

## The Relationship Between Age, Gender And The Incidence Of Acute Appendicitis In Naval Hospital dr. Oetojo Sorong Period January 2021 – June 14 2022

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### ABSTRACT

Appendicitis is a condition which inflammation occurs in the vermiform appendix, commonly known by the public as appendicitis. Appendicitis can also cause acute inflammation most commonly in the right area of the abdominal cavity and the most common cause of emergency abdominal surgery. Based on data in the city of Sorong, West Papua province, this disease is one of the diseases with a high incidence in the surgical section. Based on a preliminary study conducted in 2019, At Sele Be Solu Hospital, Sorong City, there were 70 cases of postoperative appendicitis in just 3 months in 2019. There has been no previous research in Sorong regarding the relationship between age, gender and the incidence of appendicitis. I. Objective: to determine the relationship between age and gender with the incidence of acute appendicitis. Methods : This study was conducted on patients diagnosed with acute appendicitis at the Naval Hospital dr. Oetojo Sorong from January 2021-14 June 2022 on 71 respondents with a cross sectional design study using secondary data. Results: The proportion of high risk age (20-40 years) is 54.9%, and low risk age (<20 or >40 years) is 45.1%. Female gender is 63.4%, and male sex is 36.6%, the incidence of acute appendicitis is 58.9%, and perforated appendicitis is 21.1%. Analysis of the relationship between age and the incidence of appendicitis was obtained with a value of  $p=0.013$ , the relationship between sex and the incidence of appendicitis was obtained with a value of  $p=0.007$ . Conclusion: there is a statistically significant relationship, namely age and gender with the incidence of acute appendicitis.

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### 1. INTRODUCTION

Appendicitis is a condition when inflammation took place in appendix vermiformis, it used to called 'usus buntu' in public [1]. Appendicitis also caused acute inflammation in right area of abdominal cavity, and emergency surgery mostly come from this cause [2].

Based on World Health Organization (WHO) data in 2010 mortality rate of appendicitis in the world is about 21.000 people. Prevalence of appendicitis in Europe is relatively high 16% compare to 7% in America, 4,8% in Asia and 2,6% in Africa from a total population. This high prevalence in Europe and America because of the low fiber menu in community. In Africa and Asia the prevalence is lower but tend to increased because of adoption European dietary habit in the people there. The prevalence of appendicitis in Indonesia in 2006, 2009, 2016, 2017 are 28.949 patient, 30.703 patient, 65.755 patient and 75.601 patient, this show an increased number of appendicitis patient year by year [3]. Incidence of appendicitis in Indonesia is the highest among the other abdomen emergency cases [4],[5].

In Sorong, West Papua Province, appendicitis is one of the highest surgery cases found in the surgical department. Based on preliminary study in 2019, in Sele Be Solu hospital city of Sorong, there were 70 cases post operating appendicitis only in three months period in 2019 [6].

The risk factor of acute appendicitis is age. Yes, appendicitis can be founded in all age but mostly cases came in between 20 up to 40 years of age [2]. Based on study in Taiwan, the incidence has grown step by step along the increase of age, and it reached its peak in 15 to 19 years of age for male and 20 to 24 years of age in female. After that the incidence decreased and reached the lowest point at 55 to 59 years of age for both gender. Overall, group 15 up to 29 years old is the most highly risk group for both gender [7]. Other factor that affect appendicitis rate is: gender and dietary habit. In several studies, male tend to get appendicitis than female, this because of male has more lymphoid tissue than female. Appendicitis also found in people who consumption low fiber food daily, or irregular time of eat, these can be ended with appendicitis. Therefore a highly fiber dietary is recommended [8].

Based study by Adhar A, et al they found the prevalence of acute appendicitis case in high risk age (15-25 years old) is 57,4% this is higher than low risk age group 42,6% (with odd ratio 4,717) [9]. This result supported by Awaludin study in 2020. Acute appendicitis mostly found in < 35 years old, with p value=0,000 [2].

## 2. METHOD

This study is analytic observational research with survey approach and used cross sectional design. This research took place in surgery clinic of Naval Hospital dr. Oetojo (RSAL dr. Oetojo), Sorong period March – June 2022. Secondary data from medical record were used in this research. Patient data with inclusion criteria would be taken and collected. This data was coming from period January 2021 to 14 June 2022.

## 3. RESULTS AND DISCUSSION

### Univariate Analyses

Univariate analyses were conducted to each variable of research. This analyses to category of distribution number from each variable such as age, gender, case of acute appendicitis and perforate appendicitis in percentage.

#### Patient distribution based on age

Table 1. The Number of Patient Distribution Based on Age in RS-AL dr. Oetojo Sorong

Age	Number	Percentage (%)
20-40 years old	39	54.9
<20 or >40 years old	32	45.1
Total	71	100.0

The results of spread number by age can be seen in table 1 that shown majority patient, 39 patient (54,9%) were in high risk group of age 20-40 years old. And lower number in low risk group of age < 20 years old or > 40 years old, 32 patient (45,1%)

#### Distribution of appendicitis rate

Tabel 2. Distribution of Appendicitis Rate in RS-AL dr. Oetojo Sorong

Appendicitis rate	Number	Percentage (%)
Acute appendicitis	56	78.9
Acute perforated appendicitis	15	21.1
Total	71	100.0

The result based on table 2 is majority patient, 56 in number (78,5%) had acute appendicitis. And the number of acute perforated appendicitis is 15 (21,1%).

### Appendicitis patient distribution based on gender

Table 3. Appendicitis Patient Distribution Based on Gender In RS-AL dr. Oetoyo Sorong

Gender	Number	Percentage (%)
Male	26	36.6
Female	45	63.4
Total	71	100.0

The results shown that majority patient were female, 45 patient (63.4%) and male patient were 26 (36.6%)

### Bivariate Analyses

#### Relationship between age and acute appendicitis rate

Table 4. Relationship between Age and Appendicitis in RS-AL dr. Oetoyo Sorong.

Age (year)	Appendicitis rate			p-value
	Acute	Acute perforated	Total	
(20-40)	35	4	39	0.013
(<20 or >40)	21	11	32	
Total	56	15	71	

Based on results of chi square statistical test shown that there is significant relationship between age and appendicitis rate in RS-AL dr. Oetoyo sorong with p-value 0,013 (<0,05).

#### Relationship between gender and acute appendicitis rate.

Table 5. Relationship between Gender and Appendicitis Rate. in RS-AL dr. Oetoyo Sorong

Jenis kelamin	Appendicitis rate			p-value
	Acute	Acute perforated	Total	
Male	25	1	26	0.007
Female	31	14	45	
Total	56	15	71	

Based on results of chi square statistical test shown that there is significant relationship between gender and appendicitis rate in RS-AL dr. Oetoyo sorong with p-value 0,007 (<0,05).

### Discussion

#### Description age and appendicitis rate

Based on this research we found that from 71 cases of acute appendicitis there were 39 patient (54,9%) from 20-40 years old group of age, and from the group of <20 years old or > 40 years old there were 32 patient (45,1%). And from 71 cases of appendicitis acute there were 15 (21,1%) cases from 20-40 years old group of age were acute perforated appendicitis. Majority patient were female, 45 patient (63.4%) and male 26 patient (36.6%). The same results came from the study of Risky Zuriati (2016), it said that appendicitis more happened in group of age 20-30 year old. Same results from Ivan CP (2010) said that from 60 patient of appendicitis mostly came from 21-30 years old, 21 patient (35%).

Appendicitis can be found in all age but mostly in span 20 up to 30 years old, (Nasution, 2013) [2]. This can be happened because the poor dietary at that age. Yes it's not happened to anyone but 20-40 years old is productive age and someone in that age done so much things and can affect to their way of life and their dietary way. Based on this study, 20-40 years of age was susceptible for appendicitis. This can be seen when from the research that mostly appendicitis patient came from 20-40 years of age.

#### **Description of gender and appendicitis rate**

Based on this research, from 71 cases of acute appendicitis shown that mostly came from female patient, 45 patient (63.4%) and male 26 patient (36.6%). The same results came from Iftina Amalia (2016), "Socio- demography description of acute appendicitis symptoms in RSU South Tangerang", they said from 111 patient in period Mei to June 2016, 64 patient (57.7%) were female and 47 patient (43.3%) were male [10]. Risky Zuriati (2016) in her study said that majority appendicitis cases, 25 patient (52,1%) were female compare to 23 patient (47,9%) patient were male [11].

Different results came from the study of Anderson et al, they said that acute appendicitis mostly found in male. Appendicitis mostly found in male than in female, because of the proportion of lymphoid tissue in male are greater than female. In pre menopause age the case appendicitis in female are greater than in male, this because hormonal changes in female [13].

#### **Relationship between age and appendicitis rate**

Based on result of statistical test, it shown that age has a significant relationship with appendicitis rate in RSAL dr Oetojo, with p-value=0,013 (<0,05). The same results came from Iftina Amalia (2016) study, it said that from 111 patient of appendicitis mostly came from 15-30 group of age with p-value=0.000 [10]. Awaluddin (2020) also done the same results in Batara Guru Belopa Hospital in Luwu regency, it said that there were relationship between age of <35 and appendicitis rate with p-value=0.000 [2].

Appendicitis can be found in all age but mostly in span of age 20 to 30 years old [2]. 20-40 years old is productive age and someone in that age done so much things and can affect to their way of life and their dietary way. Based on this study, 20-40 years of age was susceptible for appendicitis.

#### **Relationship between gender and appendicitis rate**

Based on results of statistical test in this research it shown that gender has significant relationship with incidence of appendicitis in RSAL dr Oetojo Sorong with p-value=0,007. The same results with the study of Iftina Amalia (2016) that shown there was a relationship between gender and incidence of appenditis with p-value= 0,012 [10]. the same results also shown in Datuan study (2015), "Evaluation of rationality the using of prophylaxis antibiotics on operating surgery of acute appendicitis adult and geriatric patient in Bethesda Hospital, Jogjakarta" with 30 sample and 1 month research in April 2015. The research found that gender had significant relationship to incidence of appendicitis with p-value=0,004 [12]. Different results from Awaludin study shown that male has more incidens rate of appendicitis than female with p-value 0.003 [2]. Adhar Arifuddin et al did the same thing, they said that male 1,657 times greater in change to get appendicitis than female [9]. Male tend to had inflammation in appendix because of the anatomical difference with female. The appendix wall in male has many lymphoid tissue than in female [13]. This can explain why appendicitis incidents in male are higher than in female [2], [13]. In pre menopause age the case appendicitis in female are greater than in male, this because hormonal changes in female [13].

Based on this research shown that there were significant relationship between gender, especially female with incidence rate of appendicitis in RSAL dr Oetojo Sorong

#### 4. CONCLUSION

The highest number of appendicitis rate is at 20-40 years old group of age, it's 39 patients (54,9%) and least in group of age <20 years old and > 40 years old, it's 32 patients (45,1%). There are more cases appendicitis in female, 45 patients (63,4%) than in male, 26 patients (36,6%). Type of simple acute appendicitis were more often occurred than perforated type. Based on relationship between age and incidence of appendicitis there are significant relationship with  $p\text{-value}=0.013$ . Results of statistical test shown that gender has significant relationship with appendicitis rate in Naval Hospital dr. Oetoyo, Sorong with  $p\text{-value}=0,007$ .

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