

Preconception Care Recommendations, Training, and Competency of Primary Healthcare Nurses in South Africa: A Quantitative Descriptive Study

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Abstract

Introduction: There has been a growing interest in preconception care (PCC) as a primary means of tackling the high maternal and child mortality rates, as evidence has shown that the state of maternal health before conception can have a direct impact on the health of the mother and baby. Primary care nurses have been recognized as the highest providers of sexual and reproductive healthcare to the vulnerable population in resource-constrained settings.

Objective: This study aimed to examine and describe the PCC recommendations, training, and competency of primary healthcare (PHC) nurses in South Africa.

Methods: A cross-sectional descriptive study was conducted among 196 PHC nurses to examine the PCC recommendations, training, and competency. A self-administered survey tool was used for data collection.

Results: The self-reported PCC recommendations, training, and competency of PHC nurses were 63.3%, 88.3%, and 94.9%, respectively, in each aspect. The PCC training among the respondents was mainly in-service training. The only training that was indicated to have been done primarily at a pre-service level was training about reproductive life plan screening and brief counseling. Over 20% of the respondents indicated that they did not receive any training on how to provide alcohol, drug, or tobacco cessation services and how to conduct preconception risk assessments.

Conclusion: Although PHC nurses reported a high level of recommendation, training, and competency, their level of reported PCC practice is not equivalent to their provision, as they rendered PCC services to fewer women, and they also reported fewer women seeking PCC. A future longitudinal study is required to examine the reason for low PCC-seeking habits among those at high risk of adverse pregnancy outcomes and contextual factors influencing the provision of PCC services among healthcare workers.

Keywords

primary healthcare, preconception care, training, recommendation, competency, risk assessment

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Introduction

There has been a growing awareness and interest in preconception care (PCC) as a primary means of tackling the high maternal and child mortality rates. Emerging evidence has shown that the state of maternal health before pregnancy can have a direct impact on the health of the baby (World Health Organization, 2012, 2013b). PCC entails both biomedical and behavioral interventions and services provided to women and couples of childbearing age before conception (World Health Organization, 2013a). As people-centered

care, PCC ensures that primary care is concentrated on people's needs and expectations for it to be relevant and produce better outcomes (World Health Organization,

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2011a). Primary healthcare (PHC) nurses have an important role to play in health promotion and preventive care through the provision of PCC. Primary care nurses have been recognized as the highest providers of sexual and reproductive health (SRH) care to the vulnerable population in resource-constrained settings (World Health Organization, 2011b).

Globally, and in sub-Saharan Africa, the provision of PCC to women at high risk of adverse pregnancy outcomes has been problematic (Klein et al., 2017; Ukoha et al., 2022). Studies revealed that PCC traditionally targets women with existing medical conditions and healthcare workers prefer to discuss contraception with women of childbearing age instead of preconception health (Ojukwu et al., 2016; Ukoha & Mtshali, 2021). A study on the practice of Iranian healthcare providers and PCC shows that the practice of most of the physicians and family health practitioners was poor (Bayrami et al., 2013). In the Netherlands, general practitioners are more likely to provide PCC than midwives, and it is only delivered to a few women contemplating pregnancy (van Voorst et al., 2016). The state of PCC practice therefore needs to be investigated.

Review of Literature

Primary care nurses have been recognized as the highest providers of SRH care to the general population, especially the underserved population in the community settings. Thus, it is necessary to ascertain the nature of SRH content of their certification in academic programs (World Health Organization, 2010). There is also a call to establish programs that will effectively address the identified gaps in the curriculum as well as a call for integrating SRH into pre-certification programs of primary care providers (Simmonds et al., 2017); PCC is an essential component of SHR and forms part of the content of its curriculum. According to the World Health Organization (WHO), reproductive health as part of SRH means that individuals can have a satisfying reproductive life and the freedom to decide when and how often to do so (World Health Organization, 2011a). Access to SRH services by clients includes PCC, contraception, pregnancy, and unintended pregnancy care. The latter includes abortion; women's health/common gynecologic care; genitourinary conditions of men; assessment of special gynecologic problems, including infertility; sexual health promotion; and coordination with public health and primary care services which will take a patient-centered approach (Cappiello et al., 2016). Therefore, unintended and unplanned pregnancy is a sign of poor reproductive health which should be inclusive of both male and female reproductive health all through the life cycle (World Health Organization, 2011a). Generally, SRH content is very limited in most nursing curricula and is not uniformly included in every aspect of nursing education (McLemore & Levi, 2017). The inclusion of SRH care at all educational levels of the nursing curriculum requires the understanding of

its core competencies by nurse educators and an appreciation of the fact that for patient-centered holistic care to be enhanced, SRH should be included in nursing competencies (McLemore & Levi, 2017).

The effective provision of PCC services to the general population requires that preconception health be made part of the curriculum of healthcare professionals for their pre-licensing programs and specialty training and as an in-service education (Kizirian et al., 2019). An interdisciplinary healthcare provider collaboration and referral system within the primary care setting is the most practical approach to providing PCC where its provision responsibility is shared among a few professionals as others refer patients to them. Among the people in this collaboration are gynecologists, midwives, general practitioners, dieticians, pharmacists, physiotherapists, nurse practitioners, other specialists, and preventive child healthcare and social workers (Poels et al., 2017).

There is a paucity of evidence provincially and nationally in South Africa regarding the PCC recommendation, training, and competencies of nurses, prompting this study to examine these aspects among primary health care nurses.

Operational Definition of Terms

Recommendation

The PCC recommendation level of PHC nurses was measured based on how often they recommended different PCC components to women whom they consult with daily for other health services. There were 12 recommendation items in a Likert-like scale (never to always). The recommendation questions had a minimum score of 12 and a maximum score of 60. With 50% as a cutoff point, the recommendation level was divided into two: good and poor recommendation (Demisse et al., 2019; Kassa et al., 2019). In this study, PCC recommendations were observed based on how often the PHC nurses' advised women at high risk of adverse pregnancy outcomes to seek PCC.

Training

The PCC training of PHC nurses was assessed with nine dichotomous items (yes during pre-service, yes as an in-service, or never trained). With a possible minimum and maximum score of nine and 45, respectively, the training had a cutoff of 50%. It was also divided into good and poor training. The PCC training was observed in this study based on whether or not the respondents received any formal training about PCC and how the training was received (pre-service or in-service).

Competency

The competency scale adopted from the WHO comprised 21 Likert scale items (from strongly disagree to agree). Those

who scored above 50% were regarded as having good competency while those below 50% as having poor competency. The PCC competency of the PHC nurses was observed based on the PCC competency list as prescribed by the International Confederation of Midwives and the WHO.

Methods

Study Setting

This study was conducted among postgraduate PHC nursing students at a large institution of higher learning on the coast of KwaZulu-Natal. The institution runs both undergraduate and postgraduate nursing education programs. The PHC program is a two-semester one of specialization for nurses who are currently employed in PHC clinics. It is decentralized to six sites for accessibility and to cater to all the PHC nurses in the region. The selected PHC nurses are a combination of PHC nurses found in the rural, semirural, and urban areas of the country and therefore are more suitable to provide insight into the phenomenon at hand.

Research Design and Question

A cross-sectional descriptive study was employed to examine and describe the PHC nursing students' PCC recommendation, training, and competency. The purpose of this descriptive study is to observe, describe, and document the phenomenon as they naturally occur. Descriptive studies help the discovery of new meaning, describe what exists, and determine the frequency of occurrence and the categories of information (Polit & Beck, 2012).

Study Sample, Inclusion, and Exclusion Criteria

The study population comprised 248 PHC nursing students in the selected higher education institution. The intention was to contact the entire population of PHC students; therefore, no sample selection was conducted for this study. The study sample consisted of 196 PHC nursing students who met the eligibility criteria. The inclusion criteria were practicing in a PHC facility for up to 1 year, being 18 years or older, and agreeing to participate in the study. Out of 248 nurses, 196 were included in the study with a response rate of 79%.

Data Collection and Statistical Analysis. The survey was electronically administered using Google Forms and as a hard copy during the extended first and second semesters of 2020. The survey questionnaire, which required approximately 15 min to be completed, was distributed to the respondents through their course facilitators, representatives, and the researchers. The anonymity of data was maintained by ensuring the non-disclosure of personal information on the survey forms.

The three-sectioned research instrument with a demographic survey made up of the 48-item survey questionnaire provided to the respondents. The recommendation and training aspect of the instrument for data collection was adapted from a previously validated PCC tool, the Andarg-Ethio PCC-KAP Questionnaire for HCP, developed in 2017 by Andargachew Kassa. While the competency part was adapted from the International Confederation of Midwives and the SRH core competency in primary care by the WHO.

Preconception Recommendation Among Primary Health Care Nurses. This variable assessed the recommendation of PCC using a 12-item scale. It inquires about participants' recommendation and PCC screening on a five-point Likert-type scale which ranges from 1 (never) to 5 (always), with a composite score ranging from 12 to 60, and higher scores indicating higher levels of PCC recommendation and vice versa. Content and face validity of the adapted scale was established by a panel of experts in healthcare, with a content validity index of 92.4%. The internal consistency was reported as Cronbach's alpha coefficient of 0.94, based on a sample of 634 healthcare providers (424 nurses, 51 doctors, 57 midwives, 62 community extension workers, and 40 public health workers) (Kassa, 2017). In the current study, the Cronbach's alpha coefficient was 0.93.

Preconception Care Training of Primary Health Care Nurses. The training of the nurses was evaluated using the training part in the Andarg-Ethio PCC-KAP Questionnaire for HCP, a nine-item scale that captures where and how the participants received their PCC training. Items were scored using "yes" and "no"; those who indicated yes answer whether the training was received as a preservice or in-service education. The Cronbach's alpha coefficient of this component was 0.84.

Preconception Care Competence of Primary Health Care Nurses. This variable was measured using the pre-pregnancy care competency skills and behavior of the International Confederation of Midwives and the SRH core competency in primary care, a 21-item survey designed to reflect the critical aspect of PCC among nurses (International Confederation of Midwives, 2018; World Health Organization, 2011a). The scale consists of three areas of PCC competency that nurses should possess: knowledge, skills, and behaviors. The items are on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). There was no need for a reverse scoring of any of the items, as there were no negative statements. As shown in Table 2, the composite scores range from 21 to 105, and higher scores indicate a greater level of PCC competency. Content validity of the scale was established through the assessment of the required PCC competency for nurses and

Table 1. Comparing the Socio-demographic Characteristics of Respondents With Their Preconception Care Recommendation.

Demographic characteristics	PCC recommendations		Significance
	Good	Poor	
Age			0.194
24–30	33.64 (25.36–43.05)	41.86 (31.82–52.63)	
31–40	32.73 (24.54–42.11)	36.05 (26.52–46.81)	
> 41 years	33.64 (25.36–43.05)	22.09 (14.48–32.20)	
Years of experience			0.253
1–5	38.18 (29.51–47.68)	50.00 (39.46–60.54)	
6–10	46.36 (37.18–55.80)	37.21 (27.57–47.98)	
> 11 years	15.45 (9.78–23.56)	12.79 (7.18–21.77)	
Gender			0.215
Male	24.55 (17.34–33.54)	32.56 (23.42–43.25)	
Female	75.45 (66.46–82.66)	67.44 (56.75–76.58)	
Ethnicity			0.915
Black	92.73 (86.03–96.35)	86.05 (76.88–91.96)	
White	N/A	2.33 (0.57–8.96)	
Indian	2.73 (0.87–8.21)	6.98 (3.14–14.80)	
Colored	4.55 (1.89–10.55)	4.65 (1.74–11.87)	
Level of education			0.338
Diploma	57.27 (47.78–66.26)	63.95 (53.19–73.48)	
Bachelors	36.36 (27.84–45.84)	33.72 (24.45–44.44)	
Masters	6.36 (3.04–12.84)	2.33 (0.57–8.96)	
Marital status			0.184
Single	60.91 (51.41–69.65)	53.49 (42.82–63.84)	
Married	35.45 (27.01–44.91)	37.21 (27.57–47.98)	
Divorced	3.64 (1.36–9.38)	5.81 (2.41–13.34)	
Separated	N/A	3.49 (1.11–10.39)	
Location of practice			0.002
Urban	30.00 (22.11–39.29)	31.40 (22.40–42.05)	
Semi-urban	11.82 (6.95–19.39)	30.23 (21.38–40.84)	
Rural	58.18 (48.68–67.11)	38.37 (28.62–49.15)	

p-value < .05 is considered significant.

Table 2. Levels of Preconception Care Recommendation, Training, and Competency Among Respondents.

Variable	Mean	SD	Good	Poor	Respondent range	Possible score
Recommendation	44.68	10.264	63.8%	36.2%	14–60	12–60
Training	16.64	2.363	88.3%	11.7%	9–18	9–18
Competency	91.45	12.143	94.9%	5.1%	21–105	21–105

midwives by various organizations. In the current study, the scale had a Cronbach's alpha coefficient of 0.96.

Initially, this descriptive study was summarized using frequencies and percentages to examine the numbers and scores of respondents in each category using the IBM SPSS version 27. Descriptive statistics such as mean were used to describe sample characteristics. The standard deviation was used to describe how much the data varies from the mean, and the chi-square was used to assess the relationship between the variables in the study. The chi-square was also used to determine social demographic variables associated with recommendation.

Results

Sample Characteristics

The sample included 196 PHC nurses with a mean age of 36.24 years ($SD = 8.45$ years) and mean years of experience as PHC nurses of 7.68 years ($SD = 6.13$ years) (min = 1, max = 38). Most of the respondents were Blacks (89.8%, $n = 176$), females (71.9%, $n = 141$), single (57.7%, $n = 113$), and with a diploma as the highest educational qualification (60.2%, $n = 118$). A little above half (51.5%, $n = 101$) work in the PHC clinics, the average

number of work hours per week is 40 h (SD = 2.05) (min = 36, max = 56). The number of nurses who wanted to receive training on PCC was greater than those who did not want training (88.8%). As shown in Table 1, a comparison was made between respondents' demographic data with their PCC recommendation.

Preconception Care Recommendation, Training, and Competency Score

The PCC recommendation, training, and competency level among the PHC nurses were assessed by comparing the respondents' scores with the possible score and the mean composite scores obtained from the three variables, as shown in Table 2.

Preconception Care Recommendation

Respondents in this study manifested a high PCC recommendation level as determined by a mean composite score of 44.68% and 63.8% reported good recommendation while 36.2% reported poor recommendation, as indicated in Table 2. The analysis of individual items revealed that they recommended PCC to most women who would require it. Table 3 shows that more than two-thirds of the respondents (81.7%) always or often recommended PCC to women living with HIV. Most of the respondents indicated that they always or often recommended PCC to women who are sexually active, women with a previous genetically abnormal child, and women using birth control. Only 35.7% indicated that women often or always visit their practice for PCC, while only a few reported that they often or always ask for the reproductive life plan (RLP) of clients they attend to.

Table 3. Preconception Care Recommendation of the Respondents.

How often do you recommend PCC to the following women in your practice	M
Diabetic women	3.87
Hypertensive women	3.89
Women with cardiac conditions	3.88
Women with previous genetically abnormal child	3.97
Women living with HIV	4.22
Obese women	3.84
Women who are contemplating pregnancy	3.84
Women who are sexually active	3.99
Women who are using birth control	3.95
How often do women visit your practice for PCC	3.01
How often do you provide PCC	3.03
How often do you ask for the reproductive life plan (RLP) of clients you attend to	3.18

PCC = preconception care.

Preconception Care Training

The reported PCC training level among the respondents was high at 88.3% and done mainly as an in-service training. The only training that was indicated to have been done mainly at a pre-service level was training about RLP screening and brief counseling (48.5%, *M* = 2.39). Topics on how to provide alcohol, drug, or tobacco cessation services and how to conduct preconception risk assessments were the aspect that over 20% of the respondents indicated not receiving any training on as shown in Table 4. It further compares their level of PCC recommendation with their training.

Preconception Care Competency

The PHC nurses reported a high level of PCC competency, based on the mean composite score of 91.44% and 94.9% with a good level of competency. As shown in Table 5, the highest-scoring PCC competencies were on counseling about family planning and methods of contraception, counseling about the prevention of sexually transmitted infections, and counseling about nutritional supplements such as iron and folic acid. It further compares their level of PCC recommendation with their competency. The only competency that they did not have is evidence-based screening for thyroid conditions (*M* = 3.71).

Discussion

The study aimed to describe the PCC recommendation, training, and competency levels of PHC nurses. Most participating PHC nurses had a diploma in nursing as their highest educational qualification. This may be because the diploma is the basic entry point into the profession in the country and many of them have not had the opportunity to further their education, and this may negatively influence their PCC practice. It also reflected the findings of previous South African studies (Delobelle et al., 2009; Ukoha & Dube, 2019).

The participating PHC nurses reported high levels of PCC recommendation in this study, higher than what is reported among other healthcare workers (Kassa et al., 2019; Tokunbo et al., 2016). The result however may be affected by social desirability and recall bias which is inherent in self-report. In their practice, nurses in this sample recommend PCC to most women with the recommendations mostly made for women living with HIV. This finding supports earlier studies that indicate that healthcare workers traditionally recommend PCC for women at high risk of adverse pregnancy outcomes (Ukoha & Mtshali, 2021). PCC provided by different countries must be based on the disease profile, as governments around the world are responsible for the adaptation of PCC to suit the needs of their populations (Matar et al., 2016). Although participants reported high levels of PCC recommendation, their referral of most women at high

Table 4. Preconception Care Training Score of the Respondents.

Training	PCC recommendations	
	Good	Poor
Reproductive life plan screening and brief counseling		
<i>No training</i>	6.36 (3.05–12.80)	12.79 (7.20–21.71)
<i>In-service</i>	47.27 (38.09–56.64)	36.05 (26.58–46.74)
<i>Tertiary</i>	46.36 (37.2–55.76)	51.2 (40.6–61.6)
The importance of increasing public awareness of preconception health and PCC		
<i>No training</i>	7.27 (3.66–13.93)	23.25 (15.48–33.39)
<i>In-service</i>	51.82 (42.47–61.04)	38.37 (28.68–49.09)
<i>Tertiary</i>	40.91 (32.08–50.37)	38.37 (28.68–49.09)
How to conduct preconception risk assessment		
<i>No training</i>	8.18 (4.29–15.03)	39.53 (29.74–50.25)
<i>In-service</i>	47.27 (38.09–56.64)	29.07 (20.42–39.56)
<i>Tertiary</i>	44.55 (35.49–53.97)	31.40 (22.44–41.98)
How to provide preconception education and counseling		
<i>No training</i>	6.36 (3.05–12.80)	34.88 (25.53–45.56)
<i>In-service</i>	51.82 (42.47–61.04)	34.88 (25.53–45.56)
<i>Tertiary</i>	41.82 (32.93–51.27)	30.23 (21.43–40.78)
How to manage identified preconception risk factors		
<i>No training</i>	7.27 (3.66–13.93)	22.09 (14.52–32.13)
<i>In-service</i>	54.55 (45.13–63.64)	52.32 (41.76–62.69)
<i>Tertiary</i>	38.18 (29.55–47.63)	25.58 (17.43–35.88)
The elements of interconception care needed to prevent adverse pregnancy outcome		
<i>No training</i>	10.00 (5.60–17.22)	31.40 (22.44–41.98)
<i>In-service</i>	52.73 (43.35–61.91)	43.02 (32.95–53.71)
<i>Tertiary</i>	37.27 (28.71–46.71)	25.58 (17.43–35.88)
HIV/AIDS testing and management (e.g., Prevention of Mother to Child Transmission, Nurse Initiated Management of Antiretroviral Therapy, Voluntary Counseling and Testing, or Antiretroviral Therapy)		
<i>No training</i>	4.55 (1.89–10.51)	4.65 (1.75–11.81)
<i>In-service</i>	70.91 (61.70–78.67)	52.33 (41.76–62.69)
<i>Tertiary</i>	24.55 (17.37–33.49)	43.02 (32.95–53.71)
PCC considerations for clients with other chronic diseases		
<i>No training</i>	6.36 (3.05–12.80)	22.09 (14.52–32.13)
<i>In-service</i>	63.64 (54.21–72.12)	55.81 (45.15–65.97)
<i>Tertiary</i>	30.00 (22.14–39.25)	22.09 (14.52–32.13)
How to provide alcohol, drug, or tobacco cessation service		
<i>No training</i>	11.82 (6.96–19.35)	31.40 (22.44–41.98)
<i>In-service</i>	63.64 (54.21–72.12)	48.84 (38.41–59.36)
<i>Tertiary</i>	24.55 (17.37–33.49)	19.77 (12.62–29.59)

PCC = preconception care.

risk, both their provision and women's PCC seeking rate are still deficient. As questions regarding the frequency of PCC provision and the frequency of PCC utilizations ranked lower than others.

The WHO opined that only a well-trained and proficient healthcare worker in a well-functioning healthcare system is able to implement the best possible practices (World Health Organization, 2011a). It is noteworthy that most respondents reported high educational exposure to PCC, either a preservice or an in-service training. They reported that most of their educational exposure to PCC was in-service training, and from the findings of the present study, in-service

training seems to be the best way of providing PCC education to nurses. The WHO purports that opportunities should be identified for the integration of PCC into the in-service and pre-service training of healthcare workers as part of capacity building for the planning, implementation, and monitoring of PCC (World Health Organization, 2013a). Biratu (2017) went further, recommending that PCC be integrated into the curriculum as in-service and pre-service training for all healthcare providers, students as well as teachers, and policy-makers. The most common PCC education nurses reported to have received was on RLP screening and brief counseling and HIV/AIDS testing and management. This may be due

Table 5. Preconception Care Competency Score of Respondents.

	PCC recommendations	
	Good	Poor
<i>I have evidence-based knowledge of the following:</i>		
Knowledge of anatomy and physiology of females and males related to reproduction and sexual development		
Poor	4.54 (1.89–10.51)	13.95 (8.07–23.05)
Good	95.45 (89.49–98.11)	86.05 (76.95–91.93)
Knowledge of socio-cultural aspects of human sexuality		
Poor	6.36 (3.05–12.80)	24.41 (16.45–34.64)
Good	93.64 (87.20–96.95)	75.58 (65.36–83.54)
Cancer of reproductive organs		
Poor	9.09 (4.94–16.13)	27.91 (19.41–38.34)
Good	90.91 (83.87–95.06)	72.09 (61.66–80.58)
Diabetes		
Poor	5.45 (2.46–11.66)	9.30 (4.70–17.58)
Good	94.55 (88.34–97.54)	90.70 (82.42–95.30)
Hypertension		
Poor	3.64 (1.36–9.34)	9.30 (4.70–17.58)
Good	96.36 (90.66–98.64)	90.70 (82.42–95.30)
Thyroid conditions		
Poor	32.73 (24.58–42.07)	40.70 (30.80–51.41)
Good	67.27 (57.93–75.42)	59.30 (48.59–69.20)
Chronic infections that impact pregnancy		
Poor	5.45 (2.46–11.66)	16.28 (9.85–25.70)
Good	94.55 (88.34–97.54)	83.72 (74.30–90.15)
Identify and assist in reducing barriers to accessing and using Sexual and Reproductive Health Services		
Poor	50.91 (41.59–60.17)	61.62 (50.91–71.32)
Good	49.09 (39.83–58.41)	38.37 (28.77–49.09)
<i>I can assess the following in a patient:</i>		
Nutritional status		
Poor	66.36 (56.99–74.60)	63.95 (53.26–73.42)
Good	33.64 (25.40–43.00)	36.05 (26.58–46.74)
Current immunization status		
Poor	57.27 (47.82–66.22)	65.12 (54.44–74.47)
Good	42.73 (33.78–52.18)	34.88 (25.53–45.56)
Health behaviors such as the use of substances		
Poor	56.36 (46.92–65.36)	56.97 (46.29–67.05)
Good	43.64 (34.64–53.08)	43.02 (32.95–53.71)
Existing medical conditions		
Poor	59.09 (49.63–67.92)	53.49 (42.88–63.79)
Good	40.91 (32.08–50.37)	46.51 (36.21–57.12)
Exposure to known teratogens		
Poor	64.55 (55.13–72.95)	75.29 (64.98–83.35)
Good	35.45 (27.05–44.87)	24.71 (16.65–35.02)
Carry out screening procedures for STIs and cervical cancer		
Poor	61.82 (52.37–70.45)	58.14 (47.44–68.13)
Good	38.18 (29.55–47.63)	41.86 (31.87–52.56)
<i>I can provide counseling about the following:</i>		
Nutritional supplements		
Poor	62.73 (53.29–71.28)	70.93 (60.44–79.58)
Good	37.27 (28.71–46.71)	29.07 (20.42–39.56)

(continued)

Table 5. Continued.

	PCC recommendations	
	Good	Poor
Dietary intake		
Poor	59.09 (49.63–67.92)	65.12 (54.44–74.47)
Good	40.91 (32.08–50.37)	34.88 (25.53–45.56)
Exercise		
Poor	56.36 (46.92–65.36)	66.28 (55.62–75.50)
Good	43.64 (34.64–53.08)	33.72 (24.50–44.38)
Updating immunization as needed		
Poor	61.82 (52.37–70.45)	63.95 (53.25–73.42)
Good	38.18 (29.55–47.63)	36.05 (26.57–46.74)
Modifying risk behavior		
Poor	58.18 (48.72–67.07)	67.44 (56.82–76.53)
Good	41.82 (32.93–51.27)	32.56 (23.47–43.18)
Preventing STIs		
Poor	67.27 (57.93–75.42)	70.93 (60.44–79.58)
Good	32.73 (24.58–42.07)	29.07 (20.42–39.56)
Family planning and methods of contraception		
Poor	63.64 (54.21–72.12)	70.93 (60.44–79.58)
Good	36.36 (27.88–45.79)	29.07 (20.42–39.56)

to HIV/AIDS being the priority area in the country recently and this may dominate many PCC screening and recommendation made. The least common PCC education received was how to provide alcohol, drug, or tobacco cessation service. This report is contrary to the Japanese study by Kitamura et al. (2005), where participants reported smoking cessation as the most common PCC education received during their training.

The PCC training and education of PHC practitioners is much needed as they assert a sense of being under-skilled to meet the PCC needs of the community and to enhance the delivery of quality, safe, and effective PCC to women (Steel et al., 2016). The reported high level of PCC competency among PHC nurses in this study was in the areas of their overall PCC competency and in evidenced-based PCC screening, assessment, and counseling. Greater levels of competency were reported in PCC counseling and assessment. The most prevalent counseling practice reported was on contraception, prevention of sexually transmitted infections, and nutritional supplementation. The SRH core competencies for the interprofessional primary care team identified competencies to guide the training of health professionals across primary care that include PCC services (Cappiello et al., 2016). Among the least reported PCC competencies were evidenced-based screening for thyroid conditions and cancer of the reproductive organs and assessment of patients for exposure to known teratogens. The findings on PCC competency are contrary to a report which identified several barriers to the limited number of PHC nurses participating in SRH services. The barriers are limited exposure to the SRH topics during nursing training, a move of nursing training toward

generalist programs, reduction in the amount of women health practitioners, absence of standards for the SRH curriculum and competencies, lack of opportunities for SRH clinical training, and segregation and fragmentation of SRH delivery in primary care (McLemore & Levi, 2017).

Strength and Limitations

The study findings are based on survey self-reporting and nurses' opinions, which may lead to bias. The majority of the respondents reported that they had correctly followed guidelines for PCC implementation, but other factors such as resources and organizational silos were not discussed. In addition, due to the cross-sectional design of this study, it is difficult to draw conclusions surrounding causal relationships between the study variables. This study being a self-report may be affected by social desirability and recall bias. Another limitation of the study is that the sample was predominantly Black female, which may limit the generalizability of the findings.

Implications for Practice

The findings of this study suggest that information and education campaigns targeting women should be focused on not only promoting awareness of the importance of PCC utilization but also on providing guidance and addressing cultural beliefs surrounding healthcare utilization. Partnerships with organizations offering prenatal services should be developed to ensure collaboration between providers, patients, families, and community members to foster understanding about how these services can improve maternal health outcomes.

Conclusions

The reduction of maternal and child morbidity and mortality rates requires a more systematic approach, tackling the problem from the grassroots. Thus, there is an urgent need to assess the PCC recommendation, training, and competency of important stakeholders such as the PHC nurses. As a result of the findings of this study, PHC nurses desired a higher level of PCC training, even though their PCC recommendation, training, and competency were reported to be high. However, their level of reported PCC recommendation is not equivalent to their provision, as they rendered PCC services to fewer women, and they also reported fewer women seeking PCC. This suggests that the existing PCC services may be accessible to some extent but still need to be augmented or improved so that these facilities can reach all identified target populations. This could include providing additional training, as well as resources and support for PHC nurses to use in the provision of PCC services. Furthermore, it is important to ascertain the reasons why women are not seeking out available healthcare facilities for obstetric care. Only by understanding such barriers can we truly begin to tackle the problem from its root cause in order to reduce maternal morbidity and mortality rates.

In accordance with these results, it is recommended that more space be allocated to the topic of PCC in the nursing education curriculum and for adequate in-service training for nurses in the clinical areas. A future longitudinal study is required to focus on the reason for women not utilizing PCC services and not complying with PCC recommendations and counseling by healthcare workers. The most recommended PCC was for patients with HIV/AIDS; therefore, it will be necessary to investigate if other chronic conditions are equal attention. This study may assist in a better understanding of ways to ensure that most women at risk of adverse pregnancy outcomes do seek PCC services. Future research should incorporate more diverse ethnic and socio-economic sampling to examine culture, social support, and health literacy as additional factors associated with PCC utilization. Data sources such as medical records could be employed to measure the true adherence rate of the participants in this study. These measures would reveal if there were a difference between self-report and actual screenings and services provided. Finally, collecting information regarding patient experience could assist in evaluating the quality of care when utilizing PCC services and why fewer women are seeking PCC.

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Declaration of Conflicting Interests

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

Ethical Approval

The Institutional Review Board at a large KwaZulu-Natal public university and the KwaZulu-Natal Research and Knowledge Management Directorate approved this research with the reference numbers HSSREC/00001069/2020 and KZ-202003-009, respectively. Written informed consent was also obtained from all the participants, and all the ethical principles outlined in the Helsinki Declaration were observed.

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