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Risk Factors for Gastric Cancer at RSUP Prof. Dr. I.G.N.G. Ngoerah Year 2018-2023

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ABSTRACT

Gastric cancer is the fifth most common cancer and the fourth most common cause of death due to cancer in the world. The development of gastric cancer tends to be quite slow and takes years, so it is often found in the late stages. The cause of stomach cancer is not known for certain, but it is believed to be caused by many factors. This study aims to determine the risk factors for gastric cancer at RSUP Prof. Dr. I.G.N.G. Ngoerah was diagnosed in 2018-2023. This research was conducted using a retrospective descriptive method using secondary data in the form of medical records on 46 samples of gastric cancer patients who were controls or treated at RSUP Prof. Dr. I.G.N.G. Ngoerah was diagnosed in 2018-2023 The variables studied include the dependent variables, namely age, gender, peptic ulcers, blood type, obesity, alcohol consumption and smoking. The results of the analysis showed that gastric cancer patients at RSUP Prof. Dr. I.G.N.G. The majority are over 50 years old (82.6%), male (58.7%), have no peptic ulcers (89.1%), have blood type A (37%), underweight (50%), are not consume alcohol (97.8%), and do not smoke (97.8%).It can be concluded that the risk factors for gastric cancer patients at RSUP Prof. Dr. I.G.N.G. Ngoerah majority are over 50 years old, male, have no peptic ulcers, have blood type A, are underweight, do not consume alcohol and do not smoke.

Keywords: *Gastric Cancer, Risk Factors, RSUP Prof. Dr. I.G.N.G. Ngoerah*

INTRODUCTION

Gastric cancer is the fifth most frequently encountered cancer. The incidence of gastric cancer has decreased in the last 50 years globally, but is still the fourth leading cause of cancer death in the world. In Indonesia, gastric cancer cases are quite low, the estimated number of incidents is 3484 cases, but has a high mortality of 2494 deaths (WHO, 2021). In Bali, specifically at Sanglah General Hospital, there were 25 cases during 2016-2020 with the most cases being over 60 years old with 13 cases (Arimbawa et al., 2022). Despite some improvements, gastric cancer survival is still low, so further prevention is needed (Morgan et al., 2022).

The development of gastric cancer tends to be quite slow and takes years, so it is often found in the late stages. Gastric cancer is diagnosed after the appearance of symptoms or screening tests such as endoscopy are the gold standard. Patients with early stage gastric cancer usually do not complain of symptoms related to non-specific symptoms such as dyspepsia (Correa, 2013).

The cause of stomach cancer is not known for certain, but it is believed to be caused by many factors. The occurrence of gastric cancer is associated with risk factors, such as host and environmental factors (Shah & Bentrem, 2022). Host factors include age, gender, blood type A, peptic ulcers, and pernicious anemia. Other host factors are a family history of gastric cancer and the presence of hereditary cancer syndrome disorders (Slavin et al., 2019). The environmental factors associated with gastric cancer are H. pylori infection, obesity, high salt diet, alcohol consumption, smoking, Epstein-Barr virus (EBV) infection, and a history of certain therapies.

There are many cases of gastric cancer that are not diagnosed, resulting in many advanced stage cases. Many people do not realize that they are at risk of stomach cancer. This can be due to the difficulty of early diagnosis of cancer which shows non-specific disease symptoms, so it is only discovered when it has become an advanced stage with a poor prognosis. Therefore, it is necessary to know the general description of the risk factors for gastric cancer (Ilic & Ilic, 2022).

MATERIALS & METHODS

This study used a retrospective descriptive method with gastric cancer patients who were controlled or treated at RSUP Prof. Dr. I.G.N.G. Ngoerah was diagnosed in 2018-2023. The variables studied include the dependent variables, namely age, gender, peptic ulcers, blood type, obesity, alcohol consumption and smoking.

RESULT

This research is a retrospective descriptive study aimed at gastric cancer patients to look at the risk factors for gastric cancer at RSUP Prof. Dr. I.G.N.G. Ngoerah. The variables studied include the dependent variables, namely age, gender, genetic factors, blood type, *H. pylori* infection, alcohol consumption and smoking.

Tabel 1. General Characteristics of Research Subjects

Characteristics	Category	Frequency (n)	Percentage
Age	<50 year	8	17.3%
	≥50 year	38	82.6%
Gender	Male	27	58.7%
	Female	19	41.3%
Peptic Ulcers	Yes	5	10.9%
	No	41	89.1%
Blood Type	A	17	37%
	B	12	16.1%
	AB	3	6.5%
	O	14	30.4%
Obesity	BMI <18,4	23	50.0%
	BMI 18,5 – 25	31	45.7%
	BMI >25,0	2	4.3%
Alcohol Consumption	Yes	1	2.2%
	No	45	97.8%
Smoking	Yes	1	2.2%
	No	24	97.8%

1. Age of Gastric Cancer Patients at RSUP Prof. Dr. I.G.N.G. Ngoerah

Based on age category, the majority or 82.6% of gastric cancer patients are aged 50 years and over. Meanwhile, the remaining 17.3% are patients under 50 years of age.

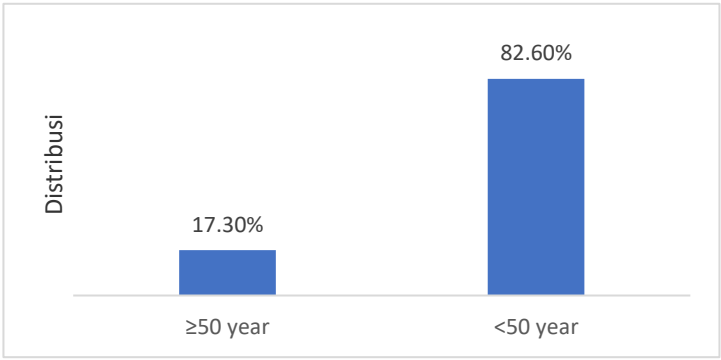

Figure 1. Age of Gastric Cancer Patients at RSUP Prof. Dr. I.G.N.G. Ngoerah

Figure 1 shows that gastric cancer patients at RSUP Prof. Dr. I.G.N.G. Ngoerah, the age group 50 years and over has greater representation than the age group under 50 years.

2. Gender of Gastric Cancer Patients at RSUP Prof. Dr. I.G.N.G. Ngoerah

The number of gastric cancer patients at RSUP Prof. Dr. I.G.N.G. Ngoerah based on gender can be explained in Figure 2 as follows.

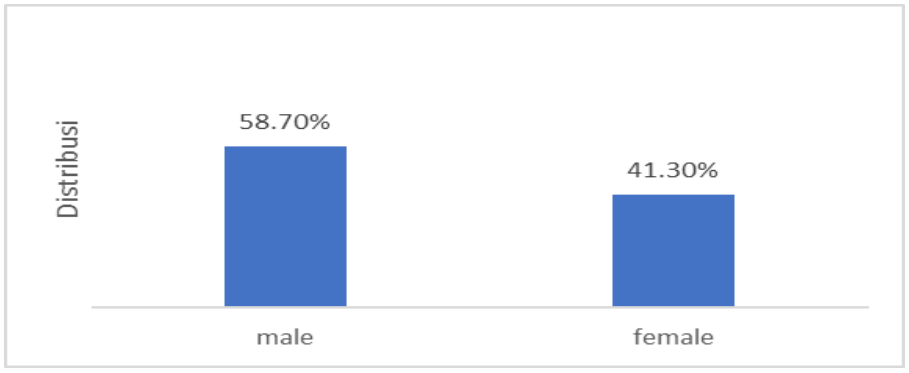

Figure 2. Gender of Gastric Cancer Patients at RSUP Prof. Dr. I.G.N.G. Ngoerah

It can be concluded that gastric cancer patients at RSUP Prof. Dr. I.G.N.G. Ngoerah, men have a greater representation than women, with a ratio of 58.7% men and 41.3% women.

3. Peptic Ulcers of Gastric Cancer Patients at RSUP Prof. Dr. I.G.N.G. Ngoerah

There were 5 cases in which peptic ulcer were present, representing 10.9% of the total sample observed. In contrast, there were 41 cases in which genetic factors were absent, representing 89.1% of the total observed sample.

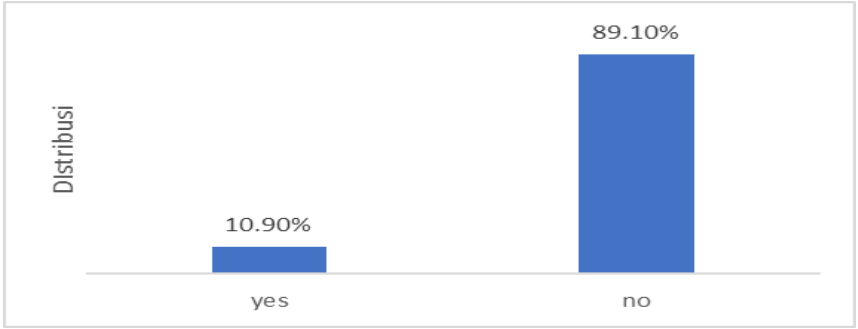

Figure 3. Peptic ulcers of gastric cancer patients at RSUP Prof. Dr. I.G.N.G. Ngoerah

Based on Figure 3, it can be concluded that the majority of gastric cancer patients at RSUP Prof. Dr. I.G.N.G. The observed ngoerahs had no relevant peptic ulcers, while only about 10.9% of the samples had peptic ulcers involved.

4. Blood Types of Gastric Cancer Patients at RSUP Prof. Dr. I.G.N.G. Ngoerah

Based on blood type, patients with blood type A had a frequency of 17, which represented 37% of the total samples observed. Blood type B has a frequency of 12, which represents 26.1% of the total sample. Blood type AB has a frequency of 3, which represents 6.5% of the total sample. Meanwhile, blood type O has a frequency of 14, which represents 20.4% of the total sample.

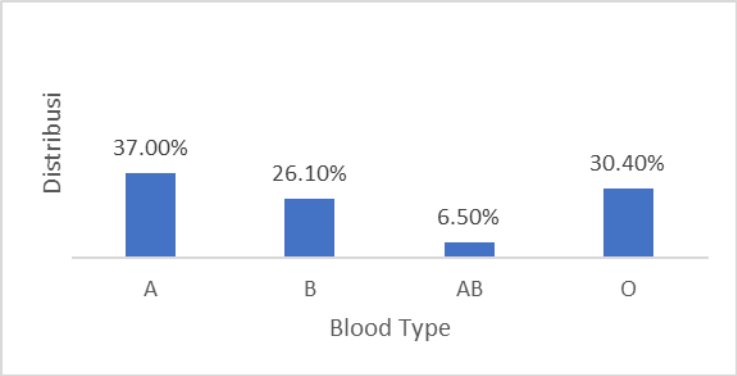

Figure 4. Blood Types of Gastric Cancer Patients at RSUP Prof. Dr. I.G.N.G. Ngoerah

Based on Figure 4, it can be concluded that the majority of gastric cancer patients at RSUP Prof. Dr. I.G.N.G. Ngoerah was observed to have blood type A.

5. Obesity in gastric cancer patients at RSUP Prof. Dr. I.G.N.G. Ngoerah

BMI <18.4 or Underweight was recorded in 23 case, representing 50% of the total samples observed. Normal weight or BMI 18.5 −25 were recorded in 21 cases, representing 4.3% of the total sample. And there overweight or BMI >25.1 for 2 cases, which represented 4.3% of the total sample.

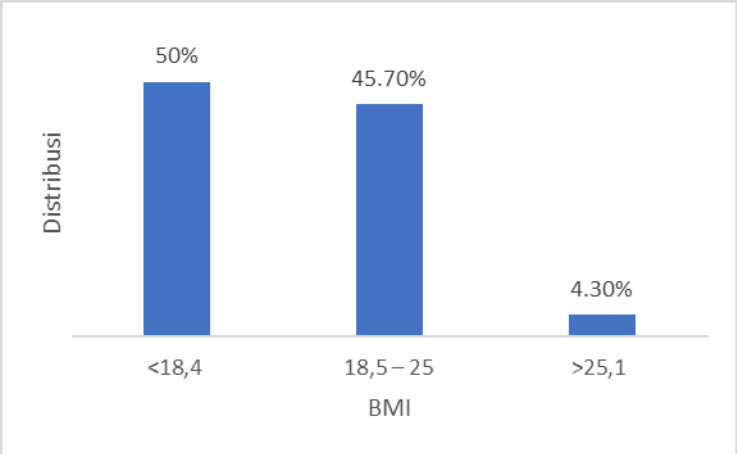

Figure 5. Obesity in gastric cancer patients at Prof. Hospital. Dr. I.G.N.G. Ngoerah

From Figure 5, it can be concluded that the majority of gastric cancer patients at RSUP Prof. Dr. I.G.N.G. Ngoerah who has underweight.

6. Alcohol consumption of gastric cancer patients at RSUP Prof. Dr. I.G.N.G. Ngoerah

Patients who consumed alcohol had a frequency of 1, which represented 2.2% of the total sample observed. Meanwhile,

patients who did not consume alcohol had a frequency of 45, which represented 97.8% of the total sample.

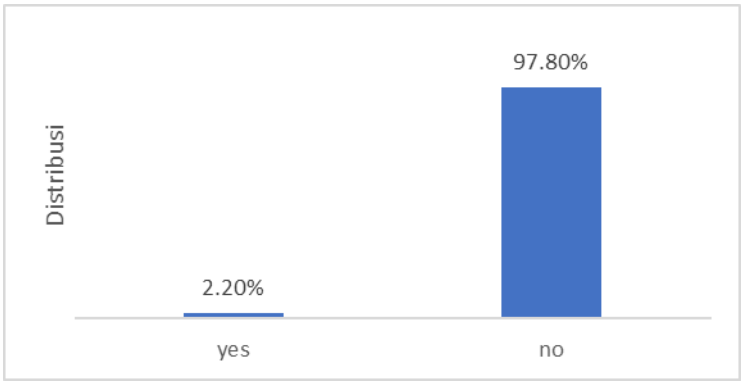

Figure 6. Alcohol consumption of gastric cancer patients at RSUP Prof. Dr. I.G.N.G. Ngoerah

Based on Figure 6, it can be concluded that the majority of gastric cancer patients at RSUP Prof. Dr. I.G.N.G. Ngoerah does not consume alcohol.

7. Smoking history of gastric cancer patients at Prof. Hospital. Dr. I.G.N.G. Ngoerah

Patients who smoked had a frequency of 1, which represented 2.2% of the total sample observed. Meanwhile, patients who did not smoke had a frequency of 25, which represented 97.8% of the total sample.

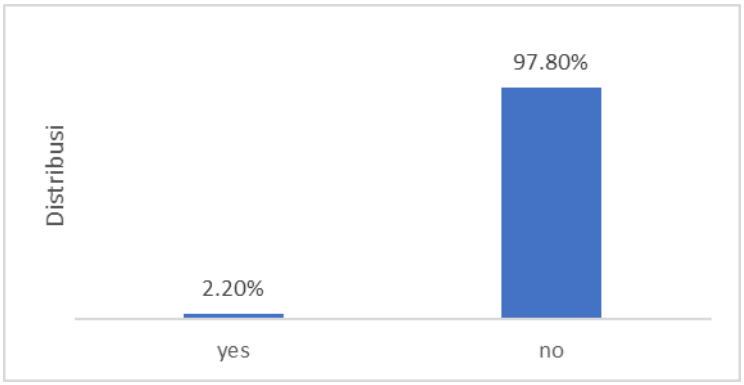

Figure 7. Smoking history of gastric cancer patients at RSUP Prof. Dr. I.G.N.G. Ngoerah

Based on Figure 7, it can be concluded that the majority of gastric cancer patients at RSUP Prof. Dr. I.G.N.G. The number observed, namely around 97.8%, did not smoke.

DISCUSSION

Based on data analysis, the results of this study found that the majority of gastric cancer patients at RSUP Prof. Dr. I.G.N.G. Ngoerah, the age group 50 years and over has greater representation, namely 68%, than the age group under 50 years. This is in accordance with research by Lou et al. (2020) which states that most cases of gastric cancer appear in people aged 50-70 years, but can also occur at a young age. The average age at diagnosis is approximately 68 years (Díaz Del Arco C et al., 2023). Likewise, research by Chudri (2020) also states that the peak incidence of gastric cancer is between the ages of 50-70 years. Referring to research data, it is necessary to screen for gastric cancer in individuals at risk, namely those aged 50 years and over (Cheng et al., 2016).

Gastric cancer patients at RSUP Prof. Dr. I.G.N.G. Ngoerah, which is male, has a

greater representation than women, with a ratio of 80% men and 20% women. This is in accordance with research by Lou et al. (2020) which states that the incidence of gastric cancer is twice as high among men as among women. Likewise, research by Chudri (2020) also states that stomach cancer is more common in men and those over the age of 50 years. Because the hormone estrogen can increase the preventive effect on the growth of stomach cancer (Karimi et al., 2014). And delayed menopause and increased fertility in women can reduce the risk of gastric cancer, while administration of antiestrogens such as the drug tamoxifen and others can increase the incidence of gastric cancer (Kim et al., 2016).

Based on data analysis, the results of this study found that the majority of gastric cancer patients at RSUP Prof. Dr. I.G.N.G. The observed ngoerah, namely about 89.1%, did not have peptic ulcers. Miftahussur (2021) stated that the relatively low rate of peptic ulcer disease in Indonesia may be attributed to the country's low prevalence of *H. pylori* infections. Contributing factors include the lifestyle, hygiene practices, and eating habits of the Indonesian people, which are thought to help minimize *H. pylori* infection rates and consequently reduce the likelihood of developing peptic ulcers.

In this study it was found that the majority of gastric cancer patients at RSUP Prof. Dr. I.G.N.G. Ngoerah was observed to have blood type A. This is in accordance with research by Huang et al. (2017) that someone who has blood type A shows an increased risk of stomach cancer by 37% compared to other blood group groups. Research conducted by Mao et al. (2019) validated that the association between blood type A and an increased risk of gastric cancer, and showed that group AB was also associated with the risk of gastric cancer. Further functional investigations are recommended to clarify the role of ABO in gastric carcinogenesis (Yu et al., (2019). Research by de Oliveira & de Oliveira Corvelo (2021) also found that the chance of developing stomach cancer triples if someone has blood type A1 Le (ab +).

Gastric cancer patients at RSUP Prof. Dr. I.G.N.G. Of the observed cases, namely around 4.3%, had overweight. This is in accordance with Chen et al., (2013) and Lee et al., (2022) that excess weight is a common risk factor for various health conditions and cancers. An individual with obesity has a twofold increased risk of stomach cancer. The mechanism linking obesity to cancer is thought to involve chronic inflammation and excessive production of insulin and leptin, which leads to increased cell proliferation and thereby promotes cancer cell growth (Bullen Love, 2017). Nevertheless, field data shows that many stomach cancer patients at RSUP Prof. Dr. I.G.N.G. Ngoerah are in a underweight condition because this hospital is the last referral center in Bali. Most referred patients are already in the advanced stages of the disease, experiencing significant weight loss due to the effects of the illness and complications such as malnutrition and cachexia.

This study found that the majority of gastric cancer patients at RSUP Prof. Dr. I.G.N.G. The people observed, namely around 97.8%, did not consume alcohol. Research conducted by Ma et al. (2017) who found that there was a positive relationship between stomach cancer and heavy alcohol drinking. Long-term alcohol consumption can damage the protective lining of the stomach wall by inhibiting the COX-1 receptor enzyme which reduces the production of cytoprotective prostaglandins (Wang et al., 2017). Patients with a history of smoking and alcohol consumption are 5 times more likely to suffer from stomach cancer (Chudri, 2020).

The results of this study also found that the majority of gastric cancer patients at RSUP Prof. Dr. I.G.N.G. The number observed, namely around 97.8, did not smoke. According to Ladeiras-Lopes et al. (2008), smoking can increase the risk of gastric cardia cancer. Smokers have an

approximately 1.5 times higher risk of stomach cancer. Nicotine increases the induction of cell motility which is followed by a decrease in *E-cadherin* expression and can cause epithelial disorders in the stomach. The mechanism of tobacco use is thought to increase the risk of transition to dysplasia in gastric cancer sufferers (Jencks et al., 2018). Patients with a history of smoking and alcohol consumption are 5 times more likely to suffer from stomach cancer (Chudri, 2020).

CONCLUSION

Based on the results of the research and discussion previously presented regarding the risk factors for gastric cancer at RSUP Prof. Dr. I.G.N.G. During 2018-2023, it was concluded that gastric cancer patients at RSUP Prof. Dr. I.G.N.G. Ngoerah, generally aged over 50 years, male, has no peptic ulcers, has blood type A, underweight, does not consume alcohol, and does not smoke.

Declaration by Authors

Ethical Approval: Approved (1074/UN14.2.2.VII.14/LT/2024)
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Conflict of Interest: The authors declare no conflict of interest.

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