THE EVIDENCE

www.evidencejournals.com

Research Article | Public Health

Check for updates

Sociodemographic determinants of preconception care use among future healthcare professionals: a cross-sectional study in Ghana

Mubarick Nungbaso Asumah[1,*], Abdulai Abubakari[2], Abdul-Manaf Mutaru[2], Issah Sumaila[3], Hikmatu Nyefianto Asumah[4], Abdulmalik Abdulai[1], Ibrahim Issah[1], Joshua Dindiok Dubik[5], Adisa Osman[1], Mulika Fasasi[1], Victoria B Yarrow[6], Zeinab Abubakari[1], Fatimata Yakubu[1], Mohammed Mutawakil Ibrahim[1], Amina Yapaga Ewuntomah[7], Francisca Abangbila[1]

[1] Ministry of Health, Nurses' and Midwives' Training College, Tamale, Northern Region, Ghana.
[2] Department of Global and International Health, School of Public Health, University for Development Studies, Tamale, Northern Region, Ghana.
[3] Ghana Health Service, Kintampo Municipal Hospital, Kintampo, Bono East Region, Ghana.
[4] Department of Midwifery and Womens' Health, School of Nursing and Midwifery, University for Development Studies, Tamale, Northern Region, Ghana.
[5] Department of Advance Nursing School of Nursing and Midwifery, University for Development Studies, Tamale, Ghana.
[6] Nursing Training College, Wa, Upper West Region, Ghana.
[7] Ghana Health Service, Northern Regional Hospital, Tamale, Northern Region, Ghana.

*Correspondence:nungbaso.asumah@uds.edu.gh

Cite this Article

Asumah MN, Abubakari A, Mutaru AM, Sumaila I, Asumah HN, Abdulai A, Issah I, Dubik JD, Osman A, Fasasi M, Yarrow VB, Abubakari Z, Yakubu F, Ibrahim MM, Ewuntomah AY, Abangbila F, Sociodemographic determinants of preconception care use among future healthcare professionals: a cross-sectional study in Ghana. The Evi. 2024:2(3):1-. DOI:10.61505/evidence.2024.2.3.88 Available From

Received:	2024-07-03
Accepted:	2024-07-12
Published:	2024-07-12

Evidence in Context

• Assessed predictors of preconception care among healthcare trainees in Ghana. • Identified low knowledge but high future willingness to use preconception care. • Schools and teachers were primary information sources about preconception care. • Emphasized the need for enhanced health education and accessibility to preconception services. • Highlighted the gender disparity, with females more likely to utilize preconception care services in the future.

To view Article

Abstract

Background: Preconception care (PCC) is a comprehensive health intervention for women and couples to optimize parental and future child health, particularly for tertiary students at risk of poor reproductive complications. The study assessed the predictors of preconception care use among future healthcare professionals in Ghana.

Method: The research employed a cross-sectional study design involving 404 students selected from four health training institutions. Multivariate regression analysis was conducted to determine the relationship between the utilization of Patient-Centered Care (PCC) and sociodemographic factors. A p-value <0.05 was considered significant.

Results: Less than half (49.3%) knew about PCC. A higher proportion of those who were aware of PCC (47.2%) indicated schools/teachers as their sources of information. In terms of PCC, only 22.3% had ever utilized PCC services, however, 77.5% of the respondents were willing to use PCC services in the future. Participants aged (AOR=2.27, 95%CI;1.00-5.12)]., respondents whose mothers had higher education status (AOR=2.99, 95%CI;1.21-7.37) and fathers with basic education (AOR=1.94, 95%CI; 1.01-3.70) were identified as a significant determinant to PCC utilization.

Conclusion: The study reveals low knowledge and utilization of PCC among health trainees in Savannah, Ghana. However, most of the participants are prepared for the adoption of PCC in the future. The factors influencing PCC utilization include parents' education and age.

Keywords: *preconception care, healthcare trainees, sociodemographic predictors, health education, reproductive health, Ghana*

Introduction

Preconception care (PCC) is a concept that involves assessing a couple ready to start a family [1]. Preconception care is defined as the implementation of any measures provided to women of childbearing age, irrespective of their current pregnancy status or intentions, to improve the well-being of mothers, newborns, and offspring before conception [2]. World Health Organization (WHO) defines PCC as "... the *provision of biomedical, behavioral and social health interventions to women and couples before conception occurs.It aims to improve your health status and reduce behavioral and individual and environmental factors that contribute to poor maternal and child health outcomes…"[3]*. This is an important element of mother and child health that is often overlooked, particularly in underdeveloped nations [4]. PCCis one of the recommended preventive methods of the World Health Organization (WHO) recommended preventative methods in maternal and Newborn Health (MNH) and is regarded as practicable for allcountries [5]. MNH continues to be a global health issue. According to WHO, even wherecomprehensive public health programs are in existence and are utilized, women who become pregnant with healthy conditions are still not assured [6]. As a result, specific efforts such as PCC are recommended during the prenatal period or early stages of pregnancy to achieve maximum beneficial health outcomes [5].

Although the WHO recommended the implementation of PCC almost a decade ago, there is still no universal agreement on its role in preventing infant and maternal death and illness [7]. In sub-Saharan Africa (SSA), PCC services are not routinely practiced [8,9]. For example, an evaluation of maternal health (MH)in SSA in 2011 showed that most countries had inadequate use of PCC due to low socioeconomic background, lack of health care professionals (HCP), lack of formal education, and a misunderstanding about MH [10]. Another study performed in Ethiopia that more than 70% of women in their reproductive ages had an insufficient understanding of PCC [11].

The personnel in the health services professions play a critical role in providing useful information to the general population on PCC [3]. This is especially manifested in their ongoing provision of public awareness on issues related to general health issues and interventions. Unfortunately, evidence from the literature shows that even HCPs who should be informing the general public about PCC seem not to be well informed themselves, to enable them to deliver effective education. For example, available literature in Europe [12], the United States of America (USA) [13], Ethiopia [8], and Egypt [14] revealed that the majority of HCPs who wish to provide PCC services lacked the necessary knowledge of the concept. In addition, a study conducted in Nepal showed that most nursing students did not have adequate knowledge about PCC [15].

In Ghana, there is minimal data to support the effective implementation of PCC interventions [16,17]. Maternal and child mortality and morbidity remain a public health concern in Ghana [18]. It has been further evidenced that 12 out of 100 (12.1%) deaths among women between the ages of 15 to 49 years are pregnancy-related [19]. Despite Ghana being rated as having robust antenatal care, the country has the highest maternal mortality rates (MMR) in the subregion (SSA) [20]. Although the rate of maternal mortality is declining, Ghana could not meet the 2015 MMR and mortality rate targets [18]. Unfortunately, PCC services are not typically included in current reproductive health services [21]. All these factors require the comprehensive implementation of PCC services.

The use of preconception care is related to the higher utilization of MNH services [22]. As such, attention should concentrate on both the beneficiaries and providers of PCC services to identify the major concerns that will drive the use of the service shortly. In the Savannah Region of Ghana, there are limited preconception care services centres and no empirical evidence has been found to address the situation. Students at the tertiary level have been reported to be prone to a variety of lifestyles and environmental risk factors that could lead to poor reproductive results [23,24]. For example, through the influence of peers, audio-visuals, the media etc., these students may engage in sexual activities, but because of their desire to advance on the academic ladder, they may resort to birth control methods. Some of these methods, if not sought by the appropriate professionals, may have consequences on their future ability to deliver. Although existing literature suggests that HCPs [8,12,13,25] and health trainees [15] are lacking in terms of PCC knowledge, their role in ensuring adequate use of PCC remains paramount. Similarly, the need to determine the situation among those who are still in training is crucial. When these health trainees acquire good knowledge

And attitude towards PCC, it is possible that they can influence senior colleagues on PCC services when they graduate, which will go a long way in increasing PCC practice levels among the general population. Furthermore, scientific studies rarely address health trainees' perceptions, associated factors, and ways to improve PCC services [21]. Specifically, the situation has been left largely unaddressed in the Savannah Region in general and Ghana in particular. Therefore, our study examines the predictors of preconception care use among health trainees in the Savannah Region of Ghana.

Methods

Study Setting

The research was conducted in the Savannah region of Ghana. The establishment of the Savannah Region took place through the utilization of Constitutional Instrument (CI) 115, designating Damongo as its regional capital. Spanning an area of 46,922 square kilometers, the Savannah region stands as the largest region in Ghana, encompassing close to one-fifth (1/5) of the nation's total land area. The northern international borders of the region are shared with the Upper West Area, while the western borders are with Ghana-Cote d'Ivoire and Burkina Faso. To the south, it borders the Bono and Bono East regions, and to the east, the North East and Northern regions. There are two (2) municipalities and five (5) districts in the Savannah region. According to the population of 2021, the population of the region is 653,266 with a 3.1% annual population change. The region has three names for health trainee institution names; Damongo Nurses Training School, Kpembi Nursing and Midwifery Training College, and Bole Community Health Nursing Training School.

Study Design

The study used the school-based analytical cross-sectional study design with an emphasis on the quantitative research approach. Being the first study in the study area, the design was employed because it allows researchers to examine the use of pre-conception care (PCC) services and, at the same time the associated factors influencing the future use of PCC.

Study population

The study population included all students in the health training institution within the Savannah region of Ghana.

Inclusion and exclusion criteria

The study recruited only students with active student identification cards within health training institutions in the Savannah region of Ghana and those who voluntarily consented to participate in the current study. Students who live in the Savannah region but study in institutions outside the region were excluded. Those who refused to participate in this study were also excluded.

Sample size and sampling techniques

The sample size was calculated using the Snedecor & Cochran, (1989) formula; N=(Z^2*pq)/m^2.

N represents the sample size, Z denotes the z score corresponding to a 95% confidence level, which is equal to 1.96, and p indicates the percentage of health trainees expected to utilize PCC services in the future, estimated at 50%. The selection of 50% stems from its ability to yield the largest sample size based on the prescribed formula. Additionally, q stands for the projected proportion of health trainees who will not engage in PCC (calculated as 1-p to account for a study error of 0.5), while m symbolizes the margin, set at 5% or 0.05 for the purpose of this investigation.

(〖(1.96)〗 ^2*0.5(1-0.5))/ 〖(0.05)〗 ^2 =384.16

With a non-compliance and response rate of 5%, the sample size was determined to be 404. Consequently, 404 health trainees will be the minimum number considered to be representative of the population. In terms of sampling techniques, the study employed the proportionate stratified sampling method. This was selected to give precision to the result emanating from this study. These sampling techniques also reduce the chances of the researcher manipulation and sampling

Biases. It also ensures that all students at the health training institutions in the Savannah Region are equally represented. Annexure I represent the total number of students in healthcare institutions in Savannah and the corresponding number of participants recruited in this study.

Data Collection Tools and Techniques

Data were collected using a structured questionnaire. The questionnaire was derived from previous research [7,8] and revised to fit the study objectives. Because the majority of the respondents could read and write in English, thequestionnaires were given to the participants to fill out and return to the researchers.Data were collected from July to September 2022. The questionnaire was structured into four sections:

Section A included a variable on sociodemographic and sexual characteristics of the participants (that is, age, sex, educational level, religion, marital status, mother's educational level, father's educational level, average monthly income, had sex, unprotected sex, and use modern contraceptives).

Section B entails variables on knowledge of preconception care. Section C contains questions on the attitude towards PCC. Section D contains questions/variables on the use of PCC services.

A total of 30 students from the Yendi College of Health were recruited for pretesting. After the pre-testing, some questions which were not well understood by the respondents were remodified to ensure clarity. Also, two questions were removed because they were already captured in the study in different words. Generally, the outcome of the pre-test was used to further shape the questionnaire to ensure that the best response was obtained from the study participants. Face and content validating was also carried out by giving the questionnaire drafted after the pre-testing to two professors at the University for Development Studies, Ghana, and one lecturer from the tertiary schools recruited for the study to suggest ways to simplify the questions for easy understanding of the respondents. All these were put into the final draft and then data collection commenced.

Data management, analysis, and presentation of results

Prior to inputting the data, a thorough examination of all questionnaires was conducted to ensure completeness. Following the completion of data analysis, the dataset underwent a cleansing process in Microsoft Excel before being imported into Stata version 14 for the purpose of conducting formal data analysis. The analytical procedure encompassed two distinct stages, namely descriptive and inferential analysis, culminating in the presentation of results in tabular format.

Bivariate analysis was used to establish the association between willingness to use PCC in the future and the sociodemographic characteristics of the health trainees.

A multiple logistic regression model was estimated to identify the predictors of future use of PCC among health trainees. To eliminate the confounding variables, a p-value of less than 0.25 at the bivariate level in the logistic regression model**.** A p-value less than 0.05 was established as statistically significant.

Results

Sociodemographic / Sexual Characteristics of Participants

Table 1 shows the sociodemographic and sexual characteristics of the participants. Most of the participants (83.2%) were between the ages of 20 to 29 years. The minimum and maximum ages were 18 and 38 years, respectively, with the median age being 22 years. The majority of the participants (55.7%) were men, 66.6% were Muslims, 92.1% had never been married and 55.4% had ever had sex. A higher proportion (37.4%) of the students were in their first year of study at the tertiary level.

Table 1: Sociodemographic/Sexual characteristics of participants (N=404)

Variable	Category	Frequency	Percent
Age	< 20 years	47	11.6

	20 -29 years	336	83.2
	30-39 years	21	5.2
Gender	Male	225	55.7
	Female	179	44.3
Education Level	Level 100	151	37.4
	Level 200	123	30.4
	Level 300	130	32.1
Religion	Muslim	269	66.6
	Christian	135	33.4
Marital status	Single	372	92.1
	Married	32	7.9
Mother's education level	No formal education	205	50.7
	Primary education	61	15.1
	JHS	45	11.1
	SHS	39	9.7
	Tertiary	54	13.4
Father's education level	No formal education	175	43.3
	Primary education	56	13.9
	JHS	71	17.6
	SHS	14	3.5
	Tertiary	88	21.8
Average monthly Income	< GHS 500	300	74.3
	> GHS 500	104	25.7
Ever had sex	Yes	224	55.4
	No	180	44.6
Practiced unprotected sex	Yes	182	45
	No	222	55
Ever used modern contraceptive	Yes	151	37.4
	No	253	62.6

Knowledge of participants on preconception care

The knowledge of preconception care among participants is shown in **Table 2.** Less than half (49.3%) of the respondents were aware of PCC; of which 47.2% cited school or teachers as their source of information, followed by health workers (29.7%), friends (21.15), and media (2.0%). The majority of participants (88.1%) knew that PCC should be given to couples before pregnancy, 90.3% indicated that PCC provides preventive treatment to couples, 73.8% believed that PCC should start at least 4 weeks before conception, and 81.9% knew that drugs and alcohol abuse should be reduced or stopped before conception.

Table 2: Awareness of participants on preconception care (N = 404)

Variable	Category	Frequency	Percent
PCC awareness			
	No	205	50.7
	Yes	199	49.3
Source of information (n=199)			
	Friends	42	21.1
	Health workers	59	29.7
	Media (TV/Radio)	4	2
	School/teacher	94	47.2
PCC given to couples before pregnancy			
	No	48	11.9
	Yes	356	88.1
Good health before conception important			
	No	33	8.2

	Yes	371	91.8
PCC is patronized during pregnancy			
	No	307	76
	Yes	97	24
PCC ends at the beginning of pregnancy			
	No	235	58.2
	Yes	169	41.8
Early detection and management part of PCC			
	No	64	15.8
	Yes	340	84.2
PCC provides preventive treatment			
	No	39	9.7
	Yes	365	90.3
ANC is an extension of PCC			
	No	114	28.2
	Yes	290	71.8
Eligible PCC clients include reproductive age			
	No	48	11.9
	Yes	356	88.1
PCC starts 4 weeks before conception			
	No	106	26.2
	Yes	298	73.8
Reducing drug and alcohol before conception			
	No	73	18.1
	Yes	331	81.9
Recommendation for good birth spacing			
	5 years and above	37	9.2
	Between 2 to 4 years	324	80.2
	One year	43	10.6

The attitude of Participants toward preconception care

The majority of the participants (93.6%) believed that PCC is important for every woman, 92.8% said that PCC is important during reproductive years, 70.0% said PCC has implications on pregnancy and delivery outcomes, 55.4% believed that PCC is a neglected part of the maternal and child welfare, 88.4% believed that PCC is as important as antenatal care (ANC), 98.0% believed all reproductive women should take folic acid supplementation. More participants (57.9%) believed that private hospitals were best for PCC services compared to 47.5% who believed that government hospitals were best for PCC services **(Table 3).**

Table 3: Attitude of participants on preconception care (N = 404)

Variable	category	Frequency	Percent
Preconception care is important for every woman			
	No	26	6.4
	Yes	378	93.6
Preconception care is important during reproductive years			
	No	29	7.2
	Yes	375	92.8
Preconception care has implications for pregnancy and delivery			
	No	121	30
	Yes	283	70
Government hospitals are the best for PCC			
	No	212	52.5
	Yes	192	47.5

Private hospitals are the best for PCC			
	No	170	42.1
	Yes	234	57.9
Preconception care is a neglected part of maternal and child welfare			
	No	180	44.6
	Yes	224	55.4
Preconception care is as important as ANC			
	No	47	11.6
	Yes	357	88.4
For all reproductive women taking 0.4 mg (400 mcg) of folic acid daily is good			
	No	8	2
	Yes	396	98
A woman planning pregnancy should aim for 30 minutes of moderate exercise 5 days a week			
	No	61	15.1
	Yes	343	84.9
Infertility screening and management is not the concern of preconception care			
	No	256	63.4
	Yes	148	36.6

Utilisation of PCC services

The use of PCC among participants is shown in **Table 4**. Although only 22.3% of participants have ever used PCC services, 77.5% of the participants are willing to use PCC services in the future. The majority of participants (62.1%) exercise every week, 60.1% knew their status of HIV / AIDs, 75.5% knew their blood groups, 86.4% will consider the partner blood group before marriage, 96.5% will consider sickling status before marriage, 86.4% will consider fertility status before marriage, while 94.6% will test and treat sexually transmitted infections (STIs) before marriage. Only 23.8% of the participants or their partners took folic acid every day.

Table 4: Utilisation of PCC services

Variable	Category	Frequency	Percent
Ever used PCC services			
	Yes	90	22.3
	No	314	77.7
Will you use PCC in the future?			
	Yes	313	77.5
	No	91	22.5
Do you undertake exercise each week?			
	Yes	251	62.1
	No	153	37.9
What kind of exercise do you do?			
	Jogging	120	47.8
	Skipping	4	1.6
	Squatting	11	4.4
	Sweeping	25	10
	Walking	91	36.3
Do you or your partner take folic acid daily?			
	Yes	96	23.8
	No	308	76.2
Know your HIV/AIDS status			
	Yes	243	60.1
	No	161	39.9
When last did you check your HIV/AIDS status (n=243)			
	< 6 months	95	39.1

> 6 months	148	60.9
Do you know your blood group?		
Yes	305	75.5
No	99	24.5
Would you consider a partner blood group before marriage?		
Yes	349	86.4
No	55	13.6
Would you consider partner sickling status before marriage?		
Yes	390	96.5
No	14	3.5
Would you consider fertility status before marriage		
Yes	349	86.4
No	55	13.6
Would you test and treat STDs before marriage		
Yes	382	94.6
No	22	5.4

Predictors of PCC service's future usage

In **Table 5**, the factors that could influence the future adoption of PCC services are presented.

The study showed that participants 20 years and above were 2.27 times more likely to use PCC in the future compared to their counterparts younger than 20 years (AOR=2.27, 95% CI; 1.00-5.12).

The study also revealed that the males were 51.0% less likely to use PCC services in the future compared to their female colleagues (AOR = 0.49, 95% CI;0.29-0.82).

Furthermore, participants whose mothers had SHS and above the level of education were 2.99 times more likely to practice PCC in the future compared to those whose mothers had no form of education (AOR=2.99, 95% CI; 1.21-7.37).

Finally, the study showed that participants whose fathers had basic education were 1.94 times more likely to use PC services in the future compared to those fathers with no formal education (AOR=1.94, 95% CI; 1.01-3.70).

Table 5: Predicators of PCC services future usage

Determinants	Measures	PCC use in future		P value	COR (95% CI)	AOR (95% CI)
		Yes	No			
Age				P=0.205		
	< 20 years	33(70.2%)	14(29.8%)		Ref*	Ref*
	≥ 20 years	280(78.4%)	77(21.6%)		1.54(0.79-3.033)	2.27(1.00-5.12) *
Gender				p=0.001		
	Female	152(84.9%)	27(15.1%)		Ref*	Ref*
	Male	161(71.6%)	64(28.4%)		0.45(0.27-0.74) **	0.49(0.29-0.82) **
Level of education				p=0.223		
	Level 100	110(72.8%)	41(27.2%)		Ref*	Ref*
	Level 200	98(79.7%)	25(20.3%)		1.46(0.83-2.58)	1.13(0.59-2.17)
	Level 300	105(80.8%)	25(19.2%)		1.57(0.89—2.75)	0.99(0.47-2.13)
Religion				p=0.106		
	Christian	111(82.2%)	24(17.8%)		Ref*	
	Muslim	202(75.1%)	67(24.9%)		0.65(0.39-1.10)	1.01(0.55-1.84)
Marital status				p=0.094		
	Single	292(78.5%)	80(21.5%)		Ref*	Ref*
	Married	21(65.6%)	11(34.4%)		0.52(0.24-1.13)	0.46(0.17-1.22)
Mother's education				p=0.002		

No formal education	148(72.2%)	57(27.8%)	Ref*	Ref*
Basic education	81(76.4%)	25(23.6%)	1.25(0.73-2.15)	1.02(0.55-1.92)
SHS & above	84(90.3%)	9(9.7%)	3.59(1.69-7.63)**	2.99(1.21-7.37) *
Father's education		p=0.065		
No formal education	126(72.0%)	49(28.0%)	Ref*	Ref*
Basic education	105(82.7%)	22(17.3%)	21.86(1.05-3.27)*	1.94(1.01-3.70)*
SHS & above	82(80.4%)	20(19.6%)	1.59(0.88-2.88)	0.85(0.39-1.86)

Ref*: Reference, p<0.05*, p<0.01**, p<0.001***, COR: Crude Odds Ratio, AOR: Adjusted Odds Ratio, CI: Confidence Interval.

Discussion

The current study examined the awareness and factors that could influence the future use of PCC among future health professionals in Ghana. The level of awareness in PCC was low (less than half 49.3%) in this study. This is consistent with a study in Malawi, it is reported that over 90% of health professionals (HCPs) acknowledged their involvement in preconception care but did not have detailed information about it [7] contrary to what was reported in Nepal [27] where over 90% knew about PCC and Nigeria [28] where 63.5% reported knowing about PCC. The disparity in findings may be due to variations in sampling. The previous studies mainly on females, while the current study included both genders. This thereby gave room for the influence of gender variation in responses. More studies are needed to explore the influence of gender variation in determining PCC utilization. This is especially imperative as a pointer to determine male involvement in ANC services. In addition, there is a need to reappraise the modes and dimensions of training, especially SRH courses in health training institutions, and adopt measures that would place more emphasis on PCC as an integral component of SRH. In doing so, the competency areas of trainees during their ANC clinical attachments should include a component of PCC where each trainee is expected to present a report after their field placement.

Although in this study diverse sources of information were identified, most of the health trainees heard about preconception care from school or health tutors, the other sources included health workers, family and relatives, and the media. All participants in this study were health trainees and they have sexual and reproductive health services included in their study curriculum. Hence, the reason for most of them attributing their sources of information to their tutors. The implication could be that health trainees listen to their tutors and when they are well educated, they can be in a position to implement the knowledge. However, a successful implementation of PCC will have several dimensions. The knowledge acquired by HCPs from their training is expected to culminate in their practices and increasing publicity on it. Also, awareness levels, access to, and willingness of the general population to accept and utilize the service are highly imperative. Therefore, future studies should be directed at non-health professionals to determine their awareness levels and sources of information. This is relevant in developing a comprehensive plan of health promotion that can be streamlined toward increasing awareness level, access to, and utilization among the general population.

The majority of the participants felt PCC is a neglected aspect of the MNH services. In most public-owned facilities in northern Ghana, PCC services are not efficiently implemented, especially in the current study setting [21]. These trainees often have their clinical training in these facilities. They observe and learn from those already in practice. Hence, the tendency for them to report what they have observed regarding the implementation of PCC service at the ANC and PNC could be expected. This calls on the districts and department heads to organize a series of workshops for already practicing HCPs on the components and comprehensive implementation process of MNH services. The successful implantation of this could be evaluated by incorporating these as part of the assessment criteria for promotion interviews for these HCPs.

Regarding the use of PCC among health trainees, only a quarter of respondents have used PCC services. On the contrary, other studies elsewhere reported higher use of preconception care services than the current study. For example, in China, 42.2% were reported to have used PCC services [29], and 34.2% utilization of PCC services was reported in Nigeria [30] before their recent pregnancy. The difference in this case points to the fact that a higher proportion of the study participants were not married and most of them not considering giving birth anytime soon. This is evident from the fact that more than 80.0% have an intention to use preconception care services

In the future. Although the participants agreed to the use of preconception care services in the future, it does not necessitate its actual usage, but this is reassuring going into the future. Munthali et al [7] postulated that HCPs' inadequate knowledge about PCC services has a direct relationship with its usage. That said, we raise another issue that poor awareness of health trainees on PCC might have also influenced low utilization in the current study. In light of the above, we strongly recommend in-service training programs for all health professionals to update their knowledge on the changing demands and skills of the professions. Knowledge acquisition in our view would not result in greater use of PCC services unless there is a deliberate health infrastructure development coupled with accessibility, affordability, and availability of the PCC services.

In this study, age has been determined as a predictor of future use of PCC by health trainees. Therefore, those over 20 years old were identified to have higher chances of utilizing PCC in the future. This position is supported by similar empirical findings in Brazil [31], Ghana [32], and Ethiopia [33], where increasing age is related to PCC usage. The role of age in influencing an individual's future utilization of PCC is quite anticipated. In certain parts of the world, including our study setting, the older an individual gets, the more ambitious they become in getting married. Since our study participants are health trainees, they are more likely to patronize PCC services. In addition, the majority of participants in this study attributed their sources of information regarding PCC to their tutors, while few attributed it to healthcare practitioners and media. The indication could be that PCC is taught in schools, with little being done about its implementation process, in terms of health promotion. Hence, the reason why several studies reported low knowledge of PCC care among HCPs [8,12–14]. To further establish the empirical veracity of this proposition, studies among non-healthcare practitioners are required to ascertain their awareness levels to make a juxtaposition. However, we recommend the need for to information increase access to PCC services through the media while filtering the content to reflect standard knowledge of PCC services. This would serve both healthcare and nonhealthcare practitioners, leading to increased awareness and subsequent utilization of the service.

In addition, the current study showed that more women were willing to use PCC in the future compared to their male counterparts. The intent to patronize the service being higher among females than their male counterparts is quite obvious, considering the study setting. In most of Ghana's traditions, infertility issues between couples are often blamed on women. This makes women more willing to accept and patronize reproductive health services, which are expected to improve their health. This is done to make them free from the issues of infertility in their marital homes. Again, the need to use the media to propagate the knowledge on PCC and the need for its utilization is proposed.

Lastly, parental education has been established to be a significant determinant of the future use of preconception care. Participants whose fathers had JHS or tertiary qualifications had a greater chance of using PCC services in the future, while those with SHS qualifications were less likely to utilize them. Although not exactly as reported by Abor et al [32], the influence of formal education on PCC use can be visualized from both studies. In addition, most people turn to advice from their parents, especially on issues relating to marriage. Parents who have acquired formal education can probably advise their children on the importance of PCC, creating the desire for them to patronize the service. Therefore, this study underscores the influence of formal education and knowledge on PCC utilization.

Limitations

This was a cross-sectional study in health training institutions. The fact that this study used cross sectional study, was conducted among health trainees and conducted in a single-country limits the generalization of the findings.

Conclusions

There is an inadequate level of awareness and utilization of PCC among health trainees in the Savannah Region, Ghana, although most health trainees are willing to use PCC services in the future. Age and parental education levels are key determinants of PCC utilization, with women more ready to accept than men. There is a need to increase access to PCC services while promoting them through the media, as well as organizing refreshing programs for HCPs and students.

Supporting information

None

Ethical Considerations

The study was carried out in strict compliance with the principles of the Declarations of Helsinki. First, ethical clearance was obtained from the Human Research, Publications & Ethics Committee (CHRPE) with reference number (CHRPE/AP/420/22). The head of all training institutions in this study. Before participating in this survey, each respondent gave their permission. After receiving complete information about the study, participants gave their oral and subsequently signed a written informed consent. However, for participants under 16 years old, consent was obtained from parents or guardians. Participants were informed that participation in the study was entirely optional and that they could opt-out at any time during the procedure if they so desired. All participants were informed that the findings of this study will be made available to the general public.

Acknowledgments

We thank very much all the study participants who availed themselves to be part of the study at will.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Author contribution statement

Conceptualization: MNA, AA1, HNA, IS, & AM; **Data collection:** MMI, II, AO, HNA, VBY, JDD, MF, &ZA; **Data curation:** MNA, AA1, AA2, IS, AM; **Formal analysis:** MNA, MF, FA, FY; **Project supervision:** AA1; **Contributed to writing the manuscript; Original draft**: MNA, HNA, JDD, IS, AM & MMI; **Review and editing:** AA1, AA2 & JDD.

All authors attest they meet the ICMJE criteria for authorship and gave final approvalforsubmission.

Data availability statement

Data used to support this study are available from the corresponding author upon request.

Additional information

No additional information is available for this paper.

Declaration of competing interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

1. Hemsing N, Greaves L, Poole N. Preconception health care interventions: a scoping review. Sex Reprod Healthc. *2017;14:24–32. [Crossref][PubMed][Google Scholar]*

2. Sabr Y, Al-Zahrani NF, Labani RM, Alrasheed RA. Knowledge, attitudes, and practice of preconception care among women attending a university tertiary hospital in Riyadh: Cross-sectional study. J Med Sci. *2021;25(109):508-19. [Crossref][PubMed][Google Scholar]*

3. World Health Organization. Meeting to develop a global consensus on preconception care to reduce maternal and childhood mortality and morbidity: World Health Organization Headquarters, Geneva, 6–7 February 2012: meeting report. 2013. *[Crossref][PubMed][Google Scholar]*

4. Mason E, Chandra-Mouli V, Baltag V, Christiansen C, Lassi ZS, Bhutta ZA. Preconception care: advancing from 'important to do and can be done ' to 'is being done and is making a difference. ' Reprod Health. *2014;11(3):1–9. [Crossref][PubMed][Google Scholar]*

5. World Health Organization. Preconception care to reduce maternal and childhood mortality and morbidity: policy brief. World Health Organization; 2013. *[Crossref][PubMed][Google Scholar]*

6. World Health Organization. Pre-conception care: maximizing the gains for maternal and child health. Policy Br. *2013. [Crossref][PubMed][Google Scholar]*

7. Munthali M, Chiumia IK, Mandiwa C, Mwale S. Knowledge and perceptions of preconception care among health workers and women of reproductive age in Mzuzu City, Malawi: a cross-sectional study. Reprod Health. *2021;18(1):1–10. [Crossref][PubMed][Google Scholar]*

8. Kassa A, Human SP, Gemeda H. Knowledge of preconception care among healthcare providers working in public health institutions in Hawassa, Ethiopia. PLoS One. *2018;13(10):e0204415. [Crossref][PubMed][Google Scholar]*

9. Ojifinni OO, Munyewende PO, Ibisomi L. Exploring the perception of and attitude towards preconception care service provision and utilization in a South Western Nigerian community–A qualitative study. African Popul Stud. *2021;35(1). [Crossref][PubMed][Google Scholar]*

10. Dean S, Rudan I, Althabe F, Girard AW, Howson C, Langer A, et al. Setting research priorities for preconception care in low-and middle-income countries: aiming to reduce maternal and child mortality and morbidity. PLoS Med. *2013;10(9):e1001508. [Crossref][PubMed][Google Scholar]*

11. Fekene DB, Woldeyes BS, Erena MM, Demisse GA. Knowledge, uptake of preconception care and associated factors among reproductive age group women in West Shewa zone, Ethiopia, 2018. BMC Womens Health. *2020;20(1):1–8. [Crossref][PubMed][Google Scholar]*

12. Braspenningx S, Haagdorens M, Blaumeiser B, Jacquemyn Y, Mortier G. Preconceptional care: a systematic review of the current situation and recommendations for the future. Facts Views Vis ObGyn. *2013;5(1):13. [Crossref][PubMed][Google Scholar]*

13. Helmer A. Increasing provider awareness and knowledge about preconception care to women of reproductive age. 2016. *[Crossref][PubMed][Google Scholar]*

14. Fadia M, Azza Refaat T, Emam E. Awareness of primary health care providers in Elminia Governorate about preconception care, Egipt. El-Minia Med Bull. *2012;23(1):14. [Crossref] [PubMed][Google Scholar]*

15. Bhatta P, Upreti K, Kalikotay B. Knowledge on preconception care among bachelor level nursing students of selected campuses in Bagmati province. J Chitwan Med Coll. *2021;11(3):58–62. [Crossref][PubMed][Google Scholar]*

16. Whitworth M, Dowswell T. Routine pre-pregnancy health promotion for improving pregnancy outcomes. Cochrane database Syst Rev. *2009;(4):CD007536. [Crossref][PubMed][Google Scholar]*

17. Boulet SL, Parker C, Atrash H. Preconception care in international settings. Matern Child Health J. *2006 Sep;10(5 Suppl):S29-35. [Crossref][PubMed][Google Scholar]*

18. UNDP Ghana. 2015 Ghana Millennium Development Goals Report, Accra, Ghana. Available from: https://www. *gh.undp.org/content/ghana/en/home/library/poverty/2015-ghana-millennium-development-goals-report.html; 2015. Accessed June 30, 2024. [Crossref][PubMed][Google Scholar]*

19. Der EM, Moyer C, Gyasi RK, Akosa AB, Tettey Y, Akakpo PK, et al. Pregnancy related causes of deaths in Ghana: a 5-year retrospective study. Ghana Med J. *2013;47(4):158–63. [Crossref] [PubMed][Google Scholar]*

20. Ghana Statistical Service (GSS) ICF International GHS (GHS). Ghana demographic and health survey 2014. Rockville, Maryland, USA GSS, GHS, ICF Int. *2015. [Crossref][PubMed][Google Scholar]*

21. Doe PF, Hormenu T, Enyan NIE. Integrating Preconception Health into Routine Reproductive Health Services of Ghana: A Qualitative Study Among University Students. J Fam Reprod Heal. *2022;43–51. [Crossref][PubMed][Google Scholar]*

22. Kassa A, Yohannes Z. Women's knowledge and associated factors on preconception care at Public Health Institution in Hawassa City, South Ethiopia. BMC Res Notes. *2018;11(1):1–6. [Crossref][PubMed][Google Scholar]*

23. Lampic C, Svanberg AS, Karlström P, Tydén T. Fertility awareness, intentions concerning childbearing, and attitudes towards parenthood among female and male academics. Hum Reprod. *2006;21(2):558–64. [Crossref][PubMed][Google Scholar]*

24. Santos MJ, Ferreira E, Duarte J, Ferreira M. Risk factors that influence sexual and reproductive health in Portuguese university students. Int Nurs Rev. *2018;65(2):225–33. [Crossref][PubMed][Google Scholar]*

25. Mosalem FA, Azza A, Refaat TM, Emam EA. Awareness of primary health care providers in el-minia governorate about preconception care, egypt. 2012; 23(1):93-106. *[Crossref][PubMed][Google Scholar]*

26. Snedecor GW, Cochran WG. Statistical methods, 8th Ed. Ames Iowa State Univ Press Iowa. *1989;54:71–82. [Crossref][PubMed][Google Scholar]*

27. Khanal LD. Knowledge and utilization of preconception care among women in the selected community of Kathmandu. J Patan Acad Heal Sci. *2020;7(2):112–23. [Crossref][PubMed][Google Scholar]*

28. Olowokere AE, Komolafe A, Owofadeju C. Awareness, knowledge and uptake of preconception care among women in Ife Central Local Government Area of Osun State, Nigeria. J Community Med Prim Heal Care. *2015;27(2):83–92. [Crossref][PubMed][Google Scholar]*

29. Du L, La X, Zhu L, Jiang H, Xu B, Chen A, et al. Utilization of preconception care and its impacts on health behavior changes among expectant couples in Shanghai, China. BMC Pregnancy Childbirth. *2021;21(1):1–8. [Crossref][PubMed][Google Scholar]*

30. Akinajo OR, Osanyin GE, Okojie OE. Preconception care: Assessing the level of awareness, knowledge, and practice amongst pregnant women in a tertiary facility. J Clin Sci. *2019;16(3):87. [Crossref][PubMed][Google Scholar]*

31. Bernardes ACF, da Silva RA, Coimbra LC, Alves MTSS de B, Queiroz RC de S, Batista RFL, et al. Inadequate prenatal care utilization and associated factors in São Luís, Brazil. BMC Pregnancy Childbirth. *2014;14(1):1–12. [Crossref][PubMed][Google Scholar]*

32. Abor PA, Abekah-Nkrumah G, Sakyi K, Adjasi CKD, Abor J. The socio-economic determinants of maternal health care utilization in Ghana. Int J Soc Econ. *2011; 38(7):628-48. [Crossref][PubMed][Google Scholar]*

33. Ayele AD, Belay HG, Kassa BG, Worke MD. Knowledge and utilization of preconception care and associated factors among women in Ethiopia: systematic review and meta-analysis. Reprod Health. *2021;18(1):1–15. [Crossref][PubMed][Google Scholar]*

Disclaimer / Publisher's Note