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An Observational Study on Prevalence, Incidence, and Risk Factors of Appendicitis in a Tertiary Care Centre

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1. INTRODUCTION

Appendicitis is an acute inflammation of the vermiform appendix, usually due to lumen obstruction by fecaliths, lymphoid hyperplasia, or infection. Obstruction causes intraluminal pressure rise, impaired blood flow, bacterial overgrowth, and eventually inflammation, which may advance to perforation and peritonitis if left untreated[1].

In the world, Appendicitis is still among the leading causes of acute abdomen necessitating urgent surgery. Per the Global Burden of Disease (GBD) Study 2019, an estimated 17.7 million incident appendicitis cases occurred globally, with an age-standardized incidence of 229.9 per 100,000 population[2]. Though. Global incidence has been variable. But still, a prominent. Health Burden especially in young adults and adolescents.[3].

In India, the appendicitis burden is increasing consistently due to urbanization, dietary changes, and enhanced diagnostic technology. The GBD data of 2019 indicated that India accounted for a large portion of the world incidence and there were increases in both prevalence and years lived with disability from appendicitis[4]. Regional data from states such as Tamil Nadu are limited. One retrospective study from South India reported that appendicitis accounted for a significant proportion of emergency abdominal surgeries, especially in younger age groups[5].

Chengalpattu, a rapidly urbanizing district in Tamil Nadu, presents a unique healthcare landscape with both rural and urban populations accessing tertiary care facilities. The epidemiological picture of appendicitis in the region has not been described clearly, and heterogeneities in risk factors like diet, hygiene, and access to health care can affect patterns of disease. As no strong local data exist, there is a need to investigate the prevalence, incidence, and risk factors of appendicitis in the area.

This observational study attempts to bridge this gap by systematically examining appendicitis cases in a tertiary care facility in Chengalpattu. Results are expected to feed into clinical protocols, assist early diagnosis, and help regional public health policy planning.

2. OBJECTIVES

Primary Objective

- To estimate the Prevalence of appendicitis in patients presenting to a tertiary care teaching hospital in Chengalpattu, Tamil Nadu, between January 2023 and January 2024.

Secondary Objectives

1- To identify the demographic and lifestyle risk factors for appendicitis among the study group.

3. METHODOLOGY

Study Design

- This research is a descriptive, observational study on secondary data analysis.

Study Setting

- The study was done in a tertiary care centre in Chengalpattu, Tamil Nadu, that serves a mixed urban and rural population.

Study Period

- The analysed data is for a one-year period from January 2023 to January 2024.

Study Population

- All the patients with a diagnosis of appendicitis at the tertiary care centre during the study period were included for analysis.

Inclusion Criteria

- All age and gender patients diagnosed with appendicitis from January 2023 to January 2024.
- Patients who had clinical assessment and/or surgical confirmation of appendicitis.

Exclusion Criteria

- Incomplete or absent medical records.
- Patients with incidental appendectomy without previous clinical diagnosis of appendicitis.

Data Collection

1. Secondary data were collected retrospectively from hospital medical records, including:
2. Demographic data (age, gender, residence)
3. Clinical presentation (symptoms, symptom duration)
4. Risk factors (e.g., food habits, past history)
5. Confirmation of final diagnosis (clinical/surgical/pathological)

Data Analysis

- Data were coded and examined using Microsoft Excel.
- Descriptive statistics like frequencies, percentages, mean, and standard deviation were employed to summarize the results.
- Results were reported in the form of tables and charts for ease of understanding.

4. RESULTS

Total sample size (n) = 496

1. Gender Distribution

51.8% of the total appendicitis cases registered during the study period were female, and 48.2% were male (Figure 1). This represents a slightly higher incidence among females than males

2. Age Distribution

The distribution of patients according to age (Figure 2) indicates that the majority of cases of appendicitis happened in the age group 20–30 (133 cases), followed by the 31–40 year old group (110 cases). Combined, these groups comprised the majority of the cases, Fewer numbers were noted in extremes of age, with 49 cases in the 1–12 age range and 19 cases in the 61–75 group.

3. Risk Factors

The most frequent risk factors seen in the study population (Figure 3) were:

- Constipation (337 patients)
- Low dietary fibre intake (325 patients)
- Alcohol use (41 patients)

Both constipation and low dietary fibre were identified as salient factors, both of which are recognized as contributing to luminal obstruction, a major pathogenic process in appendicitis. Alcohol use, occurring in a minority, may have contributory actions in a subgroup of patients.

Figures

Figure 1: Male and female distribution of cases of appendicitis.

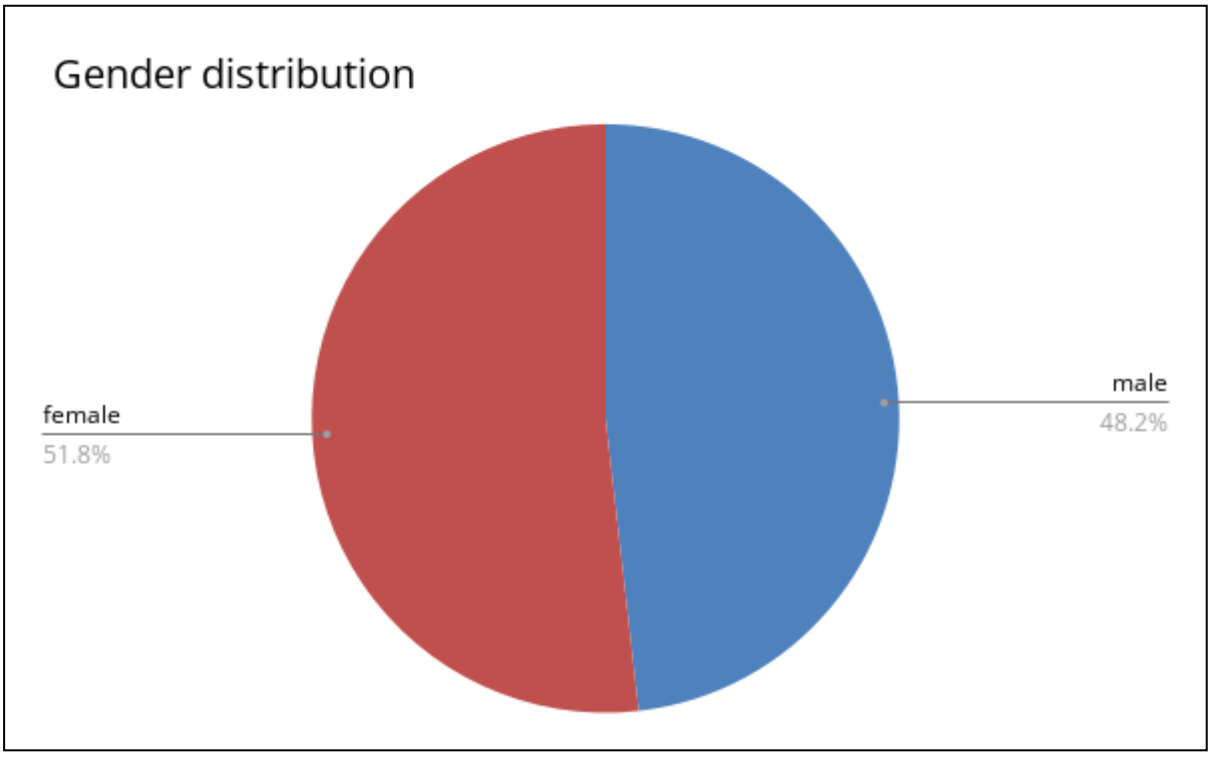


Figure 2: Distribution of patients with appendicitis according to age

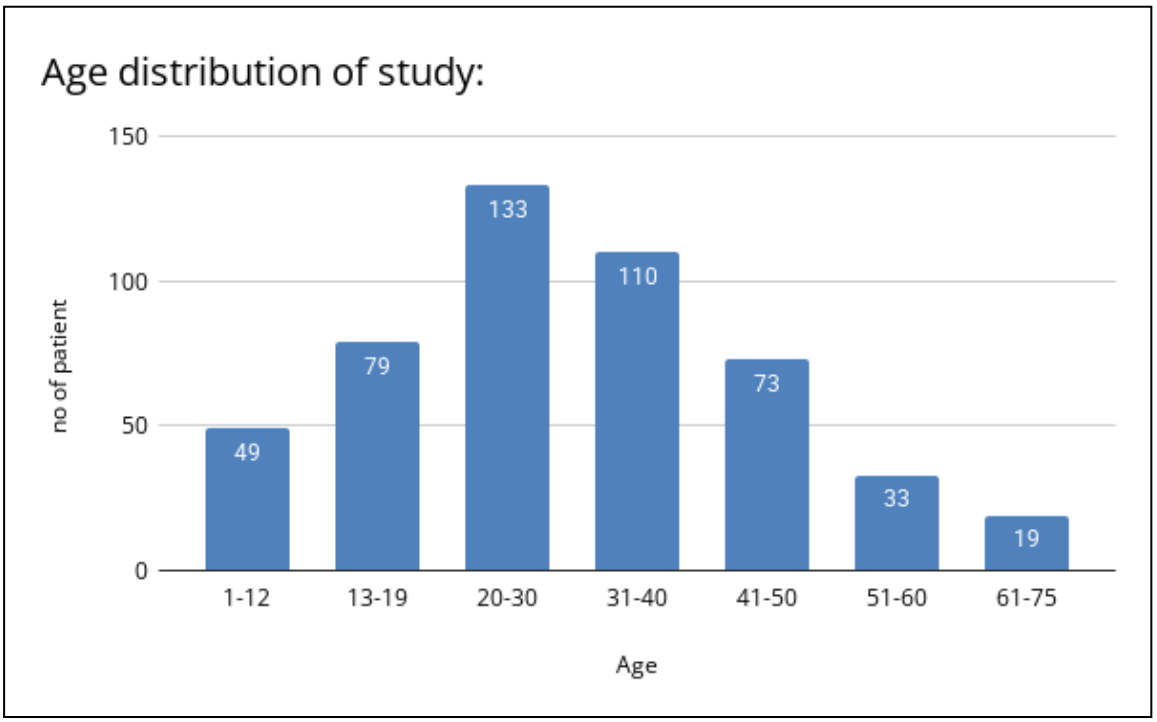
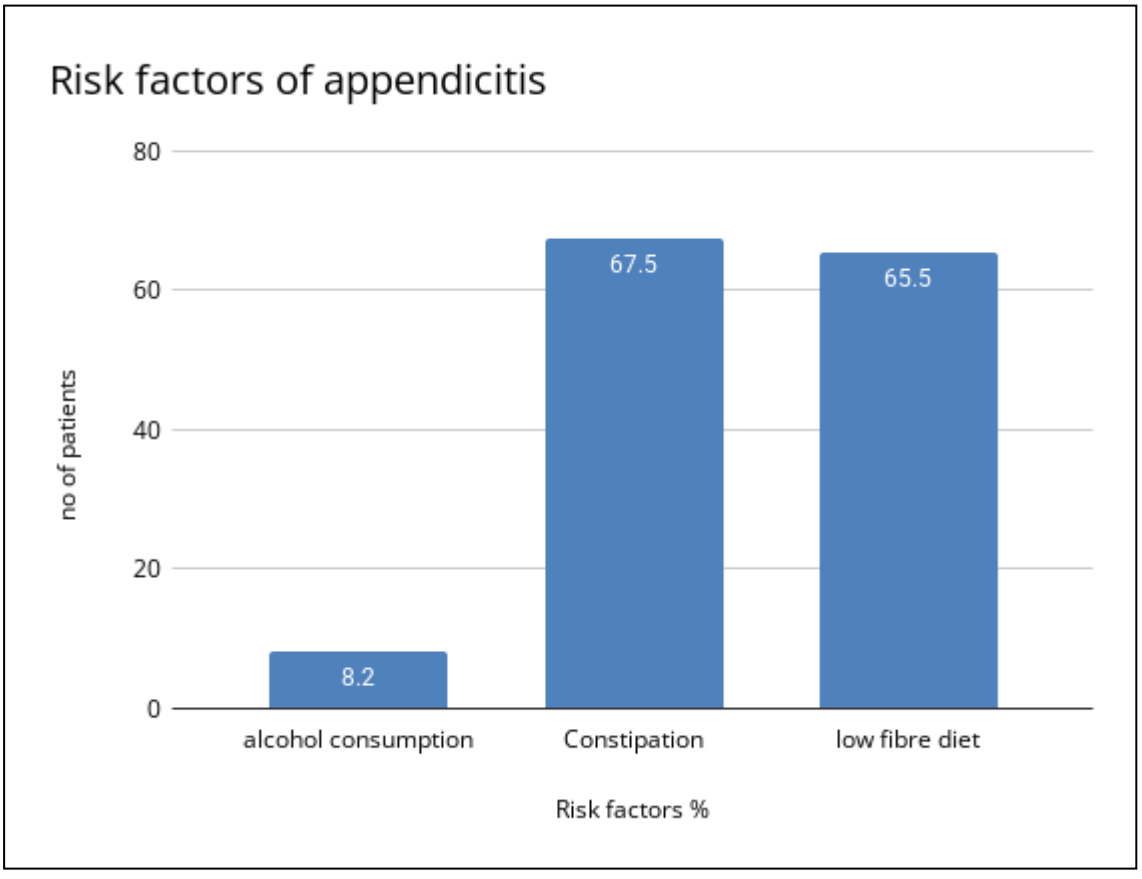


Figure 3: Risk factors for appendicitis in the study group



5. DISCUSSION

This observational study from a tertiary care facility in Chengalpattu, Tamil Nadu, presents valuable regional data on the demographics, symptomatology, and risk factors for appendicitis. The results are in line with larger epidemiological patterns but also uncover some distinctive local tendencies.

Epidemiological Trends

In the current research, females were marginally more affected (51.8%) compared to males (48.2%). This contrasts with conventional Western and international data reporting male predominance[6]. Indian studies, however, in recent times have yielded varying gender distributions, with occasional female preponderance[7]. These variations could be due to differences in lifestyle, food habits, and healthcare access.

The highest incidence was observed in the 20–30 year age group, followed by the 31–40 group. This aligns with global and national literature that has shown appendicitis to be a predominantly young adult disease[8,9]. The vulnerability of this age group is postulated to result from enhanced lymphoid hyperplasia and risk exposures related to lifestyle[10].

Risk Factors

The prominent risk factors that were identified included constipation and low fiber intake, in agreement with prevalent literature citing dietary factors to be responsible for appendicitis through fecalith development and luminal obstruction[11,12]. A significant number of patients (n=41) had a history of alcohol use. Although not a direct risk factor, alcohol-induced gastrointestinal symptoms can indirectly contribute to inflammation and late presentation, particularly in low-resource or rural environments[13].

Lack of availability of factors like genetic history and recurrent gastrointestinal infections in our database can be explained by second data collection limitation.

Global Context

The data concur with the findings in both high-resource and low-resource settings. Globally, there has been a reduction in mortality and disability-adjusted life years (DALYs) due to appendicitis, though incidence is still high among young adults[14]. Delayed presentation and limited access to early surgical intervention are key concerns in lower-resource settings[13]. Appendicitis is still a major cause of emergency surgical procedures across the world, with inconsistent presentation in adults and children[15,16].

Clinical and Public Health Implications

These results highlight the importance of public health initiatives targeted at dietary education, particularly on fiber consumption. Public awareness campaigns may also facilitate early detection of symptoms and diminish the rate of perforated appendicitis. Although real-world hospital data are a strength of this study, a weakness lies in missing confounders and follow-up information because of its retrospective design.

Future prospective research is necessary to determine causality and to investigate genetic, microbiome, and socioeconomic factors contributing to risk of appendicitis.

6. CONCLUSION

This observational study at a tertiary care centre in Chengalpattu, Tamil Nadu, underscores the ongoing public health significance of acute appendicitis, particularly in young adults aged 20–40 years. The near female predominance seen in our sample contrasts with classical worldwide trends and could be due to regional demographic or behavioral influences.

Constipation and low dietary fiber consumption were the outstanding risk factors that emerged, supporting the role of dietary correction and community awareness in preventive interventions. Timely diagnosis and intervention to avoid complications, especially in resource-poor environments, are also highlighted by the study.

While circumscribed by its retrospective design and use of secondary data, the study is a useful regional contribution to appendicitis epidemiology and risk profile. Prospective, multi-centric research is needed in the future to investigate genetic, microbiological, and lifestyle determinants further and to guide policy and clinical practice.

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