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Knowledge Attitude and Practice Towards Nutrition Pre-Conception Care Among Women of Reproductive Age Attending Out Patient Department at Kambuga Hospital, Kanungu District

Kamara Daniel[2], Kasudha Daniel[2,3,4], Nahabwe Haeven[2], Mbabazi Mackline[3], Orikushaba Isaac Magezi[2,3,4], and Nassazi Mourice[1]

***Corresponding author**
Kamara Daniel, Nutritionist, Bwindi Community Hospital, P.O Box 58, Kanungu, Uganda, Email: dankamara2017@gmail.com
Phone: +256-789407848

Author Affiliation.
1. Uganda Institute of Allied Health & Management Sciences, P.O. Box 34025, Mulago-Kampala
2. Bwindi Community Hospital, P.O. Box 58, Kanungu- Uganda
3. Kambuga Hospital, P.O Box 23, Kanungu, Uganda
4. Kanungu District Local Government, Uganda.

ABSTRACT: Background: Nutrition Pre-conception care has been neglected yet it is fundamental for better maternal and perinatal outcome since it improves the birth outcomes, reduces number of babies born prematurely or low birth weight and addresses pregnancy adverse outcomes. **Objectives:** This study assessed the knowledge, attitude and practice towards nutrition preconception care among women of reproductive age who were attending the outpatient department at Kambuga Hospital. **Methods:** This study employed a descriptive cross-sectional design using quantitative data collection methods to obtain data on the knowledge, attitude and practice towards nutrition preconception care from 126 women of reproductive age who were attending the outpatient department at Kambuga Hospital. participants were selected using convenience sampling; data was collected using structured questionnaires, analysed using Microsoft Excel and results presented using descriptive statistics in frequency tables and figures. **Results:** Majority of the women 76(60.3%) defined nutrition pre-conception care as individualized care given to people considering pregnancy, majority 50(39.7%) reported that only women of reproductive age were the ones in need of pre-conception nutrition care, majority reported that nutrition pre-conception care should be started at least 3 months before pregnancy 60(47.6%); majority 89(70.6%) had sufficient knowledge, majority agreed that preconception nutrition care has great advantage/changes for pregnancy and delivery outcome 76(60.3%); however, majority 48(38.1%) were indecisive whether omission of preconception nutrition care leads to irreversible damage to the fetus and more than half 67(53.2%) agreed that providing pre-conception nutrition care services to developing countries like Uganda is a luxury service, majority 110(87.3%) had negative attitude towards nutrition preconception care; 87(69.0%) reported not taking any vitamin or mineral supplements in preparation for pregnancy and majority of the women 82(65.1%) had inappropriate practice towards nutrition preconception care. **Conclusion:** there was a high level of knowledge on nutrition preconception care among the women, however, majority had a negative attitude and therefore, inappropriate practice towards nutrition preconception care. **Recommendations:** The Ministry of Health and Kambuga Hospital should organize education and training sessions about nutrition preconception care to all women in their reproductive age.

Keywords: Nutrition Preconception Care, Reproductive age, Pregnancy outcomes.

Introduction and background

Globally, maternal mortality remains a pressing issue, particularly in low- and middle-income countries where access to preconception and prenatal care is often limited (WHO, 2019). According to UNICEF (2016), while maternal and child mortality rates have remained consistently high over time, timely and cost-effective interventions like preconception care (PCC) can enhance outcomes for mothers and infants substantially. Evidence from studies by Benova et al. (2019) and Timilsina & Dhakal (2015) indicates that such interventions, when administered early, can mitigate complications associated with childbirth.

Preconception care is a broad approach to health care that includes interventions provided before pregnancy to ensure the health and wellbeing of women and couples while aiming to improve pregnancy and child health outcomes (Kasim et al., 2016; Fekene et al., 2020). According to the World Health Organization (WHO, 2013), PCC encompasses biomedical, social, and behavioral support tailored to women's needs before conception or throughout their reproductive years. This care is essential for early intervention in areas such as nutrition, lifestyle habits, and chronic condition management. In particular, Lassi et al. (2014), in a study published in the *Journal of Reproductive Health*, identified several critical PCC interventions: promoting reproductive health, enhancing

nutritional status and supplementation, preventing and treating infections, managing chronic diseases, and supporting lifestyle changes.

The Centers for Disease Control and Prevention (CDC) emphasize that nutrition preconception care specifically has been shown to improve birth outcomes, including reducing the prevalence of premature births and low birth weight (CDC). Similarly, WHO (2015) highlights that reducing maternal mortality is largely contingent on ensuring quality care access for women before, during, and after childbirth. Despite this knowledge, in many low- and middle-income regions, including Uganda, a significant number of women lack adequate access to these essential prenatal services (WHO, 2013). Worldwide, approximately 40% of pregnancies are unplanned, and the risk of prenatal death is higher among infants born to adolescent mothers who do not receive PCC (WHO, 2013).

In high-income countries, PCC utilization is considerably higher; for example, Canada reports that 78.4% of women receive preconception care, and the Netherlands reports 82% utilization among women of reproductive age (Bialystok et al., 2013; Van Voorst et al., 2016). However, in sub-Saharan Africa, uptake remains critically low, with an estimated 18.7% of pregnant women using nutrition preconception care (Tekalign et al., 2021). In Ethiopia, for instance, an institutional study by Kassa et al. (2019) reported that 84.7% of healthcare practitioners were not actively practicing PCC despite its proven benefits. Uganda, too, struggles with high maternal mortality rates. The Uganda Demographic Health Survey (UDHS, 2016) found the maternal mortality ratio to be 336 deaths per 100,000 live births. Makerere University's School of Public Health identified the neglect of NPC in Uganda as a missed opportunity to enhance maternal health and work toward Sustainable Development Goals (SDGs) 2 and 3, which focus on ending hunger and ensuring good health and well-being for all.

The knowledge, attitudes, and perceptions of women toward PCC are also pivotal. Women's engagement with PCC services is influenced by their understanding of these services and the perceived relevance to their health. According to M'hamdi et al. (2017), improving knowledge about preconception care among women could directly impact their willingness to seek out and utilize PCC services. To address this, WHO in 2013 developed a comprehensive PCC package covering 13 areas for healthcare providers, encouraging a structured approach to counseling women on reproductive goals, contraceptive use, and overall health (WHO, 2013). In alignment with this framework, healthcare providers, including obstetricians and midwives, were encouraged to discuss pregnancy intentions and provide necessary advice on pre-pregnancy and contraceptive options (American College of Obstetricians and Gynecologists, 2017).

In Uganda, the Ministry of Health has incorporated PCC services into national health guidelines, with components like folic acid supplementation available at no cost in antenatal care (ANC) service points. Despite these policy measures, however, PCC utilization trends remain low, particularly in developing countries. For example, Makerere University School of Public Health (2021) reported that 82.4% of Ugandan women of reproductive age lacked awareness of PCC, and misperceptions about the services were common. At Kambuga Hospital specifically, only 9.2% of women reportedly use PCC services, resulting in continued high rates of pregnancy-related adverse outcomes.

This study aimed to explore the knowledge, attitudes, and practices (KAP) concerning nutrition preconception care among women of reproductive age attending the outpatient department at Kambuga Hospital in Kanungu District, Uganda. The objectives are to assess women's understanding of PCC, gauge their attitudes toward adopting healthy habits before conception, and examine actual practices related to nutrition and lifestyle during the preconception period. The study also investigates factors that influence these KAP aspects, such as educational background, socioeconomic status, and healthcare access.

Methodology

The study employed a cross-sectional design to assess the knowledge, attitudes, and practices (KAP) towards nutrition pre-conception care (NPC) among women of reproductive age at Kambuga Hospital, located in Kanungu District, Uganda. The target population consisted of women aged 18 to 49 years attending the outpatient department. The sample size was determined using the sample size formula for estimating proportions in a single population:

Where Z=1.96 (for a 95% confidence level), p = 0.30 (estimated prevalence of NPC knowledge, attitude, and practice), q = 1−p= 0.7 (5% margin of error). This formula resulted in a required sample size of 126 participants. Convenience sampling was used to select participants, and data was collected through structured questionnaires designed to assess participants' knowledge, attitudes, and practices related to NPC. The data was analyzed using descriptive statistics, such as frequency tables and graphs.

The study ensured the validity of the questionnaire through expert review and assessed its reliability using Cronbach's alpha. Ethical approval was granted by Kambuga Hospital, and informed consent was obtained from participants, assuring them of confidentiality and the right to withdraw at any time. The findings aimed to inform strategies to improve NPC utilization and maternal health outcomes.

Socio-demographic characteristics of study participants

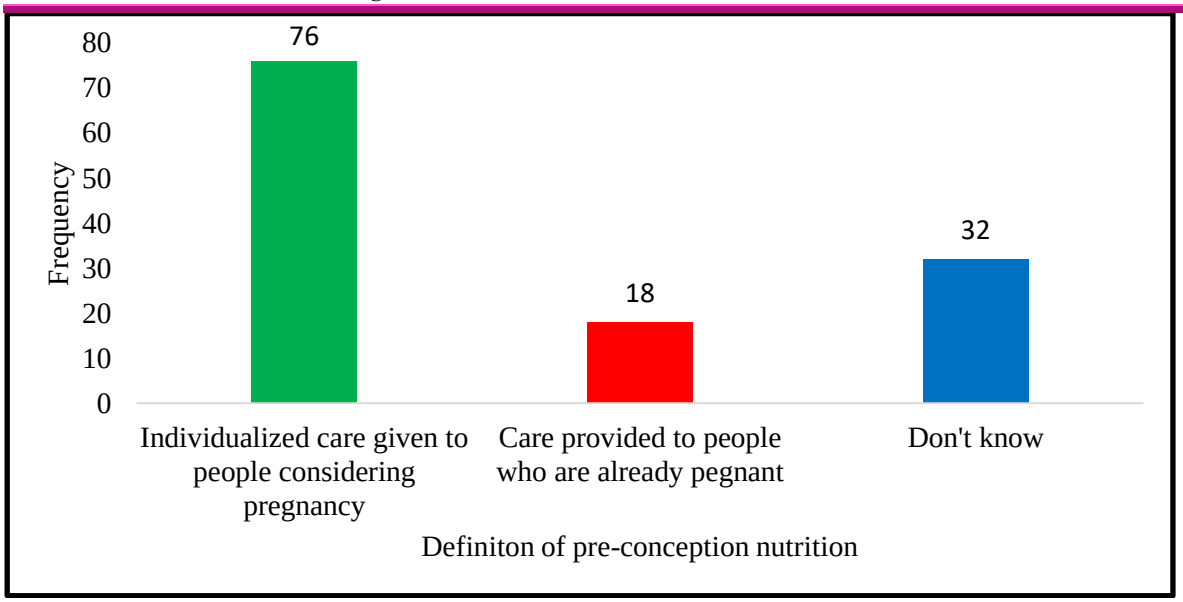
The study included 126 women of reproductive age (18 to 49 years) who were attending the Outpatient Department at Kambuga Hospital for various health concerns. Majority of these were aged 24 to 29 years 47(37.3%) followed by those aged 30 to 40 years 34(27.0%), 15 to 23 years 29(23.0%) and the least were those aged 41 years and above 16(12.7%). Concerning their marital status, majority were married 96(76.2%); 4(3.2%) were divorced; majority 72(57.1%) had attained secondary level education and the least proportion according to education level were those who had attained tertiary level education 7(5.6%). More than half of the women in the study sample were housewives 75(59.5%) and majority 91(72.3%) had more than 2 children.

Table 1: Showing socio-demographic characteristics of study respondents

Variable	Category	Frequency (n)	Percentage (%)
Age	15 to 23 years	29	23.0
	24 to 29 years	47	37.3
	30 to 40 years	34	27.0
	41 years and above	16	12.7
Total		**126**	**100.0**
Marital status	Married	96	76.2
	Single	21	16.6
	Divorced	4	3.2
	Widow	5	4.0
Total		**126**	**100.0**
Highest level of education	No formal education	13	10.3
	Primary	34	27.0
	Secondary	72	57.1
	Tertiary	7	5.6
Total		**126**	**100.0**
Occupation	Self employed	32	25.4
	Civil servant	3	2.4
	Housewife	75	59.5
	Private sector employee	16	12.7
Total		**126**	**100.0**
Number of children	None	11	8.7
	<2	24	19.0
	>2	91	72.3
Total		**126**	**100.0**

Source: Primary data,

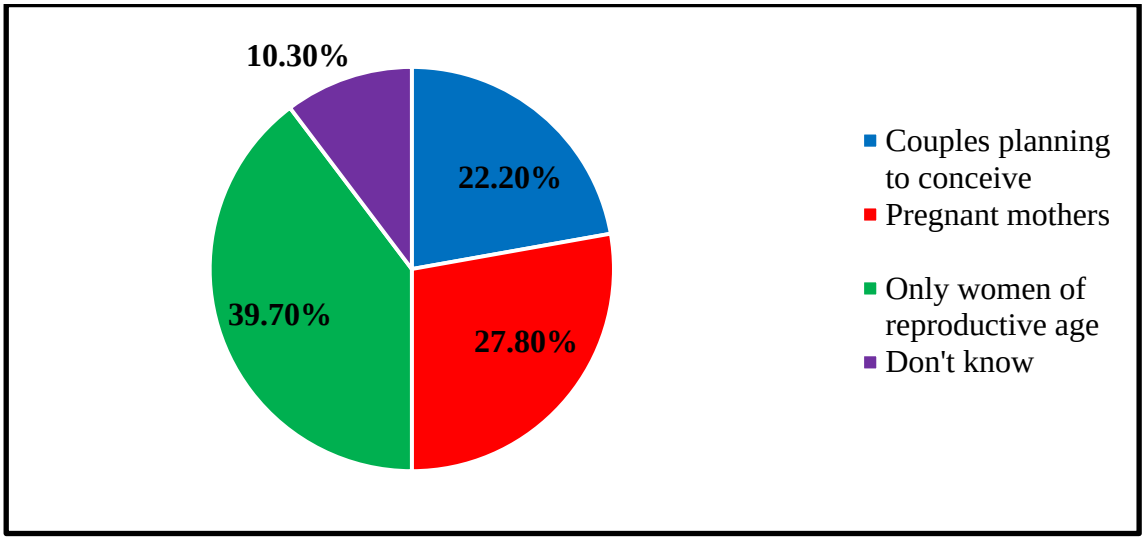
Figure 1: Showing knowledge of the women about the definition of preconception nutrition care (n=126)



Source: Primary data,

Majority of the women 76(60.3%) defined nutrition pre-conception care as individualized care given to people considering pregnancy, 18(14.3%) defined it as care provided to people who are already pregnant and 32(25.4%) didn't know.

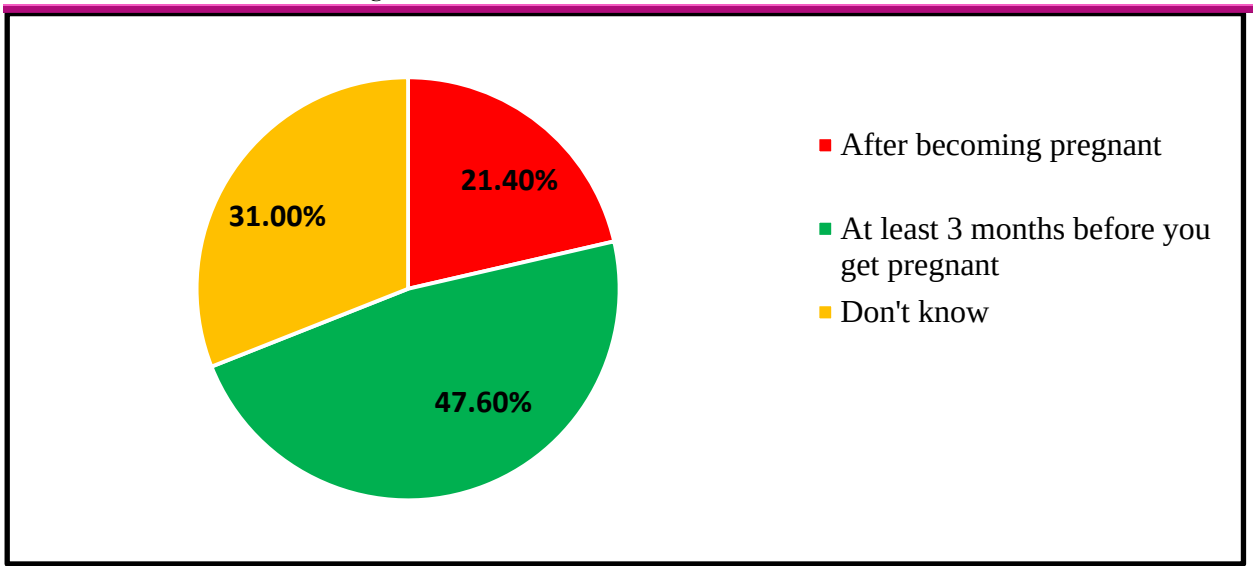
Figure 2: Showing knowledge of mothers about individuals in need of pre-conception nutrition care (n=126)



Source: Primary data,

From figure 3 above, majority 50(39.7%) reported that only women of reproductive age were the ones in need of pre-conception nutrition care, 35(27.8%) reported pregnant mothers, 28(22.2%) reported couples planning to conceive and 13(10.3%) didn't know.

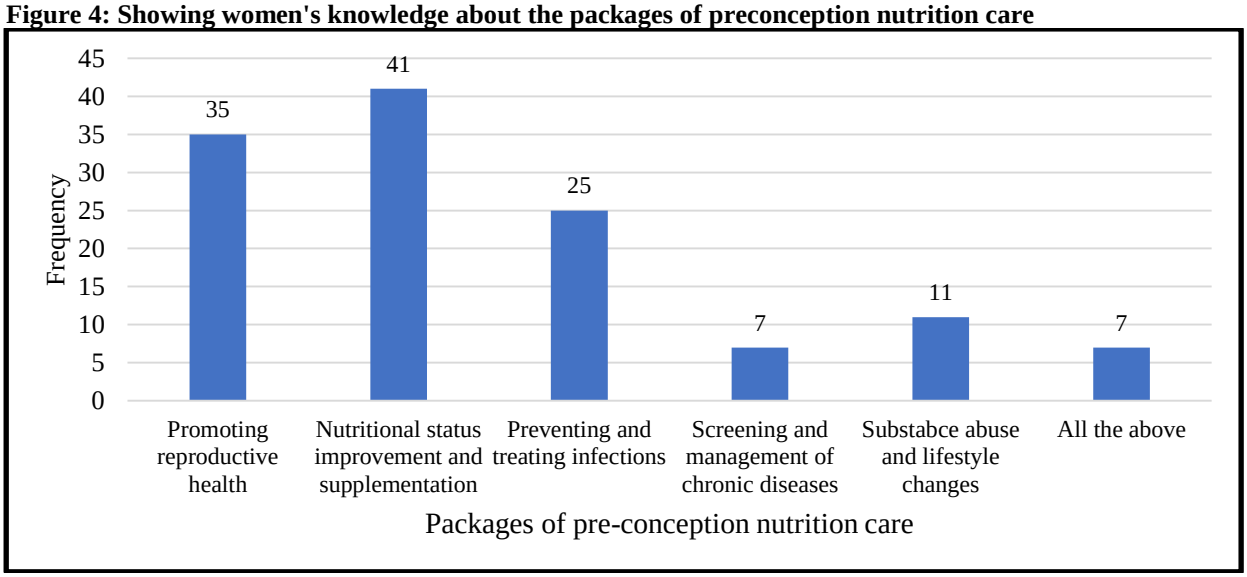
Figure 3: Showing knowledge of when preconception nutrition care should be started (n=126)



Source: Primary data,

Majority of the women reported that nutrition pre-conception care should be started at least 3 months before you get pregnant 60(47.6%); 27(21.4%) reported after becoming pregnant and 39(31.0%) didn't know.

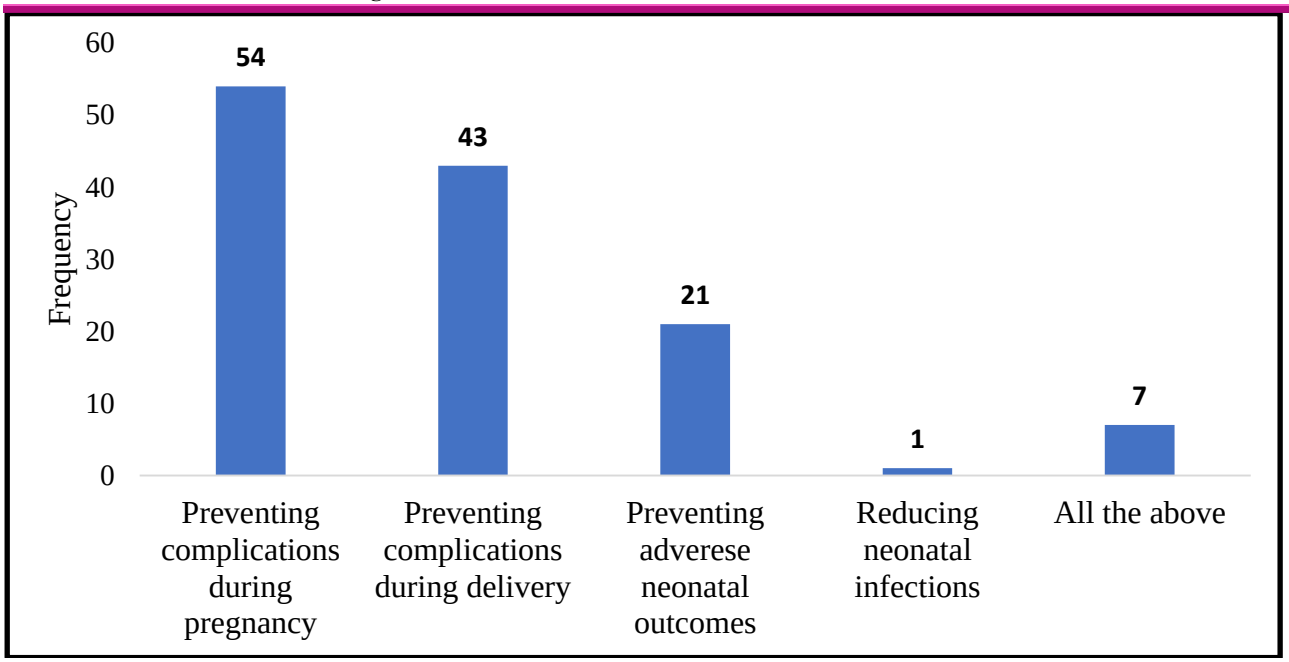
Figure 4: Showing women's knowledge about the packages of preconception nutrition care



Source: Primary data,

With regard to the packages of pre-conception nutrition care, majority of the women 41(32.5%) reported nutritional status improvement and supplementation, promoting reproductive health 35(27.8%), preventing and treating infections 25(19.8%), 11(8.7%) reported substance abuse and lifestyle changes and the least 7(5.6%) reported screening and management of chronic diseases and 7(5.6%) reported all the above.

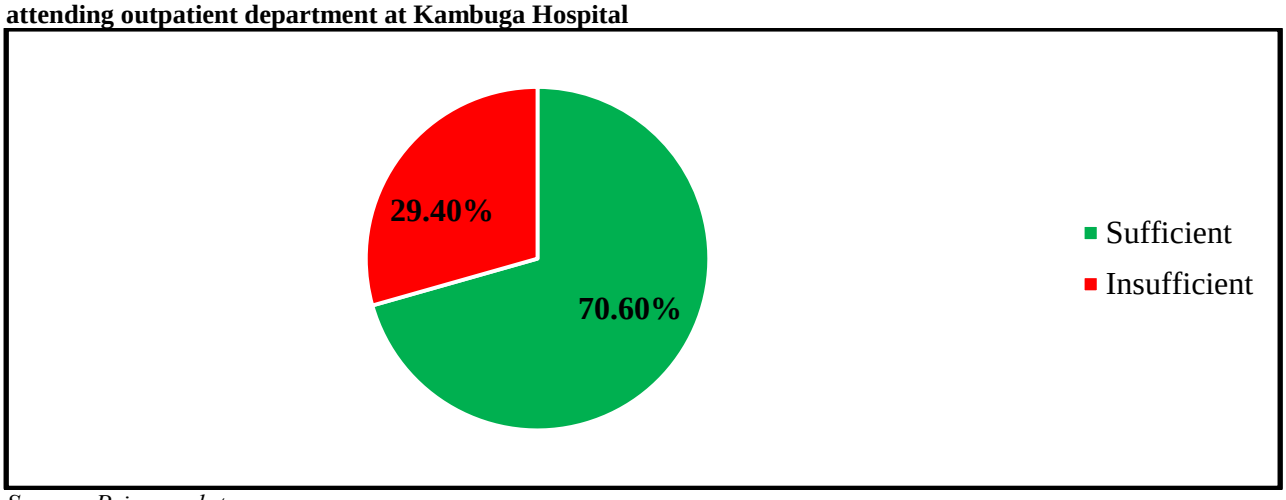
Figure 5: Showing knowledge of the women about the benefits of preconception nutrition care (n=126)



Source: Primary data,

Concerning benefits of nutrition pre-conception care, majority 54(42.9%) of the women reported preventing complications during pregnancy, 43(34.1%) reported preventing complications during delivery, 21(16.7%) reported preventing adverse neonatal outcomes, 1(7.9%) reported reducing neonatal infections and 7(5.6%) reported all the above.

Figure 6: Showing summary of knowledge regarding nutrition preconception care among women of reproductive age attending outpatient department at Kambuga Hospital



Source: Primary data,

From figure 1 above, majority 89(70.6%) of the women had sufficient knowledge regarding nutrition preconception care and 37(29.4%) had insufficient knowledge.

Attitude towards preconception nutrition care among women of reproductive age attending outpatient department at Kambuga hospital

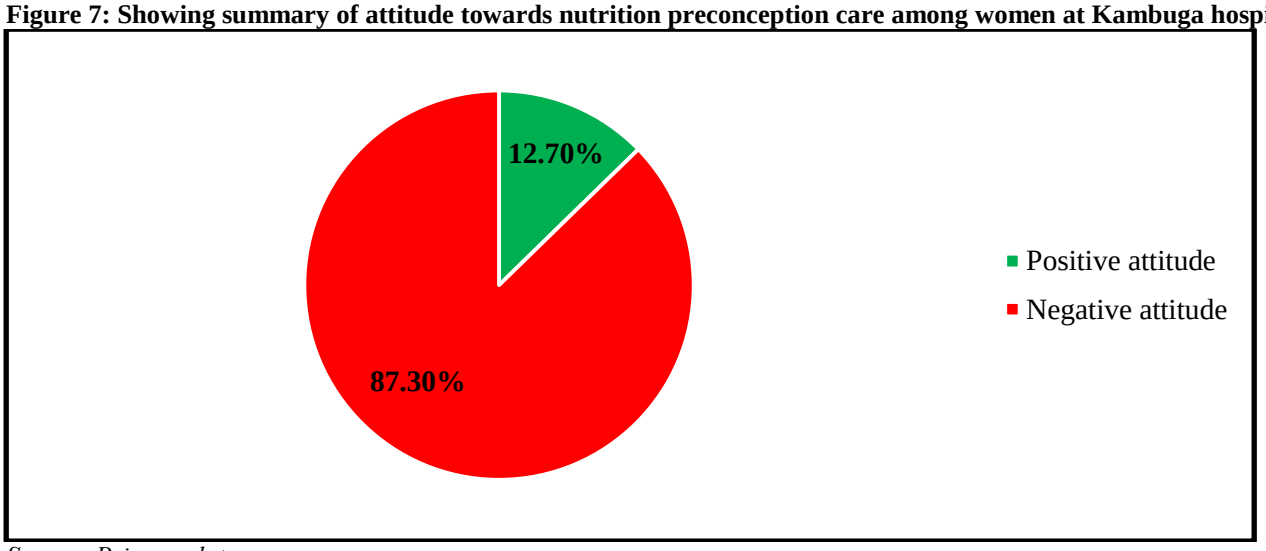
Majority of the women agreed that preconception nutrition care is important during reproductive age 87(69.0%), majority agreed that preconception nutrition care has great advantage/changes for pregnancy and delivery outcome 76(60.3%); however, majority 48(38.1%) were indecisive whether omission of preconception nutrition care leads to irreversible damage to the fetus and whether pre-conception nutrition care provides the most important incredible opportunity to optimize couples health particularly women's health before conception 51(40.5%); more than half 67(53.2%) agreed that providing pre-conception nutrition care services to developing countries like Uganda is a luxury service.

Table 2: Showing attitude of women towards nutrition preconception care among women of reproductive age at Kambuga Hospital (n=126)

Variables assessed	Agree		Neutral		Disagree	
	N	%	N	%	N	%
Preconception nutrition care is important during reproductive age	87	69.0	20	15.9	19	15.1
Preconception nutrition care has great advantage/changes for pregnancy and delivery outcome	76	60.3	39	31.0	11	8.7
Omission of preconception nutrition care leads to irreversible damage to the fetus	36	28.6	48	38.1	42	33.3
Pre-conception nutrition care provides the most important incredible opportunity to optimize couples' health particularly women's health before conception	23	18.3	51	40.5	52	41.3
Providing pre-conception nutrition care services to developing countries like Uganda is a luxury service	67	53.2	19	15.1	40	31.7

Source: Primary data,

Figure 7: Showing summary of attitude towards nutrition preconception care among women at Kambuga hospital



Source: Primary data,

Majority of the women 110(87.3%) had negative attitude towards nutrition preconception care and 16(12.7%) had positive attitude.

Practice towards nutrition preconception care among women of reproductive age attending outpatient department at Kambuga hospital

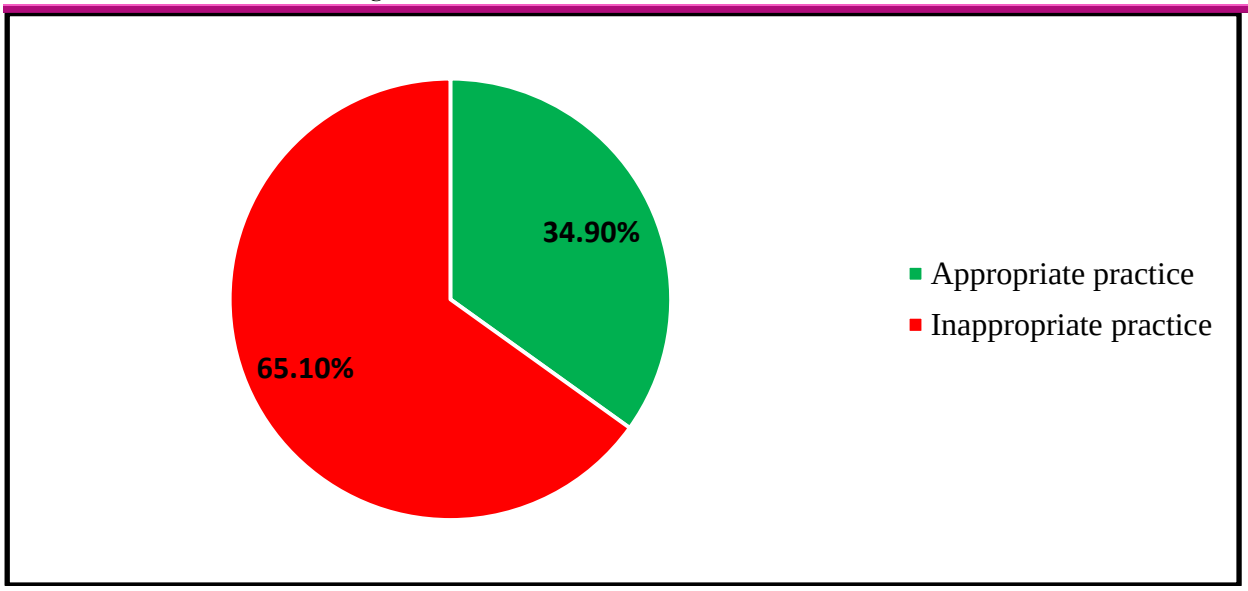
Majority of the women 87(69.0%) reported not taking any vitamin or mineral supplements in preparation for pregnancy, majority 76(60.3%) reported taking a diet rich in in fruits and vegetables only sometimes, majority 49(38.9%) reported having not thought about making any changes to diet in the past year to improve preconception health, almost half 59(46.8%) reported having made specific changes to diet with the intention of improving nutrition but only sometimes, and majority 91(72.2%) had not attended any education sessions on pre-conception nutrition care.

Table 3: Showing practice towards nutrition preconception care among women of reproductive age attending outpatient department at Kambuga Hospital (n=126)

Variable	Category	Frequency (n)	Percentage (%)
Take any vitamin or mineral supplements in preparation for pregnancy	No	87	69.0
	Occasionally	10	7.9
	Regularly	1	0.8
	I'm not sure	5	4.0
	Only when advised by a healthcare provider	23	18.3
Frequency of consuming a diet rich in fruits and vegetables	Rarely or never	13	10.3
	Occasionally	20	15.9
	Sometimes	76	60.3
	Often	11	8.7
	Always	6	4.8
Made any specific changes to diet with the intention of improving nutrition	No changes	15	11.9
	Minor changes	37	29.4
	Some changes sometimes	59	46.8
	Significant changes	15	11.9
Made any changes to diet in the past year to improve preconception health	Haven't made any changes	15	11.9
	Made minor changes	37	29.4
	Made significant changes	10	7.9
	Not sure	15	11.9
	Haven't thought about it	49	38.9
Attended any education sessions about pre-conception nutrition care	Yes	35	27.8
	No	91	72.2

Source: Primary data,

Figure 8: Showing summary of practice towards nutrition preconception care among women of reproductive age attending outpatient department at Kambuga hospital



Source: Primary data,

Majority of the women 82(65.1%) had inappropriate practice towards nutrition preconception care and 44(34.9%) had appropriate practice.

Discussion

The study revealed that women of reproductive age had a relatively high level of knowledge regarding nutrition preconception care, with 70.6% demonstrating sufficient understanding. A significant proportion (60.3%) accurately defined preconception care as personalized care for individuals considering pregnancy. Many respondents (47.6%) indicated that nutrition preconception care should commence at least three months before pregnancy. Additionally, 42.9% recognized its benefits in preventing pregnancy complications. This aligns with previous studies by Kasim et al. (2016) and Olowokere et al. (2015), showing similar knowledge levels among Nigerian women and among Iranian women (68.8%) (Fatemeh & Samaneh, 2018). However, studies in Nigeria reported lower knowledge levels, including research in Ruiru and Kiambu (Joyce et al., 2018) and South East Nigeria (Nwaolisa et al., 2021). These differences may be attributed to Kambuga's public health facility setting, which may enhance education efforts.

The majority of women (87.3%) showed an unfavorable attitude toward nutrition preconception care, despite recognizing its importance (69%) and potential benefits for pregnancy outcomes (60.3%). Nearly half of the respondents perceived preconception nutrition care as a "luxury" service. This attitude may stem from a lack of awareness regarding the advantages of proper preconception nutrition, which can reduce adverse outcomes, such as low birth weight and spina bifida. These findings echo Patel and Shah's (2018) findings in India and Olowokere et al. (2015) in Nigeria, where negative attitudes prevailed. In contrast, studies from Palestine (Al-Kasseh et al., 2022), Malaysia (Kasim et al., 2016), and Ethiopia (Fekene et al., 2020) reported more positive attitudes, possibly due to the urban hospital settings of those studies compared to the rural setting at Kambuga.

Regarding practice, most women (65.1%) at Kambuga Hospital did not engage in effective nutrition preconception practices. A majority (69%) did not take vitamin or mineral supplements, and 51.6% were unaware of the impact of unhealthy habits on preconception health. While 46.8% made some dietary changes to improve nutrition, this was not consistent. Research shows that specific dietary changes, such as increasing folate and iron intake, can prevent complications during pregnancy (Crider et al., 2016; Cetinkaya et al., 2017). Studies underscore the importance of educational interventions to promote healthier practices in the preconception period (Muñoz-Oliveira et al., 2018; Pettigrew et al., 2019).

In conclusion, this study finds that although women at Kambuga Hospital exhibit a high level of knowledge about nutrition preconception care, their attitude remains largely negative, and their practices are often inappropriate.

Conflict of interest

The authors declare no conflicts of interest.

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