



Utilisation of Preconception Care among Pregnant Women in Dar es Salaam, Tanzania: A Cross-Sectional Study

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Abstract

Background: Various strategies have been applied to reduce the burden of maternal and child morbidity and mortality, but the rates remain unacceptably high. Efforts have been made in antenatal, intrapartum, and postnatal care, although little emphasis has been placed on preconception care, particularly in developing countries such as Tanzania. Therefore, this study aimed to assess the utilisation of preconception care in Dar es Salaam, Tanzania. **Methods:** This was a cross-sectional study conducted among 312 pregnant women attending Temeke and Mwananyamala Regional Referral Hospitals, Dar es Salaam, Tanzania, using interviewer-administered structured questionnaires. Descriptive and inferential statistics were applied to the data, including bivariate and multivariable logistic regression analysis. To declare a statistically significant association, a p-value of <0.05 was used. **Results:** Forty-seven (15.1%) participants utilised preconception care, with HIV counselling, testing and ART initiation being the most utilised (21.3%). Logistic regression analysis revealed unplanned pregnancy ($p = <0.001$) and not having a history of previous infertility or subfertility ($p = <0.001$) as statistically significant factors influencing preconception care utilisation. **Conclusion:** The study revealed that the utilisation of preconception care is low. It also identified factors influencing the use of preconception care; therefore, implementing strategies to increase uptake, such as opportunistic provider-initiated preconception care counselling during health visits, may be helpful.

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morbidity and mortality rates in both groups; nonetheless,

INTRODUCTION

Worldwide, maternal and child mortality continues to be a major risk for women and children below the age of five. In 2020, the global maternal mortality ratio was 223 deaths per 100,000 live births.¹ In 2021, approximately 5 million children under the age of five years died.^[2] Different strategies have been implemented to decrease

the rates are still unacceptably high.³ Over the years, much effort and emphasis has been placed on family planning, antenatal care, intrapartum care, and postnatal care. However, little emphasis has been placed on preconception care.

Preconception care (PCC) refers to a set of interventions aimed at identifying and modifying risk

factors directly or indirectly associated with malformations or poor perinatal outcomes, and is targeted to couples and women of reproductive age prior to pregnancy.⁴ Globally, many women do not visit a health institution to talk to health workers about their health status and its impact on pregnancy outcome before conception.⁵ By the time most pregnant women attend their first prenatal visit, many interventions targeting the prevention of birth defects and other maternal and infant outcomes may be too late to have any desired effect.⁶ Inadequate preconception behaviours, such as low or nonexistent utilisation of preconception care services, may result in poor maternal and children's health outcomes and an escalation in healthcare expenses.⁵

There are regional and national differences in the prevalence of preconception care, with varying rates: in Kenya, 14.6%⁷; in Iran, 33%⁸; and in China, 42.2%.⁹ Several studies found an association between sociodemographic characteristics such as age, education status and wealth status with the utilisation of preconception care.^{10–12} Other studies demonstrated an association between medical and obstetric characteristics such as history of chronic medical conditions, previous adverse pregnancy outcome, parity and pregnancy planning with the utilisation of preconception care.^{11–13} Knowledge of and attitude towards preconception care were also found to influence utilisation of preconception care.¹⁴ Generally, studies show that there are a range of factors that may influence utilisation of preconception care.

Preconception care has been mentioned in some guidelines in Tanzania^{15,16} as a means of preventing and managing certain conditions, but not as prescribed by the World Health Organisation (WHO). In Tanzania, there are no specific guidelines for preconception care or preconception care units in health facilities. In places where preconception care may be available, it is being provided by healthcare professionals to women whenever the opportunity arises, rather than as part of a specialised practice. There is a need to promote utilisation of preconception care services in Tanzania, as this can help fill the gap in the continuum of care, detect and initiate treatment early for women with medical conditions that put them at a higher risk of maternal and child morbidity and mortality, ultimately resulting in fewer maternal deaths and morbidities. Therefore, this study aimed to investigate the utilisation of preconception care among pregnant women in Dar es Salaam, Tanzania.

METHODS

Study Design

This was an analytical cross-sectional study conducted in Dar es Salaam, Tanzania, between June 5, 2023, and July

25, 2023. Dar es Salaam city is one of Tanzania's 31 administrative regions, with an estimated population of 5.4 million people¹⁷ and a Total Fertility Rate of 2.8.¹⁸ Given Tanzania's large population, diversity, and multicultural nature, it was useful to provide baseline information on preconception care utilisation.

Study Population

The study participants were pregnant women attending Mwananyamala and Temeke Regional Referral Hospitals (RRH), in Dar es Salaam, Tanzania. However, pregnant women who were critically ill and those who were mentally ill were excluded from the study.

Sample Size Calculation and Sampling Procedure

A sample size of 323 pregnant women was estimated using the single-population proportion formula, with a 10% non-response rate.¹⁹ Standard normal deviation was set at 1.96 (95% CI), a margin of error of 5%, and a proportion of preconception care utilisation of 25.8%, taken from a previous study conducted in Kenya.⁷

A multi-stage sampling technique was used to obtain study participants. In the first stage, a random sampling method was used to select two hospitals from three regional referral hospitals in Dar es Salaam. Based on the number of pregnant women who attended the antenatal clinics of the selected health facilities in the previous year, proportionate stratified sampling was used to determine the number of participants to be included at each facility. One hundred and fifty-one (151) pregnant women were included from Temeke RRH, and 172 pregnant women were included from Mwananyamala RRH. In the second stage, a systematic sampling method was used to select the study participants at the antenatal clinic.

Data Collection Tool and Methods

Data collection was conducted through face-to-face interviews using a pretested, structured questionnaire adapted from previous studies.^{12,20} It was prepared in English, translated into Swahili, the local language, then back-translated into English again to check for consistency. The questionnaire had subsections on socio-demographic information, obstetric characteristics, utilisation of preconception care, and components of preconception care utilised.

Study Variables

The study's dependent variable was utilisation of preconception care, and the independent variables were socio-demographic factors and obstetric characteristics.

Operational Terms and Definitions

Utilisation of preconception care was defined as “If a woman stated having received at least one preconception care service from a health care provider, such as counselling, screening, treatment, or follow-up and care for preexisting health problems.”²⁰

Data Processing and Analysis

Data were analysed using IBM SPSS Statistics for Windows, Version 27.0 (Armonk, NY: IBM Corp). Descriptive data were summarised using frequencies, proportions, means, and standard deviation. Bivariate logistic regression was performed to assess the relationship between the dependent and independent variables. To control for potential confounders, multivariable logistic regression was employed; variables identified in the bivariate analysis with p-values < 0.25 were included in the multivariable model. The strength of association between dependent and independent variables was measured using an adjusted odds ratio with 95% confidence intervals and a p-value. To declare a statistically significant association, a p-value of 0.05 was used as a cut point.

RESULTS

Three hundred and twenty-three participants who met the eligibility criteria were approached by the researchers, and 312 consented to participate and completed the interview, resulting in a response rate of 96.6%.

Socio-Demographic and Obstetric Characteristics of the Study Participants

The mean age of participants was 29.4 (± 6.2 SD) years, and about half (157; 50.3%) were aged 25-34 years. The majority (262, 84%) were married; 263 (84.3%) had a monthly income of less than 120 US dollars; and only 14 (4.5%) had no formal education. The majority of participants, 240 (76.9%), were multigravida, and just over a quarter, 120 (38.5%), started their antenatal care visits at 12 weeks or less of gestational age; more than half, 185 (59.3%), had ever used family planning before, and 128 (41%) had unplanned pregnancy (Table 1).

Utilisation of Preconception Care

Among 312 participants, only 47 (15.1%; 95% CI [11.3, 19.5]) reported having utilised preconception care (Figure 1).

Components of Preconception Care Utilised

The most utilised component of preconception care was HIV counselling, testing and ART initiation by 27 (21.3%) participants, while the least utilised component was counselling on avoiding chemical or radiation exposure by 2 (1.6%) (Table 2).

Table 1: Socio-demographics and obstetric characteristics of the study participants

Variable	Categories	n	%
Age (in years)	15 – 19	10	3.2
	20 – 24	72	23.1
	25 – 34	157	50.3
	35 – 45	73	23.4
Marital status	Married	262	84.0
	Single	50	16.0
Education level	None	14	4.5
	Primary	139	44.6
	Secondary	134	42.9
	Tertiary	25	8.0
Occupation status	Employed	28	9.0
	Self-employed	151	48.4
	Housewife	123	39.4
	Others	10	3.2
Monthly income (USD)	< 120	263	84.3
	$\geq$ 120	49	15.7
Gravidity	Primigravida	72	23.1
	Multigravida	240	76.9
Timing of the first ANC visit	<12 weeks	120	38.5
	>12 weeks	192	61.5
Ever use of family planning	Yes	185	59.3
	No	127	40.7
Chronic medical disease	Yes	56	17.9
	No	256	82.1
Previous infertility/subfertility	Yes	49	15.7
	No	263	84.3
Planned Pregnancy	Yes	184	59.0
	No	128	41.0
Total		312	100.0

Factors Influencing Utilisation of Preconception Care

In a bivariate logistic regression analysis, nine variables had a p-value of <0.25 hence they were used for multivariable logistic regression, and previous infertility/subfertility (p<0.001), planned pregnancy (p < 0.001), knowledge of preconception care (p < 0.004) and attitude towards preconception care (p <0.001) were found to be statistically significantly associated with

utilization of preconception care (Table 3). Also, participants who had never had previous infertility/subfertility (AOR = 0.19, 95% CI [0.07, 0.47]) and had an unplanned pregnancy (AOR = 0.19, 95% CI [0.07, 0.5]) were 91% less likely

Table 2: Components of preconception care utilised by the study participants

*Components of preconception care	N	%
Screening and treatment for chronic medical diseases	9	7.1
Screening and treatment for STI's	11	8.7
HIV counseling, testing and initiating ART if reactive	27	21.3
Diagnosis and treatment for infertility/sub-fertility	14	11.0
Tetanus toxoid vaccination	5	3.9
Folic acid supplementation	11	8.7
Follow up and care for preexisting chronic medical condition	3	2.4
Follow up and care for previous adverse pregnancy and birth outcomes	5	3.9
Advice on weight management	4	3.1
Advice on diet modification	10	7.9
Counseling on avoiding smoking and drinking alcohol	11	8.7
Counseling on avoiding teratogenic & illicit drugs	6	4.7
Counseling on avoiding chemical/radiation exposure	2	1.6
Psychosocial counselling and support	6	4.7
Others	3	2.4

*Multiple responses

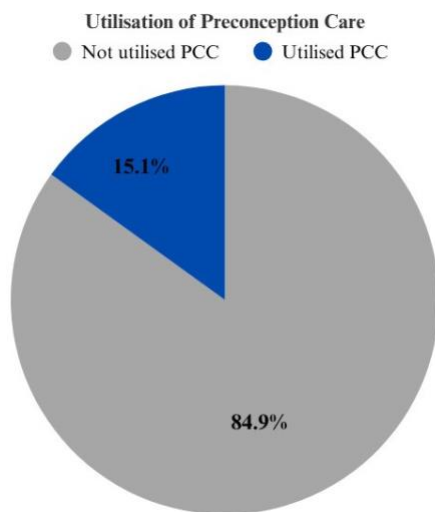


Figure 1: Prevalence of Preconception care utilisation among the study participants.

to use preconception care services. Also, participants who had adequate knowledge of preconception care (AOR = 5, 95% CI [1.67, 14.99]) and a favourable attitude towards preconception care (AOR = 8.44, 95% CI [2.82, 24.9]) were 5 and 8 times more likely to use preconception care services, respectively.

DISCUSSION

The findings indicated that the prevalence of preconception care utilisation among pregnant women in Dar es Salaam was low (15.1%). This indicates that many women who may have health problems and risk factors do not get medical attention until they are pregnant. This is concerning, as it can negatively affect the health of the mother and baby. Similar results have been reported in other countries, including Kenya (14.6%)⁷ and Ethiopia (16.2%).¹² Slightly higher prevalence was reported in China (42.2%).⁹ This disparity could be due to differences in sample size, sampling techniques, data collection methods, and the implementation of preconception care services in the study areas.

Preconception care components that were mostly received by those who attended preconception care were HIV/STIs counselling, testing and treatment, and diagnosis and treatment for infertility/subfertility. Counselling on avoiding chemical or radiation exposure was the least received component. These results further indicate that even the individuals who utilised preconception care did not receive all the required components. This highlights the necessity of educating both healthcare providers and the community about the components of preconception care. A similar study conducted in Ethiopia found that the main types of care utilised by most women were screening and treatment of HIV/STIs, and the least utilised was optimising psychological health.¹⁰

Knowledge of preconception care, attitude towards preconception care, pregnancy planning, and previous infertility or subfertility were factors associated with the utilisation of preconception care. Having adequate knowledge of preconception care, a favourable attitude towards preconception care, planned pregnancy, and a history of infertility or subfertility were positively associated with the utilisation of preconception care.

Participants with adequate knowledge of preconception care were 5 times more likely to utilise it than those with inadequate knowledge. This result is consistent with those of previous studies.^{21,22} Likewise, the odds of utilising preconception care among participants with a favourable attitude were approximately 8 times higher than among those with an unfavourable attitude.

Table 3: Logistic regression analysis on factors affecting utilisation of preconception care among the study participants

Variables		Utilisation of PCC Services		*AOR (95%CI)	p-value
		Yes n (%)	No n (%)		
Education level	None	2 (14.3)	12 (85.7)		
	Primary	13 (9.4)	126 (90.6)	0.62 [0.76, 5]	0.651
	Secondary	22 (16.4)	112 (83.6)	0.97 [0.12, 7.72]	0.980
	Tertiary	10 (40)	15 (60)	2.49 [0.23, 26.5]	0.451
Occupation status	Employed	9 (32.1)	19 (67.9)		
	Self-employed	21 (13.9)	130 (86.1)	0.43 [0.13, 1.39]	0.158
	Housewife	15 (12.2)	108 (87.8)	0.64 [0.17, 2.48]	0.519
	Others	2 (20)	8 (80)	1.72 [14, 21.3]	0.673
Monthly income (USD)	< 120	34 (12.9)	229 (87.1)		
	≥ 120	13 (26.5)	36 (73.5)	1.08 [0.35, 3.31]	0.893
Gravidity	Primigravida	15 (20.8)	57 (79.2)		
	Multigravida	32 (13.3)	208 (86.7)	0.63 [0.27, 1.49]	0.299
Timing of the first ANC visit	<12 weeks	23 (19.2)	97 (80.8)		
	>12 weeks	24 (12.5)	168 (87.5)	0.49 [0.23, 1.1]	0.085
Previous infertility/subfertility	Yes	16 (32.7)	33 (67.3)		
	No	31 (11.8)	232 (88.2)	0.19 [0.07, 0.47]	<0.001
Planned pregnancy	Yes	40 (21.7)	144 (78.3)		
	No	7 (5.5)	121 (94.5)	0.19 [0.07, 0.5]	<0.001
Knowledge of PCC	Inadequate	5 (4.5)	107 (95.5)		
	Adequate	42 (21)	158 (79)	5 [1.67, 14.99]	0.004
Attitude towards PCC	Unfavorable	5 (3.5)	138 (96.5)		
	Favorable	42 (24.9)	127 (75.1)	8.45 [2.86, 24.9]	<0.001

* AOR - Adjusted Odds Ratio, CI – Confidence Interval

Similar findings were reported in Ethiopia.^{10,12} One possible reason for this could be that women with an understanding of and a positive outlook on preconception care might choose to enhance their health before getting pregnant. As such, there is a high likelihood that they may seek preconception care.

In agreement with previous research^{13,21,22}, participants who had unplanned pregnancies were less likely to have utilised preconception care compared to their counterparts. This finding is unsurprising considering the abrupt nature of unplanned pregnancies, catching people unprepared. Also, participants who had no history of infertility or subfertility were less likely to

utilise preconception care compared to those who had a history of infertility or subfertility. This could be because women with an infertility history are more likely to want to address health issues affecting their fertility before trying to conceive.

Unlike some research^{20,21} showing a relationship between family planning use, chronic illness, and utilisation of preconception care, this study did not find a significant association with these variables. Moreover, several studies^{7,12,13} have suggested that demographic characteristics such as age and educational status are associated with the utilisation of preconception care, but these findings differ from those presented in this study.

Possible reasons for the differences could be: first, different sample sizes and characteristics of the study population.

Second, preconception awareness and healthcare behaviours differ by region. But these contrasting results could also stem from differences in how healthcare policies and programs are implemented across settings.

A number of limitations need to be noted regarding the present study. First, the cross-sectional design limits the ability to establish a cause-and-effect relationship among the identified factors. Second, because interviewer-administered questionnaires are used, there is a possibility of social desirability bias. Finally, this study relied on participants who attended public health facilities; the findings may not fully apply to women who attend private health facilities.

CONCLUSION

The findings suggest that interventions to promote preconception care should focus on increasing women's awareness of preconception care and perceived importance of preconception care. The results also support current interventions focusing on ensuring pregnancy planning, such as family planning programs. Health workers should use the opportunity when women of reproductive age attend the hospital for routine and other health services to inform them about preconception care. Further research is needed to formulate and implement strategies to enhance the utilisation of preconception care services.

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