

# Causes and Outcome of Surgically Treated Non-Traumatic Surgical Acute Abdomen in Suhul General Hospital, Shire, Northwest Tigray, Ethiopia, a Retrospective Study

Solomon Gebre\*

*Suhul general hospital, Emergency surgical department, Shire, Northwest Tigray, Ethiopia*

*Email: [solomunlka@yahoo.com](mailto:solomunlka@yahoo.com)/[solomongebre300gmail.com](mailto:solomongebre300gmail.com)*

## Abstract

The term acute abdomen refers to signs and symptoms of abdominal pain and tenderness, a clinical presentation that often requires emergency surgical therapy. This challenging clinical scenario requires a thorough and expeditious workup to determine the need for operative intervention and to initiate appropriate therapy. Many diseases, some of which are not surgical or intra-abdominal, can produce acute abdominal pain and tenderness. An acute abdomen could be medical, surgical or gynecological. Furthermore surgical acute abdomen classified to traumatic and non-traumatic. The causes of acute abdomen are several and their relative incidence varies in different populations. Several factors are described to be responsible for these differences. Socioeconomic factors and diet have mostly been incriminated to be responsible for the observed differences. The Objective of this study is to assess the causes and outcome of surgically treated non-traumatic surgical acute abdomen patient who were managed operatively at Suhul general hospital. This is two year hospital based descriptive cross-sectional study on 166 patients complaining of non-traumatic acute abdomen over the period of two year from March 2012 to March 2014 who managed surgically at Suhul general hospital. Data was collected by data collectors in to the appropriate data collection instrument- the questionnaire. Daily completeness of the questionnaire was cross checked by principal investigator for data quality control. The collected data was processed using SPSS software. Descriptive statistics and chi-square calculation has been used to show association with P-value.

---

\* Corresponding author.

The results shows that there were 166 patients who underwent emergency abdominal surgery at Suhul general hospital for non-traumatic acute surgical abdomen in the study period. Of this 166 patient 94(56.6%) were male and 72(43.4). The most common cause of acute abdomen was acute appendicitis 54.2% found followed by generalized peritonitis 27.1% and intestinal obstruction 18.7%. There were 07 deaths in the study period giving an overall case fatality rate of 4.2%. A higher morbidity and mortality was observed in patients who presented late.

As a conclusion we can say that acute appendicitis where the most common condition encountered in patients presenting with acute abdomen. Most patients having acute abdomen are relatively young in the 2nd and 3rd decades of life. A late presentation is the common factor for increased morbidity. The most common early (in hospital) post-operative complication was surgical site wound infection.

**Key word:** surgical; non traumatic; acute; abdomen; treated; surgically.

## 1. Introduction

Acute abdomen defines as any serious acute intra-abdominal condition (such as appendicitis) attended by pain, tenderness, and muscular rigidity, and for which emergency surgery must be considered. The causes of acute abdomen are several and their relative incidence varies in different populations. Several factors are described to be responsible for these differences. Socioeconomic factors and diet have mostly been incriminated to be responsible for the observed differences [1,3].

Intestinal obstruction has been the leading cause of acute abdomen in several African countries whereas acute appendicitis is the most frequently seen cause in the developed world [2,6]. The leading causes of intestinal obstruction in Africans have mostly been hernia and volvulus whereas adhesions are most frequent in the developed world [6,13].

There are, however, some African studies which are pointing to a change in these established patterns [13, 14].

Acute abdomen is a common condition encountered in general surgical practice. In order to reach the correct diagnosis a careful and methodical approach is needed. Causes of acute abdominal pain have wide spectrum and a detailed history, physical examination and investigation will lead to correct management. Pain is the predominant symptom of the acute abdomen and the knowledge of anatomy and pathophysiology is important in assessment. Common causes of acute abdominal pain include acute appendicitis and nonspecific abdominal pain, while other serious pathologies may be a reflection of infection, mechanical obstruction, biliary disease, malignancy, cardiac problems, and GI ischemia. The symptom complex of acute abdomen commonly results from luminal obstruction, inflammation and peritonitis recently, abdominal tuberculosis is becoming a major surgical emergency in our set up [17].

## 2. Statement of the problem

Ethiopia is one of the less developed countries where health related morbidity and mortality is high. One of the

major causes is trauma related morbidity and mortality from road traffic accident followed by emergency acute abdomens.

Acute abdomen remains the important causes of morbidity and mortality in emergency medicine. Delay in seeking in surgical management opinion contributes to make the situation worse, since presentation of case of acute abdomen.

Acute abdomen varies from mild dull aching pain to severe guarding and rigidity with associated systemic symptoms like fever, there is a need to know the spectrum of presentation as well as the most frequent among them. Surgeons managing a case of acute abdomen should be aware of the diverse etiologies of acute abdomen, there is a need to enlist the different etiologies leading to acute abdomen and the most common among them, so that the decision regarding the management of such cases can be taken as early as possible. Surgical acute abdomens are the commonly encountered emergencies in the practice of General surgery and for which emergency surgical operation commonly performed. Acute appendicitis, intestinal obstruction and perforated peptic ulcer disease are the leading cause of acute abdomen. Despite of modern surgery is being practiced; the mortality rate following non-traumatic surgical emergencies is still high worldwide. It is always advantageous to do an early surgery than a late surgery, so knowing pattern and causes of diseases will help to make diagnosis early, then starting treatment accordingly and this will decrease delays in management and related complications. The study is believed to have epidemiological and clinical benefits and would also serve as a base for other studies.

### **3. Literature Review**

Study in Sina hospital shows that a total of 139 patients diagnosed with acute abdomen underwent emergency Laparotomy. Acute appendicitis was the most common cause of acute abdomen (56.8%). Acute appendicitis was the etiology of acute abdomen in 67% of male and 38.8% of female patients. Other common causes of acute abdomen were peritonitis (14.4%) among which 8(5.7%) resulted from PPUD, 5(3.5%) were perforated appendicitis, 2(1.4%) pancreatitis, 10(7.2%) cholecystitis. Bowel obstruction 10(7.2%) of which 3(2.2%) adhesion and volvulus each, 2(1.4%) incarcerated Hernia and only 1(0.7% case of invagination (intussusception) found. In this study 4(2.9%) ruptured AAA and torsion of an ovarian cyst (24.5%) in female patients diagnosed intraoperatively [14].

A total of 88 patients were treated for mechanical intestinal obstruction in North Jordan. Postoperative adhesions in 52.5%, gastrointestinal tumors in 21.0%, and obstructed abdominal wall hernias in 9.5% were the three major causes of mechanical intestinal obstruction. Three patients developed surgical-site infections (3.3%), and one developed a minor Anastomotic leak that was treated accordingly (1.1%). There were no mortalities. In 1993, obstructed hernias accounted for 30% of the mechanical intestinal obstructions followed by postoperative adhesions and tumors (27 and 14%, respectively). There was a 7% mortality rate [15].

Study done in Sulaimany teaching hospital, Iraq shows, The most common causes of acute abdomen was acute appendicitis (33.46% followed by urologic causes (27.88%) causes, non-specific abdominal

pain(NSAP)(11.34%) and biliary colicky diseases (8.8%). Acute appendicitis was frequently seen in young male patient, NSAP were seen in young women and biliary diseases mainly presented in adult and elderly women patients [16].

Out of 127 patient with acute surgical abdomen the most common cause was acute appendicitis (50.4%), 13,4 had acute pancreatitis , 10.2% acute intestinal obstruction and the remaining are acute cholecystitis (7%), abdominal tuberculosis (6,2%), enteric perforations, diaphragmatic hernia, obstructive jaundice, psoas abscess, strangulated umbilical hernia, carcinoma of rectum (with intestinal obstruction) and pelvic abscess. Wound infection was the most common complication (10%) followed by chest infection (7%). Mortality rate was 10% [17].

Thirty-five patients died before and 195 after operation. Of these 230 deaths, 110 (47.8%) reported to the hospital after three or more days of illness. Twenty-six per cent and 23.7% of postoperative deaths occurred after emergency colonic resections and closure of gastro duodenal perforations, respectively. (22) During the period under review in Northern Uganda, a total of 132 patients with acute intestinal obstruction were included in the study. There were 91 males and 41 females, with a mean of 31.5years.The commonest causes of obstruction were Hernias 53(40.1%), Adhesions 27(20.45%), Volvulus23(17.4 %), Intussusception 15(11.36%), Neoplasms 5(3.7%), Total number of cases presented with intestinal obstruction requiring operative management was 100. Among them 81 were males & 19 were females. As far as the age distribution is concerned the age range was 5 months to 82 years. Mean age was 33 years. The commonest cause of intestinal obstruction was obstructed inguinal hernia followed by adhesions. Postoperative fever & wound infection was the common postoperative complications. Mortality was 7 (7%) [18].

There were 99 patients (60 males) aged 15 -101 years (mean age 45 years) in study conducted in Nigeria. The majority of patients were young and middle-aged adults. Main causes of obstruction included adhesion (N = 44), volvulus (N =15), external hernias (N = 11), colorectal carcinoma (N = 10) and intussusception (N = 8). Approximately two-thirds of patients (28/44) with adhesion had had previous abdominal operations. The overall mortality was 14% mainly owing to strangulation obstruction and colonic malignancy [20].

In Lilongwe, Malawi190 patient were include in the study of etiologies, clinical presentation and outcome of patient with peritonitis, the most common causes were perforated appendicitis (22%), intestinal obstruction (17%), followed by perforated peptic ulcer (11%) and small bowel perforation (11%).With overall mortality rate of 15% [21].

84-month period from January 1998 to December 2004 study at Komfo Anokye Teaching Hospital in Kumasi Ghana, West Africa shows there were 3114 patients, 2070 men and 1044 women. The ages ranged from 15 to 95 years. The seven most common causes of the admissions were acute appendicitis 698 (22.4%), typhoid ileal perforation (506) 16.2%, acute intestinal obstruction 391 (12.6%), gastro duodenal perforations 342 (11.0%), non-specific abdominal pain 306 (9.8%), abdominal injuries 260 (8.3%) and acute cholecystitis 102 (3.2%). There were 1976 (63.4%) emergency operations. Appendectomy was a common operation that was carried out (638 cases or 32.3%). Two hundred and thirty patients (7.4%) died [22].

Prospective study at El Obeid Hospital, Western Sudan, All patients who presented with acute abdomen to the University Surgical Unit at El Obeid Hospital between January 1999 and December 2000 were included. There were 421 patients. 242 were males (57.5%). Acute appendicitis was the commonest cause accounting for 63% of the patients, followed by acute intestinal obstruction 20.4% and abdominal trauma 11.6%. One third of the patients with acute appendicitis reported with complications. The majority of acute intestinal obstruction cases were due to obstructed and/or strangulated hernia. Acute cholecystitis and perforated duodenal ulcers were not common. Perforated typhoid ulcers and tuberculosis peritonitis were less frequent but had high mortality. The overall mortality was 8.5% and those deaths occurred mostly in patients presenting late with generalized peritonitis [24].

A 09 month retrospective study at Kigali university teaching hospital on 229 who managed by emergency abdominal surgical procedure, The most common operative findings were peritonitis (41.5%), intestinal obstruction (28.4%) and acute appendicitis (11.8%). traumatic acute abdomen accounts for 11.8% of this splenic injury were commonest. The average time interval between onset of symptoms and admission was 3.6 days. Presenting complaint upon admission were, abdominal pain (100%) and constipation (51.1%) and abdominal distension (59%) and tenderness and guarding (45.4%) the most frequent physical findings. Wound infection (8.7%) and septicemia (4.8%) were among the post-operative complications. The overall mortality was 18% which was influenced by red cell count, hematocrit, leukocytosis, duration of the surgery (>1 hour) and presence or absence of peritonitis [25]. Study conducted in Tikur Anbessa hospital shows that there were a total of 587 adult surgical emergency operations of which 2149(36.4%) was laparatomies for acute abdomen. Acute appendicitis was the leading cause of acute abdomen which accounts 52%, of whom 81(67%) was males and 41 (33%) females. The majority of cases were in their 2nd and 3rd decades of life. Small bowel obstruction due to adhesions and volvulus were the leading causes of intestinal obstruction each accounting for 27%. Adhesion were the most frequent cause of small bowel obstruction (17/33). twelve's had had previous surgery, four were managed conservatively and 13 were operated out of which four had died. There were 8 patients with primary small bowel volvulus. Sigmoid volvulus was the leading cause of colonic obstruction (17/29) of which 7 had simple volvulus and ten gangrenous sigmoid volvulus. Perforated PUD was the 3rd most common cause of acute abdomen identified accounting for 21(9%) of cases, for which simple closure with omental patch was done [26].

Study conducted in Zewditu Memorial Hospital, Addis Ababa on 76 patients with perforated PUD shows male to female ratio was 6.6:1 with a mean age being 31.5 years. The most common presenting symptom was abdominal pain in 76 (100%) patients. History of smoking and khat chewing was documented in 82.8% and 75% of the patients respectively. Twenty five per cent of the patients gave no history of previous peptic ulcer disease. Seventy patients (92.1%) presented after 48 hours of their illness. The mean hospital stay was 14.5 days. Sixty five (85.5%) patients had duodenal ulcer perforation the rest were gastric perforation. Twelve (15.8%) patients have been died in the hospital before they discharged home [27].

A retrospective analysis was undertaken on 229 cases of acute surgical abdomen surgically managed at Yirgalem hospital from January to December 1997. Small intestinal obstruction, acute appendicitis, large intestinal obstruction, Typhoid perforation, primary peritonitis, perforated gastro duodenal ulcer, abdominal

tuberculosis and empyema of the gallbladder in descending order were the observed causes of acute surgical abdomen [28].

Four year retrospective study at Gondar university hospital shows that emergency laparotomies for non-traumatic acute abdomen were 511(43.3%) of all laparotomies. The leading operative diagnoses were small bowel obstruction (43.4%), appendicitis (34.6%) and large bowel obstruction Thirty three (49.3%) of patients with generalized peritonitis developed postoperative complications. However only 46 (18.6%) of the cases without generalized peritonitis developed postoperative complication [29].

#### **4. Methodology**

##### ***4.2 Study area and Study Period***

A two years retrospective study was conducted in Suhul general hospital Shire, Tigray, Ethiopia; during the year of March 2012–March 2014.

##### ***4.2 Study Design***

Two year hospital based descriptive cross-sectional studies were employed in Suhul general hospital.

##### ***4.3 Population***

###### ***4.3.1 Source Population /target population of the study***

Sources of the study were all patients for whom emergency surgical operation had been performed in Suhul general hospital, Shire.

###### ***4.3.2 Study Population***

The study populations were all patients who have been operated for emergency abdominal surgical illness during the year March 2012- March 2014 in Suhul general hospital.

###### ***4.3.3 Study Unit***

Each individual documented patient who were operated for non-traumatic abdominal surgical emergency in registration book in Suhul general hospital.

###### ***4.3.4 Sample size determination***

166 operated patients chart for non-traumatic surgical acute abdomen during the period of March 2012 to March 2014 has been taken as the sample.

###### ***4.3.5 Sampling Technique***

All patients in the study period who operated for emergency non traumatic acute abdomen were taken as sample

#### **4.4 Data Collection and Quality Control**

After half day training given to data collector( year two MSc emergency surgery student) study population has been determined from registration book, the patient card was collected and the data is filled by data collectors in to the appropriate data collection instrument- the questionnaire –which was prepared in English. Daily completeness of the questionnaire was cross checked by principal investigator.

#### **2.5 Data management and Analysis**

The collected data was checked, coded, entered, cleaned and analyzed by using SPSS version 16 software Descriptive statistics a and chi-square calculation has been used to show association with P-value.

#### **2.6 Ethical consideration**

Data collection were started after the study is approved by the Institutional Ethics Review Committee of the College of Health Sciences of Mekelle University and secured a permission letter from Suhul general hospital. Confidentiality of the records was maintained throughout the study period. Reports were not included names and identifiers of patient. Operation Theater staffs have been informed. **Variable**

#### **2.7 Independent Variables**

- Age
- Sex
- Residency
- Duration of the illness
- Present compliant
- Physical funding
- Preoperative diagnosis
- Operative diagnosis
- Type of emergency surgical operation (procedure)

#### **2.7.1 Dependent Variables**

- Outcome of surgically treated non traumatic surgical acute abdomen

### **5. Result**

#### **5.1 Socio-demographic factors**

There were 166 patients who underwent emergency abdominal surgery at Suhul general hospital for non-

traumatic acute surgical abdomen in the study period. Of this 166 patient 94(56.6%) were male and 72(43.4%) were female with male to female ratio of 1.3:1. sixty five (39.2%) were urban dwellers and 101(60.8%) were rural dwellers. The mean age of the individual was  $27.2 \pm (SD=16.4)$ . (Table 1)

**Table1:** Socio-demographic distribution of patients who were surgically treated for non -traumatic acute abdomen at Suhul general hospital March 2012-March 2014

Variable	Frequency	%
Residence		
Urban	<b>65</b>	<b>39.2</b>
Rural	<b>101</b>	<b>60.8</b>
Age distribution		
<10	<b>18</b>	<b>10.9</b>
11-20	<b>45</b>	<b>27.1</b>
21-30	<b>45</b>	<b>27.1</b>
31-40	<b>26</b>	<b>15.7</b>
41-50	<b>16</b>	<b>9.6</b>
51-60	<b>7</b>	<b>4.2</b>
>60	<b>9</b>	<b>5.4</b>
Sex distribution		
Male	<b>94</b>	<b>56.6</b>
Female	<b>72</b>	<b>43.4</b>

### 5.2 Clinical Features of Patients

The commonest present complaint was abdominal pain followed by vomiting which accounts 88.8% and 8.4% respectively. About 123(68.1%) patient were present to hospital with in 12hr-5day duration from their initial symptom, the rest of patient present <12hr(13.9%) and > 5day(18.1%).Tachycardia 102(61.4), localize tenderness 94(56.6%), generalized tenderness 30(18.1) and distention 28(16.9%) were most frequent physical finding. (Table 2)

### 5.3 Causes of acute abdomen

The most common cause of acute abdomen was acute appendicitis 90(54.2%) found followed by generalized peritonitis 45(27.1%) and intestinal obstruction 31(18.7%) as shown in (Table 3). Acute appendicitis accounts for more than half 90(54.2%) of whom 38(42.2%) were male and 52(57.8%) with M: F (1:1.7). The majority of the cases were in their 2nd and 3rd decades of life. About 65 (72.2%) cases were found to have non complicated acute appendicitis for them simple appendectomy has been done. Fifteen (16.7%) cases were Appendiceal abscess for whom abscess drainage was done and Ten (11.1%) were perforated appendicitis with local

peritonitis.

**Table 2:** Clinical Feature of Patients who had emergency abdominal surgery for non-traumatic acute surgical abdomen in Suhul general hospital March 2012-March 2014 and association with complication

Variable	Frequency (%)	P-value
Pulse rate		
Normal	<b>64(38.6%)</b>	-
Tachycardia	<b>102(61.4%)</b>	-
Blood pressure		
Normal	<b>146(96.1%)</b>	-
Hypotension	<b>6(3.9%)</b>	<b>.000</b>
Symptoms		
Abdominal pain	<b>146(88%)</b>	<b>.000</b>
Vomiting	<b>14(8.4%)</b>	-
Distention	<b>6(3.6%)</b>	<b>.001</b>
Sign		
Generalized tenderness	<b>30(18.1%)</b>	<b>.001</b>
Abdominal distention	<b>28(16.9)</b>	-
Guarding and rigidity	<b>14(8.4%)</b>	<b>.000</b>
Localized tenderness	<b>94(56.6%)</b>	-

Generalized peritonitis was the second most common cause of acute abdomen leading to emergency laparotomy 45(27.1%), of which 33(73.3%) was following perforated appendicitis, 9(20%) was following perforated peptic ulcer disease, 2(4.5%) were following primary peritonitis and 1(2.2%) were following Typhoid perforation. Perforated PUD 9(20%) was the second common cause of generalized peritonitis. Simple closure with omental patch was done for all. Four of the 45 generalized peritonitis were died which gives case fatality rate 8.9%.

Adhesion (8/24) was the leading cause of SBO followed by primary small bowel volvulus (7/24), intussusception (5/24) and hernia (4/24). Adhesions were the most frequent causes of small intestinal obstruction (8/24) of which 7 patients were males and 1 female. Six patients had viable SBO after adhesion and band for which adhesionolysis and band release done, but two Patients were found to have gangrenous SBO, resection and anastomosis done. Primary small bowel volvulus was the 2nd leading cause of SBO (7/24). Three Cases were having simple twisting for which derotation and milking was done; but 4 patients were found to have gangrenous small bowel volvulus for which resection and anastomosis had been done. There were 4 patients with strangulated hernia, for whom resection and anastomosis was done.

There were 5 cases with ileo-colic intussusceptions; 4 were males and 1 females, except two cases, other were developed gangrenous bowel, resection and ileo-transvers anastomosis was done. Sigmoid volvulus was the

leading cases of colonic obstruction (6/7). Two patients had simple volvulus for which derotation was done and four had gangrenous sigmoid volvulus for which resection and Hartman’s colostomy was done. In this study 1 patient were found to have colonic mass intraoperatively.

**Table 3:** Causes of acute abdomen in patients who had emergency abdominal surgery for non-traumatic acute surgical abdomen in Suhul general hospital March 2012-March 2014 and their association with outcome

Operative diagnosis	Frequency (%)	P-value
Acute appendicitis	<b>90(54.2%)</b>	<b>.000</b>
Generalized peritonitis	<b>45(27.1%)</b>	-
Perforated appendicitis	33(73.3%)	-
Perforated PUD	9(20%)	-
Primary	9(20%)	-
Typhoid perforation	1(2.2%)	-
SBO	<b>24(14.5%)</b>	<b>.002</b>
Adhesion	8(33.3%)	-
Primary volvulus	7(29.2%)	-
Intussusception	5(20%)	-
Hernia	4(16.7%)	-
LBO	<b>7(4.2%)</b>	<b>.000</b>
Sigmoid volvulus	6(85.5%)	-
Colonic tumor	1(14.5%)	-

#### 5.4 Outcome of patients

Thirty four (20.5%) of operated patient had early (in-hospital) post-operative complication. of this wound infection 21(12.7%) were the commonest post-operative complications followed by death which make the overall case fatality rate 7(4.2%) in the study population, anastomotic leak 2(1.2%), pneumonia3(1.8%) and sepsis 1(0.6%) were the list of post-operative complication. More than half patient who died were presented late > 5days from their initial symptom. (Table 4).

## 6. Discussion

Emergency abdominal surgery is one of the most common operations in general surgical practices in Suhul general hospital. A total of 166 emergency abdominal surgeries for non-traumatic acute abdomen were performed over a period of 02 years under review. In this study, male patients were more affected than females and male to female sex ratio was 1.3:1. The Majority of patients were in their 2nd and 3rd decades of life. The most common causes of acute abdomen were appendicitis (54.2%), generalized peritonitis (27.1%) and intestinal obstruction (18.7%) which was similar with previous studies done in the country, Tikur Anbessa

Hospital, other African, European and Asia countries.<sup>3, 4, 6,14,16,17,22,24,26</sup>, Thrifty four (20.5%) of operated patient had early (in-hospital) post-operative complication. of this wound infection 21(12.7%) were the commonest post-operative complications.

**Table 4:** Outcome of patients who had emergency abdominal surgery for non-traumatic acute surgical abdomen in Suhul general hospital March 2012-March 2014

Post-operative complication	Frequency (%)
Wound infection	21(12.7%)
Pneumonia	3(1.8%)
Anastomotic leak	2(1.2%)
Sepsis	1(.6%)
Death	7(4.2%)

Acute appendicitis was found to be the leading cause of acute abdomen leading to emergency operation in our study. The majority of the cases with acute appendicitis were in their 2nd and 3rd decades of life with male to female ratio 1.7:1 which agree with other studies done like in TAH, ZMH, Ethiopia and Sina Hospital.<sup>14, 16, 17,22,24,26</sup>, But contrast to study done in Gondar University hospital and Yirgalem hospital which showed that intestinal obstruction was the leading cause of acute abdomen. Generalized peritonitis was the next most common cause of acute abdomen. The leading causes of generalized peritonitis in this study was perforated appendicitis and perforated PUD each accounting 33(73.3%) and 9(20%) respectively which is similar with study conducted in Malawi. In this study there were relatively high frequency of peritonitis (27.1%) of which 19.9% resulted from perforated appendix; 5.4% from perforated PUD. But study in Sina hospital showed 14.4% of patients developed peritonitis, among which 5.7% resulted from PPUD, 3.5% of from perforated appendix. Intestinal obstruction was the next most common cause of acute abdomen.

The leading causes of intestinal obstruction in this study was adhesion, primary small bowel volvulus and sigmoid volvulus each accounting (8/31), (7/31) and (6/31) respectively. The number of patients with sigmoid volvulus might have been increased if cases of sigmoid volvulus which were managed as an outpatient by simple rectal tube deflation were included. This agrees with studies done in TAH.<sup>14, 15, 20, 26</sup>But other studies has shown that Hernia was the leading cause of small bowel obstruction. <sup>18, 23, 24</sup>In this study primary small bowel obstruction and intussusception were found to be 2nd and 3rd most common cause of SBO. Thrifty four (20.5%) of operated patient had early (in-hospital) post-operative complication. of this wound infection 21(12.7%) were the commonest post-operative complications which is similar with study conducted in Malawi.<sup>17, 18, 21,23,24,25</sup> The overall case fatality rate was 7(4.2%) in the study population which is lower than in Kigali.<sup>17, 20, 21, 22, 23, 25,27</sup> Anastomotic leak 2(1.2%), pneumonia3(1.8%) and sepsis 1(0.6%) were the list of post-operative complication. More than half patient who died were presented late > 5days from their initial symptom.

## 7. Conclusion

Acute appendicitis is the most common condition encountered in patients presenting with acute abdomen. Most patients having acute abdomen are relatively young in the 2nd and 3rd decades of life. Lack of health education, improper health care facilities and late presentations are common factors for increased morbidity. The most common early (in hospital) post-operative complication was surgical site wound infection, and this might be due patient factor or environmental factor. But this needs farther study. relatively high frequency of peritonitis cases were also found which was mostly encountered in patients who came late and referred from nearby health institutions.

## Acknowledgement

In the first place, my gratitude and appreciation is to my advisors Dr. Asmamaw Yoseph and Mr. Huruy Assefa for reviewing my research proposal and advising me with patience and utmost concern during the subsequent development of this thesis.

She sacrificed all what she have for being my study accomplished successfully, my wife W/ro Selamawit Hailegebriel, words are not enough to thank and appreciate you for your unlimited exertion. This all successes are because of your endurance.

I would like to thank all my friends particularly Mr. Brhane Fiseha for his all sacrifices. I would like also to thank Suhul general hospital for giving me all the necessary data.

## REFERENCES

- [1]. TEGEGN A. CULTURAL BOWEL PATTERNS AND SEX DIFFERENCES IN SIGMOID VOLVULUS MORBIDITY IN [14]AN ETHIOPIAN HOSPITAL. TROP GEOGR. MED 1995; 47 (5): 212-5.
  - [2]. GELFAND M. THE PATTERN OF DISEASE IN AFRICA AND THE WESTERN WAY OF LIFE. TROP DOC 1976;6(4);173-9.
  - [3]. WAKER ARP, RICHARDSON B.D, WAKER BF, WOOL FORD A. APPENDICITIS, FIBER INTAKE AND BOWEL BEHAVIORS IN ETHNIC GROUPS IN SOUTH AFRICA. POST GRAD MED J 1973;49:243-9
  - [4]. KRUKWSITUZH,O' KELLY TJ. APPENDICITIS, SURGERY .1997, 15:76-81 .
  - [5]. OGBONNA BC, OBEKPA PO, MOMOH JT, IGE JT. ANOTHER LOOK AT ACUTE APPENDICITIS IN TROPICAL AFRICA & THE VALUE OF LAPAROSCOPY IN DIAGNOSIS. TROP DOC. 1993;23: 82-4
  - [6]. OTU AA. TROPICAL SURGICAL ABDOMINAL EMERGENCIES: ACUTE APPENDICITIS TROP GEOGR MED 1989;41(2):118
  - [7]. AYALEW T. SMALL INTESTINAL VOLVULUS IN ADULTS OF GONDERREGION ,N,W ETHIOPIA ETHIOP MED J 1992, 30:111-4
  - [8]. MOTUMA D. SMALL INTESTINAL VOLVULUS IN SOUTHERN ETHIOPIA, ABSTRACT, 3RD ANNUAL CONFERENCE OF THE SURGICAL SOCIETY OF ETHIOPIA NOVEMBER 26-27, 1998, ADDIS ABABA, ETHIOPIA.
- LINDTJORN B, BREIVIK K, LENDE S INTESTINAL VOLVULUS IN SIDAMO, SOUTHERN ETHIOPIA, EAST AFR

MED J 1981; 58: 208-11.

[9]. WARAMBO MW, ACUTE VOLVULUS OF THE SMALL INTESTINE. EAST AFR. MED. J.1971; 48:209.

DATUBO-BROWN DD, ADOTEY JM. PATTERN OF SURGICAL ACUTE ABDOMEN, THE UNIVERSITY OF PORT HARCOURT TEACHING HOSPITAL. WEST AFR J MED 1990; 9(1):59-62.

[10]. ZELALEM A. PATTERN OF ACUTE ABDOMEN IN YIRGALEM HOSPITAL, SOUTHERN ETHIOPIA. ETHIOP MED J. 2000; 38(4):227-235.

[11]. ADESUNKANMI AR. CHANGING PATTERN OF ACUTE INTESTINAL OBSTRUCTION IN A TROPICAL AFRICAN POPULATION. EAST AFR. MED. J.1996 Nov; 73 (11):727-31.

[12]. AJAO OG ABDOMINAL EMERGENCIES IN A TROPICAL AFRICAN POPULATION, BR J SURG 1981; 68(5):345-7.

[13]. OMARI AH, ALKHATIBLL, KHAMMASH CHANGING PATTERN OF INTESTINAL OBSTRUCTION IN NORTH JORDAN ACTACHIRBELG ;109(6):772-4

[14]. FAKU H, FARAJA M.B PATTERNS OF ACUTE ABDOMEN IN SULAIMANY TEACHING HOSPITAL. JOURNALZANKOY SULTAINI (JZS) ,2000, VOL.3(59-72)

[15]. MAHAMED T, ASMA H PRESENTATION AND OUTCOME OF ACUTE ABDOMEN IN TERTIARY CARE UNIT ISLAMABAD ANN. PAK. INST. MED. SCI. 2011; 7(3): 137-141

[16]. JAHANGIR S, JUNAID , HAMID PATTERNS OF INTESTINAL OBSTRUCTION AGHA KHAN UNIVERSITY HOSPITAL. J PAK MED ASSOC 1994; 44: 143-5

[17]. EDINO S. T, MOHAMMED, A. Z APPENDICITIS IN KANGO, NIGERIA A 5-YEAR REVIEW OF PATTERN, MORTALITY AND MORTALITY ANNALS OF AFRICAN MEDICINE VOL. 3, No. 1; 2004: 38 - 41

[18]. OLADEJO O, OLAYNIYI S. SPECTRUM OF CAUSES OF INTESTINAL OBSTRUCTION IN ADULT NIGERIAN PATIENTS SAJS VOL 43, No. 2, MAY 2005 .

[19]. JONATHAN C, JAVERIA S AN OBSERVATIONAL STUDY OF THE ETIOLOGY, CLINICAL PRESENTATION AND OUTCOMES ASSOCIATED WITH PERITONITIS IN LILONGWE, MALAWI WORLD JOURNAL OF EMERGENCY SURGERY 2011, 6:37.

[20]. DEBRAH SA, DIALLO A. CLINICAL SPECTRUM OF ACUTE ABDOMEN IN CAPE COAST. WEBMEDCENTRAL GENERAL SURGERY 2012;3(4):WMC003209.

[21]. P.K OKENY, T.G HWANG, D.M OGWANG ACUTE BOWEL OBSTRUCTION IN A RURAL HOSPITAL IN NORTHERN IN NORTHERN UGANDA. EAST AND CENTRAL AFRICAN JOURNAL OF SURGERY VOL. 16, NUM. 1, 2011, PP. 65-70.

[22]. AHMED DOUMI E. ASSESSMENT PATTERN, CAUSES AND MANAGEMENT OUTCOMES OF PATIENTS PRESENTING WITH ACUTE ABDOMEN TO EL OBEID HOSPITAL, WESTERN SUDAN. DEC 2005

[23]. NYUNDO M. RUGWIZANGOGA E, OUTCOME OF EMERGENCY ABDOMINAL SURGERY AT KIGALI UNIVERSITY TEACHING HOSPITAL: A REVIEW OF 229CASES EAST CENT. AFR. J. SURG. APRIL 2013; VOL. 18 NO.1.

[24]. KOTISO, B. & ABDURRAHMAN, Z. PATTERN OF ACUTE ABDOMEN IN ADULT PATIENTS IN TIKUR ANBESSA TEACHING HOSPITAL, ADDIS ABABA, ETHIOPIA.

[25]. ASEFA Z, G/EYESUS A PERFORATED PEPTIC ULCER DISEASE IN ZEWDITU HOSPITAL. ETHIOPIAN

MEDICAL JOURNAL [2012, 50(2):145-151].

[26]. ASEFA Z. PATTERN OF ACUTE ABDOMEN IN YIRGALEM HOSPITAL, SOUTHERN ETHIOPIA. ETHIOPIAN MEDICAL JOURNAL [2000, 38(4):227-235].

[27]. TSEGAYE, S.; OSMAN, M. & BEKELE, A. SURGICALLY TREATED ACUTE ABDOMEN AT GONDAR UNIVERSITY HOSPITAL, ETHIOPIA. ABSTRACT FROM EAST AND CENTRAL AFRICAN JOURNAL OF SURGERY, VOL. 12, NO. 1, APRIL, 2006, PP.53-57.

## APPENDIX

### Questionnaire

This questionnaire is prepared to assess emergency surgical operation performed for non-traumatic acute abdomen in Suhul general hospital during the year 2004-2006 E.C. This will be filled by the investigator from secondary data (from registration book and patients profile card).

Case No.....

1. Sex M ..... F.....

2. Age .....

3. Address Urban ..... Rural.....

4. Presenting complaint of the patient

Vomiting ..... Abdominal pain.....

Diarrhea..... Distention .....

Constipation ..... Anorexia .....

Nausea ..... Others.....

5. Duration of illness

< 12hrs ..... 12 hrs-5 days ..... > 5 days.....

6. Physical findings

General vital signs PR..... T ..... Bp..... RR.....

7. Abdominal findings

Normal .....

Distended .....

Localized tenderness RUQ LUQ RLQ LLQ

Generalized tenderness .....

Guarding and rigidity .....

Bowel sound normal/ hyper active /hypo active/ absent

Per rectum mass/tenderness/loaded with stool/ bleeding

## 8. Investigation

Blood Hct (%). .... WBC.....

## 9. Working diagnosis (pre-operative diagnosis)

### 9.1 Appendicitis

Acute appendicitis \_\_\_\_\_ Appendiceal abscess \_\_\_\_\_

Perforated appendix \_\_\_\_\_

### 9.2 Intestinal obstruction

#### A) Large bowel obstruction

Sigmoid volvulus Gangrenous \_\_\_\_\_ Non gangrenous \_\_\_\_\_

Colonic cancer \_\_\_\_\_ Ileo- sigmoid knotting \_\_\_\_\_ Others \_\_\_\_\_

#### B) Small bowel obstruction

Primary volvulus gangrenous \_\_\_\_\_ Non- gangrenous \_\_\_\_\_

Adhesion/band gangrenous \_\_\_\_\_ Non - gangrenous \_\_\_\_\_

Hernia gangrenous \_\_\_\_\_ Non - gangrenous \_\_\_\_\_

Intussusceptions gangrenous \_\_\_\_\_ Non - gangrenous \_\_\_\_\_

Others \_\_\_\_\_

9.3 Peritonitis

Following perforated PUD	<input type="checkbox"/>
Following perforated appendix	<input type="checkbox"/>
Typhoid perforation	<input type="checkbox"/>
Primary peritonitis	<input type="checkbox"/>
Others	<input type="checkbox"/>

10. Treatment

Pre-operative treatment.....Type of anesthesia    spinal / general

Type of incision ..... Type of procedure done.....

Operative funding ..... Final diagnosis .....

Post-operative treatment.....

11. Was there any complications during operation and post-operatively in ward stay? If there was

- Sepsis	Wound infection	<input type="checkbox"/>	<input type="checkbox"/>
- Pneumonia	Anastomotic leak	<input type="checkbox"/>	<input type="checkbox"/>
- Intra-abdominal abscess			<input type="checkbox"/>
- death	others	<input type="checkbox"/>	