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**Original Research Article**

# Prevalence and biostatistical analysis of health facility related predictors of adherence to healthy timing and spacing of pregnancy among multiparous women in Wajir County, Kenya

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## ABSTRACT

**Background:** Globally, healthy timing and spacing of pregnancy is important for reducing maternal and child health risks, yet adherence remains unpredictable. Sub-Saharan Africa faces high rates of short birth intervals due to inadequate contraception, cultural norms, and weak health systems. In Kenya, and especially Wajir County, poor adherence is driven by low contraceptive uptake, high fertility, and early pregnancies.

**Methods:** The study employed a cross-sectional descriptive-analytical design. It included multiparous women. A sample of 368 participants was selected using Fisher's formula via systematic sampling. Data were collected with structured questionnaires and analyzed using SPSS version 26.0.

**Results:** The results revealed that 56.5% of respondents adhered to heathy timing and spacing of pregnancy in Wajir County with 34.2 under age pregnancy, 15.8% abortion/miscarriage and 32.6% short inter-birth interval. The predictors of adherence based on health facility related factors were; time taken to reach nearest health facility offering family planning services (AOR=0.464, p=0.016), ever missed family planning services due to stock-out (AOR=3.902, p=0.001) and availability of contraceptive at health facilities (AOR=2.768, p=0.013) significantly influenced the adherence.

**Conclusions:** The study found that the health facility related factors that predicted the adherence were; time taken to reach nearest health facility offering family planning (AOR=0.464, p=0.016), ever missed family planning services due to stock-out (AOR=3.902, p=0.001) and availability of contraceptive at health facilities (AOR=2.768, p= 0.013).

**Keywords:** Healthy timing and spacing of pregnancy, Health facility factors, Family planning services, Multiparous women

## INTRODUCTION

Globally, the healthy timing and spacing of pregnancy (HTSP) is recognized as a very critical issue of reproductive health, which is meaningfully in impacting the maternal and child health outcomes.[1,2] According to the World Health Organization (WHO), optimal birth spacing, is defined as delaying the pregnancy until one gets at least 18 years old before getting pregnant, waiting for at least 24 months post successful delivery, and also not less than 6 months post miscarriage/abortion outcomes.[1,2] Adherence to these recommendations significantly reduces the risks of maternal morbidity and mortality, adverse pregnancy outcomes, infant and

neonatal deaths, and childhood undernutrition. Despite these well-documented benefits, adherence to HTSP remains inconsistent worldwide due to a complex interplay of socioeconomic, cultural, and health system factors. Globally, nearly one-third of pregnancies occur at short intervals, increasing the likelihood of poor maternal and child health outcomes.[3,4]

In sub-Saharan Africa (SSA), short interbirth intervals represent a major public health concern where many women in the region experience pregnancies spaced less than 24 months apart, largely driven by limited access to modern contraceptives, sociocultural norms favouring large family sizes, early marriage, and weak health systems.[5] Although several countries in SSA have implemented family planning (FP) programs aimed at improving contraceptive awareness, accessibility, and utilization, progress remains uneven, particularly in marginalized and hard-to-reach populations.[6] Consequently, the region accounts for over 90% of short birth intervals globally.[2-7]

In Kenya, adherence to HTSP guidelines varies considerably across counties, with rural and arid and semi-arid lands (ASALs) lagging behind urban areas. The Kenya Demographic and Health Survey (KDHS) 2022 indicates that while contraceptive prevalence has improved nationally, a substantial proportion of women still experience closely spaced births, particularly in counties with limited health infrastructure and poor access to reproductive health services.[8]

Wajir County presents one of the most extreme examples of poor adherence to HTSP in the country. The county's TFR is 6.8 children per woman which is one of the highest in Kenya. Contraceptive uptake remains critically low at only 3%, and teenage pregnancy is highly prevalent, with 14.9% of girls aged 15–19 years having ever been pregnant and a reported teenage pregnancy prevalence of 10.8% in 2022, among the highest nationally. Furthermore, 34.6% of births in Wajir do not meet the recommended spacing interval.[8]

Poor adherence to HTSP increases the risk of adverse outcomes, including low birth weight, preterm births, neonatal mortality, and maternal complications such as anaemia, pregnancy-induced hypertension, and obstetric fistula.[9] While Kenya's national neonatal, infant, and under-five mortality rates are 21, 32, and 41 per 1,000 live births respectively, Wajir County records substantially higher rates at 37, 43, and 57 per 1,000 live births.[8] Also, maternal mortality in Wajir is alarmingly high at 1,683 per 100,000 live births, compared to the national average of 355 per 100,000 live births.[8-10] Early pregnancies, largely driven by early marriage, school dropout, and gender-based violence, contributes to a central role in poor adherence to WHO-recommended HTSP. Adolescents who become pregnant before the age of 18 face increased risks due to physiological immaturity and limited access to skilled care, perpetuating cycles of closely spaced births and poor health outcomes.[7,11,12] Despite strong evidence supporting the benefits of HTSP, there is limited context-specific research examining adherence to HTSP in Wajir County. Therefore, the study seeks to assess the health facility related factors influencing adherence to HTSP among multiparous women in Wajir County, Kenya.

## METHODS

The study utilized the descriptive analytical cross-sectional design. The study was carried out at Wajir County, Kenya from Jan-February 2026. The study population comprised of multiparous women of reproductive age.

### *Inclusion criteria*

The inclusion criteria were that the multipara woman should have lived in Wajir County for at least nine months and consent to participate in the study.

### *Exclusion criteria*

Multipara women in poor health or not able to speak were excluded. The sample size of 348 was calculated using Fisher's formula, considering a 34.6% non-adherence to HTSP rate from KDHS 2022 with a 10% adjustment to 382 participants.[8,13] However the response rate was 96.8% who were deemed complete and fit for analysis. The participants were sampled using systematic random sampling from a list of registered households from which one eligible woman was selected. Ethical consideration included ensuring consent, privacy and confidentiality, independent communication, and obtaining approvals. Research permit was obtained from the National Commission for science, Technology and innovation (NACOSTI) license No. NACOSTI/P/26/4183358 while ethical clearance obtained from Tangaza University, TU/ISERC2025/04/00132.

Local authorities also granted the necessary permissions. Data, gathered through a questionnaire, underwent thorough cleaning in SPSS 26.0. The analysis involved descriptive statistics such as frequencies, proportions and inferential analysis using Chi square test with statistical significance set at $p<0.05$ and a 95% confidence interval.

## RESULTS

### *Distribution of socio-demographic factors (n=368)*

The results revealed that 149 (40.5%) respondents were aged between 30-39 years followed by and 104 (28.3%) aged 20 -29 years. Regarding highest level of education attained, 160 (43.5%) had secondary level followed by 107 (29.1%) who had primary level of education and majority 240 (65.2%) were single followed by 78 (21.2%) who were married. Majority 201(54.6%) were Muslim followed by 103(28%) Christians/protestants, 169(45.9%)

were un-employed followed by 128 (34.8%) who were self-employed and 143(38.9%) earned KSHS 10,001 – 20,000 KSHS per month followed by 115(31.3%) who earned ≤ 5,000 KSHS. Further about 190(51.6%) of them had either 3 or 4 pregnancies followed by 107 (29.1%) who had 2 pregnancies. Result is presented in Table 1.

**Table 1: Socio-demographic characteristics among respondents (n=368).**

| Variables | Respondents | Frequency (N) | Percent (%) |
|---|---|---|---|
| **Age category (in years)** | ≤ 20 | 65 | 17.7 |
| | 20-29 | 104 | 28.3 |
| | 30-39 | 149 | 40.5 |
| | 40-49 | 50 | 13.6 |
| **Level of education** | No formal education | 59 | 16.0 |
| | Primary | 107 | 29.1 |
| | Secondary | 160 | 43.5 |
| | Tertiary | 42 | 11.4 |
| **Marital status** | Single | 240 | 65.2 |
| | Married | 78 | 21.2 |
| | Divorced/widowed | 50 | 13.6 |
| **Religion affiliated** | Christian/protestant | 103 | 28.0 |
| | Muslim | 201 | 54.6 |
| | Traditional | 50 | 13.6 |
| | Other (Hindu, Buddhism, Atheist) | 14 | 3.8 |
| **Occupation** | Unemployed | 169 | 45.9 |
| | Self-employed | 128 | 34.8 |
| | Employed | 71 | 19.3 |
| **Monthly income** | ≤ 5,000 KSHS | 115 | 31.3 |
| | 5,000 – 10,000 KSHS | 143 | 38.9 |
| | 10,001 – 20,000 KSHS | 64 | 17.4 |
| | ≥ 20,000 KSHS | 46 | 12.5 |
| **Number of pregnancies** | 2 | 107 | 29.1 |
| | 3 or 4 | 190 | 51.6 |
| | > 4 | 71 | 19.3 |

***Adherence to healthy timing and spacing of pregnancy***

*Age at first pregnancy*

The results revealed that 242 (65.8%) had first pregnancy at 18 years and above. The results were as shown in Figure 1.

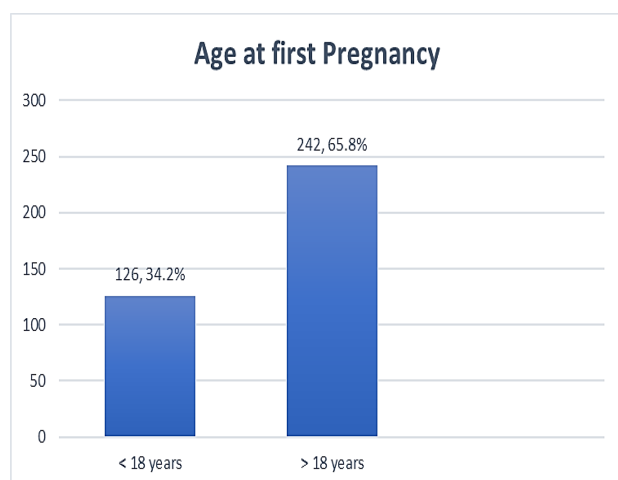


**Figure 1: Age at first pregnancy.**

*Incidences of abortion/miscarriages*

The results showed that 310 (84.2%) had never had a case of abortion or miscarriage while 58 (15.8%) had encounter pregnancy loss. The results were as shown in Figure 2.

*Pregnancy spacing after a miscarriage/abortion*

Regarding the spacing of another pregnancy after a miscarriage or abortion, results showed that 20 (34.5%) had next pregnancy below 6 months as shown in figure 3.

Most 248 (67.4%) respondents had an inter-birth interval of between 24-59 months. The results were as presented in table 2. Proportion of respondents adhering to healthy timing and spacing of pregnancy.

This was measured using a checklist capturing info on age at first pregnancy, inter-birth interval and pregnancy after a miscarriage. Respondent who had a first pregnancy more than 18 years, afterbirth interval of 24 months and after a miscarriage for at least 6 months (where applicable) were considered adherent to the recommended HTSP while those who had missed out on

any of the requirements were considered to be non-adherent. Result presented in figure 4 indicates that 208 (56.5%) respondents had adhered to HTSP. The Findings from KII also noted non adherent as indicated as emphasized that adherence in Wajir County remains significant problem. Count reproductive health officer who was part of KII noted. Adherence to HTSP in Wajir is still a challenge because many women lack adequate knowledge, cultural beliefs favour regular childbearing, and access to FP services is limited especially in remote areas. Even when women understand the importance of spacing, these combined factors make it difficult for them to practice it consistently.

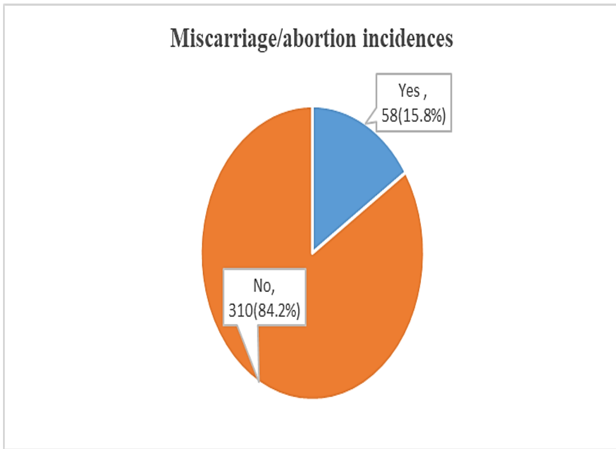


**Figure 2: Cases of abortion/miscarriages among respondents.**

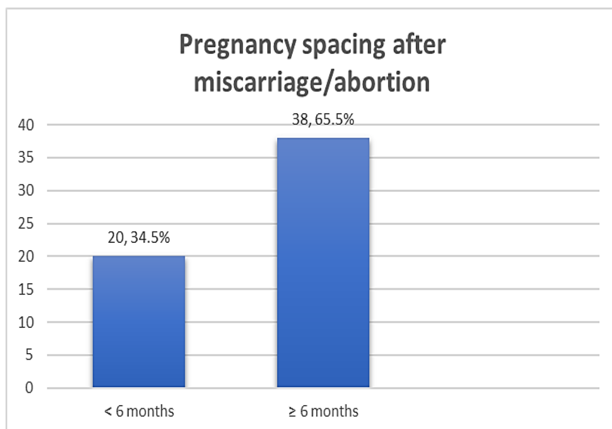


**Figure 3: Pregnancy spacing after a miscarriage/abortion.**

**Table 2: Inter-birth intervals among respondents among respondents (n=368).**

| Variable | Respondent response | Frequency (N) | Percentage (%) |
|---|---|---|---|
| Inter-birth intervals | <24 months | 90 | 24.5 |
| | 24-59 months | 248 | 67.4 |
| | >59 months | 30 | 8.2 |

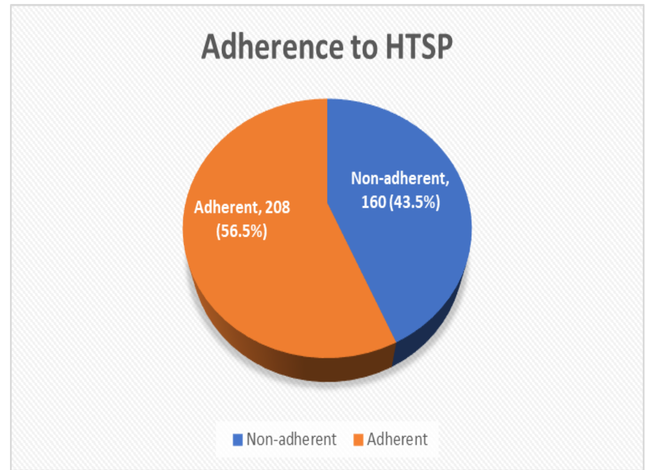


**Figure 4: Adherence to healthy timing and spacing of pregnancy.**

***Health facility-related factors***

*Distribution of health facility-related factors*

Results revealed that more than half 226 (61.4%) took less than 30 minutes to reach nearest healthy facility, 253 (68.8%) paid less than KSHS 100 for the services, majority 231 (62.8%) had missed FP services due to stock-out, while 258 (70.1%) had received FP counselling at a health centre. Majority 240 (65.2%) indicated availability of contraceptives at health facilities, 264 (71.7%) rated the excellent of the quality of FP services, and 221 (60.1%) reported healthcare workers encourage adherence to HTSP. The results were as presented in table 3 below.

*Health facility related factors associated with healthy timing and spacing of pregnancy*

Table 4 presents the association between Health facility related factors and HTSP. The results revealed that most of 40 (70.2%) respondents whose time taken to reach nearest facility offering FP services was more than 1 hour had adhered to HTSP. Time taken to reach to the nearest facility was significantly associated with adherence to HTSP (p=0.045). A substantial proportion 7 (70.0%) paid more than KSHS 200 for FP services adhered and the average cost of services established a significant statistical association with adherence (p= 0.001). Nearly 48 (67.6%) among those who never missed FP services due to stock out adhered. It was established that those who ever missed FP had a significant statistical association with adherence to HTSP. About 152 (59.0%) who ever received FP counselling at a health facility adhered. However, receipt of FP counselling at a health facility was not significantly statistical associated with adherence to HTSP ((p=0.322).

Among 62 (66%) who reported that contraceptives at the health facilities are not availability adhered. Availability of contraceptives at health facilities had a significant

statistical association with adherence to HTSP (p= 0.032). Although 19 (61.3%) rated the quality of FP fair adhered to HTSP, there was no statistically significant association was established between quality of FP services and adherence to HTSP (p= 0.055). Additionally, 143 (64.7%) reported being encouraged by healthcare workers adhered to HTSP. Healthcare workers encourage adherence to HTSP established a significant statistical association with adherence to HTSP (p=001). The KII further reported that geographical barriers were identified as a major challenge limiting access to FP services among women living in remote areas. A CHP noted. Women walk for many houses to reach the health facility so the miss FP services. Supply side challenges were also highlighted by a county reproductive health officer, who emphasized the negative impact of contraceptive stock out on continuity of FP uptake.

There are times when health facilities run out of certain contraceptives methods due to delays in supply or logistic challenges. When women come and do not find their preferred methods many of them discontinue FP or take long to return to the facility which affects adherence to HTSP.

**Table 3: Distribution of health facility related factors healthy timing and spacing of pregnancy among respondents (n=368).**

| Variable | Response category | Frequency (N) | Percent (%) |
|---|---|---|---|
| **Time taken to reach nearest health facility offering FP services** | Less than 30 minutes | 226 | 61.4 |
| | 30–60 minutes | 85 | 23.1 |
| | More than 1 h | 57 | 15.5 |
| **Average cost of receiving FP services** | < KSH 100 | 253 | 68.8 |
| | KSH 100–200 | 105 | 28.5 |
| | > KSH 200 | 10 | 2.7 |
| **Ever missed FP services due to stock-out** | Yes | 231 | 62.8 |
| | No | 71 | 19.3 |
| | Cannot tell | 66 | 17.9 |
| **Ever received FP counseling at a health facility** | Yes | 258 | 70.1 |
| | No | 77 | 20.9 |
| | Cannot tell | 33 | 9.0 |
| **Availability of contraceptives at health facilities** | Yes | 240 | 65.2 |
| | No | 94 | 25.5 |
| | Cannot tell | 34 | 9.2 |
| **Rating of quality of FP services received** | Excellent | 264 | 71.7 |
| | Good | 73 | 19.8 |
| | Fair | 31 | 8.4 |
| | Poor | 0 | 0.0 |
| **Healthcare workers encourage adherence to HTSP** | Yes | 221 | 60.1 |
| | No | 137 | 37.2 |
| | Cannot tell | 10 | 2.7 |

**Table 4: Health facility related factors associated with healthy timing and spacing of pregnancy among respondents (n=368).**

| Independent variable | Respondent response | Adherence to HTSP | | Statistical significance |
|---|---|---|---|---|
| | | No (n=160) N (%) | Yes (n=208) N (%) | |
| **Time taken to reach nearest health facility offering FP services** | <30 minutes | 108 (47.8) | 118 (52.2) | X2=6.215A |
| | 30–60 minutes | 35 (41.2) | 50 (58.8) | DF=2 |
| | More than 1 h | 17 (29.8) | 40 (70.2) | p= 0.045* |
| **Average cost of receiving FP services** | <KSH 100 | 97 (38.3) | 156 (61.7) | Fisher's exact test |
| | KSH 100–200 | 60 (57.1) | 45 (42.9) | DF=2 |
| | >KSH 200 | 3 (30.0) | 7 (70.0) | p= 0.001* |
| **Ever missed FP services due to stock-out** | Yes | 94 (40.7) | 137 (59.3) | X2=16.894A |
| | No | 23 (32.4) | 48 (67.6) | DF=2 |
| | Cannot tell | 43 (65.2) | 23 (34.8) | p= 0.001* |
| **Ever received FP counseling at a health facility** | Yes | 106 (41.0) | 152 (59.0) | X2=2.265A |
| | No | 39 (50.6) | 38 (49.4) | DF=2 |

Continued.

| Independent variable | Respondent response | Adherence to HTSP | | Statistical significance |
|---|---|---|---|---|
| | | No (n=160) N (%) | Yes (n=208) N (%) | |
| | Cannot tell | 15 (45.5) | 18 (54.5) | p=0.322 |
| **Availability of contraceptives at health facilities** | Yes | 108 (45.0) | 132 (55.0) | X2=6.890A |
| | No | 32 (34.0) | 62 (66.0) | DF=2 |
| | Cannot tell | 20 (58.8) | 14 (41.2) | p= 0.032* |
| **Rating of quality of FP services received** | Excellent | 106 (40.2) | 158 (59.8) | X2=5.784A |
| | Good | 35 (47.9) | 38 (52.1) | DF=2 |
| | Fair | 19 (61.3) | 12 (38.7) | p=0.055 |
| **Healthcare workers encourage adherence to HTSP** | Yes | 78 (35.3) | 143 (64.7) | Fisher's exact test |
| | No | 78 (56.9) | 59 (43.1) | DF=2 |
| | Cannot tell | 4 (40.0) | 6 (60.0) | p=0.001* |

*p value ≤0.05

**Table 5: Health facility related factors influencing adherence to health timing and spacing of pregnancy.**

| Independent variable | Category | B | S.E. | WALD | SIG. | AOR | 95% C.I. For OR | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Lower | Upper |
| **Time taken to reach nearest health facility offering FP services** | Less than 30 minutes | Reference | | | | | | |
| | 30–60 minutes | -0.767 | 0.319 | 5.794 | 0.016* | 0.464 | 0.249 | 0.867 |
| | More than 1 h | -0.499 | 0.364 | 1.881 | 0.170 | 0.607 | 0.298 | 1.239 |
| **Average cost of receiving FP services** | < KSH 100 | Reference | | | | | | |
| | KSH 100–200 | -20.778 | 12.710 | 0.000 | 0.999 | 0.000 | 0.000 | 41.291 |
| | > KSH 200 | -21.491 | 11.815 | 0.000 | 0.999 | 0.000 | 1.093 | 18.114 |
| **Ever missed FP services due to stock-out** | Yes | Reference | | | | | | |
| | No | 1.002 | 0.291 | 11.867 | 0.001* | 2.725 | 1.540 | 4.820 |
| | Cannot tell | 1.361 | 0.362 | 14.144 | 0.001* | 3.902 | 1.919 | 7.932 |
| **Availability of contraceptive at health facilities** | Yes | Reference | | | | | | |
| | No | 0.557 | 0.372 | 2.247 | 0.134 | 1.746 | 0.842 | 3.619 |
| | Cannot tell | 1.018 | 0.411 | 6.140 | 0.013* | 2.768 | 1.237 | 6.193 |
| **Healthcare workers encourage adherence to HTSP** | Yes | Reference | | | | | | |
| | No | -0.261 | 0.704 | 0.137 | 0.711 | 0.770 | 0.194 | 3.063 |
| | Cannot tell | -1.126 | 0.711 | 2.508 | 0.113 | 0.324 | 0.080 | 1.307 |

*p value ≤0.05

*Health facility related factors influencing adherence to healthy timing and spacing of pregnancy*

The result showed that those who took 30-60miutes to nearby health facility were significantly less likely to adhere to HTSP (AOR=0.464, 95% CI: 0.249–0.867, p=0.016).

Also, those who had not missed and those who were unsure whether they had missed FP due to stock out were significantly more likely to adhere to HTSP (AOR=2.725 CI: 1.540 - 4.820, p=0.001; AOR=3.902, 95% CI: 1.919–7.932, p=0.001) respectively.

And lastly women who were uncertain about the availability of contraceptive at the health facilities were significantly more likely to adhere compared to who reported that contraceptives were availability (AOR=2.768, 95% CI: 1.237–6. 193, p=0.013). See Table 5.

## DISCUSSION

### *Adherence to healthy timing and spacing of pregnancy*

The rate of pregnancies recorded below the age of 18 years was 34.2%. This has been mostly attributed to the cultural practice of early and forced marriages. This is above the Kenyan national average of teenage pregnancy which stands at 15%, a great improvement from the 20% reported in the country.[8,14] Wajir County, contraceptive uptake is extremely low at 3%, and teenage pregnancy remains a major concern, with 14.9% of girls aged 15–19 years having ever been pregnant, prevalence of 10.8% teen pregnancy as reported by KDHS, one of the highest nationally.[8] This is almost similar to what was reported in

Ghana, where approximately 30% of the pregnancies registered were underage.[15] Regarding the incidence of abortion/miscarriage, about 15.8% had miscarriage/abortion this was attributed to unintended pregnancies, limited access to comprehensive SRH services, delayed ANC care, inadequate post abortion counselling sessions and also poor nutritional status. The findings are consistent with a study conducted in Kajiado County which reported that 14.3.% of respondents had experienced abortion/miscarriage indicating a comparable burden of pregnancy loss across different Kenya settings despite background differences.[16]

According to pregnancy spacing after miscarriage/ abortion, 34.5% conceived within less than 6 months after pregnancy loss. This is because they conceived within less than 6 months after a miscarriage or abortion. The results were contrary to study conducted in Kajiado County in Kenya where 14.3% of respondents had unhealthy timing of pregnancy.[16] According to study findings from Ethiopia, it was noted that majority of respondents who had miscarriage conceived within the first 6 months indicating high non-adherence rates.[17,18] However, it disagrees with Wassihun et al who reported women are more likely to delay pregnancy after miscarriage in area with strong support by health workers and family to offer post abortion recovery and counseling.[19]

Regarding inter-birth interval, results revealed that 67.4% had adhered to the recommended inter-birth interval of between 24-59 months. This indicated good adherence to optimal birth spacing which was attributed to enhanced health education and utilization of contraceptives. This was contrary to findings by Aleni and his colleague, who found out that the rate of short birth intervals recorded in Kenya, Tanzania and Uganda were 18%, 19% and 25% respectively.[20] According to a study from Ethiopia, it was reported 50.0% of respondents adhered to the recommended inter-birth intervals.[21]

The results indicated that 43.5% of respondents did not adhere to the recommended healthy timing and spacing of pregnancy indicating moderate high level of adherence in Wajir county. This study was done in the rural areas of Wajir County which is characterized by increased teenage pregnancies, early and forced marriages resulting to increased cases of non-adherence to HTSP. The findings are comparable to a study conducted in Kilifi County, Kenya which reported non adherence of 39.9% which is consisted with the present study.[22] The results were contrary to findings from a Kenyan study conducted in Kajiado County where a lower proportion 33.6% of respondents had not adhered to the recommended HTSP.[16]

### *Health facility related factors*

Regarding the time taken to reach the nearest health facility offering FP services, the majority of respondents who reported taking less than 30 minutes to the facility had adhered to HTSP. This was attributed to proximity to health facilities which enabled more frequent contact with health care providers, timely access to FP services and regular counselling on HTSP. This finding established significant association between time to health facility and adherence to HTSP. This is due to constant contact with healthcare providers which has improved HTSP information due to shorter time take which reduces logistical barriers like transport cost and fatigue. The findings align with studies conducted in Kenya which reported that proximity to health facility significantly enhances utilization of FP services and adherences to recommended birth spacing.[23,24] However, it contradicts the study which reported that long distances to health facilities act as major barrier to adherence to HTSP and contraceptive services due to transport challenges and inadequate outreach services.[17]

Regarding the average cost of receiving FP services, majority wo spent less than KSHS 100 adhere to HTSP. This suggested that lower cost of FP services due to subsidized services provided by the ministry of health enhanced utilization am low-income household levels which promoted the recommended pregnancy spacing practices. This is in line with studies which highlighted subsidized or lower cost services improved utilization and continuity of uptake of contraceptive.[10] Similarly, the Kenya Community Health Strategy 2020-2025 emphasized that reducing out of pocket cost through community-based distribution and free FP commodities optimal birth spacing more especially in low income and rural areas.[25,26] Statistically the average cost of receiving FP services established significant association with HTSP adherence. This attributed that accessibility of financial of FP services where low cost or free FP services reduces economic barriers enabling women to initiate, continue and utilize FP methods without interruption thus increasing adherence to HTSP. This finding was in agreement with other studies from Wajir County and in East Africa which have shown that reduced or Free FP services more so in low- and middle-income countries enhance the utilization and adherence to optimal birth spacing.[27,28]

In terms of ever missed FP services due to stock out, majority of respondents who had experienced stock outs still adhered. This was attributed to adequate knowledge of HTSP and prior counselling which led to switching methods or finding alternative sources of FP services such as other public facilities, and private clinics. These findings were consistent with study from SSA which reported that informed women are more resilient to health system disruptions and are more likely to maintain recommended birth spacing practice even if temporary services constraints.[6,29] Similar findings were reported in Kenya where community-based programs offering counselling and linkages to alternative services points have mitigated the negative impacts of commodity stock outs on continuity of FP uptake.[24,25] The findings

demonstrated a statistically significant association between ever missing FP services due to stock out and adherence to HTSP. This was attributed to effectiveness of counselling sessions and community health strategies that empowered women with knowledge, skills and agency to make informed decisions on health even in the face of barriers. The findings were in with studies which highlighted that comprehensive counselling and health systems responsiveness reduces discontinuation of FP during stock outs by promoting methods are flexible and available for alternative services delivery.[23,29,30]

Concerning ever received FP counselling at a health facility, majority who had received had adhered to HTSP. This may could be due to counselling sessions which has enhanced women's knowledge of optimal birth spacing, increases awareness of benefits of HTSP for both mothers and children, and improves informed decision making regarding contraceptive choices and utilization. These findings are in line with a finding which reported that facility-based counselling contributes to promoting and improving HTSP knowledge, and uptake of contraceptives.[6] Statistically ever received FP counselling at a health facility established a significant association with adherence. This was attributed to nature of counselling services in health facilities where trained health providers address misconceptions and supports methods selection based on individual need and fertility intentions which helps women's self-efficacy and positive behaviour intentions towards birth spacing. The findings are in agreement with study that reported that women who receive FP counselling during ANC, postnatal maintains consistent uptake of contraceptives.[24] However, it contradicts findings that reported no significant association between FP counselling and adherence to HTSP due to counselling quality is poor, incomplete information given and socio-cultural barriers.[5,31]

In regards with availability contraceptive at the health facilities. Majority who reported the availability had adhered to HTSP. This was attributed to uninterrupted access to preferred contraceptive methods, reduced missed opportunities for FP and increased confidence in health system which led to effective pregnancy spacing. The findings are in line with studies conducted in SSA which demonstrated that consistent availability of contraceptive commodities at health facilities determines sustainability of FP use and optimal birth spacing.[6] Statistically availability contraceptive at the health facilities had established the significant association with adherence to HTSP. This suggested that when contraceptives are readily available women are more likely to initiate and continue to use and maintain recommended inter pregnancy intervals. The findings are in agreement with a study from Turkana County which reported that consistent availability of modern contraceptives at public hospitals significantly improved uptake and utilization of FP services and adherence to recommended birth spacing interval among women of reproductive age.[32]

Majority who had reported that they had excellent quality of FP service had adhered to HTSP. This was attributed to the provision of client cantered care, respectful treatment, clear communication given, adequate counselling time, availability of health provider who are competent, and trust in health services. The findings were in line with studies which reported that perceived quality of FP services positively influences contraceptives uptake and continuation and subsequently adherence to HTSP.[6,24] Though there was no statistically significant association was seen between quality of FP services received and adherence to HTSP. This could be due to subjective nature of perceived service quality where individuals' expectations and experiences vary which contribute to stronger effect on adherence than perceived quality alone. The findings were in agreement with studies which reported no significant association between perceived quality of services and adherence to HTSP.[5,31] However, it contradicted the study that highlighted strong relationship between high quality FP services and improved adherence to HTSP emphasizing that respectful care good counselling and competence of health providers determines the sustained contraceptives uptake and optimal birth spacing.[21,30]

Regarding the healthcare workers encourage on adherence to HTSP, majority who reported that they were encouraged had adhered. This was attributed to reinforcement by health providers on optimal birth spacing, clarifying misconceptions and regular encouragement which strengthens trust in health system and promotes utilization of FP. The findings are in agreement with studies which reported that provider communication, supportive counselling and regular reinforcement by health workers positively influences adherence to recommended birth spacing and utilization of FP services.[28,33]

However, it disagrees with study which reported that healthcare providers encouragement alone had minimal influence on adherence to HTSP mostly in areas where strong culture expectations, male partner dominance in reproductive decision, and limited autonym among women which restrict translation of provider's advice into practice.[34,35] Statistically, healthcare workers encourage on adherence to HTSP established a significant association with adherence to HTSP. This was due to repeated encouragement from health providers which strengthens women's perceived importance of birth spacing, enhanced confidence in uptake of contraceptives and promotes sustained engagement with FP services which ultimately reduces the chances of short birth intervals. The finding aligns with a study which reported that regular provider follow-ups and encouragement significantly enhanced continuity of FP use and adherence to HTSP especial in low resource settings.[22,33] However, it contradicts with findings which highlighted

that provider encouragement had insufficient impact when not supported by reliable contraceptives supply, accessible services, and enabling social environment, emphasizing that health system and socio-cultural and economic barriers can outweigh provider's influence.[5,31]

## CONCLUSION

The study revealed 56.5% of multiparous women of reproductive age adhered to the recommended heathy timing and spacing of pregnancy in Wajir County. The rate of under-age pregnancy was 34.2% which is above the national average and the rate of abortion/miscarriage was 15.8%. About 32.6% did not adhere to the recommended inter-birth intervals of 24-59 months. The study also concludes that the health facility related factors that predicted adherence to healthy timing and spacing of pregnancy were; time taken to reach nearest health facility offering FP services (AOR=0.464, p=0.016), ever missed FP services due to stock-out (AOR=3.902, p=0.001) and availability of contraceptive at health facilities (AOR = 2.768, p= 0.013).

### *Recommendations*

The County government should provide mobile clinics to reach more women in remote areas with reproductive health service, minimize stock outs at health facilities and also concentrate on regular continuous medical education sessions among care providers to enhance their role in provision of reproductive health services thus improve adherence to HTSP.

Also, further study should be conducted on male involvement in decision making and support HTSP with emphasis on men's knowledge, attitudes and participation influencing women's adherence to recommended birth interval in Wajir County.

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