

Knowledge and Awareness About Preconception Care Among Nursing Students at the University of Medical Sciences and Technology, Khartoum, Sudan

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Abstract

Background: One of the Sustainable Development Goals for 2030 is to reduce maternal and child mortality and morbidity, and this is still a major global priority. **Purpose:** This study aimed to determine how much the participants at the University of Medical Sciences & Technology in Sudan knew about preconception care. **Methods:** A descriptive cross-sectional institutional study was carried out using simple random sampling to select 193 nursing students. After outlining the study's goal and considering confidentiality, data was gathered by distributing a questionnaire. Excel and SPSS, version 22, were then used for analysis. **Results:** It was found that almost half (46.1%) of participants had good knowledge which was (>75%), while only (35.8%) had poor knowledge, which was (< 50%) and few of the participants (18.1%) had Fair knowledge which ranged from (50-75%). The study results showed a highly statistically significant correlation (P.V 0.00) between the participants' ages and knowledge levels as well as between their educational attainment and knowledge levels. **Conclusion:** The study concluded that most participants had a good understanding of preconception care and that there was a correlation between participants' educational attainment and their knowledge of the topic. **Recommendation:** As a result, the study recommended that ongoing preconception care refresher courses be held and that further research be done to evaluate participants' practical skills in preconception care.

Keywords: Knowledge, Awareness, Preconception care, Nursing students, Faculty of Nursing sciences

Introduction

In 2020, approximately 800 women every day, or one every two minutes, died from preventable reasons related to pregnancy and childbirth. (1). Preconception health care is defined as medical treatment provided to a woman or man by a doctor or other health provider that emphasizes health factors that have been demonstrated to increase the likelihood of conceiving a healthy child during the reproductive years. The CDC defines preconception care as a collection of medical procedures aimed at preventing and controlling health risks associated with a woman's behavior, biology, and social interactions, either before or during her pregnancy. Women of childbearing age should attain and maintain a healthy nutritional status before becoming pregnant to reduce the health risks to both mothers and infants. (2).

By acting now, preconception health and care seeks to safeguard the future health of an unborn child. Regardless of when they plan to start a family, men and women should place a high priority on preconception health. Optimal Health Before Conception It emphasizes how important it is to act immediately to safeguard the health of

their future child. The birth rate in the United States is still lower than in many other developed nations, despite these improvements. Many babies are underweight or born prematurely. For a few, the problems are getting worse. Preconception health care is different from preconception health. When it comes to prenatal care, everyone's needs vary. The doctor or another healthcare professional will recommend a treatment plan or follow-up care based on the patient's specific medical requirements. Anyone planning a pregnancy should be worried about their preconception well-being. It entails taking the initiative and making prudent choices. It entails living a purposeful life while also remaining happy and healthy. Making plans for the future. (3)

Preconception care is individualized treatment for people who are thinking about getting pregnant. Its primary objectives are to reduce morbidity and mortality among patients and fetuses, increase the chance of conceiving at the desired time, and provide contraceptive counseling to help prevent unintended pregnancies. Inter-conception care is the term used to describe the care provided between conceptions. A complete understanding of the patient's medical history, previous pregnancies, and pregnancy risk factors is essential for

providing interconception care. Throughout this position paper, the term "preconception care" refers to issues about "inter-conception care," unless a distinction is required because both types of care address the same risk factors. The strategic goals of Healthy People 2030 include preconception care and health improvement before, during, and after pregnancy. (4) Internationally, the number of pregnancy-related deaths has declined, but in the US, they have increased. (5) Birth outcomes in the United States are lower than in many other countries, high- and low-income alike. (6,7) Racial and ethnic disparities in pregnancy-related morbidity and mortality persist. (8) To improve reproductive health outcomes in several significant areas, the Centers for Disease Control and Prevention (CDC) released a report in 2006. (9) Despite attempts to enhance results and reduce infant and maternal mortality and morbidity, there are still significant disparities between American and European countries as well as between racial and ethnic groups in the US. (10).

The infant mortality rate is often a good indicator of the general health of a nation. The infant mortality rate in the United States is still higher than in many other high-income nations (10), even with recent declines. It is also higher among racial and ethnic minority groups within the nation. Improving prenatal care does not significantly improve the outcomes of prematurity and congenital malformations, which account for the majority of infant deaths in the United States. (8)

Drug use counseling is an essential part of preconception care. In the US, environmental factors related to pregnancy account for between 10% and 15% of congenital abnormalities. Prescription medications, illicit substances, exposure to chemicals, and ailments that impact mothers are among them. Since the late 1970s, the use of prescription drugs during the first trimester of pregnancy has increased by more than 60%; by 2008, half of pregnant women reported taking at least one medication. In a study conducted between 2006 and 2008, more than 80% of pregnant women reported using at least one OTC or prescription medication during the first trimester. (11,12,13).

Problem Statement:

It is largely unknown how often Pre-Conception-Care (PCC) is understood in the nursing field and among women who are more likely to have unfavorable pregnancy outcomes in the majority of

African countries in general and in Sudan in particular.

Rationale and Justification:

In response to the high maternal mortality in Sudan, therefore, preconception care is an essential issue to improve Pregnancy outcomes and to reduce the risk of complications for both the mother and the unborn because the child may be significantly influenced by the maternal health status before conception., therefore, it is necessary to prepare care providers(nurses) and to conduct this study to evaluate the awareness.

Aim of the study:

To investigate the knowledge and awareness about preconception care among Nursing students at the faculty of Nursing Sciences - University of Medical Sciences and Technology. Khartoum, Sudan.

Research question:

*What is the Participants' knowledge about preconception care among Nursing students at the faculty of Nursing Sciences -University of Medical Sciences and Technology?

*Is there a presence of a relationship between students ' knowledge, and awareness about preconception care and socio-demographic characteristics?

Material and Methods:

Study Design: This descriptive cross-sectional intuitional study aimed to examine nursing students' knowledge at the Faculty of Nursing Sciences in UMST, Sudan.

Study Area: This study was conducted at the Faculty of Nursing Sciences (UMST) - Khartoum State. This is a private Sector (faculty) that graduates Baccalaureate, Master, and Doctorate degrees in Nursing Sciences in Sudan, which was established in 2008.

Study Populations: The study population was nursing students from the Faculty of Nursing Sciences (UMST) who selected based on the following criteria: Students, from each level who were agreed to participate in the study and excluded participants were students from other nursing faculties, students from Nursing Diploma program and students who refused to participate in this study. The sample participants of this study

were randomly selected from lists of students based on the inclusion and exclusion criteria.

Sampling Technique and Sample Size: The participants were approached and informed about the study's purposes, and those who agreed to participate were given a questionnaire to complete. The anonymity and confidentiality of the participants were ensured throughout the study.

Random sampling technique was used in this study, and the sample size was calculated according to the following equation: $n = N/1+N(d^2)$, where n = sample size, N = population size, d = degree of accuracy desired (the accepted margin of error was 0.05).

$n = 390/1+390(0.05)^2 = 390/1.975 = 198$ students

Thus, the sample size should be 198 students, but 193 students completed the questionnaire and only 5 students refused to participate.

Data Collection Technique: The nursing students from the faculty of nursing sciences were invited to participate in the study via a face-to-face self-administered questionnaire, which was distributed during the meeting. Explanations about the study's purpose and data collection and the tool of data collection were provided to the participants before enrollment.

Data Collection Tools: Data was collected by disseminating a pre-tested well-designed questionnaire to all participants which contained (10) questions to select the appropriate option/s that fit the participants' knowledge after explaining the purpose of the study and consideration of confidentiality. A questionnaire that includes two sections. The first section is about participants' sociodemographic characteristics such as age, gender, level of education, and marital status. The second section was for participants' knowledge using the Likert-type scale with ten (10) items, and the participants ranked their knowledge for each of the 10 listed answers (14). The Likert scale used in the questionnaire was a 3-point scale ranging from known, neutral to do Not Know, with response options for each item presented in Table 1 of the manuscript. The validity and reliability of the used questionnaire were assessed, and the Cronbach's Alpha scale was 0.82.

Ethical Consideration:

When a student met the requirements for inclusion, the researcher approached them and went over the purpose, advantages, and potential risks of taking part in the study. It was also stressed that students had the freedom to choose whether or not to voluntarily join the study and to stop at any time. Written informed consent was obtained after they gave their consent. Participants' anonymity was respected and the confidentiality of the collected data was guaranteed. Additionally, privacy was protected while the study was being conducted.

Data analysis: The data was analyzed using the Statistical Package for Social Sciences (SPSS) version 22. Descriptive statistics were used to calculate the frequencies and percentages of variables, and the results were presented in tables and figures. The relationships between the demographic characteristics and the level of participants' knowledge using an independent t-test. A p-value of <0.05 was considered statistically significant. It is important to note that no inferential statistics were employed in this study.

Results:

Table (1) represents the sociodemographic characteristics of 193 students at the Faculty of Nursing Sciences (UMST). The empirical results showed that most of the participants (88.6%) were females their age is Less than 18 years old, most of them their an education level from level 2, only (2.1%) were married and the vast majority (97.9%) were single near half of the study sample their Source of information about preconception care was from Faculty's curriculum.

Table (2) shows the detailed knowledge concerning preconception care among 193 nursing students as participants, more than fifty (59.6%) of participants knew the definition and meaning of preconception care, only (42.5%) didn't know the goal of preconception care while(54.9%) knew , regarding the benefits of preconception care (54.9%)of participants they were aware and (42.5%) did not know, when participants asked about the Proper time of preconception care (at least), more than half (52.3%) knew while (41.5%) didn't know, Regarding knowledge about the types of assessment done in preconception care more than two third of participants knew the types and only (20.7%)of them did not know,(57.5%) of participants knew the pre conception care items and only(39.9%) did not know, (62.7%) of study group aware about the Essential diseases that

should be investigated and screened in the preconception care and few of them (35.8%) did not aware, near half of respondents (49.2%)knew the important vaccinations that should be taken in preconception care, more than two-third (68.9%)of participants have knowledge concerning Counseling issues and only(25.9%) did not know, when asking the participants about their roles regarding pre conception care , near two-third (64.8%) aware by their roles .

Finally, the overall knowledge scored as follows: Good knowledge was (46.1%), fair knowledge was (18.1%) and poor knowledge was (35.8%).

Table (3) displayed the statistical differences between the participants' sociodemographic traits

and their level of knowledge. The study's findings demonstrated a strong significant correlation ($P \leq 0.05$ level) between the participants' age and educational attainment and their knowledge level. P. V. for both was 000.

Figure (1) Explains the age of the Participants, the study findings revealed that most of the participants their age less than 18 years old, and few of them their age more than 23 years old.

Figure (2) Explores the total knowledge scored by participants concerning preconception care the findings: showed that the good knowledge was 46.1%, fair knowledge was 18.1% and poor knowledge was 35.8%.

Table (1): Socio-demographic characteristics of participating nursing Students, N=193.

Item	n	%
Age (Years)		
Less than 18	55	28.5
18 – 20	50	25.9
21 – 23	46	23.9
More than 23	42	21.8
Mean \pm SD	2.3 \pm 1.1	
Gender		
Male	22	11.4
Female	171	88.6
Level of education		
Level 2	55	28.5
Level 4	50	25.9
Level 6	46	23.8
Level 8	42	21.8
Marital status:		
Single	189	97.9
Married	4	2.1
Separate	0	0.0
Divorced	0	0.0
Widowed	0	0.0
Source of information about preconception care		
Social Media	53	27.5
Radio and Television	10	5.2
Faculty's curriculum	88	45.6
Family/friends/relatives	41	21.2
Other	1	0.5

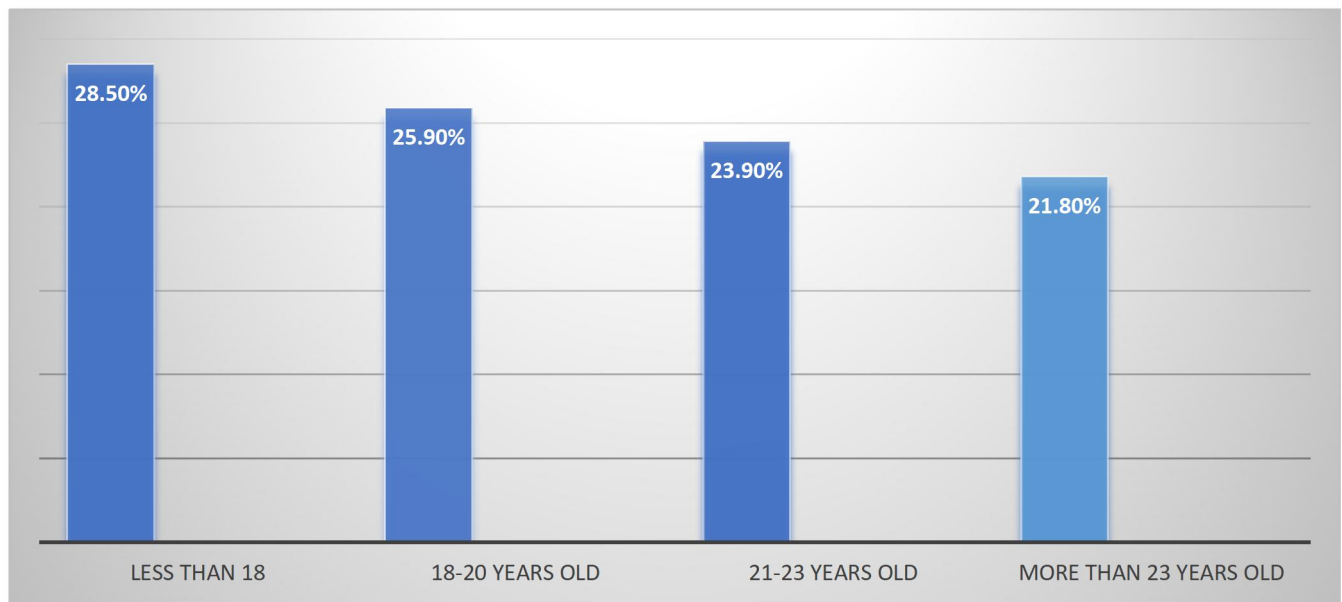


Figure (1) Age of Participants, N=193

Table (2): Frequency distribution of the knowledge concerning preconception care among the Study Sample, (N=193).

Item	Know		Neutral		Do Not Know		Mean \pm SD
	N	%	N	%	N	%	
Preconception care is defined as care that a woman receive before she gets pregnant It involves taking care of problems that might affect her and her baby later. or it is the health of people during their reproductive years, or the years they can have a child.	115	59.6	5	2.6	73	37.8	1.4 \pm 0.5
The goal of preconception care is to:							
1. Improve pregnancy outcomes							
2. Women's health in general through prevention of disease and management of risk factors that affect pregnancy outcome							
3. The health of future generations	106	54.9	6	3.1	82	42.5	1.4 \pm 0.6
The benefits of preconception care are:							
1. Reduced child and maternal mortality.							
2. Preventing complications during pregnancy.							
3. Preventing complications during delivery.							
4. Preventing stillbirths, preterm labor, and preterm birth.							
5. Preventing low birth weight.							
6. Reducing neonatal infections.							
7. Preventing the transmission of STDs/HIV.							
	124	64.2	6	3.1	63	32.6	1.4 \pm 0.5
Proper time of preconception care (at least)							
- Three months before pregnancy	101	52.3	12	62.2	80	41.5	1.5 \pm 0.6
Types of assessment done in preconception care?							
1. Vital signs							
2. General Physical assessment							
3. Obstetrics assessment	143	74.1	10	5.2	40	20.7	1.3 \pm 0.6
Pre-conception care items are:							
1. Lifestyle management (Smoking cessation,	111	57.5	5	2.6	77	39.9	1.5 \pm 0.5

Alcohol cessation, eating nutritionally balanced diets)							
2. Weight management							
3. Folic acid intake							
4. Cervical cancer							
5. Sexually transmitted infection							
6. Dental care							
The Essential diseases that should be investigated and screened in the preconception care?							
1. Screen of hereditary diseases							
2. Screen for sexually transmitted diseases and HIV							
3. Screen of infectious diseases (rubella, toxoplasmosis,)							
4. Screen for chronic diseases	121	62.7	31.6		69	35.8	1.4±0.5
The important vaccinations should be taken in preconception care?							
1. Hepatitis P Virus (HPV)							
2. Tetanus vaccination							
3. Infectious diseases	95	49.2	5	2.6	93	48.2	1.6±0.5
Counseling issues must be addressed in preconception care:							
1. Antenatal follow-up							
2. Exercises during pregnancy							
3. Dietary regimen during pregnancy							
4. Vaccinations							
5. Labour and labor process	133	68.9	10	5.2	50	25.9	1.4±0.6
The role of nurses in preconception care:							
1. Assessment and history taken							
2. Physical examination							
3. Immunization and family planning							
4. Counselling	125	64.8	7	3.6	61	31.6	1.4±0.6
Total Knowledge Score (Mean ±SD)	12.9 ±5.5						

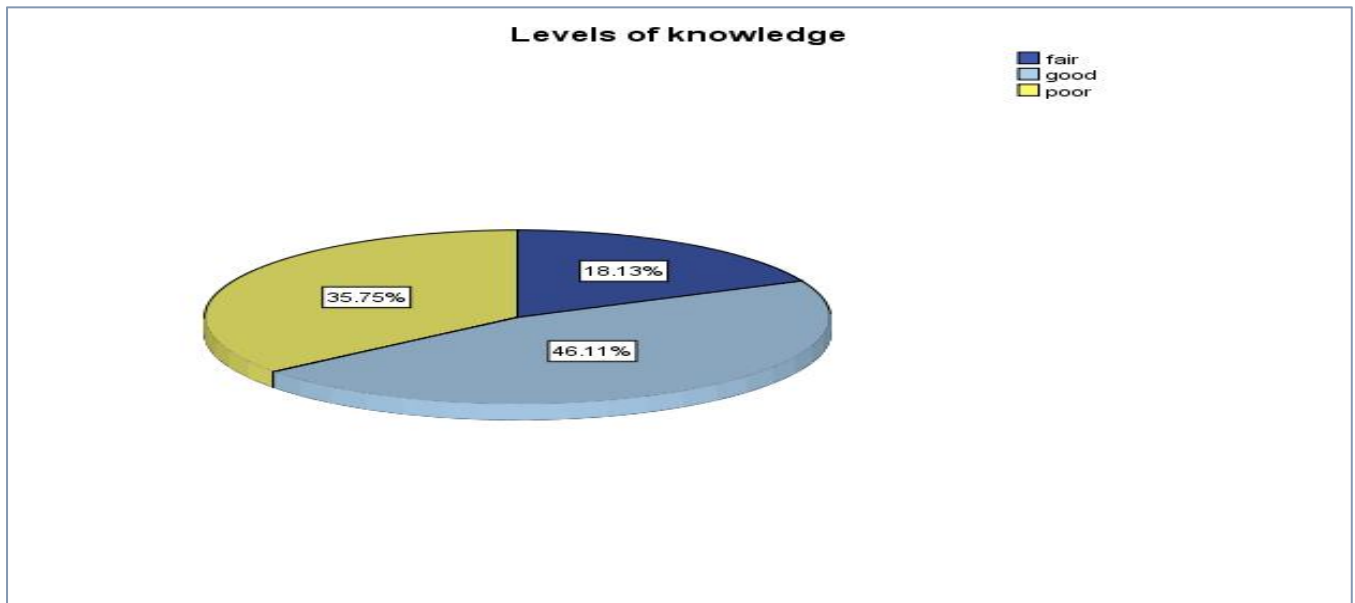


Figure (2) Levels of Knowledge about Preconception Care among Study Group(n=193)

Table (3) Relationship between demographic characteristics and Knowledge levels of nursing Students at Faculty of Nursing Sciences (UMST) Khartoum, (N=193)

Variable	(Mean ±SD) of knowledge level	P-Value
Age	Less than 18 years	.000**
	18- 20 years old	
	21-23 years old	
	More than 23 years old	
Gender	Male	.692
	Female	
The educational level of the participants	Level 2(first year)	.000**
	Level 4(second year)	
	Level 6(third year)	
	Level 8(fourth year)	
Marital Status	Single	.059
	Married	
	Separated	
	Divorced	
	Widowed	

Discussion:

In 2010 287,000 women worldwide passed away from pregnancy- and childbirth-related causes, and many more suffer from permanent disabilities (15). In this study, the WHO scale of knowledge was used which classified the knowledge as follows: (>75% good knowledge - 75%-50% fair knowledge - <50% poor knowledge) this scale was used to assess the levels of knowledge of participants scored.

The current study revealed that the source of information about preconception care was obtained from the faculty's curriculum, social media, family/relatives/friends, and Radio/television, this result is different from to study done by Shibata (16) in a rural town in central Japan, it was stated that the mass media, the Internet, and friends and family were the participants' main information sources. In contrast to a study conducted by Hawi Abayneh in 2022 in the West Shoa Zone of Ethiopia, which found that 52.4% of care providers were married and under the age of 18, the current study indicated that the majority of participants

were single and that the majority of them were from level 2 at the nursing faculty. (17) The results of the current study showed that there was no statistically significant difference in the other variables, but there was a highly significant difference in the participants' knowledge and age (0.00) and education level (0.000) respectively. Preconception care addresses and manages biochemical, behavioral, and social factors that may jeopardize a woman's health or the outcome of her pregnancy. Preconception care is defined by most participants as any treatment a woman receives before becoming pregnant, as indicated by the study's results. This involves taking care of matters that could later affect her and her child. This result is comparable to that of a study conducted in the West Shoa Zone of Ethiopia (17), which reported that (48.2%) of obstetric care providers had good knowledge about preconception care; however, it differs from that of a study conducted at the Maternity Hospital, ElGalaa Teaching Hospital, Cairo, Egypt, which reported that participants had poor knowledge. (18). Furthermore, the current study's findings revealed that the majority of participants agreed that the

primary goals of preconception care are to: improve the health of future generations and women in general by preventing disease managing risk factors that influence pregnancy outcomes; and improving the health of future generations while pregnant. A healthy family is the foundation of a healthy society, and preconception care affects these families. Preconception care has been shown to benefit people individually, as well as families and entire societies. These advantages for women include having control and choosing healthy lifestyle options. Preconception care not only improves health and well-being but also specifically reduces the risk of low birth weight, prevents stillbirths, preterm labor, and premature delivery, avoids pregnancy-related complications, avoids delivery-related complications, and lowers the risk of neonatal infections. These issues should be taken into consideration before getting pregnant: Diet, exercise, folic acid consumption, cervical cancer screening, STDs, and dental care, from the study's findings, fortunately, more than half of the participants were aware of these six items and few of them didn't, this result was similar with result that conducted at Mzuzu City, Malawi which mentioned that Most women were aware by things needed to promote a healthy pregnancy. (19)

The foundation of preconception care is physical assessment, which consists of three sorts of assessment points: vital signs, general physical assessment, and obstetrics assessment. The majority of participants had a solid understanding of these three types of assessments. Regarding essential diseases that occur during the preconception period, more than half of the participants were oriented by these diseases and only a few of them didn't know. Many diseases are preventable by vaccination, so vaccinations in preconception care are HPV (hepatitis B virus) vaccination, Tetanus vaccination, and other infectious disease vaccinations, participants who knew all these three vaccinations acted as nearly half (49.2%) of the study group.

Preconception counseling can significantly reduce the rates of morbidity and mortality for mothers and infants, as nearly half of the 200 million pregnancies that occur each year are unplanned. To optimize a person's health both before and during pregnancy, preconception counseling involves risk assessment, health promotion, and education. Antenatal care, prenatal exercise, prenatal nutrition, vaccinations, labor and delivery protocols, and the

labor and delivery process are some of these factors, this study's findings revealed that more than two-thirds have good knowledge about preconception counseling areas, and only one-third didn't know. Nurses play a crucial role in preconception care. This outcome was comparable to that of a study conducted in Mzuzu City, Malawi (19).

Conclusion:

The study finds that the majority of participants have good knowledge and know a lot about preconception care, there was a relationship between the educational level and knowledge of participants, so the study recommended that refresher training courses about preconception care should be conducted continuously and future studies to assess the practical skills concerning preconception care should be conducted.

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