IJHSIHS

INTERNATIONAL JOURNAL OF BIOMEDICAL INFORMATICS, HEALTH SYSTEMS AND INTEGRATED HEALTH SCIENCES

ASSOCIATION BETWEEN INDIVIDUAL AND BEHAVIOURAL FACTORS AND HEALTHCARE UTILIZATION FOR REPRODUCTIVE TRACT INFECTIONS AMONG WOMEN AGED 15–49 YEARS IN WAJIR TOWNSHIP, WAJIR COUNTY, KENYA

Abdikadir Abbey Hussein, Dr. John G. Kariuki, PhD and **Dr. Anne Aswani Musotsi, PhD**

PEER REVIEW

International Journal of Biomedical Informatics, Health Systems and Integrated Health Sciences
ISSN:2047-6965
Vol.3, Issue No. 2, 2026

Association Between Individual and Behavioural Factors and Healthcare Utilization for Reproductive Tract Infections Among Women Aged 15–49 Years in Wajir Township, Wajir County, Kenya

Abdikadir Abbey Hussein
Master of Public Health (Epidemiology and Disease Control) Postgraduate Student, Mount Kenya University, Kenya
Dr. John G. Kariuki, PhD
Lecturer, School of Public Health, Mount Kenya University
Dr. Anne Aswani Musotsi, PhD
Lecturer, School of Public Health, Biomedical Sciences and Technology, Department of Nutritional Sciences, Masinde Muliro University of Science and Technology

Article History:
Published on: 20/10/2026
DOI: **https://doi.org/10.68715/p2wpxs36**

How to Cite: Hussein, A. A., Kariuki, J. G., & Musotsi, A. A. (2026). Association Between Individual and Behavioural Factors and Healthcare Utilization for Reproductive Tract Infections Among Women Aged 15–49 Years in Wajir Township, WAJIR COUNTY, KENYA. *International Journal of Biomedical Informatics, Health Systems and Integrated Health Sciences*, 3(2), 1–21. **https://doi.org/10.68715/p2wpxs36**

Abstract:

Purpose of the Study: The study examined the association between individual and behavioural factors, specifically knowledge of and attitude towards reproductive tract infections (RTIs), and healthcare utilization among women aged 18–49 years in Wajir Township, Wajir County, Kenya. It sought to establish whether knowledge and attitudes influenced women's decisions to seek formal healthcare services for RTI symptoms.

Methodology: An analytical cross-sectional study design with a quantitative approach was employed. Multistage sampling, random household selection, and lottery-based selection identified eligible participants. Data were collected using structured interviewer-administered questionnaires through the Open Data Kit platform. Of 383 questionnaires administered, 357 valid responses were analysed using SPSS. Descriptive statistics, chi-square tests, Fisher's exact tests, and binary logistic regression were applied.

Findings: Among 357 respondents, 99 reported RTI symptoms, of whom 45 (45.5%) sought care from public or private health facilities. Including pharmacy use increased healthcare utilization to 64.6%. Although 86.3% of respondents had heard of RTIs, knowledge gaps regarding HIV risk and infertility persisted. Furthermore, 79.3% feared stigma and discrimination, while 60.5% were uncomfortable discussing symptoms with healthcare providers. Knowledge was significantly associated with healthcare utilization ($\chi^2 = 9.416$, $p = 0.009$). Women knowledgeable about RTIs had 2.22 times the odds of utilizing healthcare compared with those who were not knowledgeable (95% CI: 1.31–3.76; $p = 0.003$). However, attitude was not significantly associated with utilization ($p = 0.127$).

Conclusion: Knowledge of RTIs was significantly associated with healthcare utilization, whereas attitude was not. Low facility-based utilization, self-medication, fear of stigma, and discomfort discussing symptoms remain important concerns. Strengthening health education, promoting confidentiality, providing respectful services, and engaging pharmacists in appropriate referrals may improve healthcare utilization.

***Keywords*:** *Reproductive tract infections; Healthcare utilization; Knowledge; Attitude; Wajir County.*

©2026 By The Authors. This Article is an open-access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license **(https://creativecommons.org/licenses/by-nc-sa/4.0/)**

1.0 INTRODUCTION

1.1 Background of the Study

Reproductive tract infections (RTIs) are infections of the female genital tract. They include sexually transmitted infections (STIs) and other vaginal infections, such as bacterial vaginosis and candidiasis, which are not classed as STIs but are linked to a higher risk of HIV (Duby *et al.*, 2026). Untreated infections can cause infertility, complications in pregnancy and a higher risk of acquiring HIV, and many infections cause mild symptoms or none (World Health Organization [WHO], 2024). Early care therefore matters. In this study, healthcare utilization means that a woman with RTI symptoms used a public or private health facility. Two individual and behavioural factors are examined: knowledge of RTIs and attitude towards RTIs and care-seeking. The study is guided by the socio-ecological model (SEM), which treats individual characteristics as one of several levels that shape health behaviour (McLeroy *et al.,* 1988).

1.1.1 Global Perspective

Globally, women seek care for RTIs against a large burden of infection. The WHO estimated 374 million new cases of four curable STIs (chlamydia, gonorrhoea, trichomoniasis and syphilis) among people aged 15–49 years in 2020, which is more than one million new infections every day (WHO, 2024). In Europe, England recorded 168,889 chlamydia diagnoses and 71,802 gonorrhoea diagnoses in 2024, and syphilis diagnoses reached their highest annual number since 1948 (UK Health Security Agency [UKHSA], 2025). These figures come from routine sexual health services and therefore reflect both infection and testing activity. In Asia, incomplete care-seeking is a persistent problem. In an urban resettlement area of Uttar Pradesh, India, only 54.1% of symptomatic women sought treatment, and 83.1% of those who did not seek treatment cited lack of awareness that treatment was needed, or stigma, as the main reasons (Barua *et al.,* 2024). Together, these examples show that infection is common in very different health systems, and that limited awareness and stigma, which are individual and behavioural factors, are repeatedly reported as barriers to care.

1.1.2 Regional Perspective

Sub-Saharan Africa carries a large share of the global STI burden, and care-seeking varies widely. Across 28 countries, 66.1% of women with STIs or STI symptoms sought healthcare, ranging from 85.6% in Liberia to 37.9% in Ethiopia, and comprehensive knowledge of HIV/AIDS was associated with higher odds of seeking treatment (Seidu *et al.,* 2023). A later analysis of 11 countries found that 62.2% of women sought care (Aemro *et al.,* 2025). In West Africa, 72% of young women in Ghana with a history of STIs sought treatment, but 34% of those who did so went to chemical or drug stores and 10% self-medicated (Abuosi *et al.,* 2022). In Togo, 60.7% of female

sex workers who reported STI symptoms sought medical care (Bitty-Anderson *et al.,* 2022). In Southern Africa, 57.1% of South African adolescent girls and young women with symptoms sought care at clinics or hospitals, and shame, embarrassment and misunderstanding shaped how they responded to symptoms (Duby *et al.,* 2026). In Malawi, 54.2% of adults who reported STI symptoms in national surveys conducted up to 2015 sought treatment (Michalow *et al.,* 2024). In all four countries, a substantial share of symptomatic people did not use formal health services.

1.1.3 Local Perspective

In Kenya, evidence on RTI care-seeking comes mainly from specific groups and urban settings. Among 77 young street females in Eldoret, 80.5% had heard of RTIs and 65% (n = 50) reported ever having one. Of these, 72% sought treatment, and pharmacies (43%) and health facilities (51%) were the first points of care (Maritim *et al.,* 2021). These findings show that awareness does not guarantee use of health facilities and that pharmacies are an important alternative source of care. Kenyan women, like women elsewhere in sub-Saharan Africa, may obtain treatment from health facilities, pharmacies or self-medication (Abuosi *et al.,* 2022; Maritim *et al.,* 2021). The route taken may influence whether the infection is diagnosed and treated appropriately. Published evidence from the arid and semi-arid northern counties, where health services are thinly spread, appears limited. County health managers therefore have little local evidence on which women use services and why. The present study addresses part of this gap for Wajir Township by examining knowledge and attitude as individual and behavioural influences on healthcare utilization.

1.1.4 Wajir County and Wajir Township Context

Wajir County is in north-eastern Kenya and had 781,263 residents in the 2019 census, of whom 604,089 lived in rural areas (Commission on Revenue Allocation [CRA], 2022). Poverty and limited health services form the setting for care-seeking. The poverty headcount was 62.6% in 2015/16, the county had six health workers per 10,000 populations in 2019, and 48.2% of deliveries took place in a health facility (CRA, 2022). In 2020, the county had 120 public and 32 private health facilities at levels 2 to 4, and most public facilities were dispensaries and health centres (CRA, 2022). Under the SEM, such conditions form part of the wider environment in which women decide whether to seek care. This study did not measure them directly, but they help to explain why knowledge and attitude may matter.

1.2 Statement of the Problem

RTIs remain a source of avoidable illness among women, and untreated infection can lead to infertility and pregnancy complications (WHO, 2024). Care-seeking is incomplete in many settings: between 54% and 72% of symptomatic women or young people sought care in the studies reviewed above (Abuosi *et al.,* 2022; Barua *et al.,* 2024; Duby *et al.,* 2026; Maritim *et al.,* 2021;

Seidu *et al.,* 2023). Studies in sub-Saharan Africa and India link low use of care to limited knowledge, stigma and taboos, but the strength of these relationships differs between settings (Barua *et al.,* 2024; Bitty-Anderson *et al.,* 2022; Seidu *et al.,* 2023). Wajir County has high poverty and few health workers, and in such settings women with symptoms may turn to pharmacies or self-medication. However, to the authors' knowledge, no published study in Wajir Township has measured how many women with RTI symptoms use health facilities or whether knowledge of RTIs and attitude towards RTIs are associated with that use. Without this evidence, county health managers cannot decide whether education, stigma reduction or changes in services should receive priority. This study therefore examined the association between individual and behavioural factors and healthcare utilization for RTIs among women in Wajir Township.

1.3 Purpose of the Study

The purpose of the study was to determine the association between individual and behavioural factors (knowledge of and attitude towards RTIs) and healthcare utilization for RTIs among women in Wajir Township, Wajir County, Kenya.

1.4 Research Hypotheses

H01: Knowledge of RTIs is not significantly associated with healthcare utilization for RTIs among women in Wajir Township.

H02: Attitude towards RTIs is not significantly associated with healthcare utilization for RTIs among women in Wajir Township.

2.0 LITERATURE REVIEW

2.1 Theoretical Framework: The Socio-Ecological Model

The study is guided by the SEM of McLeroy *et al.* (1988). The SEM holds that human behaviour is shaped first by individual characteristics, such as biological factors, knowledge, perceptions and attitudes, and by their interaction with external influences. These extend from interpersonal relationships with family and friends to institutional, community and public policy factors. The model therefore treats health behaviour as the product of several interacting levels rather than of individual choice alone (McLeroy *et al.,* 1988). Recent evidence on STI care-seeking shows the same pattern. Across 28 sub-Saharan African countries, individual factors (education, work status, HIV/AIDS knowledge), household and relationship factors (wealth, marital status), community factors (rural residence) and health-system factors (access barriers, health insurance) were all associated with the odds of seeking care (Seidu *et al.,* 2023). By showing these interlinked levels, the SEM also points to the need for interventions that work at more than one level.

Application of the SEM to the Present Study. The SEM was applied in three steps. First, it supplied the principle that healthcare utilization for RTIs is influenced by factors at more than one level, which led the study to examine individual-level and institutional-level determinants together. Second, the levels were used to select variables: the individual level supplied the sociodemographic characteristics and the knowledge and attitude variables, and the institutional level supplied the health facility-related variables. Third, the levels were used to group variables into the sets of determinants analysed in the study. The interpersonal, community and public policy levels of the SEM were not measured, and this is acknowledged as a limitation of scope.

2.2 Empirical Review

2.2.1 Individual and Behavioural Determinants of Healthcare Utilization for Reproductive Tract Infections

The individual and behavioural variables assessed in this study are knowledge of RTIs and attitude towards RTIs and care-seeking. Knowledge refers to a woman's awareness of RTI symptoms, causes, the need for treatment and the availability of treatment. Attitude refers to her beliefs and feelings about RTIs and about seeking care, including perceived seriousness, stigma and embarrassment, and preference for non-facility care. Both are intrapersonal factors in the SEM (McLeroy *et al.,* 1988).

Knowledge. Low knowledge is often linked to low use of care, although awareness alone does not ensure it. In an urban resettlement area of India, the most common reasons for not seeking care were lack of awareness that treatment was needed and stigma (Barua *et al.,* 2024). Across 28 African countries, women with comprehensive HIV/AIDS knowledge had higher odds of seeking treatment for STIs or their symptoms (Seidu *et al.,* 2023). Education, which shapes health knowledge, was also associated with seeking treatment among young women in Ghana (Abuosi *et al.,* 2022). In Eldoret, 80.5% of young street females had heard of RTIs and 72% of those with an RTI sought treatment, yet pharmacies were the first point of care for 43% (Maritim *et al.,* 2021).

Attitude. Attitudes towards RTIs and care-seeking also shape use. Women with STI symptoms in sub-Saharan Africa may not seek treatment because of inhibitions and taboos surrounding sexual and reproductive health (Seidu *et al.,* 2023). Shame, embarrassment and misunderstanding influenced how young South African women understood and responded to STI symptoms (Duby *et al.,* 2026), and stigma was among the main reasons for not seeking care in India (Barua *et al.,* 2024). Context also matters. Among Togolese sex workers with symptoms, care-seeking was 46.7% in Lomé and 85.5% in Kara (Bitty-Anderson *et al.,* 2022), suggesting that local conditions influence how attitudes translate into behaviour.

2.3 Healthcare Utilization for Reproductive Tract Infections

Healthcare utilization for RTIs refers to a woman's use of formal health services when she has symptoms of an RTI. In this study it was defined as the use of a public or private health facility; visits to pharmacies and self-medication were not counted as facility use but were described separately. Reported levels of utilization vary. Among women with STIs or their symptoms, 66.1% sought healthcare across 28 sub-Saharan African countries, and 62.2% did so across 11 countries in a later analysis (Aemro *et al.*, 2025; Seidu *et al.*, 2023). Single-country estimates include 72% in Ghana, 60.7% among sex workers in Togo, 57.1% among young South African women, 54.2% in Malawi and 54.1% in an Indian urban resettlement area (Abuosi et al., 2022; Barua *et al.*, 2024; Bitty-Anderson *et al.*, 2022; Duby *et al.*, 2026; Michalow *et al.*, 2024). In Eldoret, Kenya, 72% of young street females with an RTI sought treatment (Maritim *et al.*, 2021).

These figures are not directly comparable because definitions differ. Some studies count any advice or treatment, including from drug stores (Abuosi *et al.*, 2022; Seidu et al., 2023), whereas others count only visits to clinics or hospitals (Duby *et al.*, 2026). The populations also differ, as the studies include young women, sex workers and adults of both sexes. The definition used therefore influences the apparent level of utilization, and comparisons should be made with care.

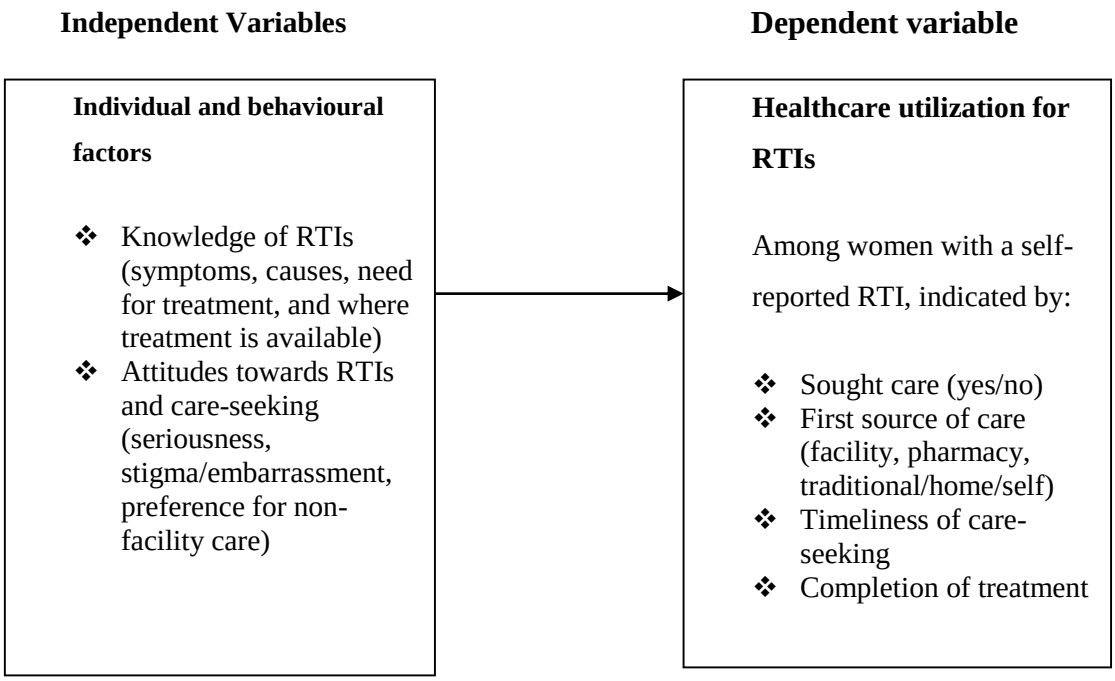
Who uses care also differs. Higher wealth, education, older age, health insurance and absence of access barriers were associated with seeking care, while married and rural women had lower odds (Abuosi *et al.*, 2022; Seidu *et al.*, 2023). Older participants were also more likely to seek treatment in South Africa (Duby *et al.*, 2026). Delay or non-use has consequences, because untreated infection can cause infertility and pregnancy complications and many infections are not obvious to the woman (WHO, 2024). Understanding who seeks care, and why, is therefore a first step towards designing services that reach women who are currently missed.

2.4 Conceptual Framework

A conceptual framework shows the expected relationships among the variables of a study. In this study, individual and behavioural factors are the independent variables and healthcare utilization for RTIs is the dependent variable (Figure 1).

Figure 1

Conceptual Framework



Note. Source: Researcher (2026)

In the SEM, knowledge and attitude are intrapersonal influences. It is expected that women who are more knowledgeable and hold favourable attitudes will be more likely to use a health facility when they have RTI symptoms. These expected relationships are tested through H01 and H02. Sociodemographic and facility-related factors are examined under other objectives of the wider study and are not part of this framework.

3.0 RESEARCH METHODOLOGY

The study adopted an analytical cross-sectional design using a quantitative approach to assess healthcare utilization practices for reproductive tract infections (RTIs) among women aged 18–49 years in Wajir Township, Wajir County, Kenya. Data were collected at the household level to establish self-reported RTI experiences, healthcare utilization practices, and the associations between sociodemographic, individual and behavioural, and institutional factors and healthcare utilization. The study targeted women aged 18–49 years who were usual residents of Township sub-location and provided informed consent. A sample of 383 respondents was targeted through multistage sampling, simple random household selection, and lottery-based selection of eligible women within households.Data were collected using a structured interviewer-administered questionnaire through the Open Data Kit (ODK) platform. The instrument was pretested in Garissa County, while validity was assessed through expert and supervisor review. Reliability was

evaluated using Cronbach's alpha. Data were analysed using SPSS, with frequencies, percentages, chi-square tests, Fisher's exact tests, and binary logistic regression. Adjusted odds ratios, 95% confidence intervals, and a significance level of 0.05 were used for interpretation. Ethical approval, research authorization, informed consent, confidentiality, and voluntary participation were observed. The findings were interpreted cautiously because of geographical limitations, self-reported data, and the cross-sectional design.

4.0 RESEARCH FINDINGS AND DISCUSSION

This section presents the response rate, the pattern of healthcare utilization for RTIs, and the association of knowledge and attitude with utilization. Findings are discussed against the literature.

4.1 Response Rate

Table 1 presents the questionnaires administered, valid and excluded, the response rate achieved and the minimum sample size required in Wajir Township.

Table 1
Response Rate

Item	n	%
Questionnaires administered	383	100.0
Valid questionnaires analysed	357	93.2
Questionnaires excluded (duplicate entries and missing responses)	26	6.8
Minimum sample size required	348	

Note. Source: Field data.

A total of 383 questionnaires were administered, of which 357 were valid for analysis, giving a response rate of 93.2% (Table 1). The remaining 26 questionnaires (6.8%) were excluded because of duplicate entries and missing responses, not because of refusal to participate. The valid responses exceeded the minimum required sample size of 348 by nine respondents, so the planned sample size was achieved. A high response rate does not by itself establish representativeness or rule out non-response bias. Because respondents came from one sub-location, the findings apply to Township and should not be generalised to all women in Wajir County.

4.2 Descriptive Analysis

4.2 Healthcare Utilization for Reproductive Tract Infections

4.2.1 Overall level of healthcare utilization for RTIs

Table 2 summarizes overall healthcare utilization among the the affected women, including where care was sought, the preferred health provider and the timing of care-seeking.

Table 2
Healthcare utilization for RTIs and care-seeking practices

Variable	Category	n	%
Overall healthcare utilization for RTIs	Used a health facility (public or private)	45	45.5
	Did not use a health facility	54	54.5
	Total	99	100.0
Where care was sought	Public hospital/facility	35	35.4
	Private hospital/facility	10	10.1
	Pharmacy	19	19.2
	Self-medication	35	35.4
	Total	99	100.0
Preferred health provider	Doctor	16	16.0
	Nurse	10	10.0
	Clinical officer	15	15.0
	Pharmacist	59	59.0
	Total	100	100.0
Timing of care-seeking	Immediately	67	67.7
	After a few days	16	16.2
	After symptoms worsened	16	16.2
	Total	99	100.0

Note. Source: Field data.

Table 2 shows that 45 of the 99 women who reported RTI symptoms (45.5%; 95% CI: 36.0–55.2) used a health facility. Public facilities were the main source of care, accounting for 35 women (35.4%), while 10 women (10.1%) used private facilities. The other 54 women (54.5%) did not use a facility: 19 (19.2%) obtained medication from pharmacies and 35 (35.4%) self-medicated. When pharmacy visits were included, utilization rose to 64.6%, which shows that the level of care-seeking depends partly on how utilization is defined.

Facility-based utilization (45.5%) was lower than the 65% anticipated during sample size determination. It was also lower than the estimates reported across 28 sub-Saharan African countries (66.1%; Seidu *et al.*, 2023), across 11 countries (62.2%; Aemro *et al.*, 2025), among young women in Ghana (72%; Abuosi *et al.*, 2022), among sex workers in Togo (60.7%; Bitty-Anderson et al., 2022), among young women in South Africa (57.1%; Duby *et al.*, 2026) and in an urban area of India (54.1%; Barua et al., 2024). These comparisons need care because the studies used different populations and definitions. Abuosi et al. (2022), for instance, counted treatment obtained from chemical and drug stores. When pharmacy use is included, the Wajir figure of 64.6% is close to the pooled African estimates. The result rests on only 99 women, and the confidence interval shows considerable uncertainty.

Public facilities accounted for 77.8% of facility visits. This differs from Ghana, where 34% of treated women used drug stores compared with 26% who used public hospitals (Abuosi *et al.*, 2022). It may reflect the supply of services in Wajir, where public facilities at levels 2 to 4 outnumber private ones by 120 to 32 (CRA, 2022), although the present study did not test this explanation. Self-medication was as common as public facility use (35.4% each). It was higher than the 10% reported among treated women in Ghana (Abuosi *et al.*, 2022), although the denominators differ. Self-medication is a concern because treatment taken without assessment may not match the infection, and many infections cause few symptoms (WHO, 2024). The findings therefore support encouraging timely clinical assessment of RTI symptoms among women in Wajir Township.

4.2.2 Care-seeking practices among women with RTIs

Table 3 presents the preferred healthcare providers and the timing of care-seeking among women who reported RTI symptoms.

Table 3
Care-seeking practices among women with RTI symptoms

Care-seeking practice	Frequency (n)	Percentage (%)
Preferred healthcare provider		
Pharmacist	59	59.0
Doctor	16	16.0
Clinical officer	15	15.0
Nurse	10	10.0
Timing of care-seeking		
Immediately	67	67.7
After a few days	16	16.2
When symptoms worsened	16	16.2
Total	99	100.0

Note. *Source: Field data (2026).*

Pharmacists were the preferred providers of 59 women (59.0%), compared with doctors (16.0%), clinical officers (15.0%) and nurses (10.0%). Only 41.0% preferred doctors, clinical officers or nurses. The strong preference for pharmacist's contrasts with actual pharmacy use of 19.2% (Table 3), which suggests that stated preferences did not always translate into practice. Pharmacies are a common first point of care elsewhere: 43% of young street females in Eldoret first sought treatment at a pharmacy (Maritim *et al.*, 2021), and 34% of treated young women in Ghana used chemical or drug stores (Abuosi *et al.*, 2022). The preference in Wajir may reflect accessibility, privacy or cost, but these explanations were not tested. Discomfort discussing genital symptoms with providers (Table 4.10) may also influence women's choices.

Regarding timing, 67 women (67.7%) sought care immediately, while 16 (16.2%) waited a few days and another 16 (16.2%) waited until symptoms worsened. Consequently, 32.3% postponed care. Most women therefore sought help promptly, but about one in three delayed. Taboos and inhibitions surrounding sexual and reproductive health are reported barriers to care-seeking in sub-Saharan Africa (Seidu *et al.,* 2023). Delay prolongs discomfort and increases the risk of complications when an infection remains untreated (WHO, 2024). These findings point to the need for confidential, accessible and respectful services, community education on early care-seeking, and a role for pharmacists in referring women to health facilities.

4.3 Individual and Behavioural Determinants of Healthcare Utilization for RTIs

4.3.1 Attitude towards RTIs

Table 4 presents responses to six attitude statements on a five-point scale for all 357 women.

Table 4

Attitude towards RTIs

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Agree + SA %	Disagree + SD %
RTIs are serious conditions that require immediate treatment	242 (67.8)	61 (17.1)	17 (4.8)	9 (2.5)	28 (7.8)	84.9	10.4
I am comfortable discussing RTI symptoms with a healthcare provider	75 (21.0)	54 (15.1)	12 (3.4)	140 (39.2)	76 (21.3)	36.1	60.5
I prefer traditional remedies to visiting a hospital for RTI symptoms*	72 (20.2)	66 (18.5)	10 (2.8)	121 (33.9)	88 (24.6)	38.7	58.5
I believe seeking treatment for RTIs is embarrassing*	38 (10.6)	59 (16.5)	9 (2.5)	132 (37.0)	119 (33.3)	27.2	70.3
I avoid seeking care for RTIs for fear of stigma and discrimination*	231 (64.7)	52 (14.6)	24 (6.7)	3 (0.8)	47 (13.2)	79.3	14.0

I trust healthcare providers to offer confidential and effective RTI treatment	239 (66.9)	59 (16.5)	18 (5.0)	3 (0.8)	38 (10.6)	83.5	11.5

Note. SA = strongly agree; SD = strongly disagree; * = negatively worded statement.

Note. Source: Field data.

Most women recognised that RTIs are serious and trusted providers, but stigma and discomfort remained substantial barriers. Most respondents (303; 84.9%) agreed that RTIs require immediate treatment, and 298 (83.5%) trusted providers to offer confidential and effective treatment. These findings suggest that most women recognised the need for timely treatment and had confidence in formal services. However, 216 women (60.5%) were uncomfortable discussing RTI symptoms with a provider, and only 129 (36.1%) were comfortable. RTI symptoms are intimate and may be hard to disclose where sexual health is considered private. Discomfort may limit the information women give and so affect assessment and treatment. Trust in providers may therefore not be enough to encourage care-seeking.

Fear of stigma was prominent: 283 respondents (79.3%) avoided seeking care for fear of stigma and discrimination, while 50 (14.0%) disagreed. Women may fear judgement from health workers, partners, family or the community because RTIs are often associated with sexual behaviour. This agrees with evidence that taboos and inhibitions deter women from seeking treatment for STI symptoms in sub-Saharan Africa (Seidu et al., 2023) and that shame and embarrassment shape how young South African women respond to symptoms (Duby et al., 2026).

A total of 138 women (38.7%) preferred traditional remedies to hospital care, whereas 209 (58.5%) disagreed. Most women therefore did not favour traditional remedies, but a considerable minority did. The data do not show why, and possible reasons such as cultural beliefs, cost or reluctance to discuss intimate symptoms should be treated cautiously. Health education should acknowledge these preferences while explaining the importance of clinical assessment.

Only 97 respondents (27.2%) considered seeking treatment embarrassing, while 251 (70.3%) disagreed. This appears to contrast with the high fear of stigma and discomfort discussing symptoms, but the items measure different experiences. A woman may not find seeking treatment embarrassing yet still fear judgement or breaches of confidentiality. Barriers may therefore arise less from personal embarrassment and more from concern about the social consequences of seeking care. The questionnaire did not establish which source of stigma women feared.

4.3.2 Knowledge of RTIs

Table 5 presents responses to seven knowledge statements on a five-point scale for all 357 women.

Table 5
Knowledge of RTIs

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Agree + SA %	Disagree + SD %
I have heard about RTIs before	245 (68.6)	63 (17.6)	18 (5.0)	10 (2.8)	21 (5.9)	86.3	8.7
I know the common symptoms of RTIs	237 (66.4)	64 (17.9)	18 (5.0)	16 (4.5)	22 (6.2)	84.3	10.6
RTIs can affect both men and women	237 (66.4)	58 (16.2)	19 (5.3)	19 (5.3)	24 (6.7)	82.6	12.0
RTIs can lead to infertility if not treated early	192 (53.8)	61 (17.1)	14 (3.9)	74 (20.7)	16 (4.5)	70.9	25.2
I am aware that untreated RTIs can increase the risk of HIV infection	146 (40.9)	62 (17.4)	18 (5.0)	91 (25.5)	40 (11.2)	58.3	36.7
Poor personal hygiene can increase the risk of RTIs	238 (66.7)	63 (17.6)	18 (5.0)	15 (4.2)	23 (6.4)	84.3	10.6
I know that some RTIs can be asymptomatic	210 (58.8)	56 (15.7)	12 (3.4)	63 (17.6)	16 (4.5)	74.5	22.1

Note. SA = strongly agree; SD = strongly disagree.

Note. Source: Field data.

Awareness of RTIs was high (Table 5). A total of 308 women (86.3%) had heard of RTIs, 301 (84.3%) knew the common symptoms, 295 (82.6%) knew that RTIs affect both men and women, and 301 (84.3%) agreed that poor personal hygiene increases RTI risk. The proportion who had

heard of RTIs was slightly higher than the 80.5% reported among young street females in Eldoret (Maritim *et al.,* 2021), although the populations differ.

Knowledge was lower on complications and the course of infection. Although 253 women (70.9%) agreed that untreated RTIs can lead to infertility, 90 (25.2%) disagreed. Likewise, 208 (58.3%) knew that untreated RTIs can increase the risk of HIV infection, while 131 (36.7%) disagreed, and 266 (74.5%) knew that some RTIs can be asymptomatic, while 79 (22.1%) disagreed. Between 3.4% and 5.3% were neutral across statements. These gaps matter because women who do not know that infections can be silent, or can lead to infertility and HIV risk, may see no reason to seek care without obvious symptoms (WHO, 2024). Knowledge of the link between RTIs and HIV is also relevant, since comprehensive HIV/AIDS knowledge was associated with higher odds of seeking treatment for STI symptoms in sub-Saharan Africa (Seidu et al., 2023). The statements measured self-reported agreement rather than tested knowledge, so the results should be read as perceived knowledge.

4.3.3 Association of knowledge and attitude with healthcare utilization for RTIs

Table 6 shows healthcare utilization by attitude and knowledge category, with row percentages and the chi-square statistic, degrees of freedom and p-value for each variable.

Table 6
Association between individual and behavioural factors and healthcare utilization for RTIs (chi-square test)

Variable	Category	Yes (n = 99) n (%)	No (n = 258) n (%)	χ^2	df	p-value
Attitude towards RTIs	Positive (strongly agree and agree)	45 (32.8)	92 (67.2)	4.126	2	0.127
	Neutral	11 (32.4)	23 (67.6)			
	Negative (strongly disagree and disagree)	43 (23.1)	143 (76.9)			
Knowledge of RTIs	Knowledgeable (strongly agree and agree)	66 (34.4)	126 (65.6)	9.416	2	0.009
	Neutral	8 (23.5)	26 (76.5)			
	Not knowledgeable (strongly disagree and disagree)	25 (19.1)	106 (80.9)			

Note. Source: Field data.

Table 6 shows that utilization differed across attitude categories, but the association was not statistically significant ($\chi^2 = 4.126$, df = 2, p = 0.127). Utilization was higher among women with positive attitudes (32.8%) and neutral attitudes (32.4%) than among those with negative attitudes (23.1%). Favourable attitudes may be linked to greater utilization, but the data do not provide enough statistical evidence to confirm this. In contrast, knowledge was significantly associated with utilization ($\chi^2 = 9.416$, df = 2, p = 0.009). Utilization was highest among knowledgeable women (34.4%), followed by women with neutral knowledge (23.5%) and those who were not knowledgeable (19.1%).

Table 7 reports the binary logistic regression of knowledge level on healthcare utilization, with the coefficient, odds ratio and confidence interval for each knowledge category.

Table 7
Binary logistic regression of knowledge and healthcare utilization for RTIs

Variable	B	S.E.	Wald	df	Sig.	Exp(B) = OR	95% CI for Exp(B)
Knowledge level			9.211	2	0.010		
Knowledgeable	0.798	0.269	8.779	1	0.003	2.22	1.31–3.76
Neutral	0.266	0.461	0.332	1	0.564	1.30	0.53–3.22
Not knowledgeable	–	–	–	–	–	1 (ref)	–

Note. Source: Field data.

Table 7 shows that knowledge level was significantly associated with healthcare utilization for RTIs (Wald = 9.211, df = 2, p = 0.010). Women who were knowledgeable about RTIs had 2.22 times the odds of utilizing healthcare compared with women who were not knowledgeable (OR = 2.22; 95% CI 1.31–3.76; p = 0.003). Women with a neutral knowledge level did not differ significantly from those who were not knowledgeable (OR = 1.30; 95% CI 0.53–3.22; p = 0.564). Targeted health education may therefore be a useful way to promote healthcare utilization for RTIs.

4.3.4 Discussion of individual and behavioural determinants

Attitude. Attitude was not significantly associated with healthcare utilization (p = 0.127). Most women recognised the seriousness of RTIs and trusted providers (84.9% and 83.5%; Table 4.10), but 79.3% feared stigma and 60.5% were uncomfortable discussing symptoms. These barriers may have limited utilization even among women with positive attitudes, which could explain why attitude category did not clearly separate users from non-users. In sub-Saharan Africa, wealth, education, health insurance and access barriers also strongly influenced care-seeking (Seidu et al.,

2023), so attitude may be only one of several influences. In addition, combining positively and negatively worded items into one score may have hidden differences. Utilization was 32.8% among women with positive attitudes and 23.1% among those with negative attitudes, a difference that did not reach statistical significance.

Knowledge. Knowledge was significantly associated with healthcare utilization in both the bivariate analysis ($p = 0.009$) and the logistic regression (OR = 2.22). This agrees with findings from sub-Saharan Africa that women with comprehensive HIV/AIDS knowledge had higher odds of seeking treatment (Seidu et al., 2023) and from India, where lack of awareness that treatment was needed was a leading reason for not seeking care (Barua et al., 2024). Women who recognise symptoms and understand complications such as infertility and HIV risk may be better placed to seek timely care. Because the design was cross-sectional, the direction of the association cannot be established, and women who had used a facility may have learned more about RTIs as a result. Table 9 summarizes the hypothesis tests.

Table 8
Summary of hypothesis tests and comparison with previous studies

Hypothesis	Test result	Decision	Comparison with previous studies
H01: Knowledge is not significantly associated with utilization	$\chi^2 = 9.416$, df = 2, p = 0.009; OR = 2.22 (95% CI 1.31–3.76), p = 0.003	Rejected	Consistent with Seidu et al. (2023) and Barua et al. (2024)
H02: Attitude is not significantly associated with utilization	$\chi^2 = 4.126$, df = 2, p = 0.127	Not rejected	Fear of stigma and discomfort were widespread, as in Duby et al. (2026) and Seidu et al. (2023)

5.0 SUMMARY OF THE STUDY

This study examined the association between individual and behavioural factors and healthcare utilization for RTIs among women in Wajir Township. Of 383 questionnaires administered, 357 were valid, giving a response rate of 93.2%, which exceeded the minimum sample size of 348. Among the 99 women who reported RTI symptoms, 45 (45.5%) used a health facility, mainly public facilities (35.4%), while 35.4% self-medicated and 19.2% used pharmacies. Utilization rose to 64.6% when pharmacy use was included. Pharmacists were the preferred provider of 59.0% of women, and 32.3% delayed seeking care.

Awareness of RTIs was high, with 86.3% having heard of them, but fewer women knew that untreated RTIs can raise the risk of HIV (58.3%) or cause infertility (70.9%). Most women recognised that RTIs are serious (84.9%) and trusted providers (83.5%), but 79.3% feared stigma and 60.5% were uncomfortable discussing symptoms. Knowledge was significantly associated with utilization ($\chi^2 = 9.416$, $p = 0.009$), and knowledgeable women had 2.22 times the odds of utilization compared with those who were not knowledgeable (95% CI 1.31–3.76). Attitude was not significantly associated with utilization ($p = 0.127$). H01 was therefore rejected and H02 was not rejected. The results are limited by the cross-sectional design, self-reported data and the single sub-location.

6.0 CONCLUSION

The study concludes that knowledge of RTIs is associated with healthcare utilization for RTIs among women in Wajir Township, whereas attitude towards RTIs is not significantly associated with it. Facility-based utilization was lower than levels reported in most comparable studies, and self-medication and pharmacy use accounted for a large share of care-seeking. Although women valued medical treatment and trusted providers, fear of stigma and discomfort discussing symptoms were widespread and may keep women from disclosing symptoms. Strengthening knowledge, especially about complications, HIV risk and asymptomatic infection, and making services confidential and respectful are therefore the most useful ways of improving utilization. Because the study was cross-sectional, covered a single sub-location and relied on self-reported data, the findings show association rather than causation and should be generalised with caution.

7.0 RECOMMENDATIONS

The Wajir County Department of Health and health facilities should strengthen community-based and facility-based health education on reproductive tract infections (RTIs). Health education should focus on common symptoms, possible complications, the relationship between RTIs and HIV, and the fact that some infections may occur without noticeable symptoms. Particular attention should be given to knowledge gaps regarding HIV risk and infertility, as only 58.3% and 70.9% of women, respectively, were aware of these complications. Improved awareness would enable women to recognize potential risks, seek appropriate medical advice, and adopt preventive practices.

Health facilities should promote confidential, respectful, and non-judgemental healthcare services for women seeking treatment for RTIs. Healthcare providers should be trained to communicate sensitively, maintain privacy during consultations, and protect patients' personal health information. This recommendation is particularly important because 79.3% of women feared stigma, while 60.5% felt uncomfortable discussing their symptoms. Creating a supportive

healthcare environment would encourage women to disclose their symptoms, seek professional assistance, and access appropriate treatment without fear of discrimination or embarrassment.

The Wajir County Department of Health should engage pharmacists in efforts to improve healthcare utilization for RTIs. Since 59.0% of women preferred pharmacists as healthcare providers, pharmacists should receive appropriate training on RTI symptoms, treatment guidelines, patient confidentiality, and referral procedures. They should provide accurate health information, discourage inappropriate medication use, and refer women with suspected RTIs to qualified healthcare professionals for assessment and treatment. Collaboration between pharmacists and health facilities would improve access to reliable information and strengthen referral pathways for women requiring specialized care.

Community health promoters and healthcare providers should encourage women to seek professional medical attention promptly whenever they experience symptoms suggestive of RTIs. Health promotion messages should emphasize the risks associated with self-medication and delayed treatment, including possible complications and continued transmission of infections. This recommendation is supported by the finding that 35.4% of symptomatic women practised self-medication, while 32.3% postponed seeking care. Community outreach, health talks, and targeted awareness campaigns should therefore emphasize early diagnosis, appropriate treatment, and adherence to professional medical advice.

Health facilities should integrate RTI education, screening information, and referral services into existing reproductive health and HIV service delivery programmes. Women attending family planning clinics, antenatal care services, HIV testing centres, and other reproductive health facilities should receive relevant information about RTI prevention, symptoms, complications, and available treatment services. Integrating these messages into routine healthcare visits would provide additional opportunities to reach women with essential information, promote early care-seeking, and improve access to appropriate services.

8.0 AREAS FOR FURTHER RESEARCH

Future research should examine sociodemographic and facility-related factors together with knowledge and attitude in multivariable models, to estimate their independent effects. Qualitative studies would help to explain the sources of stigma, the preference for pharmacies and the reasons for delay. Studies should also measure the interpersonal, community and public policy levels of the SEM, which were not measured here. Replication across other parts of Wajir County and in other arid and semi-arid counties would test whether the findings apply more widely. Clinical

confirmation of infections, tested measures of knowledge and longitudinal designs would reduce the limitations of self-reported, cross-sectional data.

9. REFERENCES

Abuosi, A. A., Ackon, S. K., & Anaba, E. A. (2022). Health-seeking behaviours of young women with sexually transmitted infections: Analysis of the 2014 Ghana Demographic and Health Survey. *PLOS ONE, 17*(11), Article e0277205. https://doi.org/10.1371/journal.pone.0277205

Aemro, A., Ali, M. S., Zegeye, A. F., Workneh, B. S., Zeleke, G. A., Mekonen, E. G., & Tamir, T. T. (2025). Determinants of sexually transmitted infection-related care-seeking behavior among reproductive-age women in sub-Saharan Africa: A multilevel analysis. *PLOS ONE, 20*(9), Article e0331781. https://doi.org/10.1371/journal.pone.0331781

Barua, K., Gohar, M., Mahajan, H., & Srivastava, S. (2024). Reproductive healthcare seeking behaviour of women of the reproductive age group in an urban resettlement area of district Gautam Buddh Nagar in Uttar Pradesh, India. *Journal of Family Medicine and Primary Care, 13*(1). https://doi.org/10.4103/jfmpc.jfmpc_1382_23

Bitty-Anderson, A. M., Gbeasor-Komlanvi, F. A., Bakoubayi, A. W., Tchankoni, M. K., Sadio, A. J., Salou, M., Dagnra, C. A., Ekouevi, D. K., & Coffie, P. A. (2022). High burden of self-reported sexually transmitted infections among female sex workers in Togo in 2021. *Frontiers in Public Health, 10*, Article 915029. https://doi.org/10.3389/fpubh.2022.915029

Commission on Revenue Allocation. (2022). *Kenya county fact sheets (3rd ed.): Wajir County*. https://cra.go.ke/wp-content/uploads/2022/06/Kenya-County-fact-sheets-Report-Final-Res.pdf

Duby, Z., Bergh, K., Jonas, K., Lotvonen, M., Kuo, C., & Mathews, C. (2026). "It's burning down there": A mixed-methods study on sexually transmitted and other vaginal infections among adolescent girls and young women in South Africa. *International Journal of Sexual Health*. https://doi.org/10.1080/19317611.2026.2637641

Maritim, V. C., Wanyoro, A., Nyamari, J., Maingi, J., Aballa, L., & Kimani, E. (2021). Factors associated with health seeking behavior for reproductive tract infections among young street females in Eldoret, Kenya. *Kabarak Journal of Research & Innovation, 11*(2), 147–163. https://doi.org/10.58216/kjri.v11i2.86

McLeroy, K. R., Bibeau, D., Steckler, A., & Glanz, K. (1988). An ecological perspective on health promotion programs. *Health Education Quarterly, 15*(4), 351–377. https://doi.org/10.1177/109019818801500401

Michalow, J., Jahn, A., Cori, A., Boily, M.-C., Chimpandule, T., Mbiriyawanda, S., Ozituosauka, W., Nyirenda, R., & Imai-Eaton, J. W. (2024). Burden and trends of symptomatic sexually transmitted infections in Malawi from 2000 to 2021: Comparative analysis of survey and case report data. *Sexually Transmitted Diseases, 51*(3), 206–213. https://doi.org/10.1097/OLQ.0000000000001919

Seidu, A.-A., Aboagye, R. G., Okyere, J., Adu, C., Aboagye-Mensah, R., & Ahinkorah, B. O. (2023). Towards the prevention of sexually transmitted infections (STIs): Healthcare-seeking behaviour of women with STIs or STI symptoms in sub-Saharan Africa. *Sexually Transmitted Infections, 99*(5), 296–302. https://doi.org/10.1136/sextrans-2022-055424

UK Health Security Agency. (2025). *Sexually transmitted infections and screening for chlamydia in England: 2024 report*. GOV.UK. https://www.gov.uk/government/statistics/sexually-transmitted-infections-stis-annual-data-tables/sexually-transmitted-infections-and-screening-for-chlamydia-in-england-2024-report

World Health Organization. (2024). *Sexually transmitted infections (STIs)* [Fact sheet]. https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-(stis)