [38].Who revealed that there is a statistically significant positive correlation between the overall knowledge level of pregnant women's nutrition during pregnancy and the overall attitude level. Also, this finding was in the same line with that of [39].Who found a statistically significant link between strong nutritional knowledge and positive attitude towards nutrition during pregnancy in pregnant women. Moreover, the present study finding was consistent with [40]. Who conducted a study in Shomolu Local Government, Lagos State, about "Knowledge, attitude and practice of good nutrition among women of childbearing age in Shomolu Local Government, Lagos State" and stated that a statistically significant link between respondents' knowledge and attitudes toward optimal nutrition in their study.

In contrast, the present study findings was dissimilar with [41]. Who conducted a study in Saudi Arabia about "Knowledge, Attitude, and Practice of Primigravida Women on Birth Preparedness" and found no statistically significant association between knowledge and attitudes. Furthermore, the present study findings was contraindicated with [42]. And shows that, there was a positive moderate linear correlation between the mother's knowledge and attitude ($r = 0.36$, $P < 0.001$). From the researcher's point of view, this can be explained by the fact that raising awareness of healthy indigenous food culture and eating habits can help to change attitudes and habits, whilst nutrition knowledge can help to modify attitudes and lead to better eating habits. The current study reveals that the relationship between socio-demographic characteristics of woman and their total knowledge regarding omega-3 supplementation, revealed that There were a highly statistically significant differences between women total knowledge and their socio-demographic characteristics

Finding was consistent with [42]. And reveals that knowledge score was significantly associated with age, residency, and occupation of pregnant women ($P \leq 0.05$).

The current study reveals that there were a highly statistically significant differences between women total attitude and their socio-demographic characteristics; namely women age. Finding was strongly agreed with [43]. Who revealed that there is a statistically significant relationship between personal characteristics and the total attitude level of pregnant women in the areas of educational level and occupational status. The current findings agreed with a similar study done by [44].which found personal characteristics to be significantly associated with attitude towards good nutrition among pregnant women. In contrast, there is no significant differences between women total attitude and their socio-demographic characteristics in the areas of age and residence. From the researcher's point of view, that's may because the level of education is a factor that affects the attitude towards good nutrition. Also, the present study finding was congruent with [45]. Who shows that, there is a highly statistically significant relation between the studied sample' attitudes regarding fatty acid supplementation and their demographic data as age, education level, and working status at ($P = < 0.01$). Also, there is statistically significant relation with their marriage age at ($P = < 0.05$).

5. Conclusions

Based on the results of the current study, the following can be concluded: Less than two third of the pregnant women had unsatisfactory level of knowledge regarding omega-3 supplementation. More than half of the studied pregnant women had a negative attitude regarding omega-3 supplementation. Also, there is a statistical significance relation between pregnant women knowledge and attitudes and demographic characteristics of the studied pregnant women. In addition to, there was a significant strong positive correlation between total knowledge& total attitudes of study pregnant women. The results of the current study answers the research questions.

6. Recommendations

Based upon the results of the current study, the following recommendations were suggested:

- Development instructional guidelines to increase awareness of pregnant women regarding omega-3 supplementation.
- Learning resources such as articles, journals and electronic resources such as computers and internet should be made accessible in the outpatient clinical for pregnant women.
- Developing a simplified and comprehensive booklet including basic information about omega-3 supplementation during pregnancy.

Recommendations for Further Researches:

- The study should be replicated on large sample and in different hospitals setting in order to generalize the results.
- Nurse's continues professional development programs should include skills updates provide to maternity nurses.
- Development of an educational program for healthcare providers to inform the pregnant women's about omega-3 supplementation as a strategy that can lead to safer pregnancy and delivery.

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