PREVALENCE OF FUNCTIONAL CONSTIPATION AND ITS ASSOCIATED FACTORS AMONG ADULTS IN TEMEKEMUNICIPALITY - A COMMUNITY BASED STUDY

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By

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A Dissertation submitted in Partial Fulfillment of Requirement for the Degree of Master of Medicine in Internal Medicine

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CERTIFICATION

The undersigned certifies that, he has read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled: "**Prevalence of Functional constipation and its associated factors among adults in Temeke Municipality – A community based study**" in partial fulfillment of requirement for the degree of Master of medicine in Internal Medicine Muhimbili University of Health and Allied Sciences.

……

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(Supervisor)

Date : ……..

DECLARATION AND COPYRIGHT

I, **Sharon Khalid Ismail** declare that this **dissertation** is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature ……. **Date ……..**

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ABSTRACT

Background: Functional Constipation is one of the most common functional gastrointestinal disorders among adults which compromise the quality of life, physical and/or social functioning and leads to high economic burden on the healthcare services. Few studies have evaluated the prevalence of functional constipation using different Rome criteria. Due to paucity of epidemiological data in Tanzania, this study was conducted to determine the prevalence of functional constipation and its associated factors among adults.

Broad Objective: To determine the prevalence of functional constipation and its associated factors among adults in Temeke municipality, Dar es salaam region.

Materials and methods: A cross-sectional, community based study was conducted among adults aged ≥ 18 years in Temeke municipality from September to November 2019. A multistage, random sampling technique was used to select participants. Data was collected at a household level using a structured questionnaire and interview. Data included the socio-demographic and baseline characteristics, anthropometric measurements and Rome IV diagnostic criteria for Functional constipation. Data entry was done using EpiInfo version 7.2 and analysed using Stata software 15.1. Quantitative variables were presented as mean and standard deviation and qualitative variables as proportions. Logistic regression models were used to study the association and a P value of <0.05 was considered significant.

Results: Out of 855 adults, 188 (22%) had functional constipation. Considering sex, the prevalence of functional constipation was higher among females 141/597 (23.62%) than males47/258 (18.22%), with a male to female ratio of 1:1.3.

Older age ≥ 60 years (AOR 1.95. 95% CI.1.06 - 3.55), female sex (AOR 1.83 .95% C.I.1.17 – 2.87), depression (AOR 5.22, 95%C.I. 1.88 - 14.48), past smoking (AOR 4.94, 95% C.I. 2.25 - 10.89) were found to be associated with higher odds of functional constipation.

However, fluid intake ≥ 0.5Lper day (AOR 0.37 95% C.I. 0.21 - 0.66) was found to be protective.

Conclusion: The prevalence of functional constipation was higher in our community. Decreasing modifiable factors associated with functional constipation such as avoid smoking and increase fluid intake per day can reduce its prevalence and decrease burden of the disease.

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LIST OF ABBREVIATIONS

AOR	Adjusted odds ratio
BSFS	Bristol stool form scale
BMI	Body mass index
CC	Chronic constipation
CI	Confidence Interval
CIC	Chronic idiopathic constipation
COR	Crude odds ratio
CI	Confidence interval
DSM	Diagnostic and statistical manual
DM	Diabetes mellitus
FB	Functional bloating
FC	Functional constipation
FD	Functional diarrhoea
FBD	Functional bowel disorders
FGID	Functional gastrointestinal disorders
GIT	Gastrointestinal tract
IBS	Irritable bowel syndrome
OR	Odds Ratio
WHO	World Health Organization
X^2	Chi square

DEFINITION OF TERMS

Functional bowel disorders (FBD) are a spectrum of chronic gastrointestinal (GI) disorders characterized by predominant symptoms or signs of abdominal pain, bloating, distension, and/or bowel habit abnormalities (e.g. constipation, diarrhoea, or mixed constipation and diarrhoea(1).

Functional constipation is a functional bowel disorder in which symptoms of difficult, infrequent, or incomplete defecation predominate. Patients with FC should not meet irritable bowel syndrome (IBS) criteria, although abdominal pain and/or bloating may be present but are not predominant symptoms. Symptom onset should occur at least 6 months before diagnosis, and symptoms should be present during the last 3 months(2) .

Rome Criteria are diagnostic criteria agreed by an international, not for profit organization in United States of America (The Rome Foundation) to create scientific data to help in diagnosis and treatment of functional gastrointestinal disorders that formerly had little scientific evidence to understand their aetiology and pathophysiology(3).

Irritable bowel syndrome is a functional gastro intestinal disorder that is characterized by a group of symptoms including abdominal pain and altered bowel movements without any visible signs of damage or disease in the digestive tract(4) .

Bristol stool form scale is a visual aid designed to classify types of stool depending on the time it spent in the colon into seven categories. Type 1 and 2 indicate constipation, 3-4 are ideal stools and 5-7 indicate diarrhoea and urgency(5).

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Constipation has been traditionally defined as stool frequency of less than three per week. This definition is not universally applicable and is based on epidemiological studies in United States and the United Kingdom.(6,7)

Chronic Idiopathic/Functional constipation is a common gastrointestinal disorder that affects individuals of all ages. Chronic constipation has been reported to occur in 15% to 25% of the general population, worldwide.(8) It affects all ages and both sexes, and different cultures and ethnicities. In some populations, it is the most common digestive complaint, which leads to a high number of medical visits and imposes high costs to the healthcare service(9) . It is more commonly reported in women, elderly patients, residents of chronic care facilities and patients with concurrent psychiatric illnesses (10).

Among adults, the mean prevalence rate of functional constipation is approximately 14%, with rates that range from 1.9% to 40.1%.(11) This wide range is due to different study populations most from western countries and also different inclusion criteria, for example studies that reported the prevalence based upon self-reporting, showed higher prevalence compared with those that used Rome criteria(12) or studies conducted in southeast Asia reported lower prevalence compared with American and European studies (11,13,14).

In Africa, only one study from Nigeria reported the prevalence of 27% among adolescents using Rome III criteria.(15) Due to these variations in prevalence, most recent studies have used Rome IV criteria, which was standardized and more expansive consensus criteria for diagnosing functional gastrointestinal disorders, that was released in May 2016(16)

Chronic constipation has different etiologies. It may be due to secondary causes including metabolic disorders, electrolyte imbalance, neurological disorders, colorectal structural disorder, and use of specific medications(17).Although only a few individuals with chronic

constipation have these secondary causes, when dealing with a patient with constipation in practice these causes also should be in consideration.

Functional constipation (FC) is the most common form of chronic constipation and its diagnosis is made after exclusion of alarm symptoms (significant weight loss, haematochezia or positive occult blood test, anaemia, acute constipation, positive family history of colon cancer, etc.) and secondary causes. Individuals with FC are categorized into three subgroups based on the pathophysiology, those with normal colonic transit (NCT), those with slow colonic transit (SCT), and those with functional defecatory disorders. Individuals with normal transit constipation may complain of infrequent defecation unresponsive to laxatives or fibres supplements and they may misperceive bowel frequency. Majority of patients presenting with FC have normal colonic transit(5)

Some of the associated factors for functional constipation based on previous studies are female sex, older age, low socioeconomic status, physical inactivity, and insufficient fluid and fiber consumption.(11, 17) .

CC is a major health problem. It has negative effects on the patients' quality of life, and their productivity, and results in a high economic burden on the healthcare services. Constipation is physically and mentally troublesome for many individuals, and can significantly interfere with their daily living and well-being.

Although only a proportion of patients with constipation seek medical care, most of them use prescribed or over-the-counter medication to improve their condition(18). Because constipation is more common in older patients and life expectancy is increasing, an increase in the prevalence of constipation is expected in the years to come, with the associated impact on quality of life and socioeconomic burden.(19)

Patients with Functional Constipation usually present with symptoms including hard or lumpy stools, reduced frequency of defecation, a sensation of incomplete evacuation or blockage, straining and some may also report abdominal pain and bloating(20).

Patients with FC should not meet IBS criteria, although abdominal pain and/or bloating may be present but are not predominant symptoms. Symptom onset should occur at least 6 months before diagnosis, and symptoms should be present during the last 3 months.

The Bristol Stool Form Scale (BSFS) is a validated tool that describes the different consistencies of stool a patient may experience.(21) The stool consistency has been shown to correlate well with colonic transit time than the overall frequency of defecation(22)

If the patients mention that during the period with abnormal bowel movement, the stools are predominantly type I or type II in the Bristol Stool Scale, a diagnosis of constipation can be made(23) In an Asian context, however, even type III stool is also considered to denote constipation(24).

FC can be diagnosed by both subjective and objective (measurable) variables. The Rome process and Rome criteria are the international effort to create scientific data to help in the diagnosis and treatment of functional gastrointestinal disorders.

The current Rome IV classification, published in 2016 after 10 years from Rome III criteria, is the most recent update of this diagnostic scheme. The diagnostic sensitivity of the questionnaire for diagnosis of Functional Constipation is 73.2% and specificity 93.6%(3)

1.2 Conceptual Framework

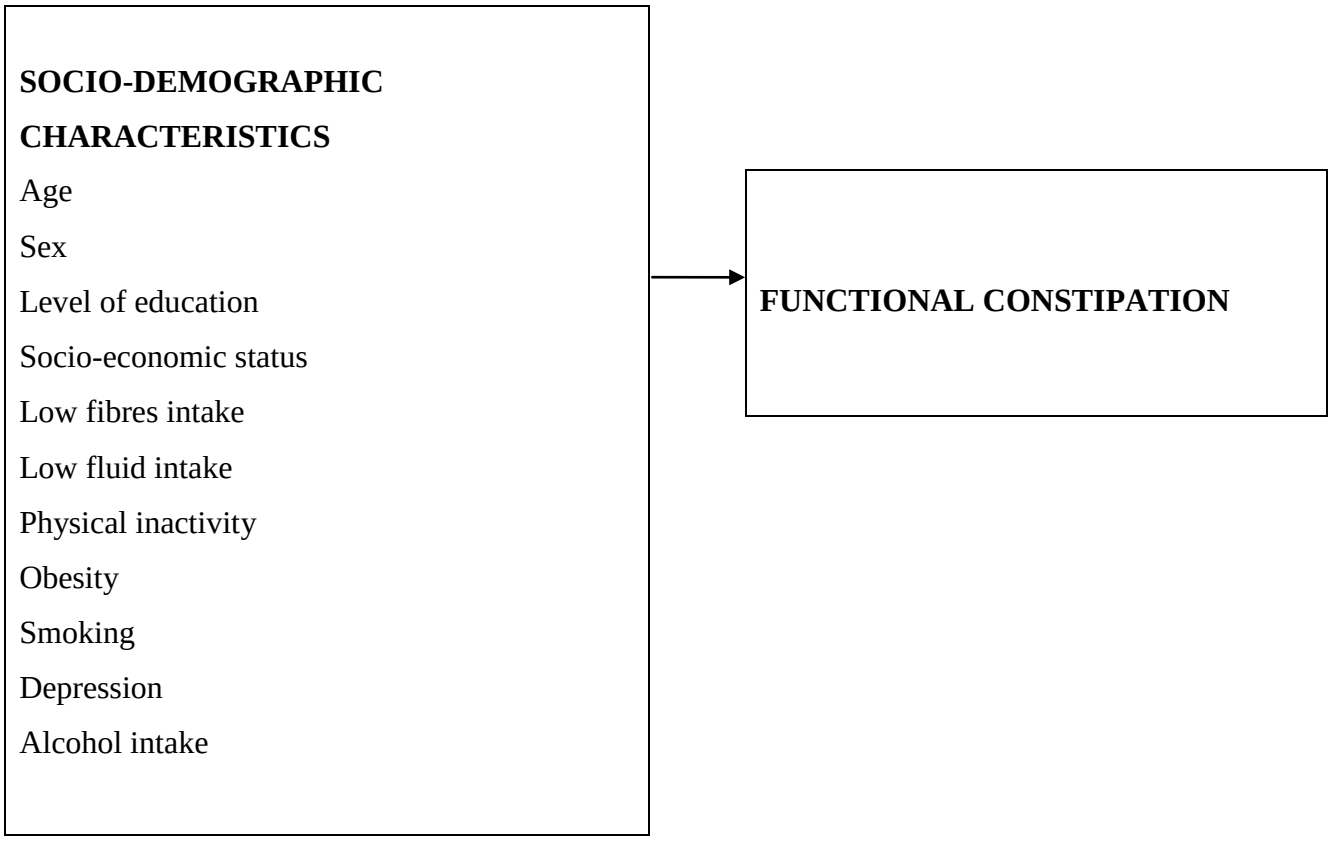


Figure 1:The relationship between socio-demographic characteristics and Functional constipation

1.3 Problem statement

There were few studies that have evaluated the prevalence of Functional constipation. Most studies have focused on patients with chronic constipation, who may or may not meet strict Rome criteria for Functional constipation.

Chronic constipation is a common, often chronic, disorder of gastrointestinal motility with a high prevalence, it affects up to 14–29% of adults in the Western population. (9,35,36) However, no study that has been done among adults in African countries, including Tanzania regarding functional constipation.

Constipation is a common complaint in the general population, and contributes considerably to physician visits and other costs to the health service (37)

Annually, constipation accounts for 2.5 million physician visits and 92,000 hospitalizations in the United States with a third of these in primary care, leading to significant costs to the health service.(10) Constipation compromises quality of life, social functioning, and the ability to perform activities of daily living. These factors were important predictors of constipation-associated health care use and resultant health care costs. (38, 39, 40)

Systematic review of the available literatures show the global prevalence of 14%(11).

But most studies which were included in this review were conducted in Europe, South and North America, and Asia, with differing methods and definitions. Data about the prevalence of Functional constipation among adults in the African continent were lacking.

Also, the marked socioeconomic, cultural, political and demographic variations that exist between and within different countries could influence the associated factors and prevalence of FC.

1.4 Rationale of the study

There were few studies that have reported on the prevalence of functional constipation and its associated factors from African continent and none from East African countries including Tanzania. This study provided recent data on the prevalence of functional constipation among adults (18 years and above), and can be used as one of the reference to identify the magnitude of the problem in our country.

Previous studies that have used Rome III criteria to determine the prevalence of Functional Constipation, have failed to distinguish between individuals with functional constipation and IBS-constipation predominant subtype and this lead to overestimation of the prevalence of Functional constipation.

With the use of new Rome IV criteria, it can help to distinguish Functional Constipation from IBS-constipation predominant subtype and used as the new diagnostic tool to exclude IBS in individuals with symptoms of constipation. As these two conditions have different management approach.

As the recommendation from the report of the global prevalence, the prevalence of constipation in certain geographical regions, such as Africa, should be studied to enable the global prevalence of FC to be calculated with greater precision.

Data from other previous studies cannot be generalized, with high variability on the results due to different culture, ethnicity, inclusion criteria used, and type of diet. This study provided data on the common associated factors in our society both modified and non-modified. This can be used in preventive strategies and in non-pharmacological treatment approaches.

The study involved adults from 18 years and above, and serves as a screening tool for individuals with alarm features (e.g. significant weight loss, upper or lower GI bleeding or family history of GI malignancy) and for elderly with chronic constipation who may be considered for further evaluation i.e. to do colonoscopy as this age group has high risk for colorectal cancers.

The results of this research will help to inform practice on the magnitude of functional constipation in our community and help in preparing guidelines and recommendations based on the local study findings.

1.5 Research Question

1. What was the prevalence of functional constipation and its associated factors among adults?

1.6. Objectives

1.6.1 Broad objective

To determine the prevalence of functional constipation and its associated factors for among adults in Temeke municipality – Dar es Salaam region.

1.6.2 Specific objectives

1. To determine the prevalence of functional constipation among adults in Temeke municipality

2. To determine the socio-demographic and lifestyle factors associated with functional constipation among adults in Temeke municipality

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Prevalence of Functional constipation

In 2011, a systematic review and meta-analysis on the prevalence of, and risk factors for, chronic idiopathic constipation in the community across 45 population-based studies showed a pooled global prevalence of functional constipation of 14%, and the majority of studies were conducted in North America or Northern Europe. There were no identified studies conducted in South Asia, Africa, or Central America, and only a few studies from South America and the Middle East with little variation by geographical region.(11)

The pooled prevalence of CIC was higher in women compared with men (17.4% vs. 9.2 %) with the Odds Ratio for CIC in women was 2.22. The prevalence was markedly higher in subjects who also reported IBS (OR: 7.98; 95 % CI: 4.58 – 13.92), suggesting common pathogenic mechanisms.

The majority of studies used a questionnaire to define the presence of chronic idiopathic constipation. Eleven studies used the Rome II criteria, 10 used self-report of symptom, six used the Rome I criteria, and only two used the Rome III criteria. The prevalence of CIC was similar with all definitions, with the exception of when the Rome II or III criteria were used to define its presence, with a prevalence of 11.0% and 6.8 %, respectively. The prevalence showed to increase with age and low socioeconomic status was identified as the major risk factor.(11)

A systematic review done in North America on the epidemiology of constipation showed that the estimates of the prevalence of constipation in North America ranged from 1.9% to 27.2%, with most estimates from 12% to 19%. Prevalence estimates by gender support a female-to-male ratio of 2.2:1. Constipation appears to increase with increasing age.(25)

A population based study done in China on the Prevalence and risk factors for functional bowel disorders using the Rome III criteria showed that the prevalence of functional bowel disorders was 41.6%. Among individuals with functional bowel disorder, 9.9% had functional constipation (FC). Similar numbers of men and women had FBDs or IBS, however, there was female predominance in Functional Constipation (62.1%, P<.001)(26).

A study done in Netherlands, on the prevalence of constipation and faecal incontinence, and their co-occurrence by using Rome III criteria found that, 24.5% suffered from constipation, 7.9% (95% CI, 6.4–9.4) suffered from Functional Incontinence, and 3.5% (95% CI, 2.5–4.5)suffered from both disorders.(27)

A cross-sectional survey was conducted among adult Chinese Population in five regions on the Epidemiology of FC and comparison with constipation-predominant IBS showed that, the overall prevalence of FC was 6% using modified Rome II questionnaire. Functional constipation was more prevalent in women than in men (8% vs. 4%, P < 0.001).However, the demographics and burden of illness are similar between FC and IBS-C, although the clinical symptoms are somewhat different.(28)

In a study done in US by Stewart et al, on the epidemiology of constipation and the clinical subtypes among subjects 18 years and older found that, the overall prevalence of constipation was 14.7%. By subtypes, the prevalence of functional constipation was higher (4.6 %,) followed by IBS 2.1 %.(29)

In 2013, A Community-Based Survey in India on the prevalence of constipation in general population, A total of 505 individuals was interviewed through structured questionnaire based on ROME II criteria for constipation. Results revealed that the prevalence of self-reported constipation within the last 1 year was 24.8% whereas 16.8% of participants had constipation according to the Rome II criteria.

Most of the subjects (83%) were within the age group of 18–59 years with mean age (years) of 38.64 ± 15.57. Constipation was significantly more frequent in females than in males (20% vs. 13%) and in nonworking population than in working population (20% vs. 12%).

Poor dietary habits, lesser fluid intake per day, and lesser physical activity were found to be significant factors leading to the constipation.

About 18% of constipated subjects reported physicians' consultation, whereas 8% reported the use of laxatives to relieve their constipation.(30)

In 2006, A population based study on bowel habits in a Korean community on the prevalence of functional constipation using Rome II criteria and self-reported constipation showed that,

of all subjects, 95.6% had a defecation frequency of between three per week and three per day. The prevalence was 16.5% for self-reported constipation and 9.2% for functional constipation (FC), and 3.9% for constipation-predominant irritable bowel syndrome (IBS-C). Of subjects' self-reporting constipation, proportions of FC and IBS-C were 21.8% and 23.5%, respectively. Of subjects excluding self-reported constipation, the proportion of FC was 6.8%. Prevalence of self-reported constipation and IBS-C were higher in females than in males ($P<0.001$). Of subjects' self-reporting constipation, 8.2% used laxatives(31).

In 2014, a cross-sectional study done among adolescents in Nigeria showed that the prevalence of functional constipation was 27% using Rome III criteria, with no difference in prevalence between sexes. Prevalence of FC was 29% in urban areas and 26% in rural areas ($p>0.05$). The condition was significantly associated with low social class ($p=0.013$).(15)

A recent cross-sectional study done by Moezi et al, in Iran using Rome IV diagnostic criteria for chronic constipation and its associated factors ,showed the prevalence of FC was 8.1%(32)

2.2 Associated factors for functional constipation

A study done on China on the risk factors for functional bowel disorders showed that there was similar numbers of men and women had FBDs (overall; 51.3% male vs 48.7% female, P=.796); however, there was female predominance in FC (62.1%, P<.001). FBDs were associated with greater anxiety, depression, life event stress, and a lower quality of life compared with those without symptoms (all, P<.0001). Logistic regression identified medical co- morbidity, anxiety/ depression, and life event stress as independent risk factors for these disorders (26)

In a longitudinal survey of self-reported bowel habits in the US, women were more likely to report constipation than men (20.8% vs. 8%) and infrequent defecation. Constipation was more frequent in black race, older respondents, those with low level of education, low physical activity, and symptoms of depression.(33)

A study on relation of clinical subtypes of constipation and socio-demographic features in US 18 years and older, showed that FC was more common in men, and age pattern was different among each of the four subtypes. The trend of functional subtypes was increased with age up to 35 years then decreased. 45% of individuals with constipation reported to have symptoms for >5 years.(29)

Study by Towers et al, showed by consumption of fewer meals per day and tendency to consume fewer calories was the risk factors for chronic constipation among elderly. However, there was no difference between groups on fibres' or fluid intake. Slow colonic transit was significantly related to low caloric intake, high protein in diet, low fluid intake and psychological symptoms of somatisation, depression, anxiety and obsessive-compulsiveness.(34).

A study by Rong et al on physical activity and constipation in Hong Kong among adolescents showed that insufficient physical activity and excessive sedentary behaviors were positively associated with constipation with dose-response relation. (35)

A study by Dukas et al among women on lifestyle variables and constipation showed that in Relation to never smoking, current smoking was associated with a slightly reduced risk (PR 0.81, 95% CI 0.74–0.89) of constipation, whereas past smoking had no association with constipation (PR 1.04, 95% CI 0.95– 1.13). (36)

Daily alcohol consumption was inversely associated with constipation, though at least one drink (approximately 12 g of alcohol) per day was required to observe the lower prevalence. Women with a median daily alcohol intake of 30.4 g had a multivariate adjusted PR of 0.66 (95% CI 0.57–0.77) compared with women who did not drink alcohol. (36)

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study design
This was a cross sectional study

3.2 Study area
The study was conducted in Temeke Municipality, Dar es Salaam region in Tanzania. This study site was selected as the representative of the study population, due to higher population size and number of households with availability of the study participants during data collection period.

Temeke municipality is among the 5 municipalities in Dar-es-Salaam region, and based on 2012 population and housing census report in Tanzania, it has a total population of 1,368,881 individuals, with a population change of +5.9%/year (from 2002 census to 2012). According to gender distribution, there are more females 51.1% than Males 48.9%. According to the age distribution, most individuals were aged between 15-64 years (64.6%) followed by aged <14 years (33.3%) and fewer aged >65 years (2.1%). (42)

Temeke has 30 wards and it is the industrial district of the city, where the manufacturing centres' (heavy and light industry) are located. Temeke is believed to have the largest concentration of low-income residents due to industry. Estimated number of persons per household is 4, with presumably 2 adults and 2 children.

This area was chosen because of higher population size, cultural similarities including type of food commonly consumed by the society, low genetic heterogeneity and low racial differences that can influence study findings.

3.3 Study population
A total of 1022 adult participants aged 18 years and above residence of Temeke municipality were selected using multistage random sampling technique.

3.4 Study duration
Study was conducted from September to November 2019

3.5 Inclusion criteria

The study included all adults both males and females, aged 18 years and above, living in Temekemunicipality, who were found in their households during the study period.

3.6 Exclusion criteria

- ✓ This study excluded individuals with previous symptoms (in the past 6 months) suggestive of alarm features such as;
- Unintentional weight loss (>10% in 3 months),
- History of rectal or upperGI bleeding (in the absence of documented bleeding haemorrhoids or anal fissures)
- A family history of colon cancer or any intra-abdominal malignancy
- Presence of co-morbidities associated with secondary constipation (DM, neurological condition, thyroid disease)
- Chronic use of medications especially opioids that cause constipation as theirsideeffects.
    - ✓ Individuals who met criteria for IBS-constipation subtype
    - ✓ Women who reported to be pregnant during the study period.

3.7 Sample size

Since there was no study done on the prevalence of functional constipation among adults using Rome IV criteria in Africa, the prevalence of 8.1% from the study done by Moezi et al(32) in Iran was used to calculate the minimum sample size of 374.

3.8 Sample size calculation

Formula

$$\text{Sample size} = \frac{z^2 * p(1-p)}{e^2}$$

Where z= z-score (1.96 for 95% confidence interval)

p= estimated prevalence (8.1%) by Moezi et al on the prevalence of FC and its associated factors in Iran using Rome IV criteria.

e= margin of error (3%)

n=non response (15%)

Sample size= $\frac{(1.96^2) * 8.1(100-8.1)}{(3^2)}$ = 318

Taking a none response of 15%

$n' = \frac{n \times 100\%}{100\%-10\%}$

$n' = \frac{318 \times 100\%}{100\%-15\%}$

The minimal sample size was 374 participants

3.9 Sampling technique

A multistage sampling technique was used to select participants.

First stage

Temeke municipalitywas conveniently selected among 5 Districts in Dar es Salaam region, Tanzania.

Second stage

Temeke municipality has a total of 30 wards, which were listed, numbered and placed in a box, and 7 wards were randomly selected. For convenience, a quarter of the total wards (7) were selected for study representation of other wards.

These wards were Keko, Mbagala kuu, Temeke, Tandika, Yombo vituka, Mtoni, and Chamanzi.

The wards were the lowest level of sampling frame, and the sample size of 374 was selected from each ward depending on population size of specific ward.

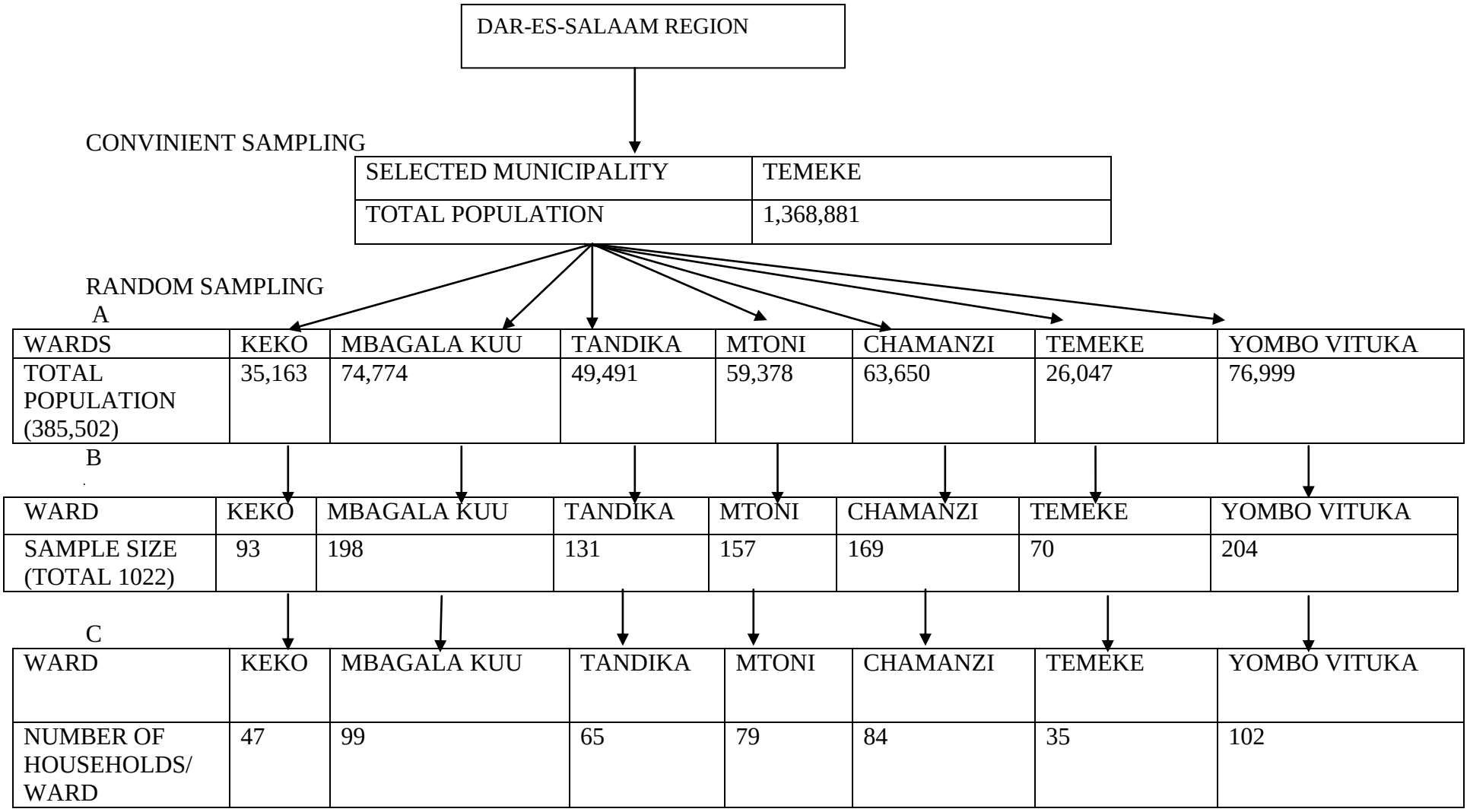


Figure 2:Flow chart showing how participants were selected from the municipality to the household level.
A –Showed the total population size in each of the 7 selected wards, among 30 wards of Temeke Municipality. B-showed the number of participants from each selected ward according to their sample size. C-showed the numbers of households selected from each ward

Third stage

From each selected ward, starting from street leader, every other house was visited and process continued in every other street until the required number of participants was obtained.

Fourth stage

In each household, all eligible adults who consented to participate in the study were involved. A maximum of 2 participants were included from each household. For the households with more than 2 adults, papers of random numbers were used to select 2 participants, where all adults were told to select a paper with certain number randomly, and those who picked odd numbers were involved in the study.

3.10 Variables

3.10.1 Dependent variable

The dependent variable was the presence or absence of symptoms for functional constipation measured using the Rome IV diagnostic questionnaire for adults with gastrointestinal symptoms.

Participants were clinical diagnosed to have Functional Constipation after fulfilling all of the 4 criteria during the last 3 months:

1. Must include 2 or more of the following;
    a. Straining more than one-fourth (25%) of defecations
    b. Lumpy or hard stools (BSFS 1 and 2) more than One-fourth (25%) of defecations
    c. Sensation of incomplete evacuation more than One-fourth (25%) of defecations
    d. Sensation of anorectal obstruction/blockage more than one-fourth (25%) of defecations
    e. Manual manoeuvres to facilitate more than one -fourth (25%) of defecations (e.g. digital evacuation, support of the pelvic floor)
    f. Fewer than 3 spontaneous bowel movements per week
2. Loose stools are rarely present without the use of Laxatives
3. Insufficient criteria for irritable bowel syndrome
4. Criteria fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis

3.10.2 Independent variables

3.10.2.1Categorical variables

Socio-demographic and baseline characteristics i.e. Sex, marital status, Level of education, social economic status, occupation, and associated factors included cigarette smoking, alcohol intake, fibre diet (fruits, vegetables, and legumes), fluid intake per day, physical exercise and depression.

Depression was assessed by presence of 5 or more symptoms of depression during the same 2-week period in most of the day or nearly every day and at least on the symptoms should be either depressed mood or loss of interest or pleasure. The symptoms of depression must lead to impaired level of social and occupation functioning. This was adopted from DSM V for mental disorders criteria for depression.

All these were recorded using the questionnaire and interview method.

3.10.2.2Quantitative variables

Age in years and BMI by measuring weight and height of the participants (kg/m^2).

3.11 Data collection

Data was collected using the Swahili version of the Rome IV questionnaires and interview after being pretested for its applicability at the community level, with trained assistants available to explain any questions that respondents were unclear about. The First part of the questionnaire included the particulars of the participants, socio-demographic characteristics and alarm features. Second part included other factors which were assessed for their association with functional constipation including food frequency questionnaire which were used to assess the dietary frequency for the past 1 month, smoking, alcohol, physical exercise and fluid intake per day. Third part included the Rome IV diagnostic criteria for Functional constipation. The questionnaire was translated into Swahili version, pretested for clarity and applicability at the community level. The questionnaire was administered to the participants at the household's level during the study period.

Data was collected in 5 days of the week from Monday to Friday (8:00am in the morning to 4:00pm in the evening), for a period of 2 months (September to November 2019) for those participants who were found at home. Some participants were followed during weekend if not found in their respective household after making an appointment via phone calls unless there was specific time as agreed by the investigator and household members depending on their availability.

Measurement: The various measurements were taken by the principal investigator from the study participants during data collections as follows.

Weight: The body weight (in kilograms [kg]) was measured using a standard weighing scale attached with the height scale as recommended by WHO without shoes and with light clothing.

Height: The body height in centimeters was measured using a stadiometer.Measurements were recorded to the nearest 0.5 centimeters then converted into meters. The body mass index (BMI) was calculated using the height (meters) and weight (kilogram), expressed in kg/m2 as shown: BMI = Weight (kg) ÷ [Height (m)] ².

BMI was categorized into four groups using the standard categories set by WHO as Underweight (<18.5 kg/m²), normal weight (18.5 - 24.99 kg/m²), Overweight (25 - 29.99 kg/m²) and Obesity (≥ 30 kg/m²).

3.12 Data analysis

The fully filled questionnaires were manually reviewed daily by principle investigator for consistency and appropriately coded prior to data entry. Data entry was done using EpiInfo software version 7.2 and analysed using Stata software version 15.1. The quantitative variables (Age, BMI) were presented as mean and standard deviation and Qualitative variables were presented into proportions.

The prevalence of FC was calculated using the proportion of individuals who fulfilled Rome IV criteria for FC as numerator and total participants who were included in the analysis as denominator.

Comparison of categorical variables between groups was performed using chi-square tests.

Logistic regression models were used to assess the independent variables that were significantly associated with FC. Each variable was first assessed for its association with Functional constipation using the univariate analysis model. For multivariate analysis, variables which showed the univariate $P< 0.2$ were included in the final regression model. P value of < 0.05 was used as a significant level.

3.13 Ethical consideration

This study was conducted after obtaining ethical clearance from Muhimbili University of Health and Allied Sciences Ethical review board.

Permission to conduct the study was also obtained from Temeke Municipality council and local government committees. And each participant was asked to provide a written informed consent before participating in the study.

Permission to use Rome IV adult questionnaire for functional gastrointestinal disorder was requested from the Rome foundation that approved its use and obtained a signed agreement.

Disposal of participants who were found to have functional constipation was done appropriately as they were advice to seek medical care for further treatment.

CHAPTER FOUR

4.0 RESULTS

4.1 Study population

A total 1200 adults were approached to participate in the study, of which 178 adults refused to participate and thus, the response rate was 1022/1200 (85%).

From a total 1022 Adults aged ≥18 years who were interviewed, 167 (16.3%) met exclusion criteria and the remaining 855 (83.7%) participants were included in the analysis (Figure 3 below).

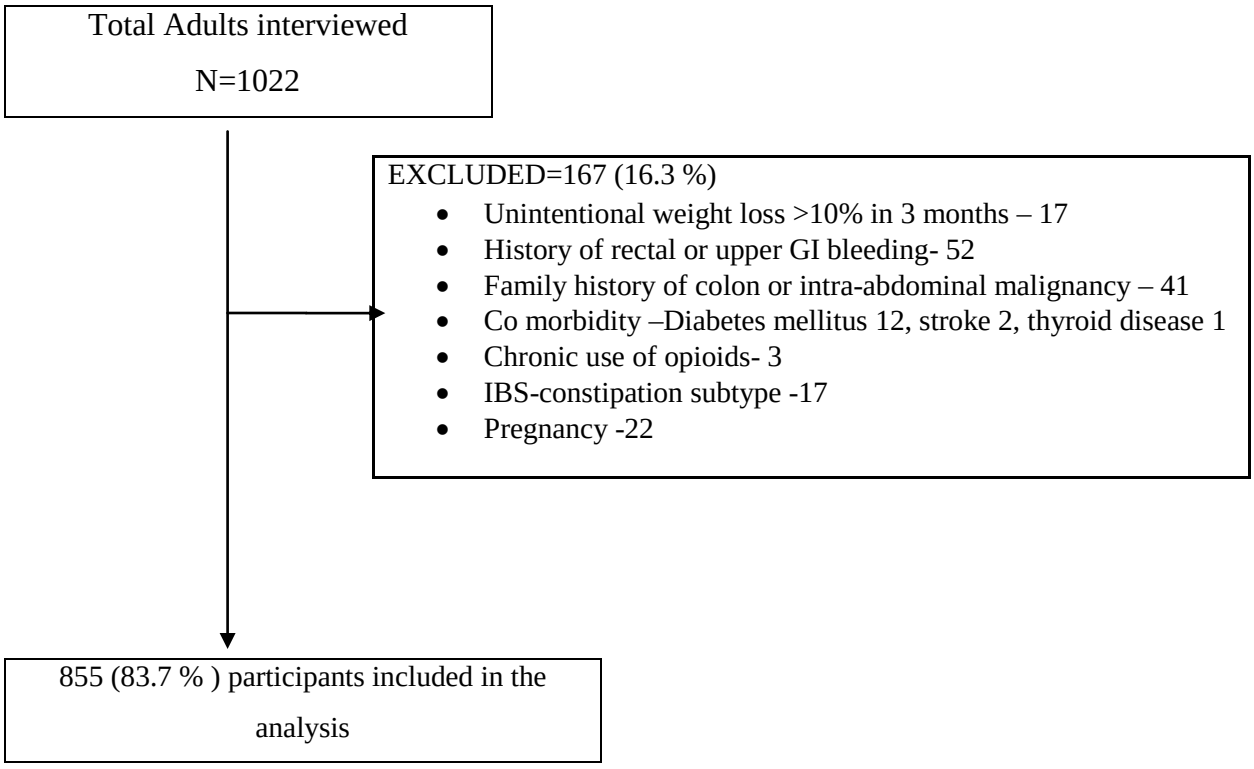


Figure 3: Flow chart showing total number of adults involved in the study (N=1022), of which 167 (16.3 %) were excluded and the remaining 855 (83.7%) were analyzed.

4.1 Socio-demographic and baseline characteristics of the participants

The socio-demographic characteristics of the study participants are shown in the table 1 below;

From a total of 855 Adults, the mean age of the study participants was 37±14.6 years.Most of the participants were below 40 years of age 518 (60.6 %), and a few 82 (9.6%) were ≥ 60 years. Majority of the participants were females 597 (69.82%) .The mean BMI of the participants was 29.15 ± 8.6 (kg/m^2).

Most of the participants were married 549 (64.2 %), having a formal education 755 (88.3%)and completed primary school level 525(69.1%). Almost half of the participants were unemployed 405 (47.4 %).

Regarding the frequency of dietary intake, majority of the participants consumed a fiber containing diet at least once a week i.e. fruits 516 (60.3%) and legumes (59.3 %) at least once a week, vegetables (61 %) at least once a day. Almost half (48.7 %) of the participants were taking ≥ 1.5 L of fluid per day.

Regarding smoking and symptoms of depression, 89% of the participants never smoked cigarette and only 18 (2.1 %) of the participants reported symptoms of depression.

Other variables include level of income, physical exercise, alcohol intake and BMI categories are as shown in the table 1 below.

4.2 The prevalence of functional constipation

Among 855 participants, 188 (22 %) fulfilled the ROME IV diagnostic criteria for functional constipation, and thus the prevalence of functional constipation among adults in Temeke municipality was 22%.

Table 1: Socio-demographic and Baseline characteristics of the participants (N=855)

Characteristics	Functional constipation YES n, (p %)	NO n, (p %)	TOTAL	X^2	p-value
Age groups (years)					
≥18 – 29	57 (18.5)	251 (81.5)	308		
30 – 39	39 (18.6)	171 (81.4)	210		
40 – 49	42 (24.7)	128 (75.3)	170	11.33	0.02
50 – 59	23 (27.1)	62 (72.9)	85		
60+	27 (32.9)	55 (67.1)	82		
Sex					
Male	47 (18.2)	211 (81.8)	258	3.06	0.08
Female	141 (23.6)	456 (76.4)	597		
Marital status					
Single	42 (20.0)	168 (80.0)	210		
Married	117 (21.3)	432 (78.7)	549		
Divorced/Separated	10 (33.3)	20 (66.7)	30	9.85	0.43
Co-habiting	2 (10.5)	17 (89.5)	19		
Widow	17 (36.2)	30 (63.8)	47		
Occupation					
Self – employed	88 (22.4)	305 (77.6)	393		
Employed	10 (17.5)	47 (82.5)	57	0.63	0.8
Unemployed	90 (22.2)	315 (77.8)	405		
Formal education					
Yes	159 (21.1)	596 (78.9)	755	3.25	0.07
No	29 (29.0)	71 (71.0)	100		
Level of education					
Primary	112(21.2)	413 (78.7)	525		
Secondary O/A level	39 (21.1)	146 (78.9)	185	0.73	0.86
University/College	8 (17.8)	37 (82.2)	45		
Income per month					
< 50,000 Tsh	21 (18.4)	93 (81.6)	114		
50,000 - < 150,000 Tsh	52 (25.1)	155 (74.9)	207	3.06	0.38
150,00 - <250,000 Tsh	16 (21.6)	58 (78.4)	74		
≥ 250,000 Tsh	9 (16.4)	46 (83.6)	55		
Fruit intake (frequency per month)					
Never	48 (26.5)	133 (73.5)	181		
At least once a week	110 (21.3)	406 (78.7)	516	3.13	0.21
At least once a day	30 (19.0)	128 (81.0)	158		

Continue Table 1

Vegetables intake (frequency per month)					
Never	11 (21.2)	41 (78.8)	52		
At least once a week	67 (23.7)	215 (76.3)	282	0.77	0.68
At least once a day	110 (21.1)	411 (78.9)	521		
Legumes (frequency per month)					
Never	24 (23.5)	78 (76.5)	102		
At least once a week	114 (22.5)	393 (77.5)	507	0.61	0.74
At least once a day	50 (20.3)	196 (79.7)	246		
Fluid intake per day					
< 0.5 L /day	33 (38.8)	52 (61.2)	85		
≥ 0.5 - < 1 L /day	31 (21.7)	112 (78.3)	143	16.15	0.003
≥ 1 - <1.5 L/day	39 (18.5)	172 (81.5)	211		
≥ 1.5 L/day	85 (20.4)	331 (79.6)	416		
Physical exercise					
Yes	49 (22.2)	172 (77.8)	221	0.003	0.99
No	139 (21.9)	495 (78.1)	634		
Smoking					
Never	163 (21.4)	598 (78.6)	761		
Past smoker	15 (48.4)	16 (51.6)	31	14.11	0.001
Current smoker	10 (15.9)	53 (84.1)	63		
Alcohol intake					
Never	132 (20.7)	507 (79.3)	168		
Past	15 (31.3)	33 (68.7)	48	3.63	0.16
Current	41 (24.4)	127 (75.6)	639		
Depression					
Yes	10 (55.6)	8 (44.4)	18	12.08	0.001
No	178 (21.3)	659 (78.7)	837		
BMI Categories (BMI kg/m^2)					
Underweight (<18.5)	5 (11.9)	37 (88.1)	42		
Normal (18.5 - 24.99)	97 (25.4)	285 (74.6)	382		
Overweight (25 - 29.99)	55 (23.5)	179 (76.5)	234	9.50	0.002
Obesity (≥ 30)	31 (15.7)	166 (84.3)	197		

p=proportions, N=total number of participants, BMI = Body mass index was calculated using height and weight, BMI= weight in kg /height in meter square, X^2= chi square

Tsh= Tanzanian shillings

4.4 Factors associated with functional constipation

All variables were analyzed for their individual association with functional constipation using the univariate logistic regression analysis model (Table 2). A total of eight variables which showed the univariate $P < 0.2$ were included in the final multivariate logistic regression model i.e. age, sex, formal education, depression, BMI, smoking, fruits and fluid intake (Table 3)

Variables which have shown to be independently associated with Functional constipation (FC) were older age of≥ 60 years (AOR 1.95. 95% C.I. 1.06 - 3.55), female sex (AOR 1.83. 95% C.I. 1.17 - 2.87), depression (AOR 5.22 95% C.I. 1.88 - 14.48), past smoking (AOR 4.94 95% C.I. 2.25 - 10.89) and fluid intake ≥ 0.5L/day (AOR 0.44 95% C.I. 0.24 - 0.83) (Table 3).

Older age of 60 years and above has shown to be significantly associated with functional constipation. Participants aged ≥ 60years had the highest proportion (32.36%) of Functional constipation compared to other age groups (Table 1) and they were 2times more likely to have functional constipation compared to younger age 18 – 29 years. i.e. (AOR 1.95. 95% C.I. 1.06 - 3.55).

Regarding sex, there was high proportion of female 141/597(23.62%) compared to male 47 /258(18.22%) with Functional constipation, with male to female ratio of 1:3 (Table 1). Female sex was almost 2 times more likely to have functional constipation compared to male and this association was statistically significant i.e. (AOR 1.83. 95% C.I 1.17 - 2.87) (Table 3).

Majority of the participants who reported symptoms of depression 10 (55.6 %) had functional constipation (Table 1), and this association was statistically significant (AOR, 5.22 95% C.I 1.88 - 14.48) (Table 3).

Regarding smoking, those who were past smokers had higher proportion of participants with Functional constipation (48.4 %) compared to those who never smoked (21.4 %) or current smokers (15.9 %) (Table 1). Past smoking was significantly associated with Functional constipation compared to those who never smoked (AOR 4.94. 95%. C.I 2.25 - 10.89).

Whoever, current smoking didn't show any significant association with Functional constipation (AOR 0.81 95% C.I. 0.37 - 1.75) (Table 3).

Compared with those who had fluid intake of less than half a litre per day, those who were taking ≥ 0.5Lper day were less likely to have functional constipation (AOR 0.44 95% C.I. 0.24 - 0.83) (Table 3).

Table 2: Factors associated with Functional constipation (Univariate logistic regression model)

Characteristics	COR (95% CI)	p-value
Age groups (years)		
≥18 – 29	**Ref**	
30 – 39	1.01 (0.64 - 1.6)	0.98
40 – 49	1.44 (0.92 - 2.27)	0.11
50 – 59	1.63 (0.93 - 2.85)	0.08
60+	2.16 (1.26 - 3.72)	0.005
Sex		
Female	**Ref**	0.08
Male	0.72 (0.49 - 1.04)	
Marital Status		
Single	2.12 (0.47 – 9.55)	0.31
Married	2.30 (0.52 – 10.1)	0.26
Divorced/separated	4.25 (0.81 – 22.1)	0.86
Widow	4.82 (0.99 – 23.4)	0.51
Co-habiting	**Ref**	
Occupation		
Self employed	**Ref**	
Employed	0.74 (0.36 – 1.52)	0.41
Unemployed	0.99 (0.71 – 1.39)	0.98
Formal education		
No	**Ref**	0.07
Yes	0.65 (0.41 – 1.04)	
Level of Education		
Primary	1.25 (0.56 – 2.75)	0.55
Secondary O/A level	1.25 (0.53 – 2.91)	0.60
University / College	**Ref**	
Income per month		
< 50,000 Tsh	**Ref**	
50,000 - < 150,000 Tsh	1.22 (0.64 – 2.29)	0.55
150,00 - <250,000 Tsh	0.71 (0.29 – 1.75)	0.46

≥ 250,000 Tsh	0.82 (0.39 – 1.69)	0.59
Fruit intake (frequency per month)		
Never	**Ref**	
At least once a week	0.85 (0.34 - 2.12)	0.15
At least once a week	0.39 (0.17 - 0.91)	0.10
Continue Table 2		
Vegetables intake (frequency per month)		
Never	**Ref**	
At least once a week	1.16 (0.56 - 2.38)	0.68
At least once a week	0.99 (0.49 - 2.00)	0.99
Legumes (frequency per month)		
Never	**Ref**	
At least once a week	0.94 (0.57 – 1.55)	0.82
At least once a week	0.83 (0.48 – 1.44)	0.51
Fluid intake per day		
< 0.5 L /day	**Ref**	
≥ 0.5 - < 1L /day	0.45 (0.24 - 0.79)	0.006
≥ 1 - <1.5 L/day	0.35 (0.20 - 0.62)	0.0001
≥ 1.5 L/day	0.40 (0.25 - 0.66)	0.0001
Physical exercise		
No	**Ref**	0.93
Yes	1.01 (0.70 - 1.46)	
Smoking		
Never	**Ref**	
Past smoker	3.44 (1.66 - 7.10)	0.001
Current smoker	0.69 (0.344 - 1.39)	0.301
Alcohol intake		
Current	**Ref**	
Past	0.8 (0.54 - 1.20)	0.34
Never	1.41 (0.69 - 2.84)	0.29
Depression		
No	**Ref**	0.001
Yes	4.62 (1.79 - 11.89)	
BMI Categories (BMI kg/m^2)		
Underweight (<18.5)	**Ref**	
Normal (18.5 - 24.99)	2.51 (0.96 - 6.59)	0.06
Overweight (25.00 - 29.99)	2.27 (0.85 - 6.07)	0.10
Obesity (≥ 30.00)	1.38 (0.50 - 3.79)	0.53

Ref – Reference, COR-Crude odds ratio, CI – confidence interval, BMI (kg/m²) – Body mass index in kilogram per meter square, Tsh- Tanzanian shillings.

Table 3: Factors associated with Functional constipation (Multivariate logistic regression model)

Variables	AOR (95% CI)	p-value
Age groups (years)		
≥18 – 29	**Ref**	
30 – 39	0.99 (0.62 - 1.61)	0.99
40 – 49	1.53 (0.95 - 2.48)	0.08
50 – 59	1.68 (0.92 - 3.07)	0.09
60+	1.95 (1.06 - 3.55)	0.03
Sex		
Male	**Ref**	
Female	1.83 (1.17 - 2.87)	0.007
Formal education		
No	**Ref**	
Yes	0.87 (0.50 – 1.51)	0.63
Depression		
No	**Ref**	
Yes	5.22 (1.88 - 14.48)	0.001
BMI Categories (BMI kg/m2)		
Underweight (<18.5)	**Ref**	
Normal (18.5 - 24.99)	2.37 (0.87 - 6.44)	0.09
Overweight (25.00 - 29.99)	1.98 (0.71 - 5.55)	0.19
Obesity (≥ 30.00)	1.11 (0.38 - 3.23)	0.84
Smoking		
Never	**Ref**	
Past smoker	4.94 (2.25 - 10.89)	0.0001
Current smoker	0.81 (0.37 - 1.75)	0.59
Fruit intake (frequency)		
Never	**Ref**	
At least once a week	0.75 (0.49 - 1.15)	0.19
At least once a day	0.62 (0.35 - 1.07)	0.09
Fluid Intake/day		
< 0.5 L /day	**Ref**	
≥ 0.5 - < 1L /day	0.44 (0.24 - 0.83)	0.01
≥ 1 - <1.5 L/day	0.37 (0.21 - 0.66)	0.001
≥ 1.5 L/day	0.46 (0.26 - 0.78)	0.004

Ref – Reference, AOR-Adjusted odds ratio, CI – confidence interval, BMI (kg/m²) – Body mass index in kilogram per meter square

CHAPTER FIVE

5.0 DISCUSSION

From this study, the prevalence of FC among adults in Temeke Municipality was found to be22 %, and FC was found to be independently associated with older age i.e. ≥ 60 years, female sex, symptoms of depression, past smokers and fluid intake ≥ 0.5L per day.

According to the systematic review in North America the prevalence range from 1.9 to 27%, with average of 15% in most studies(25). In 2014, a cross-sectional study done among adolescents in Nigeria showed slightly higher prevalence of 27 %(15) compared to this study (22 %).

Screening tools and/or criteria used greatly influence the prevalence of Functional constipation. According to Wong et al(41), using Rome III criteria for functional GI disorder, was unable to distinguish between functional constipation and Irritable bowel syndrome – constipation subtype which leads to overestimation of the burden of FC. This could explain the higher prevalence with the use of Rome III compared to Rome IV criteria. This study used the currently recommended Rome IV criteria for FC.

Compared to another study which was done in Iran using Rome IV criteria among subjects aged between 40 to 75 years, showed a lower prevalence of 8.1%(32). This difference could be due to narrow age range that was used (i.e. 40 -75 years) which could miss some individuals below 40 years or above 75 years with FC and may have led to lower prevalence than expected.

In this study, FC was more prevalent among female compared to males with male to female ratio of 1:3. Most of previous studies reported higher prevalence of FC among women. Based on a systematic review in North America, the female: male ratio was 2.2 in average(43). Another systematic review reported a female to male ratio of 2.1, worldwide.(25)A study done in Iran using Rome IV criteria also showed higher prevalence among female with female: male ratio of 1.44.(32)

In this study, the prevalence of Functional constipation (FC) increases with age (Table 1), and age of 60 years and above has shown to be a significant associated with FC (Table 3). This association was confirmed in most previous studies (47, 48, 49, 50). A population-based study reported that the cumulative incidence of chronic constipation (CC) is higher in the elderly above 70 years by compared to a younger age of less than 50 years regardless of the sex(20% vs. 14.5%)(51).A study done in Iran also showed the same age range of 60 years and above to be associated with FC compared to younger age of 40-59 years. P <0.01(32).

The higher prevalence of FC in older age may be explained by age related neuronal loss and pelvic floor dysfunction. Age-related neuronal loss and increased number of altered and dysfunctional my enteric ganglia, causes higher sensory thresholds to rectal distention results into altered rectal sensitivity in the elderly. This leads to slow colonic transit and chronic constipation (52) Pelvic floor dysfunction include failed relaxation of the pelvic floor, paradoxical contraction of the pelvic floor muscles, or the inability to produce the necessary propulsive forces needed in the rectum to expel the stool completely. These mechanisms leads to decreases in number of high amplitude propagating contractions, decrease propulsiveness and leads to Chronic constipation among elderly(52). Higher rate of co-morbidities in elderly(53) i.e. Diabetic Mellitus, hypothyroidism, cerebrovascular diseases with or without physiological and social stresses,(54) low physical activity and reduced food intake can also contribute into higher prevalence of FC among elderly (55).

In this study, majority of the participants who reported symptoms of depression had FC, and this association was statistically significant.This finding was similar to the population based study done in China, were anxiety/depression was found to be one of the associated factor for Functional bowel disorders including Functional constipation (56). Constipation has also been shown as a leading co-morbidity in individuals with depression(57).

This finding could be explained by low levels of serotonin during depression which act in the brain and gut . Serotonin is the neurotransmitter in the enteric nervous system that mediates GI function. Lower levels lead to reduced motility of the GI and impaired epithelial growth.

The study done in Columbia(57), conducted in mice, shows that a shortage of serotonin in the neurons of the gut can cause constipation, just as a serotonin shortage in the brain can lead to depression. Also, the treatment with slow release 5 HT (5 hydroxytryptophan) has shown to alleviate both symptoms of depression and constipation.

From this study, participants who reported to be past smoker had higher proportion of FC compared to those who never smoked but current smoking didn't show any association. Study by Peter et al in UK(59), among 1067 smoker's clinic patients on their level of constipation prior to and weekly after stopping smoking showed that, pre-cessation ratings of constipation were stable but after cessation of smoking, the ratings of constipation increased significantly ($P < 0.01$). The net proportion of patients affected was 17%, including 9% who were symptom-free at baseline who became extremely constipated(59).Another study by Dukas et al in US (60)showed that , current smoking was associated with a slightly reduced risk of constipation relative to never smoking , whereas past smoking had no association with constipation .

The association between smoking and constipation could be explained by effect of nicotine on the bowel movement and constipation as one of the withdrawal symptoms of smoking. In a study by Cummings et al(61) ,smoking withdrawal induced constipation, and in a study by Rausch et al(62), trans-dermal application of nicotine increased recto-sigmoidal emptying, suggesting that nicotinic acid may influence bowel motility.

Also form this study finding, fluid intake of $\geq$ 0.5L per day was protective against Functional constipation. This finding was similar to several other studies; however, the cut off amount of fluid per day to have the protective effect against Functional constipation differs, depending on the age of the study participants. In Hong Kong, an intake of up to two glasses a day (400 ml) among children was considered as the cutoff and It was found that the consumption of 600 to 800 mL a day and of more than 1000 mL was associated with a decrease in the chance of intestinal constipation of 8 to 14 times, respectively(63). In the study carried out among adults, it was observed that patients with constipation who consumed two liters of water had a

statistically significant increase in the evacuation frequency and a decrease in the use of laxatives(64). Less fluid intake was significantly associated with slow colonic transit especially in elderly population (65)

5.1 Study strength

- This was a community based study that involved participants from 18 years and above.
- Large sample size

5.2 Study limitations

- This was a cross sectional study that could not fully explain the cause – effect associations.
- Recall bias as study participants had to recall if they ever had symptoms included in the Rome IV criteria in the past months.
- Most participants were females. This could result into underestimating the prevalence of Functional constipation among males. However from the population and census report of Tanzania(42), there were more females in Temeke Municipality and data collection was done mostly on weekdays ,where females are most likely to be found at the households than males.
- Few individuals who refuse to consent may be the ones with symptoms, but this could not affect much on the results as the response rate was 85%.
- Depression was assessed using participant reported symptoms of depression for the past 6 months, instead of the calculated depression check list scales e.g. Hopkins symptoms checklist scale for depression with 15 items.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The prevalence of functional constipation was higher in our community. Decreasing modifiable factors associated with functional constipation such as avoid smoking and increase fluid intake per day can reduce its prevalence and decrease burden of the disease.

6.2 Recommendations

The findings of this study calls upon the following:

- Increase community awareness about symptoms of constipation and inform practice on the magnitude of the disease
- Advice not to smoke and increase fluid intake
- Study to evaluate the effect of depression on functional constipation i.e Is the depression causing functional constipation or because individuals had constipation that why they are depressed, this needs further evaluation.
- Screening tool/criteria for Functional Constipation should be included in our guidelines as a recommendation for every adult ≥ 60 years to exclude constipation symptoms clinically before invasive procedures.

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APPENDICES

INTERPRETATION OF BMI AS PER WHO RECOMMENDATION

Nutritional Status	BMI (kg/m2)
Underweight	Below 18.5
Normal weight	18.50 – 24.99
Pre-obesity	25.00 – 29.99
Obesity	≥ 30.00
Severe thinness	< 16.00
Moderate thinness	16.00 – 16.99
Mild thinness	17.00 – 18.49
Obesity Grade I	30.00 – 34.99
Obesity Grade II	35.00 – 39.99
Obesity Grade III	≥ 40.00

ANNEX I: INFORMED CONSENT FORM – ENGLISH VERSION
MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

Consent to participate in the study titled; **Prevalence of functional constipation and its associated factors among Adults in Temeke Municipality- A community based study.**

Dear Sir/Madam,

My Name is Dr. Sharon Khalid Ismail, a resident doctor in the department of Internal Medicine at Muhimbili University of Health and Allied Sciences (MUHAS). I am conducting a research study on the prevalence, of functional constipation and its associated factors among adults in Temeke Municipality. I hereby request your participation.

Purpose of the study: The aim of this study is to determine the prevalence of functional constipation and its associated factors among adults aged 18 and above in Temeke municipality using a ROME IV questionnaire.

How to participate: Participants who are willing to participate in this study will have to sign a consent form.

Short interview will be done before filling in the questionnaire.

Confidentiality: Information obtained from participant will be kept confidential and shall be very helpful in this study as well as promoting better health of individuals with functional constipation.

Costs: You will not be required to pay any amount for your participation in this study.

Voluntary participation and the right to withdraw from the study:

Your participation is voluntary and you have the right to withdraw from participating in this study at any time. Whatever your decision may be, it will have no effect in any way to your rights to care and treatment.

Risks: No investigation or invasive procedure that will be performed to the participant. A structured questionnaire with interview will be used to collect data. Measurement for height and weight will also be done to the participants.

Benefits: I hope that the information from this research will be useful in contributing to improve the quality of care of individuals suffering from chronic constipation without identified cause.

Contact persons:

If you have any inquiries about this study, please do not hesitate to contact:

Dr. Sharon K Ismail (MD)

Principal Investigator

Muhimbili University of Health and Allied Sciences (MUHAS)

Department of Internal Medicine

P.O. Box 65001 Dar es Salaam.

Tel. 0714 517912

OR

Dr. Ewaldo Komba (MD, MMED, MSC Gastroenterology)

Tel no. 0784200171

Supervisor for this research.

In case of any information about your rights as a participant in this study please contact:

The Chairperson of Research and Publication Committee

Muhimbili University of Health and Allied Sciences (MUHAS)

P.O. Box 65001 Dar es Salaam

Tel. 022-2152489

I will be grateful if you willingly agree to participate in this study.

I have understood the above information and my questions have been answered by the investigator to my satisfaction. I am willingly agreed to take part in this research.

Participant number:

Signature of the participant: _____ Date: _____

Signature of Investigator: _____ Date: _____

ANNEX II: INFORMED CONSENT FORM-SWAHILI VERSION
CHUO KIKUU CHA TIBA NA SAYANSI SHIRIKISHI -MUHIMBILI

RIDHAA YA KUSHIRIKI KWENYE UTAFITI HUU

Namba ya Utambulisho……

LENGO LA UTAFITI: UTAFITI WA JAMII JUU YA KIWANGO, VIASHIRIA VINAVOAMBATANA NA UGONJWA WA KUZIBA KWA CHOO KWA WAKAZI WA MANISPAA YA TEMEKE, JIJI LA DAR ES SALAAM.

Utangulizi: Mimi Daktari, Sharon K Ismail, mwanafunzi wa shahada ya uzamili katika chuo cha Afya na sayansi shirikishi ,Muhimbili,Idara ya magonjwa ya ndani. Nafanya utafiti kuhusiana na hali ya kukosa choo na viashiria vinavoambatana na hali hiyo kwa watu wazima kuanzia miaka 18 au zaidi kwa wakazi wa Manispaa ya Temeke. Naomba kwa ridhaa yako uweze kushiriki katika utafiti huu.

Uamuzi wako wa kushiriki hautakua na athari zozote kwenye uhuru na usiri wako. Tafadhali uliza swali kama kuna kitu usichokielewa kuhusu utafiti huu.

Je dhumuni la utafiti huu ni lipi?Dhumuni la utafiti huu ni uchunguzi wa kubaini kiwango, viashiria vinavoambatana na ugonjwa wa kuziba choo kwa kuulizwa maswali maalumu na vigezo vya ROME IV. Utafiti huu utatusaidia kuboresha huduma ya tiba juu ya magonjwa hayo kwa siku za usoni.

Jinsi ya kushiriki. Mshiriki atalazimika kutia saini ya kukubali kwake kushiriki katika utafiti kabla ya kuulizwa maswali maalumu yanayohusiana na utafiti huu.

Utafiti huu utahusu maswali mbalimbali juu ya taarifa zako binafsi, Taarifa zako za afya ili kujua dalili na Viashiria vya ugonjwa huo.

Je itakuwaje kama hutataka kushiriki kwenye utafiti huu?

Kushiriki kwako kwenye utafiti huu ni hiari kabisa.

Je kuna athari gani za kushiriki katika utafiti huu? Hakuna athari yeyote. Utafiti utahusisha maswali maalumu kwa mshiriki na taarifa zake zitatuzwa kwa matumizi ambayo yameidhinishwa baina ya mtafiti na mshiriki. Mshirirki atapimwa uzito na urefu kwa ridhaa yake.

Kuondoka kwenye utafiti: Unaweza kuamua kusitisha kuendelea kushiriki kwenye utafiti huu muda wowote na kwa sababu yoyote. Kama utaamua kuacha kushiriki hautaathiri jambo lolote kuhusu huduma zako za afya na matibabu.

Utunzaji wa siri? Habari na taarifa utakazotoa zitatunzwa kwa usiri mkubwa na zitatumika kwa matumizi yaliyokubaliana baina ya mtafiti na mshiriki.

Je utampigia nani kuhusu utafiti huu? Kama una maswali kuhusu utafiti au ukiwa na haja ya kuripoti athari zitokanazo na utafiti, unaweza kumpigia daktari wako au mwendesha utafiti huu muda wa masaa ya kazi. :

Dr. Sharon K Ismail

Simu namba; 0714517912

AU

Daktari kiongozi wa utafiti,

DR.Ewaldo Komba

Simu namba; 0784200171

Kama una swali kuhusu haki zako kama mshiriki unaweza kuwasiliana na;

Mkurugenzi wa tume ya tafiti na uchapishaji wa tafiti,

Chuo Kikuu Cha Sayansi na Tiba Cha Muhimbili,

S.L.P 65001, Dar es Salaam.

Namba ya Simu 022-2152489

RIDHAA

Kama utakubali kushiriki kwenye utafiti huu na ukasaini fomu hii ya ridhaa, haujiondolei haki yoyote ya kisheria.

Nitashukuru sana kama kwa hiyari yako utaamua kushiriki katika utafiti huu.

Nimeelewa taarifa zote nilizoelezwa na mtafiti hapo juu na pia amenijibu na kunielewesha zaidi maswali niliyomuuliza. Na kwa hiyari yangu nimeridhia kushiriki katika utafiti huu.

Nambari ya ushiriki: _____

Sahihi au alama ya dole gumba ya mshiriki: _____ Tarehe: _____

Sahihi ya mtafiti : _____ Tarehe: _____

ANNEX III: ENGLISH VERSION QUESTIONNAIREFOR FC

Questionnaire for the study of Prevalence of functional constipation and its associated factors among adults in Temeke Municipality- A community based study.

Dear respondent,

My name is Dr. Sharon K Ismail, a resident for Masters of Medicine in Internal Medicine (MMED Internal Medicine) course conducting an academic research on the "Prevalence of functional constipation and its associated factors among adults of Temeke Municipality- A community based study". You are kindly requested to facilitate my study by answering the following questions. I assure you that the information provided will be treated with utmost confidentiality and be used for academic purposes only. Your responses will be highly appreciated.

PLEASE NOTE: Your name should not appear anywhere in this document

Instructions:

1. This questionnaire consists of three (3) sections; sections A, B & C
2. All Sections shall be filled by the interviewer or principal investigator.
3. A mark of tick √ will be put where appropriate.

A. ENGLISH VERSION QUESTIONNAIRE FOR FUNCTIONAL CONSTIPATION
SECTION A: PARTICIPANT'S PARTICULARS

S/NO…….. DATE……..

1. WARD……...
2. STREET…… STREET LEADER …….
3. HOUSE NUMBER……
4. CONTACT ……..
5. HEIGHT (M)……
6. WEIGHT (KG)……
7. BMI…….
8. Date of birth …… (Years)……. Age (in years)
9. Sex A. Male / B. Female
10. Marital status: A. Single / B.Married / C. Divorce/separated / D. Co-habiting / E.Widow
11. Have you attended school? A: Yes / B: No
12. If yes Qn 11 above, what is your completed Education Level? A. Primary / B. Post Primary Training / C. Completed Secondary 'O' Level / D. Completed Secondary 'A' Level / E. University /College
13. Occupation: A. Unemployed / B. Self-employed / C. Government/private employed / D. Student
14. If employed (self/government/private), what is your average income per month?
    A less than 50,000 Tsh
    B.50, 000 to less than 150,000Tsh
    C. 150,000 to less than 250,000Tsh
    D. above 250,000 Tsh
15. How do you perceive your level of wealth in relation to income and expenditure?
    A. Low income
    B. Middle income
    C. High income
16. Do you have previous history of vomiting blood or passing black tarry stool?
    A. Yes /B. No

17. Do you have any family history of intra-abdominal malignancy or colon cancer or blood in stools? A. Yes/ B.No
18. Have you ever been diagnosed with Diabetes Mellitus/stroke/thyroid diseases? A. Yes/ B. No
19. If yes(Q18 above), are you on any medication…….(mention)
20. Have you noticed losing weight unintentionally for the past 3 months? A. Yes/B. No
21. What was your weight in past 3 months …….. OR Unfitting of clothes ……
22. Are you pregnant currently? (For women). A. Yes/ B. No

SECTION B: FACTORS FOR FUNCTIONAL CONSTIPATION

23. Have you ever smoked cigarette?
    A. Never B. Past smoking C. Current smoking
24. If option B or C above, how many cigarettes/day…….
25. Duration of smoking (years)……
26. Pack -year……
27. Have you ever drunk alcohol?
    A. I currently drink alcohol B. I have quit drinking alcohol C. I have never drank alcohol.
28. If yes (A or B above): Duration of alcohol intake (years).....
29. Type of alcohol (Beer/Wine/Spirits/Local).....
30. Average amount per week (ml or number of bottles).....
31. Do you have previous symptoms ofdepressionfor at least 2 weeks, every day or nearly every day that impaired you're daily functioning in the past 6 months? A. YES / B. NO
    If yes, which among the following symptoms? (Circle the symptom mentioned)
    -depressed mood,
    -Loss of interest or pleasure in all or almost all activities
    -Feeling low in energy or slowed down
    -Significant weight loss when not dieting or weight gain, increase or decrease in appetite
    -Slowing down of thought and reduction of physical movement

-Feeling of worthlessness or excessive or inappropriate guilt

- Diminished ability to think or concentrate or indecisiveness,
- Recurrent thought of death, suicide attempt or plan

32. At least once a week, do you engage in any regular activity similar to brisk walking, jogging, bicycling and running long enough to work up a sweat? A. Yes B. No C. Immobile/disability
33. If yes in Q35, how many times per week?
    A. Less Than Once Weekly B. 1/Week C. 2–3 times/Week D. 4–6times/Week E. Daily
34. By estimations, how much fluid do you take per day? (total amount of fluid intake include drinking water, juice, tea, coffee etc)
    A. I Rarely take fluids everyday
    B. Less than a ½ litre per day
    C. More than ½ to less than 1L per day
    D. 1L to 1.5L per day
    E. More than 1.5L

FOOD FREQUENCY QUESTONNAIRE.

How frequently have you been consuming the following food groups for the past 1 month?

- Mark with an "X" for the corresponding frequency

FOOD GROUPS	Never	1-3 per month	1per week	2-4 per week	5-6 per week	1 per day	2-3 per day	4-5 per day	6+ per day	Utensil	Amount
35. Cereals and cereal products (such as: rice, wheat, bread, buns, biscuits) -Cereal-based local dishes (such as: porridges, chapatti)											
36. .Fruit and fruit juices -ripe banana, mango, avocado, orange ,papayas, watermelon, apple, grapes, pineapple, sugarcane juice , jackfruit)											
37 .Legumes Beans, mung & soybeans pigeon, cow &kidney beans Beans in mixed dish											
38 .Vegetables Amaranth leaves, spinach, pumpkin leaves, Cassava leaves, Okra, Other green leafy vegetables, Eggplant											

SECTION C: ROME IV QUESTIONNAIRE FOR THE DIAGNOSIS OF FUNCTIONAL CONSTIPATION

39 In the last 3 months, how often did you have pain anywhere in your abdomen? □ Never – Skip to question 53□ Less than one day a month□ One day a month □ Two to three days a month□ Once a week□ Two to three days a week □ Most days □ Every day □ Multiple times per day or all the time

40 How often did this pain in your abdomen happen close in time to a bowel movement -- just before, during, or soon after? (Percent of times with pain) □ 0% Never □ 10% □ 20%□ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% Always

41 In the last 3 months, when you had abnormal stools, what were they usually like? (Refer to the Bristol Stool chart below)□ Usually constipation (like Type 1 or 2 in the picture)□ Usually diarrhea (like Type 6 or 7) □ Both diarrhea and constipation (more than 1/4 of all the abnormal bowel movements were constipation and more than ¼ were diarrhea)□ Not applicable, because I never or rarely had abnormal bowel movements



42 How often did your stools become either softer than usual or harder than usual when you had this pain? (Percent of times with pain) □ 0% Never □ 10% □ 20%□ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% Always

43 How often did your stools become either more frequent than usual or less frequent than usual when you had this pain? (Percent of times with pain) □ 0% Never □ 10% □ 20%□ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% Always

44 For women: How often did your pain get worse with menstrual bleeding? (Percent of times with pain) □ 0% Never □ 10% □ 20% □ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% Always □ This question does not apply to me

45 How often did your pain start or get worse after eating a meal? (Percent of times with pain) □ 0% Never □ 10% □ 20% □ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% Always

46 When you had this pain, how often did it limit or restrict your usual activities (for example, work, household activities, and social events)? (Percent of times with pain) □ 0% Never □ 10% □ 20% □ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% Always

47 Has this pain in your abdomen been continuous or almost continuous? (Continuous means that it never goes away during waking hours). A.Yes/ B. No

48 Has it been 6 months or longer since you started having this pain?). A.Yes/ B.No

49 In the last 3 months, how often did you have hard or lumpy stools that looked like Type 1 or 2 in the picture above? (Percent of all bowel movements) refer BSFS

□ 0% Never □ 10% □ 20% □ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% Always

50 Did you have hard or lumpy stools (like Type 1 or 2) when you were not taking drugs for diarrhoea? □ No, or rarely □ Yes

51 In the last 3 months, how often did you have fewer than three bowel movements a week without taking a laxative medication or enema? (Percent of weeks) □ 0% Never □ 10% □ 20% □ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% Always

52 In the last 3 months, how often did you strain during bowel movements? (Percent of bowel movements) □ 0% Never □ 10% □ 20% □ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% Always

53 In the last 3 months, how often did you have a feeling of incomplete emptying after bowel movements? (Percent of bowel movements) □ 0% Never □ 10% □ 20% □ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% Always

54 In the last 3 months, how often did you have a sensation that the stool could not be passed (was blocked), when having a bowel movement? (Percent of bowel movements) □ 0%

Never □ 10% □ 20% □ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% Always

55 In the last 3 months, how often did you press on or around your bottom, or remove stool with your fingers, in order to have a bowel movement? (Percent of bowel movements) □ 0% Never □ 10% □ 20% □ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% Always

56 Did any of the symptoms of constipation listed in questions above begin more than 6 months ago?□ No □Yes

57 Are you currently taking a prescription medication for pain? □ No □ □ Yes

58 Have any of the constipation symptoms listed in questions above changed since you started taking prescription medication for pain? □ No □ Yes

ANNEX IV; SWAHILI VERSION QUESTIONNAIRE FOR FC
DODOSO LA KISWAHILI KWA AJILI YA UTAFITI WA UGONJWA WA KUFUNGA/KUKOSA CHOO
KIPENGELE A; TAARIFA BINAFISI ZA MSHIRIKI

NAMBA YA UTAMBULISHO……..

TAREHE……..

1. KATA……...
2. MTAA…… KIONGOZI WA MTAA…….
3. NAMBA YA NYUMBA……
4. NAMBA YA SIMU ……..
5. UREFU (M)……
6. UZITO (KG)……
7. BMI…….
8. TAREHE YA KUZALIWA …… (MWAKA)……. UMRI (MIAKA)
9. JINSIA 1. Mme / 2. Mke
10. Hali ya ndoa A. Sijaoa/kuolewa B.Nimeoa/kuolewa C. Tumeachana/kutengana D. tunaishi pamoja bila ndoa / E. Mjane
11. Je, umesoma shule? A: Ndio B: Hapana
12. Kama ndio (swali la 11 hapo juu), umemaliza kiwango gani cha elimu? **A.** Shule ya msingi **B.**Mafunzo badaa ya shule ya msingi **C.** Nimemaliza shule ya sekondari (kidato cha nne) **/ D.** Nimemaliza shule ya sekondari (kidato cha sita) **E.** Elimu ya juu/Chuo kikuu
13. Kazi: A. Sina ajira B. Nimejiajiri C. Ajira ya Serikalini/Sekta binafsi D. Mwanafunzi
14. Kama una ajira (Umejiajiri/serikalini /sekta binafsi), wastani wa kipato chako kwa mwezi ni shilingi ngapi?

A chini ya 50,000

B.50, 000 mpaka chini ya 150,000

C. 150,000 mpaka chini ya 250,000

D. zaidi ya 250,000

15. Je, unajiweka katika kiwango gani cha utajiri kutokana na hali yako ya kipato na matumizi?

A. kipato cha chini

B. kipato cha kati

C. kipato cha juu

16. Umeshawahi kutapika damu au kupata choo cheusi, kilaini mfano wa lamu?
A. Ndio/ B. Hapana

17. Katika familia yako, kuna mtu aliwahi kuugua saratani ya ndani ya tumbo au utumbo mpana, au kupata haja kubwa inayoambata na damu? A. Ndio B.Hapana

18. Umeshawahi kugundulika na kisukari/kiharusi/ugonjwa wa tezi ya shingo? A. Ndio B. Hapana

19. Kama ndio(swali la 18 hapo juu),unatumia dawa zozote?…….(zitaje)

20. Je, umepoteza uzito bila kutarajia ndani ya miezi 3 iliyopita? A. Ndio B. Hapana

21. Uzito wako miezi 3 iliyopita…….. au nguo hazitoshi ……

22. Una mimba? (Kwa wanawake tu). A. Ndio B.Hapana

KIPENGELE B: SABABU ZA HATARI /VIASHIRIA VYA MAGONJWA YA MATUMBO NA KUKOSA CHOO

23. Umeshawahi kuvuta sigara?

B. Sijawahi B. Nilivuta ila nimeacha C. Ninavuta

24. Kama jibu ni B au C, sigara ngapi kwa siku…….

25. Miaka ya uvutaji wa sigara ……

26. Pakiti kwa mwaka ……

27. Umewahi kunywa pombe?

A. Ninakunywa pombe B. Nilikuwa nakunywa ila nimeacha C.sijawahi kunywa pombe.

28. Kama jibu ni A au B hapo juu, Miaka ya unywaji wa pombe.....

29. Aina ya pombe (Bia/mvinyo/pombe kali/pombe za kienyeji).....

30. Wastani wa pombe unayokunywa kwa wiki (ujazo au idadi ya chupa).....

31. Umeshawahi kuwa na dalili za ugonjwa wa sonona/huzuni kupita kiasi au msongo wa mawazo kwa muda usioupungua wiki 2 zilizotokea kwa kila siku na kusababisha

kushindwa kufanya shughuli zako za kila siku kwa kipindi cha miezi sita iliyopita ?

A.Ndio / B. Hapana

Kama jibu ni ndio-ni zipi kati ya dalili zifuatazo? (zungushia dalili zinazotaja)

-hali ya huzuni

- kupoteza hamu au furaha na ari ya kufanya kazi zako za kila siku

- kuhisi kupukiwa nguvu au kufanya kazi kwa taratibu

- kupungua au kuongezeka uzito bila kubadilisha mfumo wa ulaji , kuongezeka au kupungua hamu ya kula

-kufanya kazi au mambo kwa taratibu tofauti na kawaida

-kujiona huna thamani au kujutia kitu unachokifanya bila sababu za msingi

- kupunguza uwezo wa kufikiria , kufanya jambo kwa ufasaha

- mawazo ya kutaka kujiua , mipango au kujaribu kujiua

32. Kwa uchache wa mara moja kwa wiki, je, unashiriki kwenye kazi au mazoezi yoyote (sawa na kutembea kwa haraka, kukimbia, kuendesha baisikeli) na kufanya utoke jasho?

A. Ndio B. Hapana C. siwezi kutokana na ugonjwa /ulemavu

33. Kama ndio (swali la 34 hapo juu), mara ngapi kwa wiki?

A. Chini ya mara 1 kwa wiki B. mara 1/wiki C. mara 2–3 /Wiki D. mara 4–6/Wiki E. kila siku

34. Kwa makadirio, unakunywa vitu aina ya kimiminika kiasi gani kwa siku? (jumla ya kiasi kwa viviminika vyote –mfano maji ya kunywa ,juisi ,chai, kahawa na vinginevyo)

A. Mara chache natumia vimiminika kwa siku
B. Chini ya nusu lita kwa siku
C. Zaidi ya ½ ila chini ya lita 1 kwa siku
D. Lita 1 mpaka lita 1.5 kwa siku
E. Zaidi ya lita 1.5

DODOSO LA MATUMIZI/ULAJI WA VYAKULA

Je, ni mara ngapi kwa mwezi umekuwa ukila vyakula kati ya makundi ya vyakula vifuatavyo?

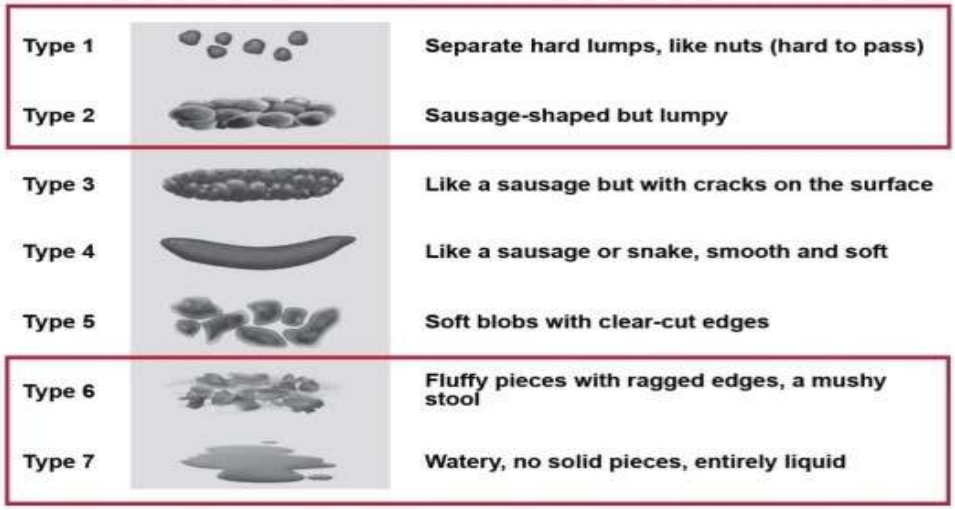
- Weka alama "X" kwenye sehemu husika

MAKUNDI YA VYAKULA	Sijawahi	Mara 1-3 kwa mwezi	Mara 1 kwa wiki	Mara 2-4 kwa wiki	Mara 5-6 kwa wiki	Mara 1 kwasiku	Mara 2-3 kwa siku	Mara 4-5 kwa siku	Mara 6+ kwa siku	chombo	Idadi ya chombo
35. **Nafaka na bidhaa za nafaka** Mchele,Ngano,Mkate,Andazibiskuti,ugali											
36. **Matunda na juisi ya matunda.** Ndizi ya kuiva, embe, parachichi, chungwa ,mapapai, tikitimaji, zabibu, tofaa,nanasi, juisi ya miwa, fenesi)											
37. Jamii ya Kunde Maharage, choroko &soya ,mbaazi, kundeMaharage ndani ya mapishi mchanganyiko											
38. Mboga za majani Mchicha, spinachi, majani ya maboga, kisamvu, Bamia, mboga za majani aina nyingine.											

KIPENGELE C: ROME IV –MASWALI YA KUBAINI MAGONJWA YA MATUMBO NA KUKOSA/KUFUNGA CHOO

39. Ndani ya miezi 3 iliyopita, mara ngapi umepata maumivu sehemu yoyote ya tumboni?
□ Hamna kabisa (nenda swali la 49)□ chini ya siku moja kwa mwezi□ siku moja kwa mwezi□ mara moja au mbili kwa mwezi□ mara moja kwa wiki□ siku mbili/tatu kwa wiki□ karibu siku zote□ kila siku□ mara kadhaa kwa siku au muda wote
40. Mara ngapi umepata maumivu karibu na kupata choo – kabla ya, wakati wa , au muda mfupi baada ya? (asilimia yenye maumivu)
□ 0% hamna kabisa□ 10% □ 20%□ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% mara zote
41. Ndani ya miezi mitatu iliyopita ulipopata choo kisicho cha kawaida kimefananaje?

(Angalia picha kwenye jedwali ya choo cha Bristol hapo



chini)

Aina 1kinafanana na njugu/choo cha mbuzi
Aina 2 kama soseji lakini legelege
Aina 3 kama soseji yenye nyufa
Aina 4 kama soseji au nyoka laini
Aina 5 laini yenye kona
Aina 6 iliyokatikakatika na laini
Aina 7 maji matupu
□ kawaida napata choo kigumu (Aina 1 au 2 kwenye picha) □ kuharisha ni kawaida (Aina 6 au 7) □ kuharisha pamoja na choo ngumu (zaidi ya 1/4 choo kisicho cha kawaida ni choo kigumu na zaidi ya ¼ kuharisha)□ hainihusu sina choo kisicho cha kawaida au ninacho mara chache sana

42. Mara ngapi umepata choo laini zaidi au kigumu zaidi wakati ukiwa na maumivu?

(asilimia ukiwa na maumivu) □ 0% hakuna kabisa □ 10% □ 20%□ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% mara zote

43. Mara ngapi wakati unapopata maumivu unapata choo mara nyingi zaidi au mara chache zaidi kuliko kawaida? (asilimia ukiwa na maumivu)
□ 0% hakuna kabisa □ 10% □ 20%□ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100%mara zote
44. **Kwa wanawake tu:** Mara ngapi maumivu yanaongezeka ukiwa kwenye siku zako za hedhi? (Asilimia yenye maumivu) □ 0% hakuna kabisa □ 10% □ 20% □ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% mara zote □ hili swali halinihusu
45. Mara ngapi maumivu yanaanza au kuongezeka baada ya mlo? (Asilimia yenye maumivu) □ 0% Hakuna kabisa □ 10% □ 20% □ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% mara zote
46. Unapokuwa na maumivu, mara ngapi yanakuzuia kufanya kazi/shughuli zako za kila siku (kwa mfano kazi za ofisi, shughuli za nyumbani, au shughuli za kijamii)? (Asilimia yenye maumivu) □ 0% Hakuna kabisa □ 10% □ 20% □ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% mara zote
47. Je, hayo maumivu kwenye sehemu ya tumbo yanakuwepo muda wote? (Yanakuwepo muda wote wa kazi na hayapungui). A.Ndio B. Hapana
48. Tangu ulipoanza kupata maumivu hayo miezi 6 au zaidi imeshapita? A.Ndio B.Hapana
49. Ndani ya miezi mitatu iliyopita, mara ngapi umepata choo kigumu kinachofanana na aina ya 1 au 2 hapo juu? (Asilimia za kupata choo) Angalia jedwali ya choo la Bristol hapo juu
□ 0% hakuna kabisa □ 10% □ 20% □ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% Mara zote
50. Ulipata choo kigumu (aina 1 au 2) wakati ambao ulikuwa hutumii dawa za kuzuia kuharisha? □ Hapana au mara chache □ ndio
51. Ndani ya miezi 3 iliyopita, mara ngapi umepata choo chini ya mara tatu kwa wiki bila kutumia dawa za kulainisha choo? (Asilimia ya wiki) □ 0% Hakuna kabisa □ 10% □ 20% □ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% Mara zote

52. Ndani ya miezi 3 iliyopita, mara ngapi umejikamua wakati wa kupata choo? (Asilimia ya kupata choo) □ 0% Hakuna kabisa □ 10% □ 20% □ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% mara zote
53. Ndani ya miezi 3 iliyopita, mara ngapi umehisi choo kimabakia baada ya kupata choo? (Asilimia za kupata choo) □ 0% Hakuna kabisa □ 10% □ 20% □ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% Mara zote
54. Ndani ya miezi 3 iliyopita, mara ngapi umehisi choo kinashindwa kutoka (au kuziba), wakati wa kupata choo? (Asilimia za kupata choo) □ 0% hakuna kabisa □ 10% □ 20% □ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% Mara zote
55. Ndani ya miezi 3 iliyopita, mara ngapi umesukuma au kutumia vidole kutoa haja kubwa wakati wa kupata choo? (Asilimia za kupata choo) □ 0% hakuna kabisa □ 10% □ 20% □ 30% □ 40% □ 50% □ 60% □ 70% □ 80% □ 90% □ 100% mara zote
56. Je, dalili za kukosa choo zilizoorodheshwa hapo juu zilianza miezi 6 iliyopita ?□ Ndio □ Hapana
57. Je, Unatumia dawa zozote za maumivu kwa sasa? □ Hapana (Ruka Swali namba 65) □ Ndio
58. Kuna dalili yoyote ya kukosa choo kati ya zilizo orodheshwa hapo juu ambayo imebadilika tangu uanze kutumia dawa za maumivu? □ Ndio □ Hapana