# PERCEIVED QUALITY OF TUBERCLOSIS TREATMENT SERVICES FROM PATIENT PERSPECTIVES IN SELECTED TB MANAGEMENT UNITS, MOGADISHU-SOMALIA

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## ABSTRACT

*Observing quality from the patient's perspective is of paramount importance for making the service more responsive to patients. However, little is known about the quality of tuberculosis treatment service from the patient's perspective in Mogadishu.* ***Objectives****: The specific objective of this study is to determine the patients' perspective on the quality of TB treatment services focusing on all 9 key quality dimensions in selected TB Management Units in Mogadishu- Somalia.* ***Methodology****: A facility-based, cross-sectional study design was employed, and data were collected in May 2018 using A QUOTE-TB tool validated for three East African countries from a sample of 177 tuberculosis patients receiving treatments at Benadir hospital TB Unit and Finsom TB center. The number of TB patients included in the interview was all TB registered patients that were taking TB medicines More than 3 weeks, elder than 18 years after accepting oral informed consent. Analyses were performed using SPSS version 20 and Excel, QI-score value greater than 0.75 represents low performance score and QI-score value less than 0.75 represents high performance score.* ***Results:*** *Majority of the respondents were male between 18-28 years of age non-educated and un-employed. The quality dimensions that needed improvement were availability and accessibility of TB treatment services, communication and information, support, patient-provider interaction and infrastructure of TB facilities.*

*High quality impact scores of TB care included affordability, stigma, HIV test and professional competence these dimensions not needed quality improvement, There were notable differences between TB patients 'expectations and what they actually received in terms of accommodation, availability of TB services, patient-provider interactions, health information, and communication, which were identified as being of inadequate quality.* ***Conclusion****: Significant effort is needed to improve the quality of TB care with respect to these particular aspects from the perspectives of patients. Individuals caring for patients with TB in the health service should address these areas that were inadequately performing.*

***Keywords:*** *Assessment, quality, tuberculosis, treatment, patient perspective.*

## 1.0 Background

Tuberculosis (TB) is an infectious disease caused by Mycobacterium tuberculosis. It can affect all parts of the human body, but the most likely target is the lungs. The disease is transmitted from one person to another by coughing or sneezing. Cough, often with bloodstained expectoration, fever, loss of appetite and weight are typical symptoms of lung TB. The diagnosis of TB is confirmed by bacteriological methods, direct microscopy or culture of sputum. (turpie *et,al*, 2008). The major objective of the TB control programs is to identify and to treat the patients with infectious pulmonary tuberculosis, the diagnosis of which relies on a bacteriological examination of the sputum. The culture of Mycobacterium is the reference method for the detection of the tubercle bacilli, but it is prohibitively slow and it requires special safety procedures in laboratories. Serological techniques are not useful in the control programs, due to a lack of sensitivity and specificity. Among the new approaches which are used for a rapid diagnosis of TB, the nucleic acid amplification methods are the most promising, but the technology is not applicable to the control programs in the developing countries (mindolli P.B, 2013).

Tuberculosis (TB) remains a major public health problem worldwide. There were 8.6 million new TB cases and 1.3 million TB deaths in 2012. The African region alone accounted for 27% of the world's cases and the highest rates of cases and deaths relative to population (225 incident cases per 100,000 on average and more than double the global average of 122) (Bulage*et.al,* 2014).

It remains a major cause of morbidity and mortality in many developing countries. Approximately95% of all TB cases and 99% of deaths occur in developing countries, with the greatest burden in sub-Saharan Africa and South East Asia. In addition, TB hinders socioeconomic development, because 75% of people with TB are within the economically productive age group of 15-54 years (MergyaEticha *et.al,* 2014).

TB is a major health burden in Somalia, contributing significantly to the reported high morbidity and mortality among the population. The epidemiology of TB in Somalia is similar to that found in many other developing countries where the disease is closely associated with widespread poverty, poor living conditions and reduced immune state especially those living with HIV and AIDS. According to WHO, TB in Somalia is the leading cause of morbidity and mortality among the adult population, contributing to significant loss in work productivity and increased household expenses in support of affected member of the household during the long treatment of TB. The Global Fund TB program in Somalia was found to have significantly contributed to the general betterment of the health status of the population by reducing the impact of TB on the population. The national program to manage and control the spread of TB in Somalia is supported by the large grant from the Global Fund, administered through the World Vision International (Somalia) as the Principal Recipient of the Global Fund and implemented through a total of sub recipients implementing different components of the program in the different regions of Somalia (World vision report, 2013).

QUOTE TB is management tool that specifically measure the quality of TB care from the patient perspective. It combines both the performance and TB care dimensions. The development of QUOTE TB took place in three East Africa countries; Kenya, Malawi and Uganda. Eight quality dimensions specific to TB care were established through qualitative research among TB patients

and healthcare providers. The eight quality dimensions were also tested quantitatively and validated through statistical analysis (Sara Massaut*et.al*, 2007).

**Specific Objective of the study**

To determine the patients' perspective on the quality of TB treatment services focusing on all 9 key quality dimensions in Finsom TB Center and Benadir hospital Mogadishu Somalia

## 2.0 METHOLOGY

### 2.1 Research Design

The study was adopted a facility-based descriptive cross sectional conducted at TB management units in Mogadishu-Somalia.

### 2.2 Study Population

The study population of this study were adult patients, aged ≥ 18 years (both drug sensitive and drug resistant TB forms) who used the TB treatment service for at least three weeks prior to the data collection period at sampled TBMUs in Mogadishu-Somalia. Mogadishu is the capital Benadir region as well as the capital city of Somalia and it's the most populous city in the country.

### 2.3 Sample size and sampling technique

The study were employ non-probability-sampling methods the sample size comprised 177 patients attending two TB management Units in Mogadishu, namely Finsom TB center and Benadir Hospital TB Unit. The number of TB patients included in the interview was all the TB registered patients that were taking the TB medicines More than 3 weeks, elder than 18 years after accepting oral informed consent.

### 2.4 Study area

Individual interviews were conducted to assess the performance of Finsom TB center and Benadir hospital as experienced by TB patients using a standardized questionnaire. The performance assessment is based on the nine quality dimensions specific to TB care.
TB patients for performance assessment interviews. Health facility staff was assist with the recruitment of TB patients, based on the following: Registered TB patients at respective health facility and have history of at least 3 weeks visiting the health facility for diagnosis and treatment.

### 2.5 Data Collection Instruments

The study was applied pre-tested structured questionnaire and focus group discussion adopted from the QUOTE TB (**Quality of Care as seen through the Eyes of the Patient)** tool validated by WHOM for East African Countries. The QUOTE-TB questionnaire is being developed by the Regional Centre for Quality of Health Care (RCQHC) and National TB Programs (NTPs) of Uganda, Kenya, and Malawi, with technical support from Royal Tropical Institute (KIT), KNCV Tuberculosis Foundation and the Netherlands Institute for Health Services Research (NIVEL).

The quality of care aspects were formulated as importance and performance statements in the questionnaire. Respondents were asked to rate the importance measures using a 4-point like scale and performance measures using dichotomized (Yes or No) Response.

### 2.6 Data Processing and Analysis

Data collected was compiled, and then analyzed using the statistical package for social scientists (SPSS) version 20 and excel. Descriptive statistics and mean scores were used to summarize data. Importance ranking score analysis were used to identify independent predictors of patient satisfaction. QI score less than 0.75was considered quality significant.

### 2.7 Ethical Considerations

The research was done in the way that no one can harm or suffer adverse consequences from research activities. Respondents were not forced to respond. The research was conducted with respect to ethical values, confidentiality, moral expectation, and rules governing the conduct of a research especially in areas of data collection. Permission to conduct the study was obtained from the National TB Program, Ministry of Health and Human Services- Somalia.

The Ethical approval was obtained from Ethical Review Committee of Jamhuriya University of Science and Technology (JUST), Mogadishu- Somalia. Informed consent were obtained from all participants before the interview, they were informed about their right not to participate or withdraw anytime, to maintain privacy and confidentiality no names of participants were obtained.

## 3.0 RESULTS

### 2.0 Availability & Accessibility of TB services

| Dimension **(Category)** | **Quality of TB care aspect** | **Importance Score** | **Performance score** | **QI score** |
|---|---|---|---|---|
| Availability & Accessibility | Acceptable waiting time | 0.94 | 0.407 | 3.82 |
| | Attended by same health provider | 0.94 | 0.271 | 2.55 |
| | Service hours are convenient to you | 0.94 | 0.356 | 3.35 |
| | Drugs not available when required | 0.94 | 0.22 | 2.07 |
| | Difficulty because of language barrier | 0.94 | 0.056 | 0.53 |
| | Without referral to another TB Unit | 0.94 | 0.079 | 0.74 |
| | TB services are available during working hours | 0.94 | 0.644 | 6.05 |
| | TB facility easy to reach | 0.94 | 0.412 | 3.88 |
| | Health provider's availability | 0.94 | 0.350 | 3.29 |

**Table 3.0: Availability and Accessibility of TB services**

The analysis of the data showed that patients treated at TB centers perceived that waiting time (QI= 3.82), being attended by same health provider (QI= 2.55), convenience service hours (QI= 3.35), availability of TB drugs when required (QI= 2.07), TB services available during working hours (QI= 6.05), distance to TB facility (QI= 3.88) and health provider's availability (QI= 3.29) as priorities that need to be addressed. The quality aspects of availability and accessibility of TB treatment services seemed quite satisfied by the patients were: language barrier and referral to another TB center (QI< 0.75).

From FGDs, the patients were satisfied with the services provided by the health facility; however some patients at the hospital would prefer that more staff should be available to give their medicines as early as possible.

"… *We are satisfied with the service provided, however we observed that sometimes one staff is available to give TB medicines, fills the form, we waited little bit longer time……"*(33year Male patient, Benadir Hospital)

### 3.1 communication and information

| Dimension | Aspects | Importance Score | Performance score | QI score |
|---|---|---|---|---|
| Communication & information | Spreading of TB | 0.78 | 0.266 | 2.07 |
| | TB can be cured | 0.78 | 0.196 | 1.54 |
| | Observed TB treatment | 0.78 | 0.339 | 2.64 |
| | Side effect of TB drugs | 0.78 | 0.322 | 2.51 |
| | Sputum test during treatment schedules | 0.78 | 0.299 | 2.34 |
| | Duration of TB treatment | 0.78 | 0.192 | 1.50 |
| | How to store TB medicines | 0.78 | 0.311 | 2.42 |
| | Next to come back for TB services | 0.78 | 0.322 | 2.51 |

**Table 3.1 Communication and information**

Patients treated at the TB facility perceived that all aspects of communication and information need to be improved as their Quality impacts scores were (> 0.75): spreading of TB (Infectiousness) (QI= 2.07), importance of observed treatment (QI= 2.64), side effects of TB medicines (QI= 2.51), sputum test during treatment schedule (QI= 2.34), duration of TB treatment (QI= 1.50), Storing of TB medicine (QI= 2.42) and when to come back for TB services (QI= 2.51) are the priorities needs to be addressed and patient needs were not met by the performance of health facility.

From the FGDs, we found that some patients experienced not receiving adequate information about services at TBMU; an example is lack of DOTs observer.

"……*there are a lot of patients who attend at TB management unit to receive their medicines early in the morning, there is no one who observes while patients are taking TB drugs in front of the care providers and no one told us more about the adverse effects of TB medicines*….." (24 year old, Male)

### 3.2 support

| Dimension 8 | Quality of TB care aspect | Importance Score | Performance score | QI Score |
|---|---|---|---|---|
| Support | Transport support | 0.94 | 0.988 | 9.294 |
| | Food support | 0.94 | 0.983 | 9.241 |
| | Money support | 0.94 | 0.994 | 9.347 |

**Table 3.2 support**

This quality dimension has got the highest important ranking score of 0.94 and all the patients receiving care at TB facility felt it should be improved. Concerning the aspects of support; transport support had quality impact score of 9.2938 which is based on weighed importance score of 0.94 and corresponding performance score of 0.988, this indicates that 98% of the patients did not get transport support and their priority needs were not met. Furthermore food support had quality impact score of 9.241 with corresponding importance score of 0.94 and performance score of 0.98 and money support received quality impact score of 9.347 with importance score of 0.94 and corresponding performance score of 0.994, and this means that 99% of respondents felt the facility is performing poorly as their priority needs were not met. Hence all patients felt that all aspects of support should be improved.

From the FGDs, we found that most of the patients experienced without support services at TBMU; "……*we never received any support regarding -transportation, food and money …"* (30-year-old, female)

## 3.0 DISCUSION

The aspects of availability and accessibility dimension of the health facilities that needs to be improved applies to shortening waiting time at TB facilities, attending same health provider and to have TB treatment services, TB drugs and its health providers to be available at convenient time for patients within reachable distance. These aspects were also pointed out as important factors influencing patient satisfaction (Rai*et.al*, 2016)

In agreement with our findings, study by Sophia V et.al observed the major reason for defaults was the unsuitability of DOT timing. Whereas Mohamed *et.al* (2014) also reported greater satisfaction among patients who spent a short time to receive the TB services.

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Effective patient-provider communication is an essential component of patient care; and in order for communication to be effective, the information must be complete, accurate, timely, unambiguous, and understood by the patient By formally implementing the assessment of patient communication needs into routine care, nursing administrators will create a sense of accountability among bedside nurses to meet the needs of patients who are communication-vulnerable ( patak *et.al*,2009)

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From the FGDs, we found that most of the patients experienced without support services at TBMU: "……*we never received any support regarding -transportation, food and money ..."* (30 year old, female)

The study found that patients perceived this quality dimension as the most important to judge the quality of TB treatment services. The most important aspect for this quality dimension for patients is the support to cover transportation, food costs and other incentives. From the FGDs, we also found that most of the patients experienced without support services.

Supporting patients with TB in different ways such as food distribution, incentives and covering transportations can ease patients to adhere and complete medication.

As such, two studies have found that providing financial incentives to TB patients was effective in enhancing and improving treatment completion, as well as motivates patients and minimizing default rates(Wei et al., 2012; Nyamathi, Christiani, Nahid, Gregerson, & Leake, 2006 ). Also, Davidson et al. found that supporting TB patients financially improve adherence to TB treatment (Davidson et al., 2000).

Although Davidson has found that financial incentives is a batter way to motivate and improve patient medication adherence, it is too complicated to apply in routine busy practice (Davidson et al., 2000).

## 5.0 Conclusions

This study were conducted applying QUOTE TB light standardized questionnaire from 177 patients attending two TB management Units in Mogadishu, namely Finsom TB center and Benadir Hospital TB Unit. The number of TB patients included in the interview was all the TB registered patients that were taking the TB medicines More than 3 weeks, elder than 18 years after accepting oral informed consent. Structured Questionnaire was used for 177 respondents for two TB Centers. 127 respondent were from Finsom while remaining 50 were from Benadir Hospital. Majority of Benadir Hospital respondents are Male who are very poor and unemployed. Their age is between 18-28 years.

Performance scores are calculated from responses to the individual assessment interviews. High performance score means that large percentage of respondents interviewed provided a negative response and therefore the health facility is performing poorly, while low performance score means that a small percentage of respondents interviewed provided a positive response and therefore the health facility is performing highly.

The result we got from our research divides in to two sections socio-demographic characteristics and facility performance in socio-demographic characteristics majority of the respondents were male between 18-28 years of age non-educational and un-employers in facility performance has both low quality impact scores and high quality impact score dimensions of TB Care.

Low quality impact scores of TB care dimensions were availability and accessibility of TB treatment services, communication and information, support, patient-provider interaction and infrastructure of TB facility this dimensions needed quality improvement.

High quality impact scores of TB care include affordability, stigma, HIV test and professional competence this dimensions not needed quality improvement.

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# PREVALENCE AND ANTIMICROBIAL SENSITIVITY OF *S. AUREUS* ISOLATED FROM PATIENT WITH SKIN WOUND INFECTION IN SHAAFI HOSPITAL.

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***ABSTRACT***

*Staphylococcal infections still remain an important cause of mortality and morbidity worldwide despite the development of antimicrobial agents (Onwubiko, et al 2011). Staphylococcus aureus the most common cause of skin and soft tissue infections, such as boils and abscesses, as well as post-operative wound infections. The objective of this study was identifying the Prevalence and antimicrobial susceptibility of S.aureus isolated from patient with skin wound infection in Shaafi hospital. The method used in this study was Cross sectional descriptive design involving using quantitative method. The swabs were collected from wound from patients attending Shaafi Hospital. Swabs were cultured and identified by using gram staining according to standard conventional methods. The isolated organisms were tested for sensitivity against the antimicrobial agents that are commonly used in hospitals. A total 50 wound swabs were collected from patients with symptoms of wound infection attending to Shaafi Hospital, in Mogadishu Somalia. Different age groups and both sexes were covered. Staphylococcus aureus strains were the predominant organism isolated 13 (26%) of total samples, and other 37 (74%). were no growth. The bacteria that isolated from the patients were resistant to Amoxyclav, Methicillin and penicillin, while 9 of them 69.2% were sensitive to Vancomycin and 4 of them 30.8% were resistant to Vancomycin so the highest frequency of sensitivity with observed with Vancomycin while Amoxyklav, Methcillin and Penicillin were highest resistant.*

*Bacterial species isolated were all susceptible to Vancomycin which may be selected as the drugs of choice for treatment of wound infection. The development of bacterial resistance against Penicillin among all isolates reflects the abuse of antibiotics in Somalia. We recommended the hospitals and doctors: - Bacterial culture to ensure the appropriate antibiotics, to encourage the patients coming hospital early stages of wound, since the culture is high expensive we recommended the doctor holding seminars that persuade that the culture is the best diagnosis of bacterial infections, we recommend the doctors to give the technicians seminars about swabbing, isolation and identification of bacteria*

***Keywords:*** *prevalence, antimicrobial sensitivity, s.aureus*

## 1.0 Background

Staphylococcal infections still remain an important cause of mortality and morbidity worldwide despite the development of antimicrobial agents. It has a remarkable capability of evolving different mechanisms of resistance to most antimicrobial agents. The aim of the present study is to establish the incidence of *S.aureus* in clinical specimens and its antibiotic sensitivity pattern to various antibiotics in this locality *(Onwubiko, et al 2011)*.

*Stapylococcus*is a gram-positive organism with aerobic to facultative anaerobic lifestyle and colonizes skin, nares, and axillae of humans. *Staphylococcus aureus* is a catalase-, urease-, and phosphatase-positive organism with most strains secreting coagulase and it also ferments mannitol sugar to lactic acid. Testing for catalase is an important criterion to distinguish Staphylococci from Streptococci and coagulase test for distinguishing *S.aureus* from *S. epidermidis*. It reduces nitrates to nitrites, liquefies gelatin, and is methyl red and Voges-Proskauer test positive. *Staphylococcus aureus* is lipolytic (lecithinase) when grown on media containing egg yolk. *Staphylococcus aureus* reduces tellurite in media containing potassium tellurite and produces shiny black color colonies *(Reddy, P. N et al 2011)*.

They are Grampositive bacteria, with diameters of 0.5 – 1.5 μm and characterized by individual cocci, which divide in more than one plane to form grape-like clusters *(Harris et al., 2002).*

**The specific objectives of this study were**

1. To isolate and identify pathogenic bacteria associated with wound infection
2. To determine sensitivity patterns of pathogenic bacteria

## 2.0 METHODOLOGY

### 2.1 Research design

**2.1.1 Approach design:** A quantities approach aiming to investigate patients with microbial wound infections.

**2.1.2 Study design:** The study design *was* be a hospital-based, experimental study.

**2.1.3 Study type:** The study type *was* a descriptive, cross-sectional study.

**2.2 Study duration:** The study *was* carried out during the period from Nov to May, 2018,

**3.3 Study area:** This study *was* conduct at Shaafi Hospital.

**2.4 Study population:** Patients with infected wounds *was* recruited for this study covering different age groups and gender.

**2.5 Inclusion criteria:** All patients with infected wounds who accept for this study.

**2.6 Exclusion criteria:**
Severely ill patients and dressed wounds *were* excluded from this study.

**2.8 sampling:** Non- probability, convenience sampling.

**Sample strategy:** convenience where patients *was* chosen on the basis of accessibility.

**Sample frame:** patients with microbial wound infections at Shaafi hospital.

**Sample size:** the sample size of this study was 50.

**2.9 Method of data collection:**

The software used for the analysis of data *was* statistical package for social sciences (SPSS) program (version 20). Frequencies, percentages, tables and graphs *was* used for presentation of the data.

**2.10 Sample collection:**

Demographical data was collected from patients using a direct interviewing questionnaire covering information regarding name, age, gender and clinical symptoms. Collection of specimens from infected wounds *was* done swabbing.
The patient was given a concise explanation of the need for the microbiological investigation. Sterile cotton swabs *were* usually used. If the wound *was* moist a swab can be used straight from the packaging; but if the wound *was* dry, the swab tip *was* moistened with sterile saline to increase the chances of recovering organisms from the site. Then the swabs *were* transport to the microbiology lab within one hour.

**2.11 Culture specimen:**

All specimens *were* directly cultured on standard media such as blood agar. Plates *were* incubated aerobically at 37° C for 24 hours. The isolated samples *were* identified used gram staining and examined microscopically the used biochemical reactions such as catalase test to differentiate staphylococcus from streptococcus, coagulase test s.aureus forom other coagulase negative.

**2.12 Sensitivity testing:**

Antimicrobial susceptibility testing *was* performed Kirby-Bour agar disc diffusion method. Isolates *was* swabbed uniformly across a Muller-Hinton agar plate. Inoculum *was* adjusted as per McFarland turbidity standard. Filter-paper disks *was* placed on the surface of the agar and incubated at 37°C overnight. The antimicrobial drugs used *was* penicillin, methicillin, Amoxclavin, vancomycin, Ampicillin, amoxcillin and Cloxacillin on the inoculum and incubate overnight at 37º C and then measure the zone of inhibition to determine the sensitivity pattern.

### 2.13 Ethical consideration:

First Approval *was* taken from Faculty of Medical Laboratory Science, Jamhuriya University of Science and technology (JUST). Second maintaining confidentiality of information obtained from patients investigated. Third valid consent of the patients under the study. Fourth permission to collect the specimens *was* request Shaafi Hospital.

## 3.0 Results

Number of respondents in our sample was 50 patients including out patients and inpatients, number of isolated were growth 13 that is 26% of total samples, and other 37 were no growth which is 74% as shown (Table 4.3).

The age and sex distribution of patients with *S.ureus* infection were 53.8% male, while 46.2% was female as shown in (Table and figure 4.1), so males were higher infection rate than females. The most age was over 41 years 46.2%, while the least less than 20 years 15.4% as show in (Table and figure 4.2. So The highest frequency of isolates of *Staphylococcus aureus* occurred in the age group (41 and above) yrs while the least *was* in the (1-20) yrs group. the bacteria that isolated from the patients were resistant to Amoxyclav, Methicillin and penicillin, while 9 of them 69.2% were sensitive to Vancomycin ( 18-20 mm in zone inhibition) and 4 of them 30.8% were resistant to Vancomycin so the highest frequency of sensitivity with observed with Vancomycin while Amoxyklav, Methcillin and Penicillin were highest resistant as shown (Table 4.4).

| **Gender** | **Frequency** | **Percent** |
|---|---|---|
| Male | 7 | 53.8 |
| Female | 6 | 46.2 |
| **Total** | **13** | **100** |

**Table 4.1: Respondent by gender**

**Table 4.1:- Respondents by Gender**

shows that the total of respondents was 13 persons, 7 of them was male that 53.8%, and 6 of them was female that 46.2%.

| **Age** | **Frequency** | **Percent** |
|---|---|---|
| 1-20 yrs | 2 | 15.4 |
| 21-40 yrs | 5 | 38.5 |
| 41 and Above | 6 | 46.2 |
| **Total** | **13** | **100** |

**Table 4.2 Respondents by age**

**Table 4.2:** shows that the most age of respondent was 41 years and above 46.2%, while the least was 20 year and below 15.4%.

| Number of samples | N. o isolates | % of total isolates |
|---|---|---|
| 50 | 13 | 26.0% |

**Table 4.3: Bacterial species isolated**

| No. | Name of antibiotics | Sensitivity pattern | | | Resistance pattern |
|---|---|---|---|---|---|
| | | Sensitive (%) | Moderately Sensitive (%) | Total (%) | |
| 01 | Amoxyclav | 0 (13) | 0(13) | 13(13) | 0 (13) |
| 02 | Penicillin G | 0(13) | 0(13) | 13(13) | 0 (13) |
| 03 | methicilin | 0 (13) | 0(13) | 13(13) | 0 (13) |
| 04 | vancomycin | 9 (13) | 0(13) | 13(13) | 4 (13) |

**4.4: Sensitivity pattern of isolated organisms**

**3.0 Discussions**

Study done in Nigeria, the age and sex distribution of patients with *Staphylococcus aureus* infection in Kano, Males (62.0%) had higher infection rate than females (38.0%). The highest frequency of isolates of *Staphylococcus aureua*s ccurred in the age group (0-10) yrs while the least *was* in the (51- 60) yrs group.

According to our study the age and sex distribution of patients with *S.aureus* infection in Shaafi Hospital males was 53.8%, while Females was of 46.2% so males were higher infection rate than females. The highest frequency of isolates of *Staphylococcus aureus* occurred in the age group (41 and above) yrs while the least *was* in the (1-2years ) yrs group. So our study has agree the infection while disagree the frequency.

Another previous study in Eritrea the antimicrobial susceptibility study of *S.aureus* isolates revealed high resistance to penicillin (77%), and most of them were methicillin resistant. According to our study penicillin was one of the highest resistant 100%, and also was methicillin resistant.

## 4.0 Conclusions

The antimicrobial susceptibility of S.aureus was different, so the four antibiotics those were used in our study were resistant except Vancomycin that had high sensitive 69%. The zone inhibition to determine s.aureus to be susceptible to vancomycin, using disc diffusion is >= 15mm and susceptibility test was between (18-19 mm). So the drug of choice of our study was Vancomycin since it was the highly sensitive.

Most of the antimicrobial resistance which is now making it difficult to treat some infectious diseases is due to the extensive use and misuse of antimicrobial drugs which have favoured the emergence and survival of resistant strains of micro-organisms. Drug-resistant strains are common among staphylococci.

Bacteria become resistant to antimicrobial agents by a number of mechanisms, the commonest being: production of enzymes which inactivate or modify antibiotics, changes in the bacterial cell membrane, preventing the uptake of an antimicrobial, modification of the target so that it no longer interacts with the antimicrobial. So in our study the cause of antibiotic resistance we think due to extensive use and misuse of antimicrobial drugs and lack of an effective microbiology lab in our country.

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# EFFECTIVENESS AND TREATMENT OUTCOME OF ESWL AS INTERVENTION METHOD AT SHAAFI HOSPITAL, MOGADISHU SOMALIA

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## ABSTRACT

*Renal stone is a most common clinical disorder affecting up to 5% of the general population in the USA. The prevalence of renal stone disease has been rising in both sexes, being estimated that about 5% of American women and 12% of men will develop a kidney stone at some time in their life, however, in certain areas of the world, as in the Middle East, the lifetime risk appears to be even higher, There has been heightened awareness of renal stone disease in children as well, Recurrence rates of 50% after 10 years and 75% after 20 years have been reported Epidemiological data on urolithiasis in sub-Saharan Africa are rare because research resources throughout most of the continent are poor. South Africa is an exception in this concern. Stone disease has been reported in several countries. Epidemiological factors in these regions are not unusual. However, in a few countries the disease is extremely rare. The absence of stones can be attributed to epidemiological factors in all regions except South Africa, where stone shortage arises because of racial differences between the white and black population groups. Routine urinary biochemical risk factors cannot account for this phenomenon. However, the protective capacity of urinary proteins may play a role in this regard The aim of this study were to investigate factors associated kidney stone and effectiveness and treatment outcome of ESWL as intervention method in shaafi hospital Mogadishu Somalia The specific objectives of this study were . To determine factors associated kidney stone at shaafi hospital. To asses availability and treatment outcome with renal calculi among adult patient in shaafi hospital in hodan district. Methodology used a descriptive cross-sectional design and the study area is shaafi hospital Mogadishu Somalia A total 40 respondents was purposively selected from 40 respondents The data were collected during 1-14 days may 2018 using structured questionnaire, . The data was compiled and analyzed by using SPSS version 20. The Result reveal that the majority of the respondents (65.0%) were male and the majority of the respondents (32.5%) were between 18-25 years and mostly respondent (70.0%) of the respondent said yes when asked the question saying do you eat food such as peanut red meat poultry eggs and seafood sugar sweetened foods that have the risk of kidney stone. (42.9%) of the respondent said red meat when asked the question saying if yes what food or diet. (50.0%) of the respondent said 1-2 litter of water when asked the question saying what is the level of your fluid or water intake. (55.0%) of the respondent said lower calceal when asked question saying The location of your kidney stone (65.0%) of the respondent were said 1-10mm when asking question saying what is the characteristic of the stone after the ESWL, intervention with size. The study recommends. To Changes in dietary habits, and changes in lifestyle and increase water intake To The composition of previous stone dietary advice will vary additional medication*

*may be necessary for patient with high risk profile. To educate health workers to consult the patient with kidney stone to visit in the machine to increase awareness of the patient of important of machine during kidney stone.*

***Keywords:*** *kidney stone, effectiveness, treatment, outcome.*

## 1.0 BACKGROUND

Changes in dietary habits and lifestyle are suggested to contribute markedly to the rise in the prevalence and incidence of urolithiasis during the past decades. Insufficient fluid intake and diets rich in animal protein are considered to be important determinants of stone formation. Overweight and associated dietary pattern additionally contribute to the increasing incidence and prevalence of stone disease. Reduction of overweight through extreme fasting or high-protein weight-loss diets, e.g. Atkins diet, also appear to affect stone formation. Although there is evidence that changes in dietary habits can reduce urinary risk factors and the risk of stone formation, further randomized controlled clinical trials are necessary to evaluate long-term effects of dietary interventions on stone disease. (Siener, R. (2006).

Extracorporeal shock wave lithotripsy (ESWL) is widely used worldwide to treat kidney stone because it is without invasive and can be done on an outpatient basis. However, not all patients are treated successfully. The success of kidney stone treatment by ESWL depends on several factors. ESWL is the treatment of choice for patients with kidney stones. The mechanism of ESWL is disintegration of the stone into particles by producing mechanical compressive, tensile forces, and transient cavitation at the stone's surface with shock wave energy, followed by the particles passing down through the ureter. The success rate of ESWL depends on several factors, such as stone size, stone composition, and stone number. (Lojanapiwat *et, al* (2011).

**The specific objectives of this study were**

1- To determine factors associated with kidney stone at shafi hospital
2- To assess a violability kidney stone at shaafi hospital
3- Treatment outcome with of ESWL as intervention method shafi hospital

## 2.0 METHOLOGY

### 2.1 RESEARCH DESIGN

The researchers was used a quantitative method of research designs, this study was used cores-sectional descriptive study design

### 2.2 STUDY AREA &TARGET POPULATION

Target population was kidney stone patients attending in Shaafi at Hodan District.

### 2.3Sample size and sample procedure

The sample size was nonprobability technique; the study was precipitate 40 of kidney stone respondents who attended for shafi hospital during 14 days of data collection phase from day 1 to 14 of May 2018. The total patient attending at the shafi hospital per day was irregular this study was collected using questionnaire instrument. The selection of this tool has been guided by the nature of data to be collected, the time available as well as by the objectives of the study and the overall aim of the study.

### 2.4 DATA ANALYSIS

Data were analyzed using SPSS 20.0(statistically package for the social science were used the researchers used descriptive statistics to describe the variables in this study.

### 2.5 Ethical considerations

The study concerns survival and development of the patients, the researcher will receive authorization letter from Jamhuriya university for science and technology and as well as Shaafi hospital for them to be allowed that they can carry out their research and wisely The Participants are completely voluntary Informed consent will provide to the subjects with information concerning the purpose of the study, any information collected from the subjects was kept entirely private.

## 3.0 Results

The results of the study were presented using frequency tables and figures.

### 3.1 when were you diagnosed kidney stone?

| when were you diagnosed kidney stone | Frequency | Percent% |
|---|---|---|
| 2017 | 9 | 22.5% |
| 2018 | 31 | 77.5% |
| **Total** | **40** | **100.0** |

**Table 3.1 when were you diagnosed kidney stone?**

Majority respondents were asked when were you diagnosed kidney stone? And replied follows 31 (77.5%) said 2018 followed by 9 (22.5%) said 2017.

**3.2 Do you think obese can contributed kidney stone?**

| Do you think obese can contributed kidney stone? | Frequency | Percent% |
|---|---|---|
| Yes | 35 | 87.5% |
| No | 5 | 12.5% |
| **Total** | **40** | **100.0** |

**Table 3.2 Do you think obese can contributed kidney stone?**

Respondent were asked do you think obese can contributed kidney stone**?** Were replied as follows 35(87.5%) were said yes and other rest as follows 5(12.5%) were said no.

**3.3 Do you eat food such as peanut red meat poultry eggs and seafood sugar sweetened foods that have the risk of kidney stone?**

| you eat food such as peanut red meat poultry eggs and seafood sugar sweetened foods that have the risk of kidney stone? | Frequency | Valid Percent% |
|---|---|---|
| Yes | 28 | 70.0% |
| No | 12 | 30.0% |
| **Total** | **40** | **100.0** |

**Table 3.3 Do you eat food such as peanut red meat poultry eggs and seafood sugar sweetened foods that have the risk of kidney stone?**

Respondent asked do you eat food such as peanut red meat poultry eggs and seafood sugar sweetened foods that have the risk of kidney stone. And replied as follows 28(70.0%) were said yes and other rest as follows 12(30.0%) were said no.

**3.4 if yes what food or diet?**

| if yes what food or diet? | Frequency | Valid Percent% |
|---|---|---|
| red meat | 12 | 42.9% |
| Egg | 7 | 25.0% |
| Seafood | 2 | 7.1% |
| sugar sweetened | 6 | 21.4% |
| Peanut | 1 | 3.6% |
| **Total** | **28** | **100.0** |

**Table 3.4 if yes what food or diet?**

Respondent asked if yes what food or diet? And replied as follows 12(42.9%) were said red meat and other follows 7(25.0%) were said eggs and other follows 6 (21.4%) were said sugar sweetened and other follows as 2(7.1%) were said seafood and other follows 1(3.6%) were said peanut.

**3.5 What is the level of your fluid or water intake?**

| What is the level of your fluid or water intake? | Frequency | Percent% |
|---|---|---|
| <1 litter | 16 | 40.0% |
| 1-2 litter | 20 | 50.0% |
| 2-3 litter | 4 | 10.0% |
| **Total** | **40** | **100.0** |

**Table 3.5 what is the level of your fluid or water intake?**

Respondent asked what is the level of your fluid or water intake. And replied as follows 20(50.0%) were said 1-2litter of water intake and other follows 16(40.0%) were said <1litter water intake other rest follows 4(10.0%) 2-3litter water intake.

### 3.6 Have you ever diagnosed recurrent urinary tract infection?

| you ever diagnosed recurrent urinary tract infection? | Frequency | Percent% |
|---|---|---|
| Yes | 34 | 85.0% |
| No | 6 | 15.0% |
| **Total** | **40** | **100.0** |

**Table 3.6 Have you ever diagnosed recurrent urinary tract infection?**

Respondent asked have you ever diagnosed recurrent urinary tract infection. And replied as follows 34(85.0%) were said yes other rest follows 6 (15.0%) were said no.

### 3.7 characteristic of stone?

| characteristic of stone | Frequency | Percent% |
|---|---|---|
| Bilateral | 39 | 97.5% |
| Multiple | 1 | 2.5% |
| **Total** | **40** | **100.0** |

**Table 3.7 characteristic of stone?**

Respondents were asked, characteristic of stone? And replied as follow 39 (97.5%) said bilateral, and the rest 1 (2.5%) were multiple

### 3.8 The location of your kidney stone?

| The location of your kidney stone? | Frequency | Percent% |
|---|---|---|
| lower calyx | 22 | 55.0% |
| middle calyx | 9 | 22.5% |
| upper calyx | 3 | 7.5% |
| renal pelvis | 6 | 15.0% |
| **Total** | **40** | **100.0** |

### 3.8 The location of your kidney stone?

The majority of respondent were follows as 22(55.0%) were lower calyx and other follows as 9(22.5) were middle calyx and other follows as 6 (15.0%) were renal pelvis and other rest follows as 3(7.5%) were upper calyx.

### 3.9 What is the primary cause of your kidney stone?

| What is the primary cause of your kidney stone? | Frequency | Percent% |
|---|---|---|
| contamination water | 17 | 42.5% |
| low fluid intake | 23 | 57.5% |
| **Total** | **40** | **100.0** |

**Table 3.9 what is the primary cause of your kidney stone?**

Respondent asked what the primary cause of your kidney stone is. and replied follows as 23(57.5%) were said low fluid intake and other rest follows as 17(42.5) were said contamination water.

### 3.10 What is the characteristic of the stone after the ESWL, intervention with size?

| what is the characteristic of the stone after the ESWL, intervention with size? | Frequency | Percent% |
|---|---|---|
| 1-10mm | 26 | 65.0% |
| 11-20 | 10 | 25.0% |
| 21-30 | 4 | 10.0% |
| **Total** | **40** | **100.0** |

**Table 3.10 what is the characteristic of the stone after the ESWL, intervention with size?**

Respondent asked what is the characteristic of the stone after the ESWL, intervention with size. And replied as follows 26(65.0%) were said 1-10mm and other follows as 10(25.0%) were said 11-20mm and other rest follows as 4(10.0%) were said 21-30mm.

### 3.11 What is the characteristic of the stone after the ESWL, intervention with number?

| what is the characteristic of the stone after the ESWL, intervention with number? | Frequency | Percent% |
|---|---|---|
| multiple stone | 24 | 60.0% |
| single stone | 16 | 40.0% |
| **Total** | **40** | **100.0** |

**Table 3.11 what is the characteristic of the stone after the ESWL, intervention with number?**

Respondent asked 4.36what is the characteristic of the stone after the ESWL, intervention with number? and replied as follows 24(60.0%) were said multiple stone and other rest follows as 16(40.0%) were said single stone.

## 4.0 DISCUSION

This chapter contains the interpretation of the results. The findings of the research should be compared and contrasted with those of previous studies presented in the literature review. The purpose of this chapter is to discuss the findings of the research.

31 out 40 (77.5%) of the respondents said in 2018 when asked the question saying when were you diagnosed kidney stone 31 (77.5%) of the respondents said no when asked the question saying did any of you primary family previously diagnosed kidney stone.

39 out 40(97.5%) of the respondent said no when asked the question saying Have you every diagnosed anatomical abnormality on your kidney 34(85.0%) of the respondent said no when asked the question saying do you smoke or have history of previous smoking 3(60.0%) of the respondent are said 5-10 years smoker when asked the question saying if yes how long of smoker.35(87.5%) of the respondent said yes when asked the question saying do you think obese can contributed kidney stone 34(85.0%) of the respondent said no when asked the question saying do you have history of diabetes 4(66.7%) of the respondent said 1-5 yeas when asked the question saying If yes how long 28(70.0%) of the respondent said no when asking question saying does one of primary families have history of diabetes 3(75.0) of the respondent said 1-5 yeas when asked the question if yes how long 38(95.0%) of the respondent said no when asked the question do you have history of hypertension? 2(66.7%) of the respondent said 1-5 years 4(66.7%) of the respondent said yes when asked the question saying if yes do you regularly take you antihypertensive medication 28(70.0%) of the respondent said yes when asked the question saying do you eat food such as peanut red meat poultry eggs and seafood sugar sweetened foods that have the risk of kidney stone 12(42.9%) of the respondent said red meat when asked the question saying if yes what food or diet 20(50.0%) of the respondent said 1-2 litter of water when asked the

question saying what is the level of your fluid or water intake.22(55.0%) of the respondent said yes when asked the question saying do you regular take fiber food.

In literature kidney stone affect 10-12% of the population in industrialized countries. The average life time risk of stone formation has been reported in the range of 5-10%. Recurrent stone formation is a common part of the medical care of patients with stone diseases. This disorder is multi factorial and is strongly related to dietary lifestyle habits or practices. Increased rates of hypertension, diabetes and obesity which are linked to nephrolithiasis, also contribute to an increase in stone formation. Hence, this study was undertaken to find out the prevalence among kidney stone patient the risk factors influencing the development of kidney stones especially Family history, inadequate fluid intake, Stress, Over weight and Obesity, Dietary habits and lifestyle modifications, association with other diseases (diabetes, hypertension) hence In this study we could establish a significant relationship between high intake of animal protein, sodium, sugar, coffee and tea. But we have not found a significant relationship between soft drinks and kidney stone. Diet plays an important role in the development of kidney stones, especially in patients who are predisposed to this condition. A diet high in sodium, fats, meat and sugar, low in fiber, vegetable protein and unrefined carbohydrates are increase the risk of kidney stones. Oxalate is found in green beans, tomatoes, nuts, chocolates and tea which increase the risk for kidney stones. Vegetarians have a decreased risk of developing stones. Studies have shown that even among meat eaters those who ate higher amounts of fresh fruits and vegetables had a lower incidence of stones. Studies have shown that even among meat eaters those who at higher amounts of fresh fruits and vegetables had a lower incidence of stones. (Thomas Walter (2016)

22(55.0%) of the respondent said lower calceal when asked question saying The location of your kidney stone 26(65.0%) of the respondent were said 1-10mm when asking question saying what is the characteristic of the stone after the ESWL, intervention with size 24(60.0%) of the respondent said multiple stone when asked the question saying what is the characteristic of the stone after the ESWL, intervention with number.

In literature extracorporeal shock wave lithotripsy (ESWL) is widely used worldwide to treat kidney stone because it is without invasive and can be done on an outpatient basis. However, not all patients are treated successfully. The success of kidney stone treatment by ESWL depends on several factors. ESWL is the treatment of choice for patients with kidney stones. The mechanism of ESWL is disintegration of the stone into particles by producing mechanical compressive, tensile forces, and transient cavitation at the stone's surface with shock wave energy, followed by the particles passing down through the ureter. The success rate of ESWL depends on several factors, such as stone size, stone composition, and stone number. In contrast, previous studies found that age, kidney morphology, and congenital kidney anomalies had a significant impact on the success rate. Several studies indicated that the stone size strongly predicted ESWL success. ESWL was the best treatment for stones less than 2 cm in size. In the present study, small stone size was the strongest factor, with an adjusted relative risk ratio of 1.52. Small stones (size < 15 mm) had higher success rates than large stones (size > 15 mm) because shock wave energy more easily fragmented the smaller stones than the large stones. Previous studies reported that small stones had a success rate of 91% with stone size of 2 cm or smaller and large stones had success rates ranging from 50% to 70% with a stone size of 2-3 cm. concluded that stone size could predict outcome of ESWL, rather than lower pole caliceal anatomy. The location of stone is one of the most common factors

for success following ESWL. Several studies concluded that stone location was a predictor of ESWL success rate Stone location in the renal pelvis had the highest treatment success compared to other locations. In addition, the results of the present study by multivariable analysis showed that the stone location was a significant prognostic factor. (Chongruksut *et, al*(2011)

## 5.0 Conclusion

The result we found based on the respondents by the factors associated kidney stone as indicate that the (60.0%) of the respondent are said 5-10 years smoker ,(87.5%) of the respondent said yes when asked the question saying do you think obese can contributed kidney stone.
(70.0%) of the respondent said yes when asked the question saying do you eat food such as peanut red meat poultry eggs and seafood sugar sweetened foods that have the risk of kidney stone (42.9%) of the respondent said red meat when asked the question saying if yes what food or diet. (50.0%) of the respondent said 1-2 litter of water when asked the question saying what is the level of your fluid or water intake,(55.0%) of the respondent said yes when asked the question saying do you regular take fiber food mostly of respondent poor in lifestyle.

The result we found was based on respondent by the availability and treatment outcome with renal calculi, that the (55.0%) of the respondent said lower calceal when asked question saying The location of your kidney stone (65.0%) of the respondent were said 1-10mm when asking question saying what is the characteristic of the stone after the ESWL, intervention with size (60.0%) of the respondent said multiple stone when asked the question saying what is the characteristic of the stone after the ESWL, intervention with number mostly of respondent were good outcome.

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# EVALUATION OF THE AVAILABILITY OF SAFE WATER AND SANITATION FACILITIES IN IDP CAMPS IN KAHDA DISTRECT IN MOGADISHU, SOMALIA

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***ABSTRACT***

*Water, Sanitation and Hygiene (WASH) is generally a challenge in Somalia particularly in IDP settlements where access to water and sanitation facilities is limited. Children particularly the ones under the age of 5 years mostly fall victim to diseases caused by poor sanitation and hygiene practices. The objective of this study was to evaluate the availability of safe water and sanitation facilities in IDP camps Kahda district Mogadishu Somalia. The study was descriptive cross-sectional baseline assessment. The study area was selected purposively 4 IDPs camps in Kahda district and the sample size was 166 households, draw from 270 households from selected 4 IDPs using Cochran's formula for calculating sample size when population size is finite. Administrated closed-ended questionnaire and observational checklist was used as data collection tools and the study employed statistical package for social science SPSS version (20.0) for data analyzing and data was present descriptive statistics graphs and frequencies tables. Majority of the households 84 (51.5%); their source of water were hand dug well with pump as well as Most of the households 100 (61.3%); it takes 3km walk to get a water from their nearest point source while the guide to WASH cluster strategy and stander states that the maximum distance from any household to the nearest water point should be 500 meters. Which means it is longer than the stander and 61 (37.4%) households they bring 1 dollar per day to get water, 52 (31.9%) they bring less than $0.5 per day so that it is one factor that may affect the availability of safe water and sanitation, whereas A very large number of households 105 (64.4%) don't treat their drinking water to improve the quality of water and The study also founded that 21 (12.9 %) of the households do not have latrine and 153 (93.9%) of the households share latrine with their neighbor and most of these households 57 (35%) they share latrine with 5 households and above, 37 (22.7%) they share latrine with 4 households, while the highly average 117 (71.8%) of the households do not wash their hands after using toilet. The study was done and it proves that the water source is far from and longer three times more than the standard, the quality of drinking water is not good and the knowledge of the dwellers for the treatment of drinking water needs to improve. Some of the households don't have latrine and they share with their neighbor. the study recommends Federal Ministry of health and social welfare, local and international nongovernmental organization and authorities concerned with constructing water source near IDPs, conducting health promotion campaign for drinking water treatment and hygiene and constructing toilets.*

## 1.0 background of the study

Safe water, sanitation and hygiene at home should not be a privilege of only those who are rich or live in urban centers," says Dr Tedros Adhanom Ghebreyesus, WHO Director General. "These are some of the most basic requirements for human health, and all countries have a responsibility to ensure that everyone can access them." In order to decrease global inequalities, the new Sustainable Development Goals (SDGs) call for ending open defecation and achieving universal access to basic services by 2030. Of the 2.1 billion people who do not have safely managed water, 844 million do not have even a basic drinking water service. This includes 263 million people who have to spend over 30 minutes per trip collecting water from sources outside the home, and 159 million who still drink untreated water from surface water sources, such as streams or lakes. (WHO, 2017) Globally, significant progress has been made to increase access to water and sanitation during the Millennium Development Goals (MDG) era. Over the last two decades more than 2 billion people have gained access to improved drinking water and almost 2 billion to sanitation. Indeed, the MDG target for drinking water was achieved five years ahead of schedule. However, 663 million people still lack access to improved drinking water, and questions remain about both the sustainability and safety of drinking water supplies. Of great concern is the fact that some 2.4 billion people do not use improved sanitation facilities, and almost one billion people practice open defecation. Notably, many countries in Africa were unlikely to meet the MDG targets for either water or sanitation. (UNICEF, 2015)

2 In 90 countries, progress towards basic sanitation is too slow, meaning they will not reach universal coverage by 2030 and Of the 4.5 billion people who do not have safely managed sanitation and 2.3 billion still do not have basic sanitation services. This includes 600 million people who share a toilet or latrine with other households, and 892 million people – mostly in rural areas – who defecate in the open. Due to population growth, open defecation is increasing in sub-Saharan Africa and Oceania. Good hygiene is one of the simplest and most effective ways to prevent the spread of disease. For the first time, the SDGs are monitoring the percentage of people who have facilities to wash their hands at home with soap and water. According to the new report, access to water and soap for hand-washing varies immensely in the 70 countries with available data, from 15 per cent of the population in sub-Saharan Africa to 76 per cent in western Asia and northern Africa. "Safe water, effective sanitation and hygiene are critical to the health of every child and every community – and thus are essential to building stronger, healthier, and more equitable societies," said UNICEF Executive Director Anthony Lake. "As we improve these services in the most disadvantaged communities and for the most disadvantaged children today, we give them a fairer chance at a better tomorrow. (WHO, 2017)

**the Specific objectives** of the study

1. To assess the availability and access of safe water in IDP camps kahda district.
2. To determine the availability of improved sanitation facilities in IDP camps kahda district.
3. To define the factors that influences the availability of safe water and sanitation facilities in IDP camps kahda district.

## 2.0 METHODOLOGY

### 2.1 Study design of the research

Study design was descriptive cross-sectional study design only quantitative to identify the availability and access of safe drinking water and improved sanitation facilities in IDPs kahda district.

### 2.2 Study area of the research

The study area was kahda district which is the 17th of banadir region and it is a very distinctive region and is located in south-west of Banadir region and is located south of Dharkenley, it is also west of Lafoole District of Lower Shabelle Region, north of Deynile district. The district is under the control of Ex-Controle Afgooye and is located in Longitude in Lower Shabelle. but has experienced many different stages, the district identified directly 15/10/2012 to be one of the districts in banadir region and founded on Monday and the many problems which occurred in Mogadishu city and it contains four sub districts and they are Ali janaale, Barwaaqo, Shimbiraale and KM13 (which are Still not provided for a direct name) and the district is approximately 15kms per inch. Andthereare about 120000 people.

### 2.3 sample size

The study covered total IDPs in the study area and selected 4 IDPs from all IDP camps in the district and sample size was 166 which was drawn from total population of those 4IDPs (270).

### 2.4 Data collection tools

Structured, Survey Closed Ended Questionnaires and observational checklist was used as data collection tools.

### 2.5 Ethical considerations

Ethical approval for the study was obtained from the Institutional Research Board, Faculty of Health Science, and Jamhuuriya University for Science and Technology. Each subject was given verbal consent and agreed to be part of the study after explanation of the aim of the study and re-assurance of confidentiality of the information.

## 3.0 Results

### 3.1 Respondent by gender

| Categories | Frequency | Percent% |
|---|---|---|
| Male | 36 | 22.1 |
| Female | 127 | 77.9 |
| **Total** | **163** | **100.0** |

**Table 3.1 Respondent by gender**

The majority of the respondents 127 (77.9%) were female and 36 (22.1%) were male.

### 3.2 Respondent by age

| Categories | Frequency | Percent% |
|---|---|---|
| 18-24 | 16 | 9.8 |
| 25-35 | 70 | 42.9 |
| 36-45 | 58 | 35.6 |
| 46-55 | 15 | 9.2 |
| 56-65 | 4 | 2.5 |
| **Total** | **163** | **100.0** |

**Table 3.2Respondent by age**

As the result of the study, Most of the respondents who participated this study 70 (42.9%) were between the age of 25-35, 58 (35.6%) were between the age of 36-45, 16 (9.8%) were between the age of 18-24, 15 (9.2%) were between the age of 46-55 and rest of the respondents 4 (2.5%) were between the age 56-65.

### 3.3 Respondent by educational level

| Categories | Frequency | Percent |
|---|---|---|
| Primary | 13 | 8.0 |
| University | 1 | .6 |
| Illiterate | 149 | 91.4 |
| **Total** | **163** | **100.0** |

**Table 3.3 Respondent by educational level**

149 (91%) were illiterate, 13 (8.0%) were primary level and one individual of the respondents (0.6%) were university level.

### 3.4 Respondent by household members?

| variables | Frequency | Percent% |
|---|---|---|
| 2 only | 14 | 8.6 |
| 2-4 | 57 | 35.0 |
| 5-6 | 58 | 35.6 |
| 7 and above | 34 | 20.9 |
| **Total** | **163** | **100.0** |

**Table 3.4 Respondent by household members?**

Majority of household members 58(35.6%) were b/w 5-6 members, 57 (35.0%) were b/w 2-4, 34 (20.9%) were 7 and above and rest of households 14 (8.6%) were 2 members only.

### 3.5 Respondent by occupation status

| Variables | Frequency | Percent% |
|---|---|---|
| Employee | 63 | 38.7 |
| Unemployed | 100 | 61.3 |
| **Total** | **163** | **100.0** |

**Table 3.5 Respondent by occupation status**

Very high average of the respondents 100 (61.3%) were unemployed and 63 (38.7%) rest of respondents were employee.

### 3.6 What is the main source of drinking water?

| Categories | Frequency | Percent% |
|---|---|---|
| piped water | 56 | 34.4 |
| hand dug well with pump | 84 | 51.5 |
| from vendors | 16 | 9.8 |
| pond water | 7 | 4.3 |
| **Total** | **163** | **100.0** |

**Table 3.6 What is the main source of drinking water?**

According to respondents the Majority of the households 84 (51.5%) there source of water were hand dug well with pump, 56 (34.4%) were get piped water, 16 (9.8%) their source of water were from vendors and 7 (4.3%) their source of water were pond water.

**3.7 How much water is used in this household per day?**

| Categories | Frequency | Percent |
|---|---|---|
| 40-60 liters | 38 | 23.3 |
| 61-90 liters | 39 | 23.9 |
| 91-120 liters | 20 | 12.3 |
| 120 liters and above | 66 | 40.5 |
| **Total** | **163** | **100.0** |

**Table 4.7 How much water is used in this household per day?**

Most of households 66 (40.5%) were used 120 liters per day 39 (23.9%) of households were used 61-90 liters of water per day, 38 (23.3%) of households were used per day 40-60 liters, rest of households 20 (12.3%) were used 91-120 liters of water per day.

**3.8 Is the water you are receiving enough to satisfy your household basic needs?**

| Variables | Frequency | Percent% |
|---|---|---|
| Yes | 50 | 30.7 |
| No | 113 | 69.3 |
| **Total** | **163** | **100.0** |

**Table 4.8 Is the water you are receiving enough to satisfy your house hold basic needs?**

Majority of the respondents 113 (69.3%) they said no which means the receiving water it's not enough to satisfy our basic needs and 50 (30.7%) were said yes.

**3.9 How long does it take you to fetch water from nearest water point?**

| Variables | Frequency | Percent% |
|---|---|---|
| less than 30 minutes | 19 | 11.7 |
| 30 m-1hr | 100 | 61.3 |
| 1hr and half - 2hr | 35 | 21.5 |
| above 2hr | 9 | 5.5 |
| **Total** | **163** | **100.0** |

**Table 3.9 How long does it take you to fetch water from nearest water point?**

This table shows Most of the households 100 (61.3%) it takes to get a water from their nearest point 30 m-1hr, 35 (21.5%) also it takes 1hr and half - 2hr, 19 (11.7%) it takes less than 30 minutes and small number of household 9 (5.5%) it takes above 2hr.

**3.10 Do you do anything (treat) to improve the quality of drinking water?**

| Variables | Frequency | Percent% |
|---|---|---|
| Yes | 55 | 33.7 |
| No | 108 | 66.3 |
| **Total** | **163** | **100.0** |

**Table 3.10 Do you do anything (treat) to improve the quality of drinking water?**

A very large number of households 105 (64.4%) they don't do anything of treatment to improve quality of their drinking water and 50 (37.7%) they do drinking water treatment.

**3.11 If your response yes in the above question, which treatment?**

| Variables | Frequency | Percent% |
|---|---|---|
| Chlorination | 47 | 28.8 |
| Boiling | 7 | 4.3 |
| Others | 1 | .6 |
| **Total** | **55** | **33.7** |

**Table 3.11 If you response yes in the above question, which treatment?**

According to the respondents 47 (28.8%) out of 55 who were select yes, they use chlorination to treat their drinking water and 7 (4.3%) were use boiling, and 1 (0.6%) were use other method.

**3.12 How much does it cost you to get water per day?**

| Variables | Frequency | Percent |
|---|---|---|
| it free | 24 | 14.7 |
| less than $0.5 | 52 | 31.9 |
| 1 dollar | 61 | 37.4 |
| 2 dollars | 26 | 16.0 |
| **Total** | **163** | **100.0** |

**Table 3.12 How much does it cost you to get water per day?**

This table shows, most of the households 61 (37.4%) they bring 1 dollar per day to get water, 52 (31.9%) they bring less than $0.5 per day, 26 (16.0%) they bring 2 dollars per day and 24 (14.7%) they get a water for free.

### 3.13 Do you think it's important to use latrine?

| Variables | Frequency | Percent% |
|---|---|---|
| Yes | 137 | 84.0 |
| No | 26 | 16.0 |
| **Total** | **163** | **100.0** |

**Table 3.13 Do you think it's important to use latrine?**

Most of the respondents 137 (84.0%) they said it's important to use latrine and rest of respondent don't agreed it's important to use latrine.

### 3.14 Do you have a latrine?

| Variables | Frequency | Percent% |
|---|---|---|
| Yes | 142 | 87.1 |
| No | 21 | 12.9 |
| **Total** | **163** | **100.0** |

**Table 3.14 Do you have a latrine?**

According to the respondents, more than half of households 142 (87.1%) who were under the study were have a latrine and 21 (12.9%) they don't have latrine.

### 3.15 What kind of latrine do you have?

| Variables | Frequency | Percent% |
|---|---|---|
| traditional pit latrine | 157 | 96.3 |
| Others | 6 | 3.7 |
| **Total** | **163** | **100.0** |

**Table 3.15 What kind of latrine do you have?**

Most of the households in the IDPs 157 (96.3%) were used traditional pit latrine and 6 (3.7%) were used others method or other way.

### 3.16 Do you share latrine with other household members?

| Variables | Frequency | Percent% |
|---|---|---|
| Yes | 153 | 93.9 |
| No | 10 | 6.1 |
| **Total** | **163** | **100.0** |

**Table 3.16 Do you share latrine with other household members?**

Majority of the households in IDPs 153 (93.9%) they shared latrines with other households and 10 (6.7%) they don't share latrine with other households.

**3.17 If you response yes in the above question how many household do you share with the latrine?**

| Variables | Frequency | Percent% |
|---|---|---|
| 2 households | 31 | 19.0 |
| 3 households | 28 | 17.2 |
| 4 households | 37 | 22.7 |
| 5 households and above | 57 | 35.0 |
| **Total** | **153** | **93.9** |

**Table 3.17 If you response yes in the above question how many household do you share with the latrine?**

57 (35%) out of 153 (93.9%) who were said previous question (yes) they share latrine with 5 households and above, 37 (22.7%) they share latrine with 4 households, 31 (19%) they share latrine with 2 households and 28 (17.2%) they share latrine with 3 households.

**3.18 What is the condition inside the container you store drinking water?**

| Variables | Frequency | Percent% |
|---|---|---|
| clean | 45 | 27.6 |
| dirty | 118 | 72.4 |
| **Total** | **163** | **100.0** |

**Table 3.18 What is the condition inside the container you store drinking water?**

Many households 118 (72.4%) the condition inside their storage containers of drinking water were dirty and 45 (27.6%) were clean.

**3.19 Do you wash your hands after using toilet?**

| Variables | Frequency | Percent% |
|---|---|---|
| Yes | 46 | 28.2 |
| No | 117 | 71.8 |
| **Total** | **163** | **100.0** |

**Table 3.19 do you wash your hands after using toilet?**

This figure and table shows Majority of the respondents 117 (71.8%) they don't wash their hands after using toilet and rest of the respondents 46 (28.2%) they wash their hands after using the toilet.

**3.20 If you have children how did you dispose the children's feaces?**

| Variables | Frequency | Percent% |
|---|---|---|
| child used potty | 110 | 67.5 |
| thrown into garbage | 23 | 14.1 |
| buried | 18 | 11.0 |
| left in the open | 12 | 7.4 |
| **Total** | **163** | **100.0** |

**Table 3.20 If you have children how did you dispose the children's feaces?**

Majority of the households 110 (67.5%) were used child used potty to dispose their children's feces, 23 (14.1%) they thrown into garbage, 18 (11%) they buried and 12 (7.4%) they left in the open.

**3.21 Does anyone in your household less or equal 5 years of age has unusual diarrheal symptoms (watery/bloody diarrhea for a few days) in the last year?**

| Variables | Frequency | Percent% |
|---|---|---|
| Yes | 66 | 40.5 |
| no | 62 | 38.0 |
| does not apply | 35 | 21.5 |
| **Total** | **163** | **100.0** |

**Tables 3.21 Does anyone in your household less or equal 5 years of age has unusual diarrheal symptoms (watery/bloody diarrhea for a few days) in the last year?**

Many under five children of age 66 (40.5%) were occurred watery /bloody diarrhea for a few days in the last year, 62 (38%) of under five children of age were not occurred diarrhea and 35 (21.5%) does not apply.

**3.22 Are drinking water container properly covered?**

| Variables | Frequency | Percent% |
|---|---|---|
| Yes | 61 | 37.4 |
| No | 102 | 62.6 |
| **Total** | **163** | **100.0** |

**Table 3.22 Are drinking water container properly covered?**

Majority of households 102 (62.6%) their drinking water containers were not properly covered and 61 (37.4%) of drinking water containers were properly covered.

**3.23 Are there any chemicals waste oil petrol solvent on or around the water point with in 50cm?**

| Variables | Frequency | Percent% |
|---|---|---|
| Yes | 45 | 27.6 |
| No | 118 | 72.4 |
| **Total** | **163** | **100.0** |

**Table 3.23 Are there any chemicals waste oil petrol solvent on or around the water point with in 50cm?**

This table shows, Most of the households in the IDPs 118 (72.4%) there were not any chemicals waste oil petrol solvent on or around the water point with in 50cm and 45 (27.6%) there was chemicals waste oil petrol solvent on or around the water point with in 50cm.

**3.24 Is there water turbid?**

| Variables | Frequency | Percent% |
|---|---|---|
| Yes | 68 | 41.7 |
| no | 95 | 58.3 |
| **Total** | **163** | **100.0** |

**Table 3.24 is there water turbid?**

According to observation checklist 95 (58.3%) of the households did not have water turbid and 68 (41.7%) their water was turbid.

## 3.25 Does water have and abnormal test?

| Variables | Frequency | Percent% |
|---|---|---|
| Yes | 67 | 41.1 |
| No | 96 | 58.9 |
| **Total** | **163** | **100.0** |

**Table 3.25 does water have and abnormal test?**

Majority of household drinking water 96 (58.9%) did not have abnormal test and 67 (41.1%) had abnormal test.

### 3.26 Are the water container general dirty?

| Variables | Frequency | Percent% |
|---|---|---|
| Yes | 85 | 52.1 |
| No | 78 | 47.9 |
| **Total** | **163** | **100.0** |

**Table 3.26 are the water container general dirty?**

Most of the households their water containers 85 (52.1%) were generally dirty and rest others 78 (47.9%) were not generally dirty.

### 3.27 Are there leaks on the piping on the borehole headwalls?

| variables | Frequency | Percent% |
|---|---|---|
| Yes | 35 | 21.5 |
| No | 128 | 78.5 |
| **Total** | **163** | **100.0** |

**Table 3.27 are there leaks on the piping on the borehole headwalls?**

128 (78.5%) there were not leaks on the piping on the borehole headwalls and 35 (21.5%) there were leaks on the piping on the borehole headwalls.

### 3.28 does water have an odour or smell bad?

| variables | Frequency | Percent% |
|---|---|---|
| Yes | 27 | 16.6 |
| no | 136 | 83.4 |
| **Total** | **163** | **100.0** |

**Table 3.28 does water have and odour or smell bad?**

Majority of household water 136 (83.4%) did not have an odour or smell bad and 27 (16.6%) had an odour or smell bad.

### 3.29 Is there water point manager?

| variables | Frequency | Percent% |
|---|---|---|
| Yes | 35 | 21.5 |
| No | 128 | 78.5 |
| **Total** | **163** | **100.0** |

**Table 3.29 is there water point manager?**

Large number 128 (78.5%) there were not water point manager and rest 35 (21.5%) there were water point manager.

### 3.30 How is general condition of the latrine?

| Variables | Frequency | Percent% |
|---|---|---|
| Good | 17 | 10.4 |
| Bad | 146 | 89.6 |
| **Total** | **163** | **100.0** |

**Table 3.30how is general condition of the latrine?**

Majority of households 146 (89.6%) their general condition of latrines were bad and small number of households 17 (10.4%) their general condition of latrines were good.

**Discussion**

According to demographic characteristics The majority of the respondents 127 (77.9%) were female and 36 (22.1%) were male that means women are more likely to stay houses for caring children and Most of them 70 (42.9%) were between the age of 25-35, 58 (35.6%) were between the age of 36-45, 16 (9.8%) were between the age of 18-24, 15 (9.2%) were between the age of 46-55 and 4 (2.5%) were between the age 56-65 also 149 (91%) were illiterate, 13 (8.0%) were primary level and one individual of the respondents (0.6%) were university level and 58(35.6%) were b/w 5-6 members, 57 (35.0%) were b/w 2-4, 34 (20.9%) were 7 and above and rest of households 14 (8.6%) were 2 members only.

Based on the results founded in previous studies, The majority of the respondents 756 (94.4%) were mothers and the remaining 45 (5.6%) were their spouse and Five hundred eighty-eight (73.4%) mothers and 458 (66.1%) fathers were illiterate whereas the majority (89.5%) of respondents were married and 602 (75%) had a family size of five or more with a mean family size of 5.95 (±1.944 SD) persons. (Yimam Tadesse Yimam, Kassahun Alemu Gelaye at el, 2013)

The results of the study showed84 (51.5%); of the households their source of water were hand dug well with pump, and Most of the households 100 (61.3%); it takes 3km walk to get a water from their nearest point source and 66(40.5%); were used 120 liters per day and 39 (23.9%) of households were used 61-90 liters of water per day and 38 (23.3%) were used per day 40 -60 liters, and more than half of respondents 113 (69.3%) Did not satisfy the water they receive and very large number of households 105 (64.4%) they don't do anything of treatment to improve quality of their drinking water and According to the respondents47 (28.8%) out of 55 who treated their water, they use chlorination and 7 (4.3%) were use boiling, and 1 (0.6%) were use other method and Most of the households 61 (37.4%) they bring 1 dollar per day to get water also 52 (31.9%) they bring less than $0.5 per day.

As the previous study results in Kenya, Most of the respondents (51%) obtained their water from open sources and the remaining 49% obtained water from boreholes (41%) and taps (8%), which are relatively safer for drinking as they are less exposed (Kimongu Justus Kioko at el, 2012) and The majority of households (81%) do not treat drinking water at household level. Eighty-six percent of households use narrow mouthed containers for storing drinking water. (UNICEF, 2017)The respondents were further asked about the water treatment methods they used on the water they perceived unsafe for drinking. The results are given of the river water users, 50% used chlorination while the remaining 50% boiled their water. For those using tap water, 12.5% used boiling, 50% used chlorination with 37.7% using filtration. Among the borehole water users 95% used chlorination and 5% filtered their water. (Kimongu Justus Kioko at el, 2012) The average water collection time is 46.5 minutes and it took less than 30 minutes to collect water (including two-way travel and queuing time) for 48% of households and more than a third (37%) of households do not have access to toilet facilities. (UNICEF, 2017)

The study also founded that 21 (12.9 %) of the households do not have latrine and 153 (93.9%) of the households share latrine with their neighbor that can result many unhygienic problems and 117 (71.8%) of the households do not wash their hands after using toilet and Majority of the households 110 (67.5%)Were used potty to dispose their children's feces and 23 (14.1%) they thrown into

garbage, and 12 (7.4%) they left in the open and Many under five children of age 66 (40.5%) were occurred watery /bloody diarrhea for a few days in the last year due to unhygienic practices and lack of safe water and Majority of households 102(62.6%) their drinking water containers were not properly covered also highly number of households 146 (89.6%) their general condition of latrines were bad which is significant related diarrheal diseases.

Based on the result of Ethiopia up to 60% of the current disease burden is attributable to poor sanitation. Latrine facility coverage is increasing since Health Extension Program started, whereas less attention to quality and utilization of latrine facilities in rural Ethiopia. Whereas a total of 801 households with latrines were assessed for their latrine utilization status. The extent of latrine utilization among 490 (61.2%) households was satisfactory and Types of available latrines in the district were 100% simple pit latrines. About 764 (95.4%) latrines were privately owned and the rest 37 (4.6%) was shared with their neighbors as the result From the functional latrines almost all of latrine slabs were made of mainly wood and mud from this 464 (76.1%) were sealed with mud and the remaining 144 (23.6%) have no properly constructed slab and only 1 cemented. About 290 (52.4%) of latrines had no cover on the squatting hole and Hand washing practices were measured through proxy indicators that focus on the existence of hand washing devices near the latrine. Only 164 (26.9%) latrines have hand washing devices. Water was observed in 124 (75.6%) households and among this soap, ash was observed only in 42 (25.6%) and 23 (14.0%) hand washing stations respectively. Among all functional latrines only 65 (10.7%) of households with access to a place to wash hands that has all essential supplies and Among the 226 households which have 3-5 years children only 20 (8.8%) children were using latrines. Of those households which have ≤5 children 133 (31.7%) households disposed their children's faeces improperly by disposing out of houses somewhere either in the backyard or in the nearby bush. (Yimam Tadesse Yimam, Kassahun Alemu Gelaye at el, 2013)

In the literature results shows the prevalence of open defecation in rural areas is estimated as 56%. Poor hygiene and sanitation practices are major causes of diseases such as cholera among children and women. With only 25 % of the population having access to improved sanitation, empowering communities to take action for their own sanitation needs, as well as supporting schools and health facilities to provide essential sanitary facilities, are priority Water, Sanitation and Hygiene (WASH) interventions. (UNICEF, 2015)

## Conclusion

Water, Sanitation and Hygiene (WASH) is generally a challenge in Somalia particularly in IDP settlements where access to water and sanitation facilities is limited. Children particularly the ones under the age of 5 years mostly fall victim to diseases caused by poor sanitation and hygiene practices. And the main objectives of the study was evaluation of safe water and sanitation facilities among IDP CAMPS IN KAHDA district and the results that founded in the study are 21 (12.9 %) of the households do not have latrine and 153 (93.9%) of the households share latrine with their neighbor that can result many unhygienic problems and 117 (71.8%) of the households do not wash their hands after using toiletand Majority of households 102 (62.6%) their drinking water containers were not properly covered also highly number of households 146 (89.6%) their general condition of latrines were bad which is significant related diarrheal diseases. And 84 (51.5%); of the households their source of water were hand dug well with pump, and Most of the households 100 (61.3%); it takes 3km walk to get a water from their nearest point sourceand 66 (40.5%); were used 120 liters per day and 39 (23.9%) of households were used 61-90 liters of water per day and 38 (23.3%) were used per day 40 -60 liters.

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# PREVALENCY OF ANEMIA AMONG PREGNANT WOMEN A TENDING ANTENATAL CLINIC DURING MCH HOLWADAG MOGADISHO

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## Abstract

*Background: Anemia in pregnancy is a common problem in most developing countries and a major cause of morbidity and mortality. In pregnancy, anemia has a significant impact on the health of the fetus as well as that of the mother. 20% of maternal deaths in Africa have been attributed to anemia. Objective: To assess the prevalence of anemia and its associated factors among pregnant women attending antenatal clinic at Cariif MCH, Holwadag District, in Mogadishu, Somalia 2018.Methodology: Facility based cross-sectional study was conducted at Cariif MCH, Holwadag District, in Mogadishu, Somalia 2018, from April to May 2018.*

*Data were collected using pretested questionnaires. A total of 60 pregnant women were included in the study. Data were entered and analyzed using STATA version 20. Result: In the study the prevalence of anemia was 51.7% percent among pregnant women (31 out of 60). The study has shown that age of the pregnant women and family size were found to be significant. Pregnant women at age of 15--25 were less likely to be anemic compared to those pregnant women at the age of 26-37. Conclusion and Recommendation: In this study the prevalence of anemia is 51.7% among pregnant women. Comparing the national prevalence of anemia in pregnancy (45.5%) it is higher, needs high effort by other researchers. the Sensitization of pregnant women by health providers to encourage early ANC visit and to continue supplements of iron and foliate throughout pregnancy. the Provision of health education on anemia and importance of visits at least four times during pregnancy.*

***Key words:*** *Anemia, prevalence of anemia, pregnant women, antenatal care, multigravidae, Primigravidae.*

## 1.0 Background

Anemia describes a situation in which there is a reduction of hemoglobin concentration in the blood of pregnant women to a level below 11g/dl. Anemia is one of the most common nutritional deficiency diseases observed globally and affect more than a quarter of the world's population (WHO/CDC, 2008). Globally, anemia affects 1.62 billion people (25%), among which 56 million are pregnant women (Balarajan, 2011; WHO/CDC, 2008). It is estimated that 41.8% of pregnant women worldwide are anemic. At least half of this anemia burden is assumed to be due to iron deficiency. Iron deficiency anemia (IDA) is the most common nutritional disorder in the world affecting 2 billion people worldwide with pregnant women particularly at risk (WHO guideline, 2012). In developing countries, the prevalence of anemia during pregnancy is 60.0% and about 7.0% of the women are severely anemic (Agan*et al*., 2010). In Africa 57.1% of pregnant women are anemic (de Benoist *et al.,* 2008). Sub-Saharan Africa is the most affected region, with prevalence of anemia estimated to be 17.2 million among pregnant women. This constitutes to approximately 30% of total global cases (WHO, 2008). In Kenya the prevalence of anemia among pregnant women is 55.1% and among non-pregnant women is 46.4% (Ministry of Health, 2013). Anemia during pregnancy is considered severe when hemoglobin concentration is less than 7.0 g/dl, moderate when the hemoglobin concentration is 7.0 to 9.9 g/dl, and mild when hemoglobin concentration is 10.0 to 10.9 g/dl (Balarajan*et al*., 2011; Salhan*et al.,* 2012; Esmat*et al*., 2010). When the prevalence of anemia among pregnant women is 40.0% or more, it is considered as a severe public health problem (McLean *et al*., 2008).

Anemia during pregnancy is a major cause of morbidity and mortality in pregnant women and infants in developing countries (Akhtar and Hassan, 2012). In 2013, an estimated 289,000 women died worldwide. Developing countries account for 99% (286 000) of the global maternal deaths with sub- Saharan Africa region alone accounting for 62% (179 000). About 800 women a day are still dying from complications in pregnancy and childbirth globally (WHOa, 2015). Anemia contributes to 20% of all maternal deaths (WHOb, 2015). Anemia in pregnancy causes low birth weight (Banhidy*et al*., 2011), fetal impairment and infant deaths (Kalaivani, 2009). Iron deficiency anemia affects the development of the nation by decreasing the cognitive and motor development of children and productivity of adults (Balarajan*et al.,* 2011; Vivek*et al*., 2012). Deficiency of folic acid during pregnancy can result in developing neural tube defect that develops in embryos during the first few weeks of pregnancy leading to malformations of the spine, skull, and brain (Wolff *et al*., 2009).

Iron and foliate requirements increase during pregnancy, therefore, the likelihood of developing iron and foliate deficiency is high if there is no supplementation during pregnancy (Marti-Carvaja*et al*., 2002). It is therefore recommended that all pregnant women should start taking iron and folic acid supplementation as early as possible to avoid the complications of iron and folic acid deficiency during pregnancy. Supplementation with folic acid has also been shown to reduce the risk of congenital heart defects, cleft lips, limb defects, and urinary tract anomalies (Wilcox, *et al*., 2007 and Goh and Koren, 2008). IFAS is a major strategy to reduce iron deficiency anemia in pregnancy as well as risk of congenital malformations on the newborn.

**The specific objectives of this study was**

1. Determine the prevalence of anemia among pregnant Women.
2. Determine the factors that affect the iron status of pregnant women

## 2.0 METHOLOGY

### 2.1 RESEARCH DESIGN

The researchers used a quantitative method of research designs, this study was used cores-sectional descriptive study design.

### 2.2 STUDY AREA &TARGET POPULATION

Target population was pregnant woman attending in antenatal care clinic at Cariif MCH in Holewadag District.

### 2.3 SAMPLE SIZE AND INSTRUMENT FOR DATA COLLECTION

The sample size of this study was 60 respondents the whole population of the study was being all pregnant women with anemia at April to May 2018 in MCH.
The sampling technique of this study was being non-probability sampling procedure.

### 2.4 DATA ANALYSIS

Data were analyzed using SPSS 20 (statistical package for the social science) were used. the researchers used descriptive statistics to describe the variables in this study.

### 2.5 ETHICAL CONSIDERATION

First in considering the research ethics the researchers received obtained letter from Faculty of Medicine and Health sciences of Jamhuriya University for science and technology. The request letters were signed by the head of Cariif MCH in Holewadag District. During study names were not mentioned in the questionnaire to keep the privacy, confidentiality and the secrecy of respondents, to maintain ethical issue the researchers. All data kept confidential and safe.

## 3.0 RESULT

The result of study was present using frequency table and figure.

### 3.1 identify number of your children

| No. of children | Frequency | Percent |
|---|---|---|
| 1 | 5 | 8.3 |
| 2 | 26 | 43.3 |
| 3 | 19 | 31.7 |
| 4 and above | 10 | 16.7 |
| **Total** | **60** | **100.0** |

**Table 3.1 identify number of your children**

The above table shows the number children of Respondents the majority percentage was 2 children at 43.3%, second part was 3 children at 31.7% the third part was 4 and above children at 16.7% while 1 child was at 8.3%.

### 3.2. Spacing between children

| **Spacing between children** | **Frequency** | **Percent** |
|---|---|---|
| 1 | 8 | 13.3 |
| 2 | 51 | 85.0 |
| 3 and above | 1 | 1.7 |
| **Total** | **60** | **100.0** |

**Table 3.2 Spacing between children**

This shows the child spacing level 13.3% one year, while 85% was two year also the majority of child spacing level and 1.7% was 3 and above.

### 3.3 Age at first birth

| Age at first birth | Frequency | Percent |
|---|---|---|
| 15-20 | 41 | 68.3 |
| 20-25 | 17 | 28.3 |
| 25-30 | 2 | 3.3 |
| Total | 60 | 100.0 |

**Table 3.3 ages at first birth**

This table shows the age at first birth 68.3% between 15-20 years, while 28.3% between 21-26, and 3.3% between 27-31.

### 3.5 What age does you breastfeed?

| Till what age does you breastfeed | Frequency | Percent |
|---|---|---|
| 6 months | 52 | 86.7 |
| up to 1 year | 7 | 11.7 |
| 2 year | 1 | 1.7 |
| **Total** | **60** | **100.0** |

**Table 3.5 what age does you breastfeed?**

This shows the age do you breastfeeding of the majority 86.7% 6 months, while 11.7% 1 year and 1.7% 2years.

### 3.9 How many times have you measured your HB level?

| how many times have you measured your hb level | Frequency | Percent |
|---|---|---|
| 1time | 16 | 26.7 |
| 2 time | 17 | 28.3 |
| 3 and above | 5 | 8.3 |
| No | 22 | 36.7 |
| **Total** | **60** | **100.** |

**Table 3.9 how many times you have measured your hb level?**

This Table 4.13 shows how many times you have measured your hb level No at 36.7% also majority group, while 2 time at 28.3% second group, 1time at 26.7% third group, 3 and above at 8.3% fourth group also least group.

### 3.12 Are you taking iron tablets?

| are you taking iron tablets | Frequency | Percent |
|---|---|---|
| Yes | 40 | 66.7 |
| No | 20 | 33.3 |
| **Total** | **60** | **100.0** |

**Table 3.12 Are you taking iron tablets?**

This table shows Respondents by taking iron tablets and not taking Respondents was two groups, group one Yes at 66.7%, and while second groups No at 38.3.

**Table 3.13 Have you taken iron tablets before?**

This shows Respondents by taking iron tablets and others with percentage, the majority yes at 66.7 %, while at 33.3 % no

**3.14 are you taking multivitamin tablets?**

| Are you taking multivitamin tablets | Frequency | Percent |
|---|---|---|
| Yes | 13 | 21.7 |
| No | 47 | 78.3 |
| **Total** | **60** | **100** |

**Table 3.14 Are you taking multivitamin tablets?**

This shows Respondents by taking multivitamin tablets and others with percentage, the majority No at 78.3 %, while at 21.7% Yes

**3.15 do you suffer from any pregnancy illness?**

| do you suffer from any pregnancy illness | Frequency | Percent |
|---|---|---|
| Yes | 43 | 71.7 |
| No | 17 | 28.3 |
| **Total** | **60** | **100** |

**Table 3.15 do you suffer from any pregnancy illness?**

This show Respondents by suffer from any pregnancy illness and not suffer from any pregnancy illness with percentage, the majority No at 71.7 %, while at 28.3% Yes

**3.16 What is the level of pregnancy?**

| what is the level of pregnancy | Frequency | Percent |
|---|---|---|
| First | 19 | 31.7 |
| Second | 23 | 38.3 |
| Third | 18 | 30.0 |
| **Total** | **60** | **100** |

**Table 3.16 what is the level of pregnancy**

The level of pregnancy first at 31.7%, while Second 38.3% and Third 30%

## 3.0 DISCUSSION

### 4.1 Introductions

### Socioeconomic and Demographic Characteristics

In this study 60 of the required sample pregnant women attending antenatal care were participated in the study. The mean age of the respondents was 2.02 (±.504) years. Around 75% of respondent were in age group of 26-37 years and about 13.3 % were in age group of 38-49, while 11.7% were in age group of 15-25. About 56.7% of the respondents were Illiterate, 25% had primary school level and 18.3 % had secondary School level. Regarding occupation majority of the respondents were house wives 60% while 40% was self-employee.

Our study used three different tools URIT, Sahli and Colorimeter Method, the study shows the difference between tools and its effectiveness the most effective one is Colorimeter Method,
We prefer our study Prevalence of Anemia and its severity were 51.7% among pregnant women (31 out of 60).

About 23 (38.3%) of the mothers were in their second trimester, 19 (31.7%) Were in the first trimester, and the remaining 18 (30%) were in the third trimester. The study shows that parity and age of current pregnancy (trimester) were important Variables, which have shown a significant association with anemia in the current study. The Risk of developing anemia increases with the age of pregnancy (trimester). The risk of Developing anemia was higher in second and first trimester when compared with those in third the trimester.

This finding is consistent with a study done in Saudi Arabia, which found that the prevalence of anemia is higher in the third trimester in comparison with first trimester (Haidar, 2010), and another study conducted in India, which also indicated that the prevalence of anemia was higher in pregnant women in the third and second trimesters (Vivak etal, 2012). Additionally, studies conducted in Malaysia, Vietnam, and Nepal found that increased gestational age is significantly associated with the risk of developing anemia (Makhoul etal, 2012). This could be due to the fact that when the gestational age increases the mother becomes weak and the iron in the blood is shared with the fetus in the womb therefore decreasing the iron binding capacity of the mother's blood.

## 4.0 Conclusions

The present study revealed that the prevalence of anemia among pregnant women was 51.7% which is a severe public health problem. The foregoing discussion has indicated that anemia during pregnancy is a result of many factors, including late pregnancy, lack of formal employment and economic autonomy, poor nutritional status and late ANC booking and not taking IFAS during the current pregnancy. All these factors lead to poor health condition of the pregnant women thus by the time such mothers attend for ANC, they are already in anemic state.

In Somalia, the current strategy for reducing anemia during pregnancy includes the provision of iron and folic acid tablets, advice on dietary intake, diagnosis and treatment of malaria and hookworms. IFAS is the most common and cost-effective strategy used to control anemia in the developing countries including Somalia and is used as both a preventive measure and a treatment option. However, in spite of the WHO and Somalia national guidelines recommendations, the study revealed that ANC booking and starting to take IFAS was too late. This late ANC booking is probably due to the fact that women with low socioeconomic situation have lack of access to education and understanding about health-related issues which can contribute to delays in seeking antenatal care and makes them prone to different health problems like anemia.

To reduce this high prevalence of anemia during pregnancy, therefore, interventions for prevention and control of anemia should be strengthened by encouraging early ANC booking. Early ANC booking provides opportunities for early detection and treatment of any health problem that can arise during pregnancy and initiation of IFAS as recommended. There is need, therefore, for the government of Somalia, through the relevant ministries, to address these risk factors by encouraging female education and enhance their autonomy through economic empowerment.

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