

# To Determine the Factors that Affect the Delay in Diagnosis of Acute Appendicitis, Affecting the Morbidity and Mortality of Patients

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## ABSTRACT

**Objective/aim:** To reduce the morbidity and mortality associated with acute appendicitis, our study aims to identify the factors that contribute to diagnostic delays.

**Method:** This study is a cross-sectional analysis of data collected at a tertiary care facility in Ayyub Teaching Hospital Abbottabad and Timergara Teaching Hospital Dir Lower over the course of a year January 2022 to June 2022. All patients over the age of 16 who presented to the emergency room with acute appendicitis two or more days after the initial attack and who gave informed consent constituted the study population. All patients under the age of 16 who presented to the emergency room with signs and symptoms of acute appendicitis earlier than two days after the initial attack were excluded from the study. Patients' details were recorded in a standard proforma. Patients' ages, sexes, addresses, delays, doctors' diagnoses, and other relevant details were recorded. SPSS version 23 was used to analyse the data.

**Results:** There were 155 patients in the study, with a mean age of 35±12 years; 95 (65.34%) were male and 60 (40.67%) were female. Forty-seven (32.0%) patients were incorrectly diagnosed by ER doctors and sent home as outpatients; fifty (33.33%) were treated by non-medical professionals such as chiropractic physicians, nurses, patients who self-medicated, spiritual healers, hakeems, and homoeopaths and thirty-two (21.33%) did not seek any medical attention at all during the initial attack of appendicitis. Lack of patient or family financial means was the leading cause of delay (45.34 percent of all cases).

**Conclusion:** Early diagnosis and surgical intervention are critical for the effective care of acute appendicitis, which dramatically reduces complications, morbidity, and death of these patients. An immediate public education effort is required to encourage people to get the care they need at the right time and avoid difficulties.

**Keywords:** Appendicitis, delayed appendicitis, appendectomy, acute abdomen.

## INTRODUCTION

Acute appendicitis is a prevalent cause of acute abdomen in people of all ages, and as such, appendectomy is one of the most often performed emergency procedures [1-2]. Appendicitis has a fatality rate between 0% and 2.4%, while appendectomy for uncomplicated appendicitis has a same rate of success. Delayed diagnosis and surgery are major causes of increased morbidity and mortality for appendicitis, leading to complications like perforation of the vermiform appendix. There is some debate as to whether pre-admission or post-admission delays are the primary causes of surgical delays, but it is generally agreed that waiting to diagnose and treat a medical condition increases the risk of complications and death [3]. Co-morbidities and delay in action due to an increasing number of possible diagnoses contribute to the high mortality and morbidity rates seen in the elderly population [4]. If appendicitis is not treated promptly, complications such as appendicular mass, gangrene, perforation, abscess, and widespread peritonitis might develop. 8.6 percent of men and 6.7 percent of women will experience acute appendicitis at some point in their lives [5-6]. If treatment is delayed, gangrene and perforation can set in; in children, this can take anywhere from 8 to 24 hours, while it takes adults 36 hours [7]. Ignorance of the disease, the use of unproven home remedies or alternative treatments like homoeopathy, ayurveda, hakeem, Chinese medicine, spiritual healing practises, quacks, and a lack of proper ambulance and emergency services at district hospitals are just some of the causes of diagnostic delay in our part of the world [8]. Acute appendicitis is often misdiagnosed because its symptoms are similar to those of other conditions, such as acute gastro enteritis, urinary tract infection, and infectious diarrhoea. The positive and negative predictive values, as well as the sensitivity and specificity of a test, are what ultimately establish its value. Misdiagnosis of appendicitis is a common cause of medical malpractice in emergency rooms. Our research aims to reduce the morbidity and death caused by acute appendicitis by identifying the factors that contribute to a delay in diagnosis.

## MATERIALS AND METHODS

This research is a cross-sectional study that looks at information gathered at a tertiary care centre over the course of one year. Patients older than 16 who reported to the ED with symptoms of acute appendicitis two or more days after the initial incident and who gave informed consent to participate made up the n=155 who were enrolled in the study. Persons younger than 16 who presented to the ED within two days of symptom onset or who did not offer informed consent did not match the inclusion criteria. The patient's age, gender, address, the time they first noticed symptoms of appendicitis, how they were transported to the hospital, the findings of a comprehensive history and physical examination, the presence or absence of complications from the acute appendicitis (such as perforation, appendicular mass, auto amputation, gangrene, or abscess), and the outcomes of any pertinent laboratory investigations (such as a complete blood picture or urine analysis) were recorded in a pre Frequency and percentages were used to record quantitative data, whereas mean and standard deviation were used to record qualitative data in SPSS version 23.

## RESULTS

There were 155 patients included in the analysis, with a mean age of 35± 12 years (range: 16–70) and 95 (65.34%) males and 60 (40.67%) females. The patients' demographic information is listed in Table 1. 54% of the research group was comprised of individuals aged 20 to 40, and while hospital stays varied according to the presence or absence of preexisting co morbidities, the vast majority of patients required care for less than 10 days. Fifty (33.33%) patients were treated by non-medical experts such as homoeopaths, hakeems, spiritual healers, chiropractors, nurses, or patients who self-medicated; thirty-two (21.33%) patients did not seek any medical assistance during the initial bout of appendicitis. A look at Table 1 reveals that in 43.33 percent of these instances, the delay occurred because the patient or their

family lacked the financial resources to pay for the essential medical care.

Table 1: Delayed appendicitis patients share some of the characteristics listed

Characteristics	No of patients	Percentage
Gender		
Male	95	65.34%
Female	60	40.67%
Age groups		
< 20 years	47	32%
20 o 45 years	83	56%
>45 years	24	18%
Length of hospital day		
< 10 days	70	47%
10 to 25 days	25	17%
> 25 days	60	41%
Management		
Diagnosis by Non doctors	52	35%
Manage by district surgeon	28	24%
Misdiagnosed by physician	44	30%
Delays at home	34	23%
Mode of transport to the hospital		
By ambulance		
Via private transport	80	52%
By public transport	46	31%
	34	24%
Reasons for delay		
A lack of financial means	67	45.34%
Unavailability of appropriate modes of transportation	20	13.67%
Not having any loved ones to rely on	37	27%

## DISCUSSION

Appendicitis is a common medical topic [9]. Early diagnosis and treatment are essential for a positive outcome with minimal consequences [10, 11]. Even in the case of perforated appendicitis, surgery is still the recommended treatment [12-16]. Appendectomy can be done laparoscopically or through open surgery [17-19]. Due to the structure of Pakistan's healthcare system, patients with acute appendicitis are often seen initially by primary care physicians and alternative medicine specialists. It is then up to each of these institutions to decide whether a period of observation, medical therapy (such as antibiotics), or referral for appropriate surgical care and intervention is warranted in light of the diagnosis. However, delays in referral for proper surgical care led to complications including perforation and an increase in morbidity and mortality. In our analysis, 61.33 percent of the population was male, which is consistent with the results of other studies that have looked at the reasons for this delay in seeking surgical therapy. According to Salatiet research, men are disproportionately afflicted by this issue. In contrast to our findings, which show an average hospital stay of over 20 days, those of Aly Saber et al. only report a maximum of 7 days. And according to Ch Chung et al, the number of patients misdiagnosed by the physicians composed of 22.1% of the patient population, as compared to 30.0% in our study and 23.0% in a comparable study conducted in Kashmir. Both our study and Salatiet Alfond 's a comparable number of patients who presented with delayed appendicitis due to mismanagement by non-medical professionals and excessive delays at home (23.33 percent and 53.0 percent , respectively). Because of Pakistan's status as a developing country with inadequate infrastructure, it is more challenging for patients, especially those living in remote or rural areas, to access medical facilities in a timely way for surgical procedures they may require. Patients in rural areas are more likely to be manual labourers whose income depends on them working every day; therefore they are more prone to disregard the warning symptoms of their sickness until the pain becomes intolerable. Additionally, there is a thriving quack industry in Pakistan; however, due to the absence of any sort of regulatory authority for quacks and homoeopaths, these individuals are free to exploit the illiterate populace of Pakistan's rural areas. Many people in these locations seek help from quacks in the hopes of getting better, but this often delays surgical surgery, which can lead to even more serious

consequences. The fact that most patients will have their first engagement with a general practitioner, quack, hakeem, homoeopath, etc., makes it even more challenging to diagnose and manage acute appendicitis in youngsters. They often mask symptoms and prevent surgical examination with antibiotics and painkillers, increasing the risk of morbidity and mortality. In order to reduce the time that patients must wait for a diagnosis and subsequent referral, we propose the creation of a governing body tasked with the elimination or, at the very least, regulation of quacks and alternative medicine practitioners, as well as the expansion and improvement of primary care clinics in rural areas.

## CONCLUSION

Early diagnosis and surgical intervention are critical for the effective care of acute appendicitis, which dramatically reduces complications, morbidity, and death of these patients. The public needs to be made aware of the critical nature of seeking medical help quickly to prevent complications.

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