



CODEN [USA]: IAJPBB

ISSN: 2349-7750

INDO AMERICAN JOURNAL OF  
**PHARMACEUTICAL SCIENCES**

<http://doi.org/10.5281/zenodo.1464966>

Available online at: <http://www.iajps.com>

Research Article

**PREVALANCE OF APPENDICITIS IN CHILDREN IN A DEVELOPING COUNTRIES: A RESEARCH STUDY ON PAINFUL AND SWOLLEN APPENDIX IS INCREASING IN THE COUNTRIES**

<sup>1</sup>Dr. Muhammad Usman Ishrat Rana, <sup>2</sup>Dr. Ambreen Amna, <sup>3</sup>Dr. Momina Fawad

<sup>1</sup>Incharge Health Officer, Basic Health Unit 66/EB, Arifwala, Pakpattan.

<sup>2</sup>WMO (IRMNCH), RHC Gaggoo, Burewala, Vehari

<sup>3</sup>University College of Medicine and Dentistry Lahore

**Abstract:**

**Objectives:** The occurrence of painful and swollen appendix is increasing in the countries which are under development. The aim of this study work is to determine the consequences of late admissions/refers and false treatment method which are causing the outcome of swollen and painful appendix in the patients.

**Methodology:** All the children who were treated for swollen and painful appendix from past to recent time were included in this research work. This research was conducted at Mayo Hospital Lahore and the duration of the study was 2008 to the end of 2017. Before and after surgery unhealthiness, duration of admission in the hospital, treatment expense and death rate were compared between the patients who were admitted at the early stage of the disease with the patients who came under examination after a long time.

**Results:** Four hundred and eighty one children were the participant of this study. All the participants were aged from two years to sixteen years. Two hundred and sixty five were the male participants and two hundred and sixteen were the female participants. The average age of the participants was  $9.7 \pm 2.8$  years. Only two hundred and six children came under examination at very early stage and they were in good medical state. Two hundred and seventy five were transferred from other hospitals after wrong disease discovery and treatment was carried out by the quakes which came with the different consequences as appendix abscess, appendix mass, perforated appendix etc. Wound infection after surgery was counted in ninety one patients, breakdown of wound was counted in thirty five patients, septicemia was discovered in thirty one patients, pelvic abscess was found in thirteen sufferers and death occurred in one case. The record of these patients was not with the patients who came under examination at very early stage and had small admission tenure and treatment expense.

**Conclusion:** Late transfer of the Patients due to wrong discovery of the disease is growing rapidly which is linked with unhealthy condition of the children suffering of swollen and painful appendix.

**Keywords:** Appendix, swollen, Children, wound, consequences, under development, Incidence, Outcome.

**Corresponding author:**

**Dr. Muhammad Usman Ishrat Rana,**  
Incharge Health Officer,  
Basic Health Unit 66/EB,  
Arifwala, Pakpattan

QR code



Please cite this article in press Muhammad Usman Ishrat Rana et al., *Prevalance of Appendicitis in Children in Developing Countries: A Research Study on Painful and Swollen Appendix Is Increasing In the Countries.*, Indo Am. J. P. Sci, 2018; 05(10).

### INTRODUCTION:

Appendicitis is the swollen and painful condition of appendix which can be serious, mild and occurring again and again. It is linked with serious unhealthy conditions which can be prevented with the help of early treatment of appendix [1, 2]. The occurrence of this disease is also reported very high in the countries which are developed but their diet is possessed with high amount of fat and low quantity of the digestive materials. The confirm rate of this disease is not known, because of the poor data recording facilities but it is concluded to be lower than the rate discovered in developed countries. [3, 4].

There is growing rate of disease in particular region of intestines infection diseases as dysentery due to amoeba, growing amounts of helminthes and typhoid fever in this area which comes in abdomen pain with swollen and painful appendix. But many doctors grade painful and swollen appendix at low position in the listed diseases of belly pain which usually occur in children of Pakistan [5-8]. Lack of knowledge and lack of money are the main cause of late admission of the children suffering of swollen appendix which is responsible for difficulties in treatment.

The removal of appendix with the help of surgery is done on children with good health condition and has a mild swollen appendix and it results in good outcome. But this case is totally different from the children who are suffering of perforated appendix which can endanger the lives of patients after surgery with severe complications [1, 2, 9-11].

Research work in the same field [3, 4, 12-15] concluded that the swollen and painful appendix in that region concluded a rapid increase in the ratio of this disease from early 1960 but these have very less effect with increasing knowledge. The severe unhealthy conditions which are the outcomes of the late and false treatment or some other reasons as belly pain may become troublesome. Food has been modernized and intestines infection has been decreased with the increase in the standard living conditions. The compulsion of different modern methods of diagnosis in the children having belly pain cannot be overlooked.

The main purpose of this study work was to check patients who were treated for swollen and painful appendix with a motive to define its occurrence and compare the before and after surgery health

conditions of the patients, duration of admission in the hospital, treatment expense between the patients who were admitted at the very early stage of the disease and those who were delayed in getting proper medical treatment. This research work gives information about the effects of late admissions which cause the difficulties in this disease and can lead to a high death rate in the countries which are under development.

### METHODOLOGY:

This study was carried out at Mayo hospital Lahore in a surgical institute in which children are referred from other health departments from the same state. This research work was carried out from the start of 2008 to the end of 2017 after their files from the department of record of the hospital. The information collected was about gender, medical condition at the time of arrival, age, discovery of disease, health condition before operation, outcomes during operation, the economic condition of the parents of patients, health condition of patients after surgery and diets of patients.

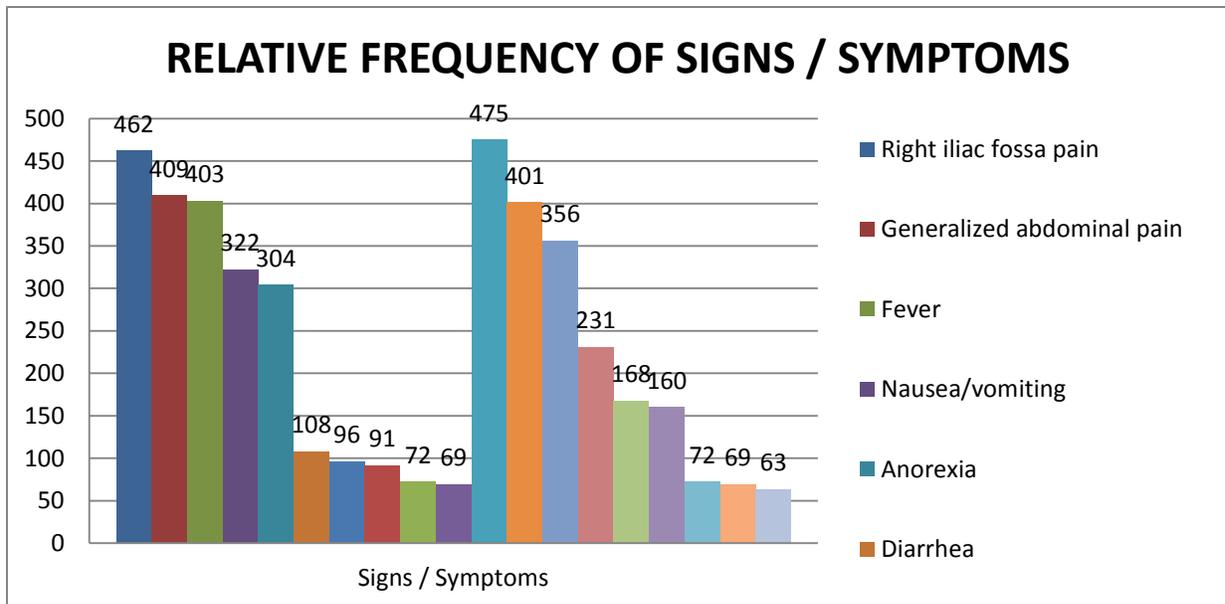
Two patients whose record files were incomplete and their disease data was not available so, they were excluded from this research work. Statistical Analysis: SPSS software was used for the evaluation of data. Data was also analyzed with the help of Chi square test method. P values which were smaller than 0.05 were regarded as significant and p value higher than 0.05 were considered as non-significant.

### RESULTS:

Four hundred and eighty-one children were treated for this disease at same institute. They were from two years to sixteen year of age. Two hundred and sixty five were the male participants and two hundred and sixteen were female participants. About six percent patients were accounted for removal of appendix through operation from eight thousand four hundred and fifty six patients. Three hundred sixty one patients were from the upper class. They were able to afford the modern food at homes. One hundred and twenty patient children were from low social class. These patients were from non-urban areas and consumed food which is rich in the substances which are helpful in digestion. Two hundred and six children were admitted within one day of the start of the disease and they were in stable medical condition at the time of their arrival. Two hundred and seventy five patients got late admissions with lot of difficulties.

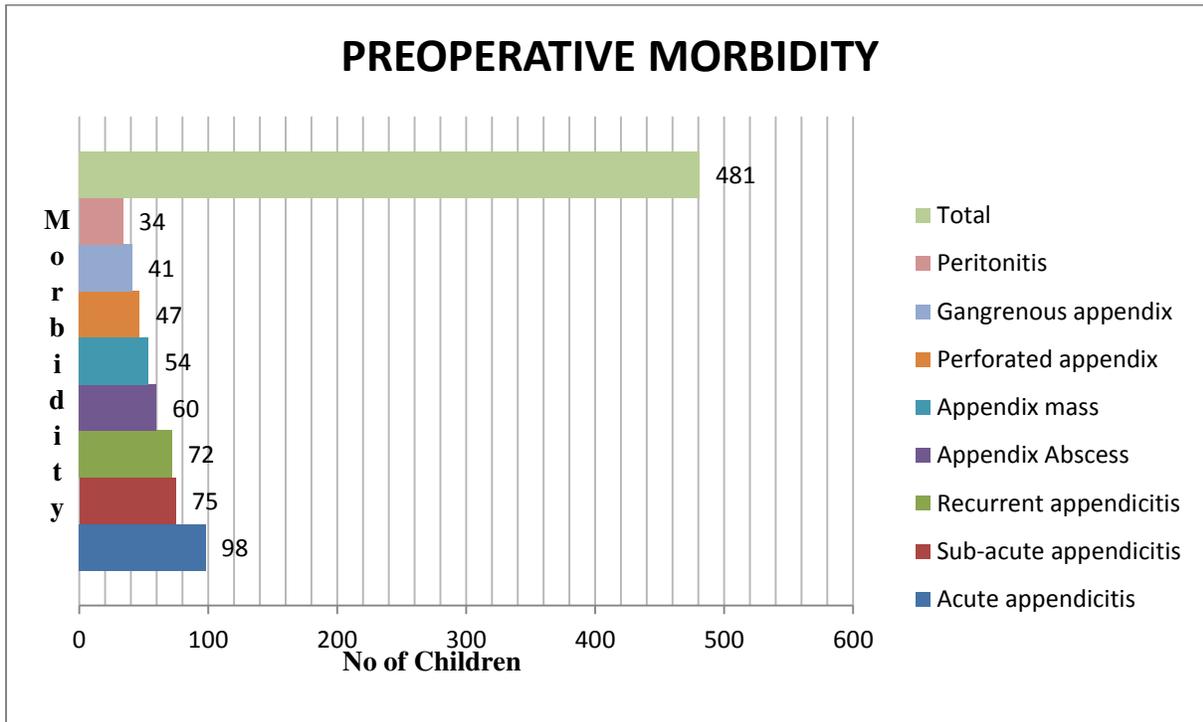
Table-1 describes the rates of the sign of this disease in the last ten years. The most frequent sign related to this disease was right iliac fossa pain. And the least frequent sign was the hindrance in the right leg movement. These sign can occur in combinations in the patients who have serious or recurring disease.

Table-I: Relative frequency of signs/symptoms	
Signs/symptoms	Frequency (%)
Right iliac fossa pain	462(96.0)
Generalized abdominal pain	409(85.0)
Fever	403(83.8)
Nausea/vomiting	322(67.0)
Anorexia	304(63.2)
Diarrhea	108(22.5)
Constipation	96(20.0)
Dysuria/urinary frequency	91(18.9)
Weight loss	72(15.0)
Impaired right leg movement	69(14.3)
Maximal right iliac fossa tenderness	475(98.8)
Right iliac fossa guarding	401(83.4)
Generalized abdominal tenderness	356(74.0)
Rebound tenderness	231(48.0)
Positive Rovsins sign	168(34.9)
Dehydration	160(33.5)
Pallor	72(15.0)
Anterior rectal tenderness/fullness	69(14.3)
Jaundice	63(13.1)



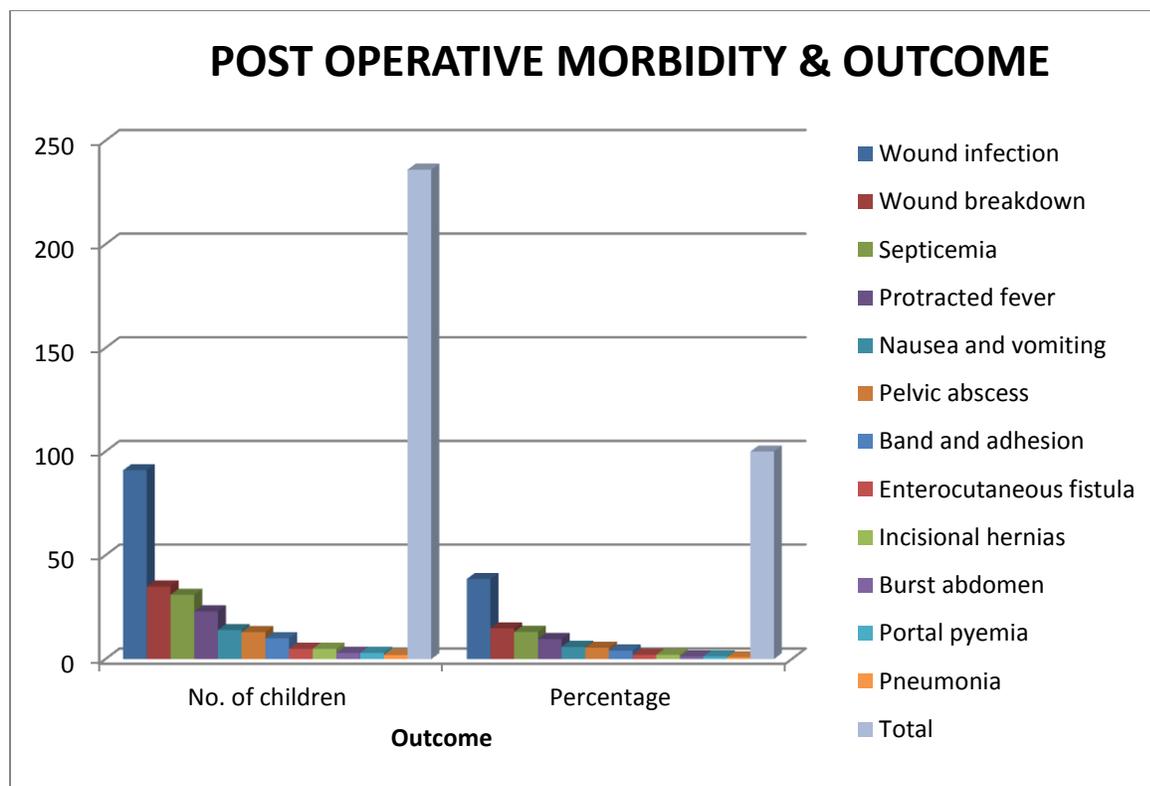
Medication has the ability to change these complications and signs. This causes difficulty in the discovery of the disease. More complications were found in the patients from non-rural areas due to late admissions in the hospitals. The appendix diseases with their percentages are mention in Table-2.

Table-II: Preoperative Morbidity	
Preoperative morbidity	No. of children
Acute appendicitis	98(20.4)
Sub-acute appendicitis	75(15.6)
Recurrent appendicitis	72(15.0)
Appendix Abscess	60(12.5)
Appendix mass	54(11.2)
Perforated appendix	47(9.8)
Gangrenous appendix	41(8.5)
Peritonitis	34(7.0)
Total	481(100)



The discovery of this disease was carried out at exploratory laparotomy in eighty five sufferers of the disease. After surgery unhealthy conditions were observed in two hundred and thirty six patients who got delayed medication. The outcome and health condition of the patients after operation are shown in Table-3.

Table-III: Postoperative morbidity and outcome			
Postoperative morbidity	No. of children	Percentage	Outcome
Wound infection	91	38.6	Responded to wound dressing
Wound breakdown	35	14.8	Dressing/secondary suturing
Septicemia	31	13.1	Responded to adequate antibiotics
Protracted fever	23	9.7	Subsided after two weeks
Nausea and vomiting	14	5.9	Subsided without sequel
Pelvic abscess	13	5.5	Responded to antibiotics/drainage
Band and adhesion	10	4.2	Responded to adhesiolysis
Enterocutaneous fistula	5	2.1	Spontaneous closure on treatment
Incisional hernias	5	2.1	Hernia repaired after two years
Burst abdomen	3	1.3	Antibiotics/closure, one died
Portal pyemia	3	1.3	All responded to adequate antibiotics
Pneumonia	2	0.9	Responded to two weeks antibiotics
Total	236	100	One mortality



### DISCUSSION:

The removal of the swollen and painful appendix, laparoscopic or open, is very authentic treatment of deformed appendix. Wrong treated appendix which could cause more complications, could lead to the loss of life as proved by this research work and other works carried out in the same field [9, 10, 16]. The outcome of patients after treatment was different in

both types of patients who admitted earlier and those who got late admissions [1, 2, 9, 16]. The incidence rate was very high than the concluded by other authors [3, 4, 12-15]. This research work gave the same belly operations [13]. The rate of unhealthy condition was due to late treatment was very high in this research work than other works [4, 13, 14]. Many patients were referred due to improper treatment [5-

7].

It is also confirmed by other studies that the swollen and painful appendix is easily discoverable in the adults [8, 17, 18]. The delay discovery in the children is very much similar to the other research [8, 18]. Different types of the appendixes due to complications are much similar to conclusions of the earlier studies [18, 20]. Exploratory laparotomy was also used in other studies for the discovery of this disease [14, 15]. The complications due to the after operation cause long admission duration and costly [1, 2, 10, 21]. Infection in the wound also causes incisional hernias which was recoverable in this work and other studies [13, 14].

### CONCLUSION:

The occurrence of swollen and painful appendix is increasing in Pakistan and the quantity of the patient was very larger than the patients reported in the past. Cases which were poorly treated, late discovery of disease and late admitted patients were in danger due to complications. Swollen and painful appendix is related to the unhealthy condition which led to long duration of admission in the hospital, expensive treatment. These conditions were less for the patients who were admitted earlier at the start of disease. Parents should be conscious about this disease. They should not consider the belly pain as normal.

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