ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCE

SCHOOL OF NURSING AND MIDWIFERY

DEPARTMENT OF NURSING AND MIDWIFERY

MANAGEMENT OUTCOME AND FACTORS ASSOCIATED WITH PEDIATRIC SURGICAL PATIENT'S ADMITTED AT ARBAMINCH GENERAL HOSPITAL, SOUTHERN ETHIOPIA, 2021:RETROSPECTIVE CROSS-SECTIONAL STUDY.

BY: FILAGOT ASSEFA (BSC)

A THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES, SCHOOL OF NURSING AND MIDWIFERY, DEPARTMENT OF NURSING FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN PEDIATRICS AND CHILD HEALTH NURSING.

MAY, 2021

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BY: FILAGOT ASSEFA (BSC)

ADVISORS:

MS. KALKIDAN WONDWOSSEN (MSC, ASS'T PROFESSOR)

MS. YESHIWORK BERHAN (BSC, MSC)

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APPROVAL SHEET

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DEPARTMENT OF NURSING AND MIDWIFERY

I, the undersigned MSc student, declare that I have submitted my original work on a title management outcome and factors associated with pediatric surgical patient's admitted at Arbaminch General Hospital, Southern Ethiopia, 2021 for the examination.

Submitted by:

_____	_____	_____
Name of student	Signature	Date

This thesis work has been submitted for examination with my approval as an advisor.

Approved by:

1. Ms. Kalkidan Wondwossen (Assistant professor) _____ _____
   Name of Major Advisor Signature Date

2. MS. Yeshiwork Berhan (BSC, MSC) _____ _____
   Name of Co-Advisor Signature Date

APPROVAL BY THE BOARD OF EXAMINATION

This thesis by _____ is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of masters in _____.

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RESEARCH ADVISORS:

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By my signature below, I declare and affirm that this thesis is my own work. I have followed all ethical principles of scholarship in the preparation, data collection, data analysis and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I affirm that I have cited and referenced all sources used in this document. Every effort has been made to avoid plagiarism in the preparation of this thesis.

This thesis is submitted in partial fulfillment of the requirement for a graduate degree from the Addis Ababa University at College of Health Sciences, School of Nursing and Midwifery Department of Nursing and Midwifery. The thesis is deposited in the Addis Ababa University Digital Library and is made available to the local, national and international scientific community. I solemnly declare that this thesis has not been submitted to any other institution anywhere for the award of any academic degree, diploma or certificate.

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STUDENT

Name: _____Signature: _____Date: _____

RESEARCH ADVISORS:

1. Ms. Kalkidan Wondwossen (Assistant professor)_____ _____

NAME SIGNITURE DATE

2. MS. Yeshiwork Berhan (BSC, MSC) _____ _____

NAME SIGNITURE DATE

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LIST OF ABBREVIATIONS AND ACRONYMS

AAU Addis Ababa University

AIDS Acquired Immune Deficiency Syndrome

AOR Adjusted odds ratio

ART Antiretroviral Therapy

CI Confidence Interval

COR Crude odds ratio

DM Diabetes mellitus

LOS Length of Hospital Stay

LMIC Low- and Middle-Income Countries

OPD Outpatient Department

PI Principal Investigator

SSI Surgical Site Infection

SNNPR South Nation Nationality and People Region

SPSS Statistical Package of Social Science

UN-IGME United Nations Inter-Agency Group for Child Mortality Estimation

WHO World Health Organization

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Background: Pediatric surgical situations are inadequately addressed globally, especially in developing countries. But, the admission of children due to surgical conditions increases dramatically as a result of increased trauma, and emergency surgical conditions. The burden of the surgical condition is high among children of middle and low-income countries including Ethiopia.

Objective: To assess management outcome and factors associated with pediatric surgical patient's admitted at Arbaminch general hospital, southern Ethiopia, 2021.

Method: An institution-based retrospective cross-sectional study design was employed among 265 children with surgical problems admitted to Arbaminch General Hospital from January 1/2017 to December 31/2020. Data were collected from patients chart by using the systematic random sampling method. Then data was entered by using Epi Data 4.2 version and analyzed by using SPSS version 25. Bi-variate and multi-variable logistic regression analysis was employed. And P-value < 0.05 with 95% confidence interval (CI) was used to identify associated factors.

Result: This study revealed that about 26% of study subjects were discharged with unfavorable management outcome. Children admitted with trauma cause [AOR: 5.753, 95% CI:(2.366-13.987)],Children with a pre-existing medical condition[AOR: 3.240, 95% CI:(1.436-7.310)], children who have an early complication [AOR: 2.515, 95% CI:(1.130-5.599)],Children with a duration of hospital presentation ≥24hrs[AOR:8.351,95% CI:(2.089-33.381)],Children who stayed in hospital ≥7days [AOR:10.671,95% CI:(1.363-83.546)], and management surgicaly [AOR:2.742,95% CI:(1.137-6.611)] are factors positively associated with unfavorable outcome.

Conclusion and recommendations: Twenty six percent of patients were discharged with unfavorable outcome. Causes of admission, preexisting medical condition, early complication, duration of hospital presentation, length of hospital stay and type of management were factors associated with the outcome of pediatric surgical admission. So, early identification and treatment of cause should be needed and need of well-equipped care centre to have a good outcome. Providing health education to the community to increase awareness about the surgical condition.

Keywords: Outcome, Pediatric Surgery, Admission, Arbaminch, Ethiopia.

1. INTRODUCTION

1.1. Background

A pediatric surgical patients condition is any pathological abnormality that requires invasive procedures, excision and closure of the wound. It may also suggest treatment and provision of palliative or curative care that usually but not always requires anaesthesia. However, some surgical conditions may not require an incision such as injured patients who require airway management like oxygen delivery, applying airway opening manoeuvre, Oro-pharyngeal and Nasopharyngeal intubation, physiotherapy, resuscitation, or traction for fracture. Generally, surgical conditions that needs management were various and which occurs in every stage of life(1).

Surgically manageable conditions account for approximately around 28-30% global load of disease (2). In the world, around sixty-seven per cent of children and adolescents who requires health care support did not have timely access to surgical care(3). And also mortality which is related to the post-operative complication was rising among children and adolescents in the world(4). The most frequent reasons for pediatric surgical admissions were congenital anomalies, injury, cancer-related conditions, gastrointestinal conditions especially appendicitis and intussusceptions(5). A major complication identified among surgically admitted children were decubitus ulcer, disruption of wound, electrolyte or acid-base abnormality, hematoma, pneumonia, surgical site infection, sepsis, and shock(6).

Generally, surgical conditions in childrens were inadequately addressed globaly. Those surgical problems that requiring surgical and conservative management contributes considerably to the global burden of mortality and morbidity rates, it is worse in economically poor countries. Even if children make up about fifty perecent of the total population in a developing country, there is a slight focus on childhood surgical conditions and attention instead been communicable disease and obstetrics care(6–8). Some studies in Africa showed that the majority of admitted children were less than one year of age and they admitted manly due to congenital anomalies (9).

Consequently, poor access to surgical care was associated with high case-fatality rates from easily treatable surgical conditions. The unmet need of pediatric surgical care was high in

eastern, western, and central sub-Saharan Africa, and South Asia coutrys(2). Main pediatric surgical conditions diagnosed during admissions in developing countries are congenital abnormalities, acute abdominal conditions, mass, and burn or wounds(10).

The main encounters to advance pediatric surgical care in developing countries were the absence of social support, lack of awareness about the treatment of a surgical condition, traditional belief about a disease process, poor communication with health care providers, inadequate health care equipment and lack of adequately skilled staff. During treatment of pediatric surgical conditions lacking adequate facility and skilled manpower leads to sharing the same ward, equipment with other wards and put the burden on health care providers this all things influence the quality of care and outcome of surgical admission(11).

In Ethiopia Pediatric surgical conditions account for about threety one percent of surgical management and 33% of all pediatric admission into the hospital(12). The main diagnosed surgical problem in some part of Ethiopia was congenital anomaly followed by trauma(13). And among children who were admitted with surgical conditions, the majority were improved and discharged without complication(14). Provision of surgical care in Ethiopia faced many problems due to patient financial constraints, increased surgical patients volume, lack of material resources and equipment, insufficient number of health care staff related to patient volume(15). So, to reach the target of sustainable development goal 3(ending of preventable death in children by 2030), government and other concerned bodies try to plan activities to improve surgical and anaesthetic pediatric care(16).

The problem of surgically admitted children was mainly addressed by conservative treatment and operative care depends upon the patient's condition and disease progression. Conservative management begins with a trial of medical therapy(administering anti-biotics, analgesic and tetanus toxoid), wound care, orthopaedic application, fluid and electrolyte balance, and medication supply(17). Of all-cause, approximately eleven percent of surgical conditions can be treated with an operation(1). Generally, care provision for surgically admitted children needs support from national and global agencies(18).

1.2. Statement of the problem

Surgical conditions in paediatrics are not considered a significant health problem globally. This put a great impact on the health of children due to increased accidental trauma and congenital disease and also it increases the burden on the health system. More than half the global population cannot access timely treatment as they need. Approximately five billion world population was lacking timely access to surgical care services(19). And each year around 16.9 million peoples were dead due to conditions which requiring surgical care(2).

Globally, due to complications of surgical conditions around 1 million peoples were dead, which is more than both malaria and AIDS-related death. And about 50% of this outcome was easily preventable with a economical strategy(20). According to the world health organization reports in 2017 around one point seven billion children did not obtain lifesaving surgical care access(3). The magnitude of mortality, complication, and serious adverse event related to the surgical condition in children was 0.02%, 13.9%, and 5.7%, respectively. The main complications developed in admitted children were surgical site infection, sepsis, bleeding requiring transfusion, shock and surgical wound dehiscence(21).

Among causes of surgical admissions, injury is the most serious cause of child death and it accounts for about 40 per cent of deaths in children the age group 1 to 14 globally(22). Road traffic accident, fall down accident, burn and poising suffocation and assault are common injuries in children(23). Congenital anomalies contribute 17%-42% of total global deaths in children (24). Neural tube defects, anorectal malformation, and trachea oesophageal fistula were the most commonly diagnosed congenital anomalies among children globally (25).

The mortality rate of children in developing countries was 5 to 15 times higher than in developed countries(26). In the low and middle-income countries, in-hospital mortality is 10 times greater than in a high-income country which is related to a shortage of health care providers, a problem with access care, and quality of care(27). Pediatric surgical care access was less than 8% in economically poor countries. And around one point one million (65%) of children mortality related to surgically conditions occurs in low and middle-income country and this indicates that pediatric surgical conditions are inadequately addressed in an economically poor country(3).

In Africa, child mortality following pediatric surgical conditions remains high, particularly from a congenital condition in neonates with a mortality rate of 17% (28). And surgical emergency condition contributes about 6-12% of all pediatric admission and 20% pediatric outpatient visit in sub –Saharan African country. In East Africa including Ethiopia, pediatric surgical health care is underdeveloped and underutilized. This is attributed to several factors such as lack of basic infrastructure for the provision of care and shortage of health care providers including pediatric surgeons and anaesthetics(2).

In Ethiopia burden of most non-communicable diseases including surgically treatable conditions was highly increasing from time to time(29). In some parts of Ethiopia, the most common mode of pediatric admission is an emergency condition. The mortality rate among surgically admitted children was 0.98%. Death among children was mainly in children admitted with an elective base (53.3%) followed by an emergency base (46.7%). The main cause of death among admitted children was infantile hypertrophic pyloric stenosis, Hirschsprung's disease, appendicitis, bowel obstruction, trauma, and admission related complications(30). The outcome of admitted children was mainly associated with delayed presentation and this could be due to unnecessary referral, poor health service seeking behaviour, and unavailability of expertise interfering hospital. This needs further study on the surgical problems to know the burden and reduce the unfavourable outcome associated with it(14).

Even if Pediatric surgical conditions are once considered fatal it is currently surgically manageable with a cost-effective approach. To reduce the burden of surgical conditions it is necessary to improve pediatric surgical care capability and increasing quality in the health care facility(31). Due to the lack of adequate admission and surgical care data in Sub-Saharan African countries including Ethiopia, it is difficult to assess the impact of surgical conditions on children's health(32).

Generally knowing about the unfavorable management outcome and factors associated with pediatric surgical patients admissions is important for health care planning and appropriate resource allocation for a health care facility. There are persistent research and data on pediatric surgical admissions, management outcome and its associated factors in developed countries, but in developing countries including Ethiopia given little notice on it. In Ethiopia, there is an

inadequate study and still know there is no study done on management outcome of pediatric surgical patient's admission and its associated factors in the study area. Therefore, this study aimed to assess the management outcome and factors associated with pediatric surgical patient's admitted at Arbaminch General Hospital, Southern Ethiopia.

1.3. Significance of the study

Health care providers and managers must know about pediatric surgical conditions, admission, pattern, the outcome of admissions and associated factors to give a quality of care and to develop a proper plan of actions. The burden of pediatric surgical admissions on the health care system and its associated factors in developing countries are poorly known and not well studied. In Ethiopia, there is a slight study on the management outcome of pediatric surgical patient's admission and its associated factors and there is a shortage of published data in this regard.

Therefore, this study tried to identify the gaps regarding the management outcome and factors associated with pediatric surgical patient's admitted at Arbaminch general hospital. Besides this, the finding will be also important to provide baseline information for hospitals and health bureau to designing appropriate policy, strategy and interventional, and treatment project towards improving pediatric surgical care.

The finding is also important for managers and policymakers to sate a plan of action regarding the pediatric surgical condition and use it to improve the quality of health care. Finally, the study will be used as a reference for nurse educators and researchers, health care professional's especially paediatrics nurses, and for others who are interested in carrying out further studies in this regard.

2. LITERATURE REVIEW

2.1. Introduction

Children mortality is an indicator of once county development, socioeconomic status, and quality of health care service provision. The child mortality rate remains high among sub-Saharan African countries which is related to the poor health care system and an increasing rate of population(33). Surgical conditions are one of the factors to cause child mortality around the world and it accounts for approximately around 28-30% global burden of disease. And each year around 16.9 million peoples were dead due to condition requiring surgical care. Globally around 1.7 billion children did not obtain life-saving surgical care access, of this around sixty-five per cent of children and adolescents without access to surgical care were found in lower-middle-income countries(2,3,34).

2.2. Management outcome of pediatric surgical patients admission

Those children were well and discharged without complication, develop complications and deaths are the main outcome variable among surgically admitted children's. A study conducted, in Bangladesh showed that 156(96.29%) patients were well and discharged without developing complication, and 12(10.08%) of patients were discharged with a complication. The main complication identified was surgical site infection, hematoma, and wound dehiscence. About 6(3.7%) children died. Mortality recorded mainly on children admitted with emergency basis and congenital anomalies(35).

Among surgically admitted children, the main outcome variables were those cured and discharge without complication, postoperative complications, and death, which is stated in the study done in South Africa. According to this study among 2024 patients about 1669(82.46%) were cured and discharged without complication and incidence of postoperative complication were 9.7%, most commonly due to infective cause. According to the study, in-hospital mortality rate was 1.1%, of which 41% is due to patients with American society of anesthesiology physical status classification 1 and 2. The median time of death was 4 days. Patients with postoperative complications, who have major surgery, and admitted into the intensive care unit should have increased length of hospital stay(27).

Another study, done in western Nigeria showed that the mortality rate among children was 2.2%. And death happens mainly in those children with abdominal wall cellulitis, burn, and intussusceptions. And all the deaths occur in children <1year of age(36). A similar study, done in northwest Nigeria, on the pattern and outcome of pediatric surgical admission among 191 children. According to this study, mortality occurs among 19 children with a mortality rate of 9.9%. Morality occurs mainly among children admitted with injury (42.1%) followed by surgical infection (31.6%) and congenital anomalies(26.3%)(37).

According to the study, done in a Nigerian teaching hospital, those children treated and discharge, those referred to other centres, and death was the main outcome of patients. The study showed that a majority of 258 (91.2%) admitted children were treated and discharged without complication. While 4(1.4%) patients were referred to other centres for further management. Only one death (0.4%) happen related to Hirchsprings disease. Those children admitted due to malignant neoplasm, trauma and surgical infection should have the longest stay in hospital (127 days)(38). A similar study was done, in Niger Delta, 4 (1.99%) death happened among admitted children (39).

Post-surgical complications, those treated and discharged without complication, transfer to another facility, and deaths are the main outcome variable, according to a study done in Benin. This study showed that the mortality rate was 3%. And most commonly death occurs among children admitted with gastrointestinal problem, burn, and general surgical conditions. Common complications among admitted children were post-operative nosocomial sepsis and wound infection, and these complications are more common among children admitted into special baby unite(40). The mortality rate among admitted children in a study done in Gambia and Malawi was (5.3% and 7%) respectively. And unfavourable management outcome was more common among children admitted to the special baby care unit, a child with a burn injury, Congenital anomalies, and child with surgical site infection(40–42).

Unfavourable management outcomes take place in 69(19%) of admitted children's according to a study, done at Adama. Among these, the vast majority of admitted children developed surgical site infection which accounts 93% of unfavourable outcome. And mortality happens among 5 children with a mortality rate of 1.3%, of this both complicated intestinal obstructions and congenital anomalies account for about 80% of total death. And 29 (7.5%)

patients were referred to other health institutions for further management(43). According to a study done, in Yirgalem, on pediatric surgical admissions stated that post-burn contracture, surgical wound infection, and amputation are the main complication in children. And overall mortality occurred 10 children (7.46%) of this 50% were children admitted with acute abdomen and morbidity was 15(11.2) which is more common among children admitted with trauma cause (44).

2.2. Factors associated with management outcome of pediatric surgical patients admissions

Many researchers try to address different factors which are associated with the management outcome of pediatric surgical patients admission. These factors are classified into socio-demographic factors like age, sex and residence of children, time-related factors include duration of presentation and length of stay in the hospital, Clinically related factors like the cause of surgical admission, condition of the patient during admission, the clinical presentation of during admission, any pre-existing medical condition, nutritional status of child and ward of admission, and therapeutic intervention-related factors like conservative management, operative/surgical management(13,20,21,42-51).

2.2.1. Socio-demographic factors

A study done in the United States revealed that being male or female is a predictor of a paediatrics surgical patient's admission outcome. According to this study, those surgically admitted male children were 1.08 times more likely to have unfoverable outcome than female surgical children(21). But a study which was done in Malawi showed that female children were more likely to be discharged with unfavorable outcome than male children(42). A similar study done in Ghana stated that male surgically admitted children were less likely to have an adverse effect than female children. According to this study type of surgery, trauma cause and surgical infections are factors that increase the length of hospital stays(45).

A different study done in the different areas showed that the age of children was one of the determinant factors of pediatric surgical patients admission outcome. This is supported by a study done united kingdom, Malawi, and Nigeria which stated that those, Neonates (or age 0-30 days) are more likely to have unfoverable outcome than those who are older age group children(42,46,47). A similar study done in Ghana stated that those younger children (less than

one year) were more likely to die than older children. Mortality in surgically admitted children whose age greater than one year was 9 per 1000 patients, which is much less than mortality in children less than or equal to 1-year which was 235 per 1000 patients(45). Similarly, a study done, Netherlands and Brazil stated that those younger children less than one-year-old was more likely to develop complication than older children(48,49).

A study conducted, at Black Lion Hospital in Ethiopia, on pediatric patient's admission and outcome revealed that being young children was a risk factor for treatment outcome pediatric surgical admissions. According to this study, those children less than 3 years of age were more likely to die than older children(14). But the residence of a child can not affect the management outcome of pediatric surgical patients admission according to a study done in Adama(43).

2.2.2. Time-related factors

Duration of time hospital presentation was one of the predictors of outcome of pediatric surgical patient's admission. This is supported by a study done in Black Lion Hospital in Ethiopia. According to this study, children who come after 24 hours of illness presentation record high mortality rate than those who come early(14). A Similar cross-sectional study done in Adama stated that those children present early for intervention(<6hrs) were 36.4 times more likely to have favorable outcome than those who present ≥6hrs(43). Additionally, a study, done in Yirgalem hospital, stated that those patients present after 3 days of disease occurrence more prone to complication and death than those present early(44).

A different study showed that length of hospital stays was one of the predictors of pediatric surgical patients admission outcome. This is supported by a study done in China, which stated that those children who have prolonged hospitalization were more likely to have unfavourable outcome than counterparts(51). A similar study conducted, in Adama, Ethiopia, stated that those children who stayed < 7 days in the hospital were 1.7 times more likely to have favorable management outcome than their counterparts(43).

2.2.3. Clinically related factors

The patient condition at the time of admission was one of the determinant factors of outcome for those patients admitted with the surgical problem. This is supported by a study done in, united states, revealed that those children admitted in the emergency base were 1.18 times more likely to have unfavorable outcome than those admitted in the elective base(21). Similarly, more deaths were recorded among children admitted on an emergency basis than on an elective basis according to a study done in Nigeria(40).

A retrospective study done in hospitals of three developing countries stated that under-nutrition among children was related to an unfavourable management outcome. According to this study, those children with low and median risks nutritional status were 6.3 times chance to be discharged with a complication than well-nourished children. And those children having high-risk nutritional status were 16 times the chance to be discharged with unfavorable outcome than those a well-nourished child(50). And higher weight-for-height z-score was one of the protective factors to the occurrence of postoperative complication(51).

Admission into different ward were independent predictors of the outcome of pediatric surgical admission. According to a study done in, Nigerian tertiary hospital, those neonates admitted into the special care baby unit were more likely to have unfavorable outcome than those admitted into other wards. And this study also revealed that admission of different patients who have different characteristics into the same ward enhances complications(40).

A retrospective cross-sectional study in Ghana stated that admission with trauma cause, surgical infections, and pre-existing medical condition are factors associated with the outcome of pediatric surgical patients admission. Those children admitted with traumatic causes were 3.13 times chance to be discharged with unfavourable management outcome than those admitted with other causes. A child with a pre-existing medical condition at the time of admission had the chance of 4.04 times to be discharged with unfavourable outcomes than a child without a pre-existing condition. And according to this study, children with surgical infection were more likely to have longer in-hospital stay(45). Unstable condition on arrival and the nature of underlying pathology are risk factors for unfavourable outcomes in children with a surgical condition(14).

Among clinical related factors cause of admission was factor wich associated with patient management outcome. Those children admitted with trauma cause were more likely to have unfavourable management outcome than other cause of admission, according to a study was done in Nigeria(37). Another similar study done in Adama stated that those patients admitted with trauma cause were more likely to have a favourable outcome at the time of discharge than those admitted with other causes of admissions(43). Another case series study which was conducted in Yirgalem hospital stated that those children admitted with acute abdominal cause, trauma cause, foreign body aspirations and emergency base were factors positively associated with unfavorable management outcome(44).

2.2.4. Therapeutic intervention-related factors

A different study showed that type of management were one of the independent predictors of management outcome of pediatric surgical patients admission. A study that was done, in Malawi, stated that those children who had surgery significantly associated with favorabel management outcome than those who did not. And those children with congenital abnormalities who have surgical management were 3.72 times more likely to have favorable outcome than their counterpart (42). Those children who had surgical management especially gastrointestinal surgery were more likely to have unfavorable management outcomes than their counterpart, according to a study done in Ghana(45).

Even if a different strategy was developed by the national and international community to improve the provision of quality of pediatric surgical care, but it is still a challenge for developing countries to achieve the target of pediatric surgical care. Challenges they face are lack of awareness of the community about surgical care, lack of adequate data about surgical admission, inadequate health care provider, and infrastructure to provide care. Since there is inadequate research conducted in this area of interest especially in the study area, therefore it needs information on pediatric surgical admission and its outcome to plan and to develop a strategy for pediatric surgical care.

2.3. Conceptual framework

The management outcome of pediatric surgical patients admission was associated with different factors. These factors are divided into four groups. The conceptual framework shown in the figure below helps to summarize the relationship between the outcome of pediatric surgical patients admission with its associated factors and also shows the relationship between independent variables

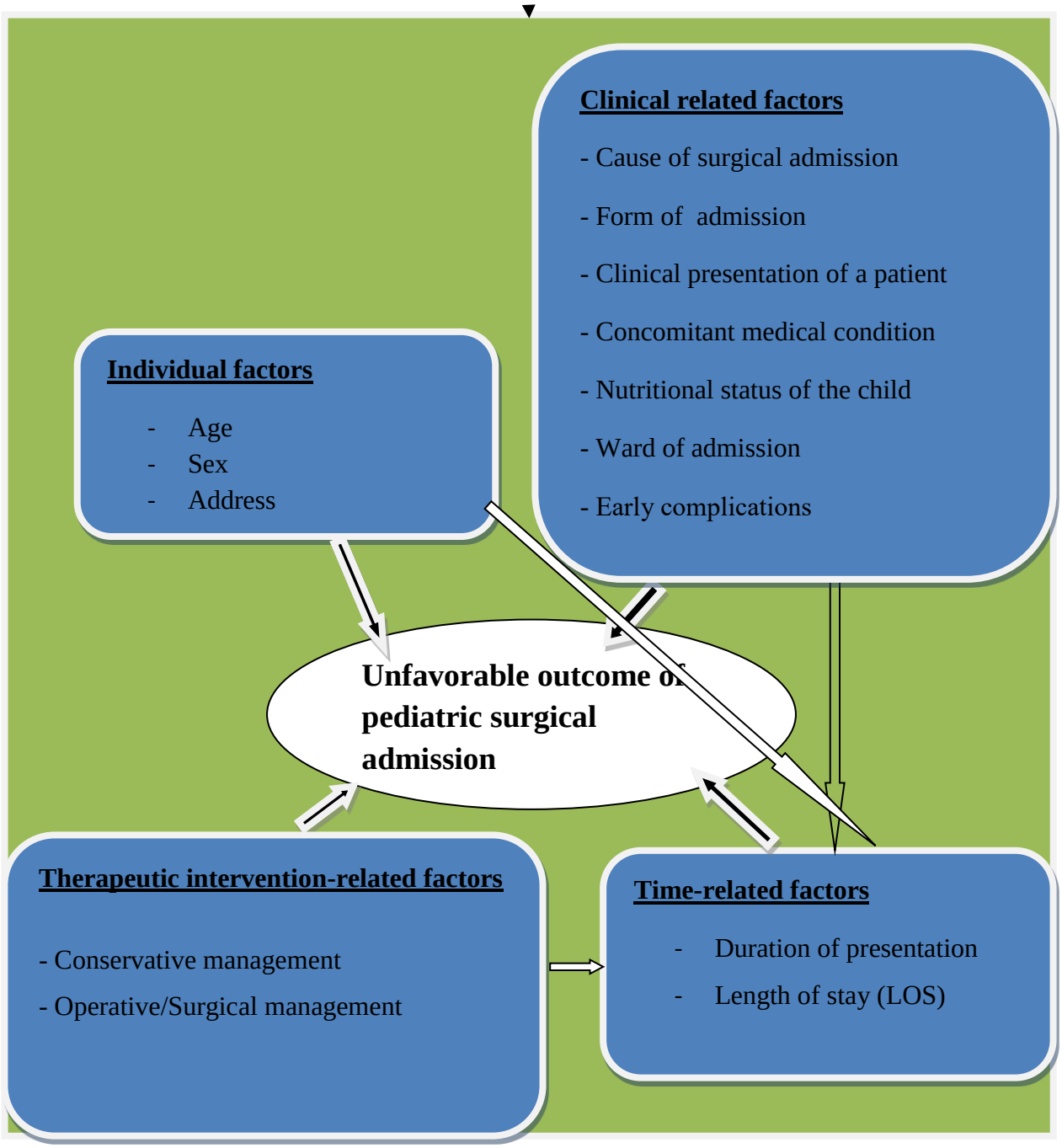

Figure 1: Conceptual framework for unfavorable management outcome and factors associated with pediatric surgical patients admission developed from different literature's

3. OBJECTIVES

3.2. General objective

- **To assess management outcome and factors associated with pediatric surgical patient's admitted at Arbaminch General hospital, Southern Ethiopia, 2021.**

3.3. Specific objective

- To assess management outcome of pediatric surgical patient's admitted at Arbaminch General Hospital, Southern Ethiopia, 2021.
- To identify factors associated with management outcome of pediatric surgical patient's admitted at Arbaminch General Hospital, Southern Ethiopia, 2021.

4. METHODS AND MATERIALS

4.1. Study area and study period

Arbaminch general hospital is located at Arbaminch town, which is the capital city of Gamo zone, which is 505km away from Addis Ababa (the capital city of Ethiopia) and 280 Km from Awassa, a centre of the southern nation nationality and people regional state (SNNPR). Arbaminch Town was founded in the early 1960s and the name of Arbaminch was derived from the forty springs which mean a collection of more than forty springs which are located in the Arbaminch natural forest. Astronomically town is located at 6°04′ North Latitude and 36°40′ East Longitude(58). Arbaminch Town has 1 Zonal hospital, two health centres, and 69 private health institutions(34 primary clinics, 20 medium clinics and 15 higher clinics). Arbaminch General Hospital is technically a regional hospital; it is acting as a referral hospital for the people from Gamo zone, Gofa Zone, South Omoo Zone and other nearby zones. The annual average total surgical admission in the hospital were 1220 from this around 120 were children below 18 years. The study was conducted in Arbaminch General Hospital from February 25 to March 25, 2021.

4.2. Study Design

An institution-based retrospective cross-sectional study design was conducted from January 1/2017 to December 31/2020.

4.3. Population

4.3.1. Source population

The source population for this study was all childrens less than 18 years who were admitted with a surgical problem and treated at Arbaminch General Hospital in the last three years (from January 1/2017 to December 31/2020).

4.3.2. Study population

The study population for this study was all selected childrens less than 18 years old who were admitted for surgical care at Arbaminch General Hospital in the last three years (from January 1/2017 to December 31/2020) and those fulfilling inclusion criteria

4.4. Eligibility criteria

4.4.1. Inclusion criteria

The inclusion criteria include all selected patient's chart of children less than 18 years of age-old who were admitted for surgical care which was with a complete medical record.

4.4.2. Exclusion criteria

The exclusion criteria include incomplete patient's card
The minor outpatient pediatric surgical procedure was excluded.
Those children who were admitted for surgical care but left against medical advice and referred to another health care centre for further management were excluded.

4.5. Sample size and sampling procedure

4.5.1. Sample size determination

The overall sample size was calculated by using a single population proportion formula by considering the following assumptions:
P = 80.5% proportion of patient with favorable outcome of pediatric surgical admission(43).
Level of confidence = 95%
Margin of error (d) =5%
$n = \frac{(Z\ \alpha/2)2 \times P\ (1-P)}{d2}$ where;

n- The minimum sample size required
P- Proportion of pediatric surgical admission
d- Margin of error
$Z\alpha/2$- Standard normal distribution (Z= 1.96) with a confidence interval of 95% and $\alpha = 0.05$.

n= (1.96)2 X0.805 (1-0.805) = **241**

(0.05)2

By adding a 10% non-response rate (by considering unreadable handwriting and incomplete cards) giving a total sample size of **265** Patients.

4.5.2. Sampling technique and procedure

In a study overall three-year medical records of surgically admitted children who was blowe 18 years were reviewed at Arbaminch General Hospital. During the period of three years (from January 1/2017 to December 31/2020) about 460 pediatric surgical patient's were admitted to Arbaminch General Hospital. Out of 460 patient's, those who admitted in year 1(from January 1/2017 to December 31/2018) were 156, those admitted in year 2 (from January 1/2018 to December 31/2019) were 144 patient's and those who admitted in year 3 (from January 1/2019 to December 31/2020) were 160. The total sample size of 265 was estimated based on the total number of admissions each year. Then a determined sample was proportionally allocated to each year based on the number of surgically admitted patient's. The total sample size of 265 was distributed proportionally to each year by using the following formula:-

$ny = \frac{n \times NY}{N}$

Where; ny =required sample size from each year (Year1, Year 2, Year 3)

n(the total sample size) =265,

NY=total number of surgically admitted pediatric patient less than 18 years in each year (NY1, NY2, NY3)

N= total number of surgically admitted pediatric patient less than18 year within three years

After that the sample size was allocated to each year as follows;

$ny1 = \frac{n \times NY1}{N} = \frac{265 \times 156}{460} = 90$

$ny2 = \frac{n \times NY2}{N} = \frac{265 \times 144}{460} = 83$

ny3= $\frac{n \times NY3}{N} = \frac{265 \times 160}{460} = 93$

The total sample size was =265

Finally, Study subjects was selected by using a systematic random sampling method from each year. The medical card sampling frame was prepared based on a medical record in the hospital's patent registration book each year, then patient's medical card was selected from the sampling frame by using a systematic random sampling method by considering every 2nd medical chart as sampling interval. To get this appropriate sampling interval (I), by using the following formula: -

I = N/n; where I= sampling interval

N= population size

n= required sample size

After that the required sampling interval was allocated to each year as follows;

I1=$\frac{156}{90}$ = 1.73 approximately= 2

I2=$\frac{144}{83}$=1.73 approximately =2

I3=$\frac{160}{92}$=1.73 approximately =2

Subsequently, the card was checked for its completeness, and cards that contain incomplete information and illegible handwriting was replaced by the next card and then continued in a similar pattern until the required numbers of samples collected.

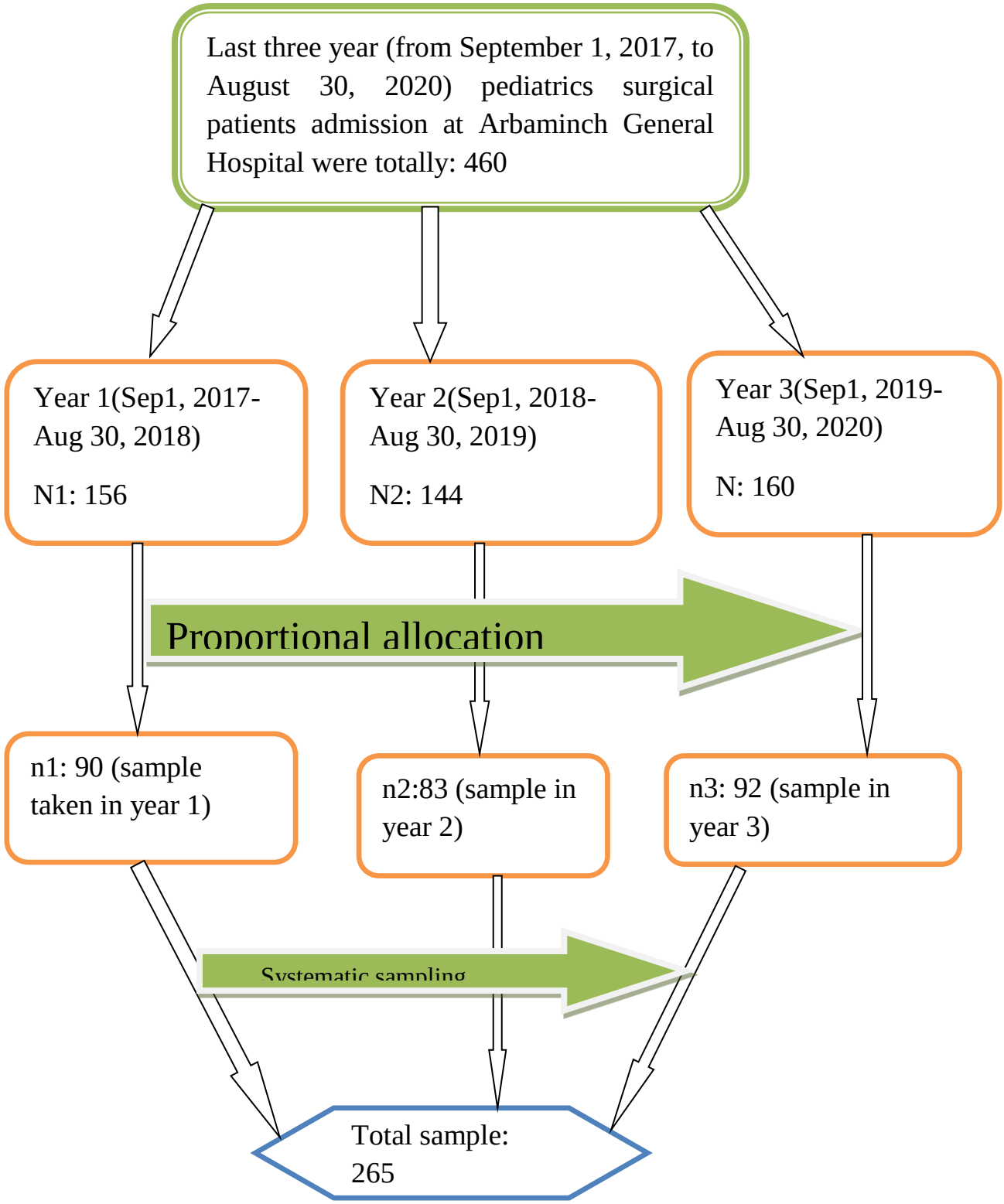

Figure 2: Schematic representation of sampling procedure

4.6. Study variables

4.6.1. Dependent variable

- Management outcome of pediatric surgical patients admission

4.6.2. Independent variables

Socio-demographic factors

- Age
- Sex
- Residence

Clinically related factors

- Patient's admitted ward
- Pre-existing medical condition
- Diagnosed problem during admission
- Form of admission
- Nutritional status of patients
- Clinical presentation during admission
- Early complications

Time-related factors

- Duration of presentation
- Length of hospital stay

Therapeutic management-related factors

- Conservative management
- Surgical management

4.7. Operational definitions

Children: Considering the age group of less than 18 years.

Surgical patient: A patient who requires a medical operation or surgery.

Conservative management: one of the pediatric surgical patient's treatments options include orthopedic application, fluid administration, wound care, providing antibiotics, analgesics and tetanus toxoid only or in combination.

Outcome of pediatric surgical patient's admission: when the children after hospital management were discharged with a favorable outcome or unfavorable outcome.

Favorable outcome: those admitted children with a surgical problem was discharged with improvement without any complications(patients discharged with no comorbidity, disfigurement, amputation, and also not dead) at the end of treatment which is mentioned on a patient's card.

Unfavorable outcome: those surgically admitted children was discharged with different complications such as comorbidity, disfigurement, amputation, and dead at the end of treatment which is mentioned on patients' card.

Duration of time before getting medical care: early if the patient comes less than 24hrs and late if the patient comes with or later than 24hrs after condition occurrence.(43)

Malnutrition: if there was written same, moderate, and severe malnutrition in diagnosis part of the children chart at admission time.

Well nutrition: if there was no written malnutrition in the diagnoses of children chart at admission time.

4.8. Data collection procedure and instrument

Data was collected from a patient's medical record by using pretested data collection checklist adapted from different literature's. Data was gathered from records of pediatric patient registration for the last three years (from January 1/2017 to December 31/2020). First of all, the target of the study population was identified from registration books inwards and operation theatre. Then, a patient's medical records were retrieved. Then data was collected from patient's medical charts by using a prepared checklist. The checklist was mainly measured sociodemographic characteristics, clinical data, time-related data, therapeutic related data and the outcome of pediatric admission.

During data collection, four BSC nurses (3 data collectors and 1 supervisor) was involved and training was given before data collection for one day on clarification of some terms and assessment tools, on the aim of the study, concerning the need for strict confidentiality of respondents information, time of data collection, timely collection and reorganization of collected data and submission on due time. The data was collected for approximately one month including training of data collectors and pretest which is facilitated by the data collection facilitator and supervisor.

4.9. Data quality assurance

To assure the high quality of the data, emphasis was given to designing the data collection instrument. Then data was coded and pretested to minimize errors. The questionnaire was pretested before one week of the main survey on 5% of the sample and pretest done in Arbaminch General Hospital with some modification. The collected data were revised and checked for completeness before data entry; then incomplete data was discarded. Appropriate statistical techniques were used during data analysis and report writing.

4.10. Data Processing and analysis plan

The collected data was checked for its completeness, consistency, and accuracy before analysis. Data were coded, entered, and cleaned using Epi Data 4.2 version and analysed by using SPSS version 25. And model fitness test was done by using the Hosmer-Lemeshow goodness-of-fit test. Descriptive statistics were computed for independent variables and the outcome variable. Categorical variables presented in the form of frequencies and percentages. The bivariate analysis was computed; then all study variables with a *P*-value of $\leq$0.25 were entered into multivariate logistic regression. P-value and 95% confidence interval (CI) for OR was used in judging the significance of the associations. A P-value of less than 0.05 was taken as a significant association. Then finding of result was presented by using charts, graph, and table.

4.11. Ethical Consideration

Ethical clearance was obtained from the Ethical Research Review Board of the Department of Nursing, School of Nursing and Midwifery, College of Health Science, Addis Ababa University. Then an official letter of permission was written from the department of nursing to the administration of Arbaminch General Hospital for the permission for data collection and written consent was obtained from the hospital administration to the medical record office. All collected data were kept confidential and no one can reach except the members of the research team to have access to collected data. All personal information concerning the study subject was kept confidentially and all collected papers during the study were kept in a safe place.

4.12. Dissemination and utilization of a result

The finding of this study will be submitted and presented to the school of nursing and midwifery, College of health science, Addis Ababa University. The result of the study will be disseminated to Arba Minch General Hospital, Gamo zone health Health Department and for other concerned bodies who directly or indirectly working to improve pediatric and child health. The finding will be presented in different seminars, workshops and meting, and also it will be published in scientific journals for those who want to use the study as literature.

5. RESULTS

5.1. Socio-demographic characteristics

The study was conducted among 265 study subjects which indicate a 100% response rate. And out of 265 admitted pediatric surgical patients who are included in the study, the majority 157(59.2%) of them were male with a male to female ratio of 1.4:1(M157:F108). The mean age of the study participants was 7.37± 5.776(with a range of 1 to 17 years). More than half 153(57.7%) study subjects came from the rural area as shown in **table 1.** About 51 patients (33.3%) who came from rular area were discharged with unfavorable management outcome.

Table 1. Socio-demographic characteristics of admitted pediatric surgical patient's, at Arbaminch General Hospital from January 1/2017 to December 31, 2020 (N=265).

Variables	Category	Frequency	Per cent
Age	<=4	116	43.8
	5-9	56	21.1
	10-14	40	15.1
	≥15	53	20.0
Sex	Male	157	59.2
	Female	108	40.8
Residence	Urban	112	42.3
	Rural	153	57.7

5.2. Clinical factors of pediatric surgical patient's admission

5.2.1. Cause and forms of pediatric surgical patient's admission

Among 265 children, the majority 188(70.9%) of them were admitted into a pediatric surgical ward. And about 65.7% of patients were admitted mainly in form of an emergency base. The most common causes of admission among children were trauma 99(37.4%), followed by surgical infection 71(26.8%) and gastrointestinal conditions 48(18.1%). Appendicitis, peritonitis and osteomyelitis (39.4%, 18.3% and 15.5% respectively) were the most commonly diagnosed surgical infection. The main diagnosed gastrointestinal conditions were intussusception 23(47.9%) followed by intestinal obstruction 11(22.9%). Inguinal hernia 9(27.3%) and duodenal atresia 9(27.3%) were the most commonly diagnosed congenital anomaly as shown in **table 2.**

Table 2: Causes and forms of pediatric surgical patient's admission at Arbaminch General Hospital from January 1/2017 to December 31/2020(N=265).

Variables	Category	Frequency	Percent
Ward of admission	Pediatric surgical	188	70.9
	Male surgical	36	13.6
	Female surgical	20	7.5
	Others*	21	7.9
Form of admission	Elective base	91	34.3
	Emergency base	174	65.7
Admission diagnosis of children	Congenital anomaly	33	12.5
	Trauma	99	37.4

	Surgical infection	71	26.8
	Gastrointestinal problems	48	18.1
	Others**	14	5.3
Gastrointestinal problems(n=48)	Intussusceptions	23	47.9
	Rectal prolapsed	5	10.4
	Intestinal obstruction	11	22.9
	Pyloric stenosis	5	10.4
	Others***	4	8.3
Diagnosed congenital anomaly(n=33)	Inguinal hernia	9	27.3
	Undescended tests	7	21.1
	Club foot/lip	6	18.2
	Duodenal artesian	9	27.3
	Others****	2	6.1
Diagnosed a surgical infection on children(n=71)	Peritonitis	13	18.3
	Appendicitis	28	39.4
	Osteomyelitis	11	15.5
	SSI	10	14.1
	Others*****	9	12.7

*Pediatric medical ward, Orthopedic ward and Intensive unit **Foreign body, Bladder stone, Kidney stone, Submandibular cyst and Lypoma ***Mesenteric lymphadenitis, Entero-cutaneous fistula and Pancreatic pseudocyst ****Hirschprung's Disease, Hypospadias, Midgutmalrotation and Anorectal malformation *****Septic arthritis, Otitis media, Gluteal abscess, Cellulitis and Mastitis.

As the figure shown below, burn injury 35(36%) was the most common causes of trauma-related admission of the patients (**figure 3**). About eighty-four per cent of traumatic causes occurs accidentally while the rest 16 % occurs intentionally.

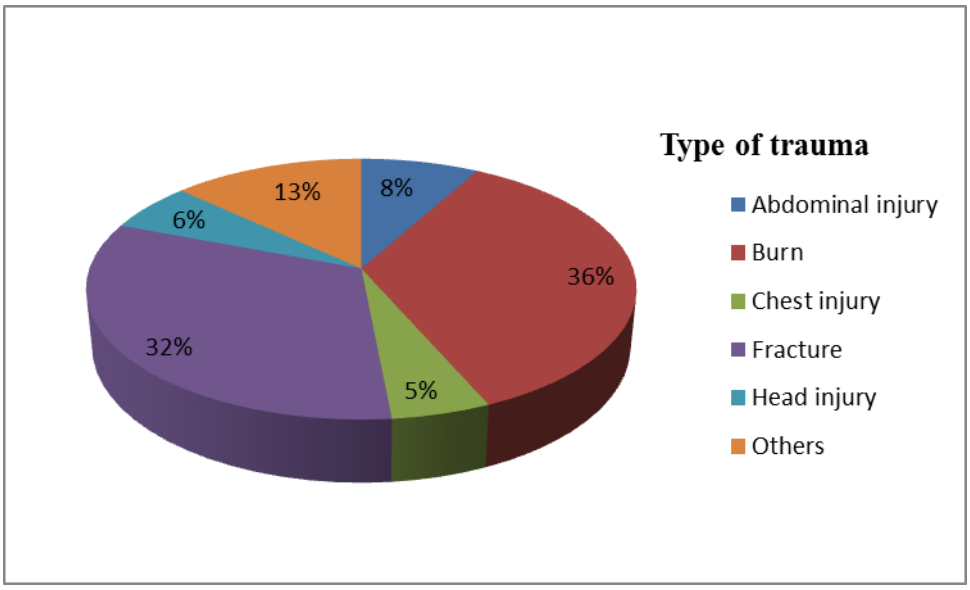

Figure 3: Distribution of type of trauma among pediatric surgical patient's admitted at Arbaminch General Hospital from January 1/2017-December 31/2020(N=265).

5.2.2. Pre-existing medical condition, nutritional status and clinical presentation at the time of admission

Among admitted children majority 198(74.7%) of them has no pre-existing medical condition during admission and the rest 67(25.3%) of them has the pre-existing medical condition at the time of admission. From those who have a pre-existing medical condition, anaemia account 19(8.3%), epilepsy 13(4.9%), pneumonia 13(4.9%), Asthma 9(4.5%), HIV/AIDS 8(3.0%) and DM 5(1.9%). Two hundred four (77.0%) of children were well nourished and the rest 61(23.0%) children were malnourished at the time of admission as shown in **table 3**. Among children with a clinical presentation at the time of admission, the majority 159(60%) of them presents with pain followed by airways compromise 67(25.3%), vomiting 64 (24.2%), shock(bleeding) 62(23.4%), arrhythmia 42(15.8%), and loss of consciousness 38(14.3).

Table 3: Pre-existing medical condition, nutritional status and clinical manifestation among admitted pediatric surgical patient's, at Arbaminch General Hospital from January 1/2017-December 31/2020(N=265).

Variables	Category	Frequency	Percent
Pre-existing medical condition	Yes	67	25.3
	No	198	74.7
Nutritional status of children on admission	Well-nourished	204	77.0
	Malnourished	61	23.0
Clinical presentation at the time of admission	Yes	219	82.6
	No	46	17.4

5.2.3. Early complication among admitted children

From the total of surgically admitted children, about 115(43.4%) patients develop early complication at the time of admission includes infection 33(12.5%), sepsis 22(8.3%), shock 21(7.9%), wound dehiscence 17(6.4%), hematoma 16(6.0%) and others like pyelonephritis, 6(2.3%). And the rest 150 (56.6%) patients has no early complication at the time of admission. About 14(42.4%) patients who have an infection at the time of admission were discharged with unfavorable management outcome.

5.3. Time-related factors of pediatric surgical patient's admission

Duration of time before getting medical attention and Length of hospital stay

Forty-three (16.2%) surgically admitted children present early (before 24hrs.) for management into hospital, and the rest 222(83.8%) patients were present lately(≥24hrs.). From the total 153 children who came from a rural area, the majority 130(84.97%) of them came into the hospital for management lately (≥24 hrs.). According to this study, the mean length of hospital stay was 23.11 days (SD: 20.826; Range:1-119 days). Among 116 patients in the age group ≤ 4,

about 88(75.86%) of them stayed ≥7days in the hospital before discharge. Sixty-nine (32.5%) surgically admitted patients who stayed in hospital ≥ 7days were discharged with unfavorable management outcome at the time of discharge as shown **in figure 4**.

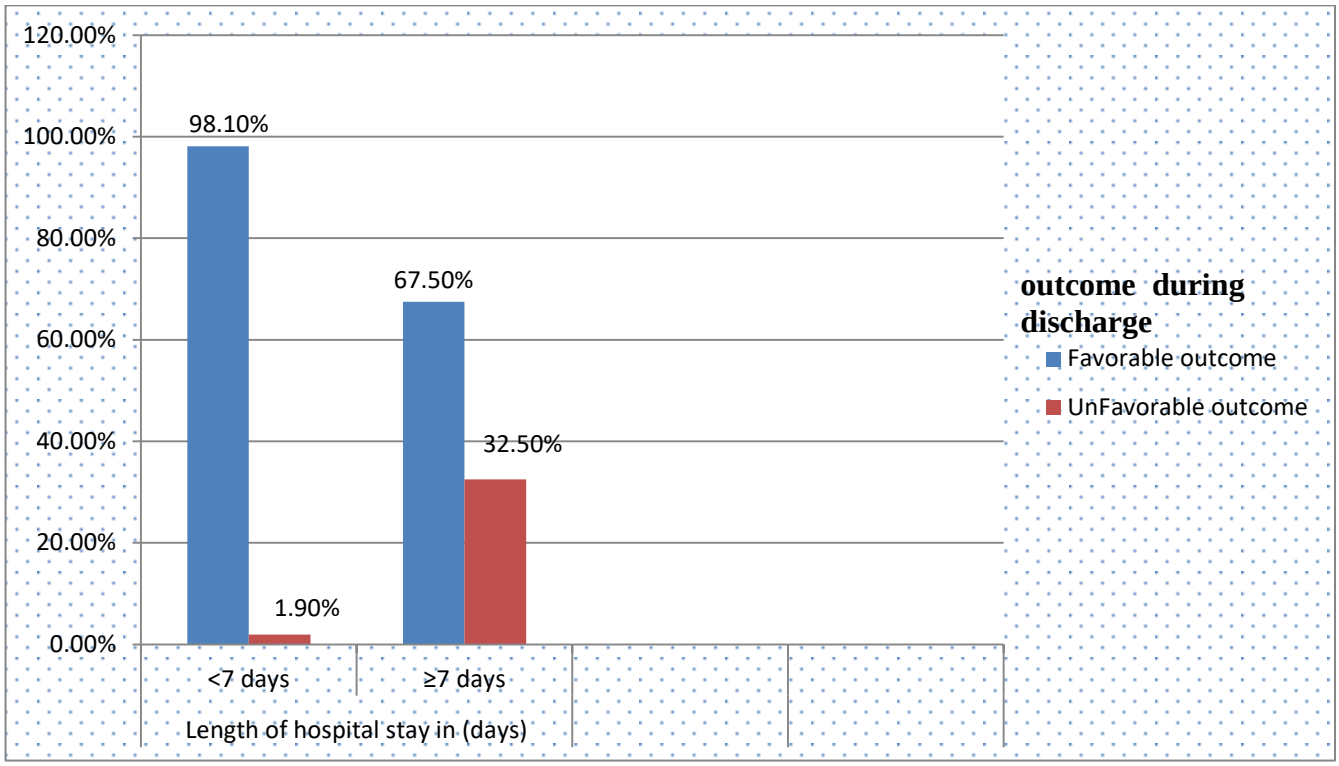

Figure 4: Length of hospital stays with the outcome of pediatric surgical patient's admission at Arbaminch General Hospital from January 1/2017-December 31/2020(N=265).

5.4. Therapeutic intervention-related factors of pediatric surgical admission.

From management options, surgical management was done for one hundred seventy-four (65.7%) admitted patients. From this major surgery was done for 124(71.3%) patients and minor surgery was done for 50(28.3%) patients. For the majority 121(69.5%) of patients, surgical management was done in an emergency basis whereas for 53(30.5%) patients surgery was done on a routine basis. Among patients who have surgical management majority, 144(82.8%) of them stayed ≥7days in hospital.

Conservative management was done for 91(34.3%) of patients including 90(34%) patients antibiotics provided, 85(32.1%) analgesics were given, 63(23.8%) wound cleansing and

dressing was done, 38(14.3%) fluid replacement was done, 25(9.4%) orthopedic application was done and 19(7.2%) tetanus toxoid was given. For the majority 35(13.2%) of patients wound care was provided one times per day while for 12(4.5%) patients three times per day, for 11(4.2%) patients two times per day and for 5(1.9%) patients every other day.

5.5. Management outcome of pediatric surgical patient's admission

Out of the total 265 study subjects, one hundred ninety-five (74%) patients discharged with favorable management outcome while 70(26%) patients discharged with unfavorable management outcome as shown in **figure 5**. From patients who were discharged with unfavorable management outcome, twenty-nine (10.9%) of them were discharged with significant comorbidity (containing body contracture, discharge with a tracheostomy, HTN), 13(4.9%) of them had amputated, 8(3.0%) patients discharged with significant disfigurement, and 20 death were recorded giving an overall mortality rate of 7.5%.

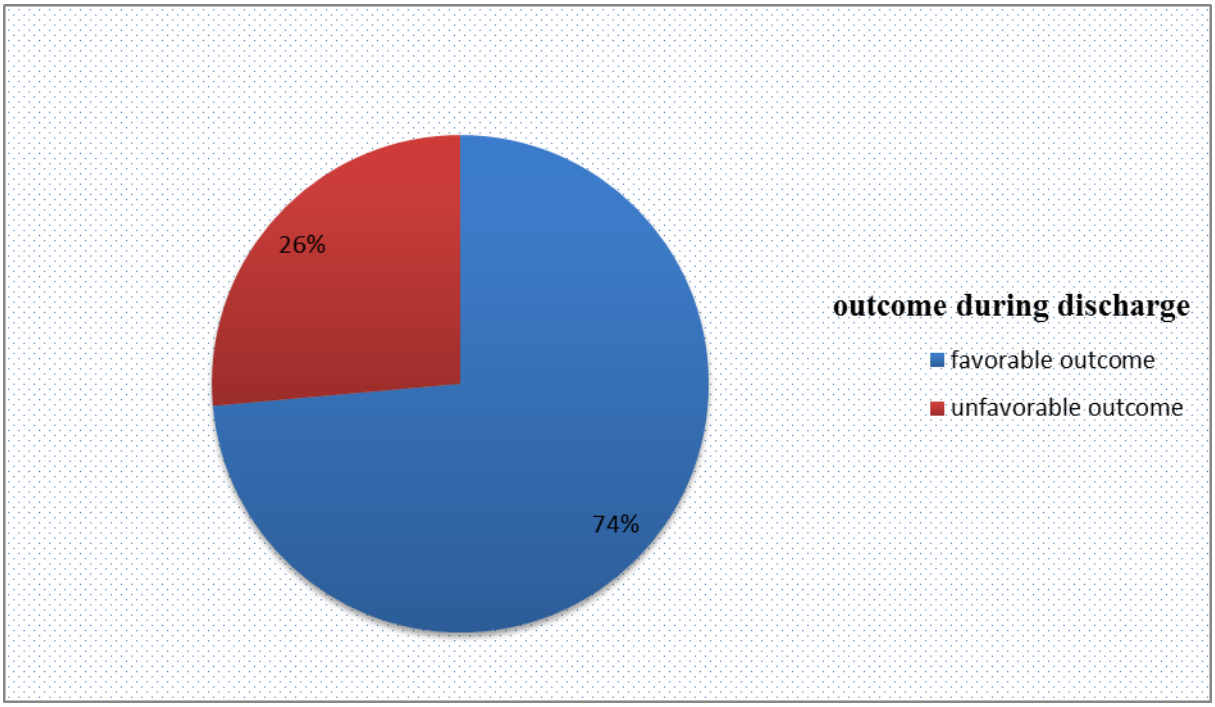

Figure 5: Management outcome of pediatric surgical patients admitted at Arbaminch General Hospital from January 1/2017-December 31/2020(N=265).

5.6. Factories associated management outcome of pediatric surgical patients admission

Bivariate and multivariate logistic regression analysis was done to identify factors associated with pediatric surgical patients admission. With bi-variate logistic regression age, sex, the residence of the patient, a form of admission, admission diagnosis, pre-existing medical condition, nutritional status, any early complication, duration of hospital presentation, length of hospital stay and hospital management were identified as associated factors with the outcome of pediatric surgical patients admission(with a P-value of $\leq$ 0.25). After adjusting for potential confounders in multivariate logistic analysis; a form of admission and nutritional status of children lost their significance of association with (p-value >0.05).

Those children admitted with trauma cause were 5.7 times more likely to be discharged with unfavorable management outcome than those admitted with non-trauma cause [AOR: 5.753, 95% CI:(2.366-13.987)]. Those children with a pre-existing medical condition at the time of admission were 3.2 times more likely to be discharged with unfavorable management outcome than there counter parts[AOR: 3.240, 95% CI:(1.436-7.310)], and those children who have an early complication at the time of admission were 2.5 times more likely to be discharged with unfavorable management outcome than those who has no complication at the time of admission[AOR:2.515,95% CI:(1.130-5.599)].

Those children with a duration of hospital presentation ≥24 hrs. were 8.3 times more likely to be discharged with unfavorable management outcome than those present early(<24hrs.) [AOR:8.351,95% CI:(2.089-33.381)].Those children with a length of hospital stay ≥7 days were 10.7 times more likely to be discharged with unfavourable management outcome than those who stayed <7days in hospital [AOR:10.671,95% CI:(1.363-83.546)] and those children who had surgical management were 2.7 times more likely to be discharge with unfavorable management outcome than those who had conservative management[AOR:2.742,95% CI:(1.137-6.611)] as shown in **table 4**.

Table 4: Bi-variate and multivariate analysis showing factories associated with the unfavorable management outcome of pediatric surgical patient's admission at Arbaminch General Hospital from January 1/2017-December 31/2020(N=265).

Variables	Managemenet outcomes		COR (95%CI)	p-value	AOR (95%CI)	p-value
	Favorable	Unfavorable				
Age						
≤4	78(67.2%)	38(32.8%)	2.095(0.951-4.615)	0.066	2.223(0.761-6.491)	0.144
5-9	47(83.9%)	9(16.1%)	0.823(0.306-2.218)	0.701	0.821(0.239-2.824)	0.754
10-14	27(67.5%)	13(32.5%)	2.070(0.797-5.378)	0.135	2.924(0.388-10.207)	0.093
≥15	43(81.1%)	10(18.9%)	1	-----	------	----
Sex						
Male	106(67.5%)	51(32.5%)	0.444(0.244-0.806)	0.008	0.739(0.326-1.676)	0.469
Female	89(82.4%)	19(17.6%)	1	------	-----	----
Residence						
Rural	102(66.7%)	51(33.3%)	2.447(1.347-4.446)	0.003	1.841(0.835-4.060)	0.130
Urban	93(83.0%)	19(17.0%)	1	------	-----	----
Form of admission						
Emergency base	122(70.1%)	52(29.9%)	0.579(0.315-1.064)	0.078	0.840(0.358-1.970)	0.688
Elective base	73(80.2%)	18(19.8%)	1	------	----	----
Admission diagnosis						
Trauma cause	54(54.5%)	45(45.5%)	4.700(2.629-8.402)	0.000	**5.753(2.366-13.987)***	**0.000**
Non-trauma	141(84.9%)	25(15.1%)	1	------	-------	-----

Any pre-existing medical condition						
Yes	32(47.8%)	35(52.2%)	5.094(2.788-9.306)	0.000	**3.240(1.436-7.310)***	**0.005**
No	163(82.3%)	35(17.7%)	1	------	----	----
Nutritional status						
Well-nourished	167(81.9%)	37(18.1%)	1	-----	----	----
Mall-nourished	28(45.9%)	33(54.1%)	0.188(0.101-0.348)	0.000	0.555(0.237-1.296)	0.174
Any early complication						
Yes	65(56.5%)	50(43.5%)	5.094(2.788-9.306)	0.000	**2.515(1.130-5.599)***	**0.024**
No	130(86.7%)	20(13.3%)	1	-----	----	----
Duration of time before the presentation						
<24 hrs.	39(90.7%)	4(9.3%)	1	------	-----	----
≥24hrs.	156(70.3%)	66(29.7%)	4.125(1.417-12.008)	0.009	**8.351(2.089-33.381)***	**0.003**
LOS(Length of hospital stays)						
<7days	52(98.1%)	1(1.9%)	1	-----	------	----
≥7days	143(67.5%)	69(32.5%)	25.091(3.397-185.299)	0.002	**10.671(1.363-83.546)***	**0.024**
Hospital management						
Surgical	120(69.0%)	54(31.0%)	2.109(1.126-3.953)	0.020	**2.742(1.137-6.611)***	**0.025**
Conservative	75(82.4%)	16(17.6%)	1	------	----------	----

NB: COR= Crude odds ratio, AOR= Adjusted odds ratio, CI= confidence interval, LOS=length of hospital stay , *P-value <0.05

6. DISCUSSION

This study gives an insight into unfavorable management outcome and factors associated with pediatric surgical patient's admitted at Arbaminch General Hospital, Southern Ethiopia. The finding of this study revealed that pediatric surgical cause was higher among male(59.2%) patients than female patients. This result was similar to the study done in northwest Nigeria 54.9%(37), Malawi 62%(42) and Adama 71.9% (43). This could be explained partly by male children involved in the behaviour that highly exposes them to the risk of injuries like sport-activity and motor bicycle activity, due to this they experience more injuries, and death related injuries than female children and in addition causes like acute abdomen were more common in male children(54-55).

In this study, trauma was the leading cause of admissions which was similar to the study done in the Gambia(41) and Malawi(42) but this finding was different from a study done in Niger(39) and Somali land(56) which showed that congenital malformation was the leading cause of admissions. This difference might be due to a difference in hospital capacity to admit and treat the cause, sample size.

The finding of this study showed that the majority (83.8%) of study subject was present into the hospital to intervention lately(≥24hrs). This finding in line with a study conducted in Black Lion Hospital 80.4%(14). This could be the majority of patients come from a rural area and referred from other health centers and difference of public awareness about health-seeking behaviors.

According to this study mean length of hospital stay was 23.11±20.826 days. This finding is relatively similar to a study reported in Nigeria with a mean LOS of 21.4±2days (38). This finding was much higher than the study conducted Niger with mean LOS 8.6±11.2days (39), and Northwest Nigeria 8.64± 10.31days (37). This might be difference in admission diagnosis in hospitals, severity patients health condition and quality of care. In this study, operative management was effective in 65.7% of the study subject. This finding was less than the study conducted in Black Lion Hospital 67.8 %(14), but it is much higher than the study done in Malawi 35 % (42). This difference might be the difference in type and severity of surgical condition during admission and care provision capacity of hospitals.

This study revealed that 26% of study subjects discharged with unfavorable management outcome. This result is much higher than the study done in Bangladesh 3.7% (35) and in South Africa 17.5%(27). And mortality rate of this study was 7.5% this result relatively similar to a study conducted in Yirgalem hospital with a mortality rate of 7.46% (44). But it is higher than the study conducted in Gambia 5.3%(41), and Niger 1.2%(39). This discrepancy might be the difference in patients pre-existing medical condition, causes of admission and quality of care.

The result of multivariate analysis in this study showed that children admitted with trauma cause is positively associated with unfavorable management outcome. This is in line with research finding in Ghana(45), Nigeria(37) and Ethiopia(44). In this study children admitted with trauma cause was positively associated with unfavorable management outcome. This is in line study done in Ghana (45), Nigeria (37) and Ethiopia (44). This might be explained by trauma cause was more likely to have complications like infection, hemorrhage, respiratory failure, renal failure and sepsis than other cause of admission which further complicates the surgical causes by delaying wound healing and recovery time. In adition trauma causes needs professionals who experienced trauma care and advanced technology which is important to identify the severity of cause (57-58).

This study also showed that those children who has pre-existing medical condition at the time of admission were positively associated with unfavorable management outcome.This finding was supported by a study conducted in Ghana and Black Lion Hospital in Ethiopia(14,45). . This might be explained by patients with pre-existing medical conditions were poor immunity level wich leads to infection manly nosocomial infection, this increase length of hospital stays and delay wound healing time. In addition presence of co-morbid conditions increases the chance of inadequate food intake may lead to fast reduction of nutrients from the body and which suspened recovery from surgical conditions.

This study showed that those children who have early complication at the time of admission were positively associated with unfavorable management outcome. This might be due to early complication increased the chance of nosocomial infection, common early complications like sepsis and bleeding decrease blood flow to vital organ leads to multi organ failure and sever impairment of function organs this further complicate the outcome and also decrease patents

immunity level this all factors leads to unfavorable outcome. However, there is no related result reported from previous studies regarding to this.

In this study, duration of hospital presentation ≥24hrs.was positively associated with unfavorable management outcome. This result in line with the study conducted in Ethiopia(14,44). This might be because those patients who come late to the intervention were more prone to different complications like sepsis, peritonitis, gangrene and body contracture and this could further complicate surgical conditions and it also complicates management; this could affect the outcome.

The finding of this study showed that the length of hospital stay ≥7 days were significantly associated with being discharged with unfavorable management outcome. This finding is supported by a study done in China(51) and Adama(43). This could be explained by those who stayed in the hospital for a prolonged time may be more likely prone to Hospital-acquired infections, the management-related error and in addition it increases the risk of muscle weakness, stiffened joints, bed ulcer this all-cause increase the chance of complication.

This study, states that those children who managed surgically were two point three times more likely to be discharged with unfavourable management outcome than their counter parts. This finding was supported by a study done in Ghana(45). This might be explained by those children who had surgery more likely to have complication like post operative infection, hemorrhage, wound dehiscence which complicates postoperative recovery phase in addition it has more likely to have management related errors and prolonged hospital stays which increases complication. The finding was different from the study done in Malawi(42). This difference might be difference in management protocols, sample size and quality of care provided in hospitals.

Limitation of the study

Since the study was a retrospective documentary review, related to this during the study time there was incomplete and lost charts which are excluded from the study this could affect the result or underestimate the result.

Some variables like educational level of children and parents, living conditions, income status of parents were difficult to get from the chart which can affect the outcome of the study. And Some characteristics and variables which can only be assessed by observation or by taking history were missed.

7. CONCLUSION AND RECOMMENDATION

Conclusion

The main causes of admission in the study area were trauma followed by surgical infection and gastrointestinal conditions. Operative management was successful in the majority of patients and about twenty six percent of patients discharged with unfavorable management outcome.

Moreover, those children admitted with trauma cause, children with a pre-existing medical condition, children who have an early complication, children with a duration of hospital presentation ≥24hrs,Children who stayed in hospital ≥7days, and those childerns who had surgical managemenet are factors positively associated with unfavorable outcome.

Recommendation

Based on the finding of the result in this study, the following recommendations are forwarded:

For Arbaminch general hospital

- ✓ The hospital should be responsible to increase the quality of care and fulfilled well trained and qualified health professionals to prevent complication and hospital-acquired infection related to care provision.
- ✓ Hospital also tries to reduce prolonged stay of patients by assessing quality care provision.

For health professionals

- ✓ Children present to intervention into hospital ≥24hrs were one of the factors to make the patients being discharged with complication; therefore, health education should be given by health professionals to create awareness for parents or community to prevent this delay to intervention.
- ✓ Health professionals should try to make proper assessments, diagnosis and early intervention for those patients with a surgical condition which is necessary to reduce complication.

- ✓ Special support and care should be continued by health care professionals for those patients with a pre-existing medical condition and early complication during admission to have a positive outcome of management.

For researcher

- ✓ It will be better if further studies will be conducted prospectively to assess pediatric surgical conditions, a form of admission, how it occurs, what are risk factors, how was the severity of the condition, quality of care provided, the socio-economic status of parents and the like to get comprehensive information directly to know about the condition detailed.

8. REFERENCE

1. Ozgediz D, Jamison D, Mcqueen K. The burden of surgical conditions and access to surgical care in low- and middle-income countries. Bull World Health Organ. 2008;86(8):646–7.
2. Meara JG, Leather AJM, Hagander L, Alkire BC, Alonso N, Ameh EA, et al. Global Surgery 2030: Evidence and solutions for achieving health, welfare, and economic development. Lancet. 2015;386(9993):569–624.
3. Mullapudi B, Grabski D, Ameh E, Ozgediz D, Thangarajah H, Kling K, et al. Estimates of number of children and adolescents without access to surgical care. Bull World Health Organ. 2019;97(4):254–8.
4. Abate SM, Mantefardo B, Basu B. Postoperative mortality among surgical patients with COVID-19: A systematic review and meta-analysis. Patient Saf Surg. 2020;14(1):1–14.
5. James A RJC. Common paediatric surgical conditions. 2016.
6. James D. O'Leary MB BCh MD, Duminda N. Wijeysundera MD PhD MWCM. Effect of surgical safety checklists on pediatric surgical complications in Ontario. CMAJ. 2016;188(9):191–8.
7. Abajobir A, Population A, Cristiana A, Abd-allah F, Abera SF. Global Health Metrics Global , regional , and national age-sex-specific mortality and life expectancy , 1950 – 2017 : a systematic analysis for the Global Burden of Disease Study 2017. Lancet. 2018;392:1684–735.doi:10.1016/S0140-6736(18)31891-9
8. Charles N. Mock, Peter Donkor AG, Dean T. Jamison, Margaret E. Kruk and HTD. Essential Surgery: Disease Control Priorities, third edition.2016;1.
9. South SD, Boeck MA, Foianini JE, Swaroop M, Gaskill CE, Gyedu A, et al. Burden of Pediatric Surgical Conditions in Uganda: Epidemiology and Mortality from a Prospective Database at a Tertiary Care Center. J Am Coll Surg. 2017;225(4):598–9.
10. Butler EK, Tran TM, Nagarajan N, Canner J, Fuller AT, Kushner A, et al. Epidemiology of pediatric surgical needs in low-income countries. PLoS One. 2017;12(3):1–9.
11. Ologunde R, Maruthappu M, Shanmugarajah K, Shalhoub J. Surgical care in low and middle-income countries: Burden and barriers. Int J Surg [Internet]. 2014;12(8):858–63. Available from: http://dx.doi.org/10.1016/j.ijsu.2014.07.009
12. Deere M and Ahmed E. The pattern of pediatric surgical conditions in Tikur Anbessa Unversity Hospital, Addis Ababa, Ethiopia. Ethiop Med J. 2006;44(4):331-8.

13. Tadesse A, Gossaye A, Derbew M. Pediatrics surgical admissions and procedures: A five-year ex-perience at Tikur Anbessa Specialized Hospital in Addis Ababa. Ethiop Med J. 2019;57(3):235–40.
14. Firomsa T, Teferra M, Tadesse A. Trends and Outcomes of Emergency Pediatric Surgical Admissions from a Tertiary Hospital in Ethiopia. Ethiop JSci. 2018;28(2):251.
15. Kelly CM, Starr N, Raykar NP, Yorlets RR, Liu C DM. Provision of surgical care in Ethiopia: Challenges and solutionse. Glob Public Heal. 2018;13(11):1691–701.
16. Guégan JF, Suzán G, Kati-Coulibaly S, Bonpamgue DN, Moatti JP. Sustainable development goal #3, "health and well-being", and the need for more integrative thinking. Vet Mex. 2018;5(2).
17. Arca, Marjorie J, Felix C Blanco, David W. Bliss, Anthony C Chin, Utpala Das, Samir Gadepalli, Alessandra Gasior RG. Handbook of Pediatric Surgical Critical Care First Edition 2013. 2013;(April).
18. Smith ER, Concepcion TL, Niemeier KJ, Ademuyiwa AO. Is Global Pediatric Surgery a Good Investment? World J Surg [Internet]. 2019;43(6):1450–5. Available from: https://doi.org/10.1007/s00268-018-4867-4
19. NG O. Journal of Surgery Forecast Global Surgery 2030 : ' Myth or Reality ?'. J Surg Forecast. 2018;1(1):1002.
20. Weiser TG, Regenbogen SE, Thompson KD, Haynes AB, Lipsitz SR, Berry WR, et al. An estimation of the global volume of surgery: a modelling strategy based on available data. Lancet. 2008;372(9633):139–44.
21. Nafiu OO, Mpody C, Kim SS, Uffman JC, Tobias JD. Race, postoperative complications, and death in apparently healthy children. Pediatrics. 2020;146(2).
22. UNICEF. Child Deaths by Injury in Rich Nations. Innocent Rep card. 2018;(2):32.
23. Adeloye D, Bowman K, Chan KY, Patel S, Campbell H, Rudan I. Global and regional child deaths due to injuries: An assessment of the evidence. J Glob Health. 2018;8(2):1–11.
24. Boyle B, Addor MC, Arriola L, Barisic I, Bianchi F, Csáky-Szunyogh M, et al. Estimating Global Burden of Disease due to congenital anomaly: An analysis of European data. Arch Dis Child Fetal Neonatal Ed. 2018;103(1):22–8.
25. Agarwal A, Rattan KN, Dhiman A, Rattan A. Spectrum of Congenital Anomalies among Surgical Patients at a Tertiary Care Centre over 4 Years. Int J Pediatr. 2017;2017:4174573.

doi:10.1155/2017/4174573

26. WHO. Worled health stastics. (2010).
27. Torborg A, Cronje L, Thomas J, Meyer H, Bhettay A, Diedericks J, et al. South African Paediatric Surgical Outcomes Study : a 14-day prospective , observational cohort study of paediatric surgical patients. Br J Anaesth. 2019;122(2):224–32.
28. Poenaru D. The burden of pediatric surgical conditions in low and middle income countries : A call to action. J Pediatr Surg . 2019;14.
29. Girum T, Mesfin D, Bedewi J, Shewangizaw M. The Burden of Noncommunicable Diseases in Ethiopia , 2000 – 2016 : Analysis of Evidence from Global Burden of Disease Study 2016 and Global Health Estimates 2016. Int J Chronic Dis. 2020.
30. Firaol D, Dandena F. Magnitude and Pattern of Inpatient Surgical Mortality in a Tertiary Hospital in Addis Ababa , Ethiopia. Ethiop J Heal Sci.2020;30(3):371.
31. Andres O, Camargo K De. Chidren are the future-their developement matters report. Brazilian J Med Hum Heal. 2016;4(1):29–32.
32. Miliard D. Pediatric surgery in Eastern Africa: The unmet need. J Pediatr Surg. 2019;54(1):21–6.Available from : https://doi.org/10.1016/j.jpedsurg.2018.10.028.
33. UN IGME. Estimate levels & trends in child mortalty. 2020.
34. Chirdan LB, Ameh EA, Abantanga FA, Sidler D, Elhalaby EA. Challenges of training and delivery of pediatric surgical services in Africa. J Pediatr Surg [Internet]. 2010;45(3):610–8. Available from: http://dx.doi.org/10.1016/j.jpedsurg.2009.11.007
35. Nessa M, Mah D. Pattern of Pediatric Surgical Admissions in a Combined Military Hospital. JAFMC Bangladesh. 2018;14(2):109–12.
36. Ayotunde OA, Centre FM, Oluwadiya KS, Ekiti A, Oginni LM. Paediatric Surgical Admissions In A Tertiary Hospital In Western Nigeria. Internet J Pediatr Neonatol. 2012;5(2).
37. Kache Stephen Akau, Sale Danjuma, Ajah Jonathan Luka, Yusuf Nuhu, Omisakin Oluleke Olatunde MJG. Pattern and Outcome of Paediatric Surgical Admissions in a New Tertiary Hospital in Northwestern Nigeria. J Surg. 2017;5(5):82–5.
38. Thanni LOA. A retrospective audit of paediatric surgical admission in a sub-urban tertiary hospital. West Afr J Med. 2005;24(1).
39. Alagoa PJ, Gbobo I. Pattern of Paediatric Surgical Admissions in a Tertiary Hospital in a Semi – Urban Community in the Niger Delta : a Three- Year Review. Int J Trop Dis Heal.

2014;4(1):45–51.

40. Osarumwense D. Osifo IPA. Pattern and Outcome of Pediatric Surgical Admissions to a Nigerian Tertiary Hospital. Ann Pediatr Surg. 2010;6(3):161–6.
41. Bickler SW, Sanno-duanda B. Epidemiology of paediatric surgical admissions to a government referral hospital in the Gambia. Bull World Health Organ. 2018;78(11).
42. Kendig CE, Samuel JC, Varela C, Msiska N, Kiser MM, McLean SE, et al. Pediatric surgical care in Lilongwe, Malawi: Outcomes and opportunities for improvement. J Trop Pediatr. 2014;60(5):352–7.
43. Ketema T, Abeya SG, Abdela K, Chaka TE. Pediatric Surgical Admissions and Their Outcomes at Adama Hospital Medical College : A Facility Based Cross Sectional Study. Am J Pediatr. 2017;3(4):23–7.
44. Tt T, Tm M. Pattern of Pediatric Surgical Admission in Yirgalem Hospital Southern. Vasc Med Surg. 2016;4(1):1–4.
45. Peiffer S, Ssentongo AE, Keeney L, Amponsah-Manu F, Yeboako R, Ofosu-Akromah R, et al. Predictors of Poor Postoperative Outcomes in Pediatric Surgery Patients in Rural Ghana. BMC Surg. 2020;20(1):1–10.
46. Brown KL, Ridout D, Pagel C, Wray J, Anderson D, Barron DJ, et al. Incidence and risk factors for important early morbidities associated with pediatric cardiac surgery in a UK population. J Thorac Cardiovasc Surg [Internet]. 2019;158(4):1185-1196.e7. Available from: https://doi.org/10.1016/j.jtcvs.2019.03.139
47. Olusegun A, Adedapo O, Taiwo A, Adejuyigbe O, Chijioke C, Obasi A. A 10-year retrospective review of perioperative mortality in pediatric general surgery at Ile-Ife Hospital , Nigeria. J Pediatr Surg. 2018;53(10):2072–6.
48. Karpelowsky JS, Zar HJ, Van Bogerijen G, Van Der Graaf N, Millar AJW. Predictors of postoperative complications in HIV-infected children undergoing surgery. J Pediatr Surg[Internet].2011;46(4):674–8.
49. Pignaton W, Mo P. An 8-Year Observational Survey From a Tertiary Teaching Hospital. 2016;95(2):1–6.
50. Keerthi AR SDY and KS. Preoperative Nutritional Screening as a Predictor of Post-Operative Outcomes in Children Undergoing Major Surgery - Retrospective Evaluation of Modified Malnutrition Universal Screening Tool. Acta Sci Paediatr. 2018;1(2):33–7.

51. Li K, Li X, Id WS, Cui Y, Xia H, Sun X, et al. Preoperative and operation-related risk factors for postoperative nosocomial infections in pediatric patients : A retrospective cohort study. PLoS One. (2019);14(12):1–12.
52. Orwelius L, Nordlund A, Nordlund P, Simonsson E, Bäckman C, Samuelsson A, et al. Pre-existing disease: The most important factor for health related quality of life long-term after critical illness: A prospective, longitudinal, multicentre trial. Crit Care. 2010;14(2):1–10
53. Arbaminch town administration.ArbaMinch.(2017);retrived from https://www.wikiwand.com/en/Arba_Minch.
54. Mutyala VD, Charitha DD. Assessment of Acute Abdomen among Patients attending Government General Hospital of Kakinada: A Prospective Study. Int J Contemp Med Surg Radiol. 2019;4(2):51–5.
55. Sorenson SB. Gender disparities in injury mortality: consistent, persistent, and larger than you'd think. Am J Public Health. 2011;101 Suppl 1(Suppl 1):S353-S358. doi:10.2105/AJPH.2010.300029..
56. Concepcion T, Mohamed M, Dahir S, Adan Ismail E, Poenaru D, Rice HE, et al. Prevalence of Pediatric Surgical Conditions Across Somaliland. JAMA Netw open. 2019;2(1):e186857. doi:10.1001/jamanetworkopen.2018.6857.
57. Cowie MR. National Institute for Health and Care Excellence. Eur Heart J. 2015;36(4):195.
58. De Aguiar Júnior, Wagner MS, RN; Saleh, Carmen Mohamad Rida MS, RN; Whitaker, Iveth Yamaguchi PhD, MS, RN. Risk Factors for Complications of Traumatic Injuries, Journal of Trauma Nurse:(2016);23(5):275-283.doi: 10.1097/JTN.0000000000000233.

9. APPENDIX

Appendix A: Information sheet to the medical director of the Hospital

Addis Ababa University College of medicine and health science, school of nursing and midwifery.

Hello. My name is Filagot Assefa and I am a postgraduate student in Pediatrics and Child health nursing at Addis Ababa University, college of medicine and health Science School of nursing and midwifery department of pediatric and child health nursing. This Governmental hospital was selected to conduct the proposed study with the title of "unfavorable management outcome and factors associated with pediatric surgical patient's admission". I am requesting your office to permit me to conduct the stated study in this hospital. Please read the following information for further understanding:

What the study is about: The purpose of this study is to assess favorable management outcome and factors associated with pediatric surgical patients admission. With study design of institution-based retrospective cross-sectional study among surgically admitted children.

What I will ask you to do: If you agree to do this study, I will conduct it by using a checklist questioner to collect necessary data from the records and patient file. The checklist will be including questions about demographics, clinical data, time-related data, therapeutic intervention related data and outcome data. I would very much appreciate your cooperation in this study.

Risks and benefits: The result of the study to help the responsible body to know about pediatric surgical admission outcome and develop an action plan based on data to improve pediatric surgical care.

Confidentiality: All information gathered from the logbook and patient file will be kept confidential. Any of the patient's personal information will be not registered. The records of this study will be kept private. In any sort of report, we will not be including any information that makes it possible to identify the patient. Research records will be kept in a locked file; only the researcher will be access to the recorded data.

Contact Address of the Principal Investigator

Name: Filagot Assefa Aga

Cell –Phone: 0901558353

E-Mail: akaluassefa26@g mail.com.

Appendix B: English version Questionnaire(checklist)

Addis Ababa University School of nursing and midwifery department of pediatric and child health Nursing. This questionnaire is used to assess unfavorable management outcome and factors associated with pediatric surgical patients admitted at Arbaminch General Hospital, Southern Ethiopia.

001. Code of questioner -------

002. Data collector: code ____/___/___ Name _____

003. Date of data collection ____/___/____ Time _____

004. Checked by Supervisor: Signature _____day _____month _____ year____

Part I. Social-demographic data

No	**Question**	**Choice of answers**	**Remark**
101	Id no	…….	
102	Date of admission	……(EC/GC)	
103	Date of discharge	……(EC/GC)	
103	Age	……	
104	Sex	……..	
105	Residence of patient	…….	

Part II. Clinically related questions regarding pediatric surgicaladmissions (checklist)

106	Ward of children admitted	1. Pediatric surgical ward 3.Pediatric medical 2.Emergency unites 4,. Female surgical ward 5.Male surgical ward 6. Others (specify)… ……	

107	Children admitted in form of	1.Emergency base 2.Elective base	
108	Admission diagnosis of children	1. Gastrointestinal condition 2. Surgical infection 3. Congenital anomaly 4. Injury 5. Others (specify)	
109	Diagnosed gastrointestinal condition on children	1. Intussusceptions 2. Rectal prolapsed 3. Intestinal obstruction 4. Pyloric stenosis 5. others (specify)……	
110	Diagnosed congenital anomaly on children	1. Inguinal hernia 2. Undescended tests 3. Club foot/lip 4. Duodenal artesian 5. Others (specify)……..	
111	Diagnosed a surgical infection on children	1. Peritonitis 2. Appendicitis 3. Osteomyelitis 4. SSI 5. Skin ulcer 6. Others (specify)…….	
112	Kind of injury occurred in children	1. Fracture 2. Abdominal injury 3. Burn 4. Chest injury 5. Head injury 6. Others (specify)……	
113	Injury occurred in the form of	1. Accidentally 2. Intentionally	

114	Any pre-existing medical conditionon admission	1. Yes 2. No		
115	Type of pre-existing medical condition on admission	Yes	No	
	HIV/AIDS			
	Anemia			
	Asthma			
	Diabetes mellitus			
	epilepsy			
	Pneumonia			
	Heart problem			
116	Nutritional status of children on admission	1.Well-nourished 2. Malnourished		
117	Clinical presentation of children during admission	A. Airway compromise B. Shock C. Arrhythmia D. Loss of consciousness E. Others (specify)_____ F. none		
118	Early complication developed among admitted children	1. Yes, 2. No		
119	If yes, developed early complication was	1. Sepsis 4. Hematoma 2. Infection 5. wound dehiscence 3. Shock 6. others(specify) ……		
III. Questioner on time-related to pediatric surgical admissions(checklist)				
121	Duration of time children stayed in home before getting medical attention	….……		

122	Length of stay in hospital	….……		
IV. **Questioner on therapeutic management-related to pediatric surgical admissions(checklist)**				
123	Management is given for the children in admission time	1. Conservative management 2. Operative/surgical management		
124	Type of conservative management	Yes	No	
	124.1 Orthopedic application done	…..……	…….	
	124.2 Fluid replacement provided	…..……	…….	
	124.3 Wound care done	…..……	…….	
	124.4 Tetanus toxoid provided	…….	…….	
	124.5 Analgesic provided	…….	…….	
	124.6 Antibiotics given	……	……..	
125	Wound care is provided for the patient	1. One times per day 2. Two times per days 3. Three times per days 4. Every other day		
126	Performed surgery for admitted children	1. Minor 2. Major		
127	Surgical management done in	1. Routine base 2. Urgent base 3. Emergent base		

V. Questioners on the outcome of pediatric surgical patients admissions

128	Children outcomeduring discharge	1. Improved and discharged without complication 2. Discharged with complication	

129	Complication occurred during discharged of children	1. Comorbidity 2. Disfigurement 3. Amputated 4. Death	
130	Cause of death	----------	
131	Developed comorbidity on children during discharge	1. With tracheostomy 2. HTN 3. Body Contracture	