

(RESEARCH ARTICLE)



## Clinicopathological profile of Non-Hodgkin and Hodgkin Lymphoma at the Anatomical Pathology Laboratory of Saiful Anwar General Hospital Malang from January 2018 until May 2023

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### Abstract

Lymphomas are a lymphocyte-driven malignancy that comprise up to 10% of cancers diagnosed in individuals < 20 years of age globally. Malignant lymphomas are divided into Hodgkin Lymphoma (HL) and Non Hodgkin Lymphoma (NHL). In 2019 at United States, more than 82.000 new patients diagnosed with lymphoma. Since the epidemiology of Lymphoma is different across regions and may have change over time, its global distribution pattern, risk factors, and temporal trends need to be assessed for developing preventive measures. The purpose of this study was to determine the frequency of NHL and HL based on histopathological type, age, and gender. This research is a descriptive analytic study. Data were obtained from patients who underwent histopathological and immunohistochemistry examinations at the Anatomical Pathology laboratory of Saiful Anwar General Hospital Malang from January 2018 until May 2023. There are 408 cases of Lymphoma consisting of 56 HL and 352 NHL. In HL, the percentage higher in men, and occurred mostly during 21 – 30 years old age group. The most common histopathological type of HL is Classical Hodgkin Lymphoma, with mostly Nodular Sclerosis subtype. In NHL, the percentage higher in men, and occurred mostly during 51 – 60 years old age group. The most common histopathological type of Non Hodgkin Lymphoma is B cell type.

**Keywords:** Non Hodgkin Lymphoma; Hodgkin Lymphoma; Histopatological Type; Age; Gender

### 1. Introduction

Lymphomas are a lymphocyte-driven malignancy that comprise up to 10% of cancers diagnosed in individuals < 20 years of age globally. Lymphomas represent heterogeneous group of malignant neoplasms of lymphocytes with more than 90 subtypes. Malignant lymphomas are divided into Hodgkin Lymphoma (HL) and Non Hodgkin Lymphoma (NHL). NHL is the sixth most common cause of cancer-related death in the USA, where globally in 2020 0,2% of all newly reported cancer-related deaths were due to HL. Lymphomas can involve lymphatic tissue, bone marrow, or extranodal sites. Extranodal involvement is more common among NHL patients, which includes the area such as Waldeyer's ring, salivary glands, orbit, paranasal sinuses, thyroid glands, larynx, and skin [1,2,4,11].

In 2019 at United States, more than 82.000 new patients diagnosed with lymphoma. From 2016 until 2017, there are 302 cases of NHL and 27 cases of HL at Saiful Anwar General Hospital Malang. Incidence of NHL is higher in men and it increases with age. Median age of patients at diagnosis of NHL is 67 years. Globally, 0.4% of all newly reported cancer-related cases were due HL in 2020. The incidence of HL varies with gender, age and geographical location. People with a higher risk of HL include males, adolescent and young adults, autoimmune diseases, exposure to pollution, cigarette

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smoking, and family history. HL is most commonly diagnosed at 20 to 34 years of age. Since the epidemiology of Lymphoma is different across regions and may have change over time, its global distribution pattern, risk factors, and temporal trends need to be assessed for developing preventive measures. [2,3,4]

The clinical behaviour and manifestations of lymphomas usually lack specific of characteristic, making it difficult to distinguish HL from NHL. With regard to lymphomas having an aggressive course, immediate histological evidence is crucial for patient management, early treatment and the outcome. [5]

Thus, the purpose of this study was to determine the frequency of Non Hodgkin and Hodgkin Lymphoma based on histopathological type, age, and gender from January 2018 until May 2023 at Saiful Anwar General Hospital Malang.

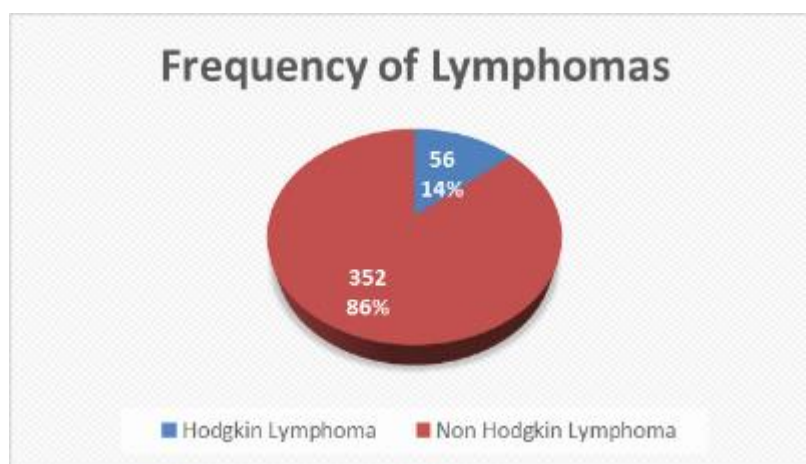
## 2. Material and Methods

This research is descriptive analytic. Data were obtained from medical records from January 2018 until May 2023 at the Anatomical Pathology laboratory of Saiful Anwar General Hospital Malang. The population in this study were patients with Non Hodgkin and Hodgkin Lymphoma who underwent histopathological and immunohistochemistry examinations at the Anatomical Pathology laboratory of Saiful Anwar General Hospital Malang from January 2018 until May 2023. The sampling method is total sampling.

Inclusion criteria were patients diagnosed with Non Hodgkin and Hodgkin Lymphoma based on histopathological and immunohistochemistry examination with complete medical records (histopathology, age, and gender). After the data was collected, it was presented in a table and diagram.

## 3. Results and Discussion

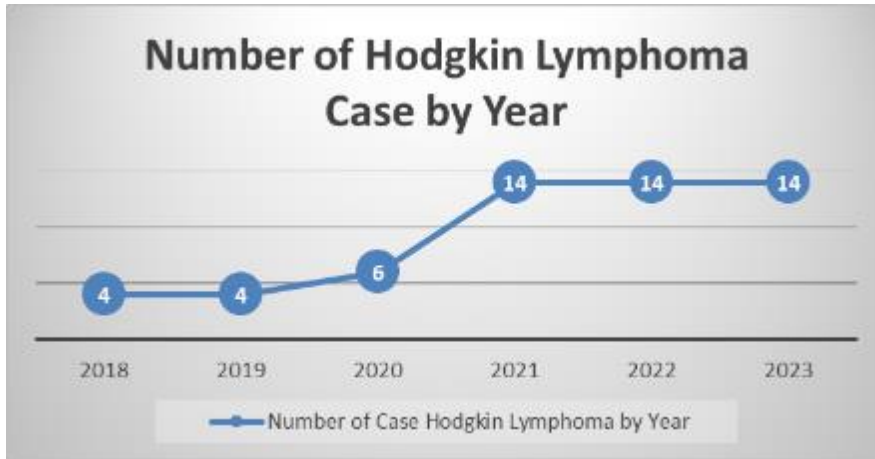
In this study there were 408 cases of Lymphoma collected through medical records from January 2018 until May 2023, with a distribution of 86% Non Hodgkin Lymphoma and 14% of Hodgkin Lymphoma, as shown in the diagram below.



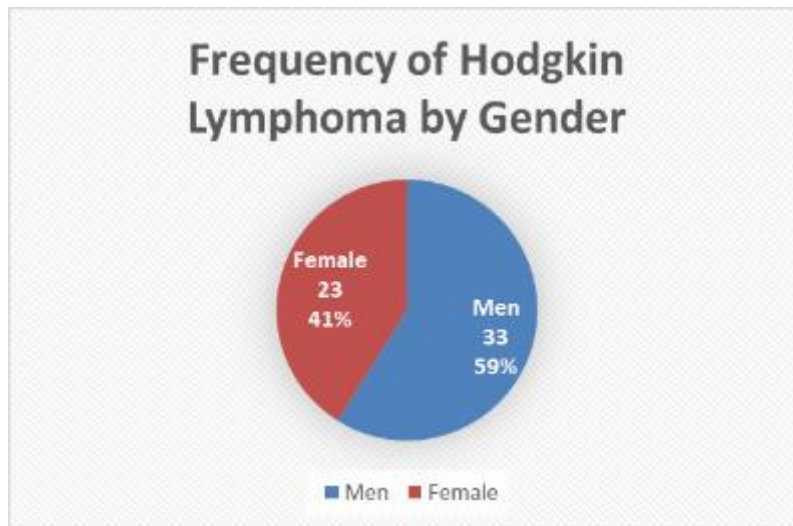
**Figure 1** Frequency of Lymphomas

Hodgkin Lymphoma occurs most often in 2021 until 2023, with distribution of case by years shown in the diagram below.

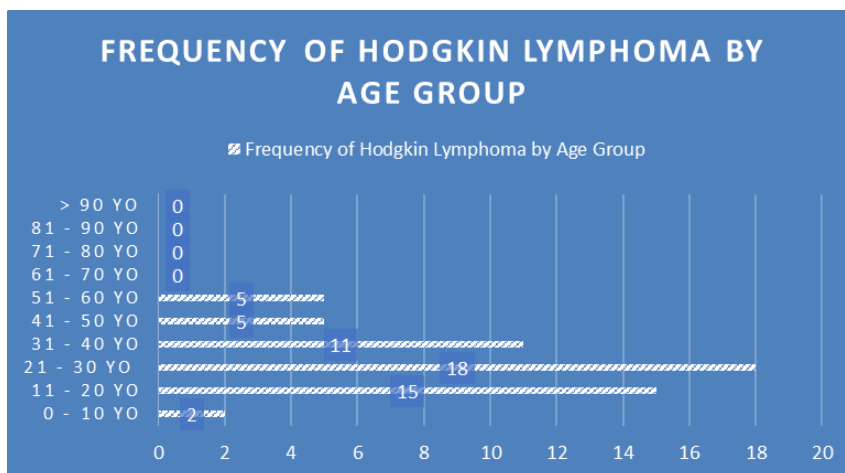
From 56 cases of Hodgkin Lymphoma, 59% cases occur in male and 41% occur in female. Most case of Hodgkin Lymphoma in this study occurred between 21 – 30 years old. This is in accordance with Kaseb et al, which states that Hodgkin Lymphoma more commonly found in males and has bimodal distribution where most of the affected patients are between ages 20 – 40 years old and there is another peak from age 55 years old and older. [6]



**Figure 2** Number of Hodgkin Lymphoma Case at Saiful Anwar General Hospital Malang from January 2018 until May 2023

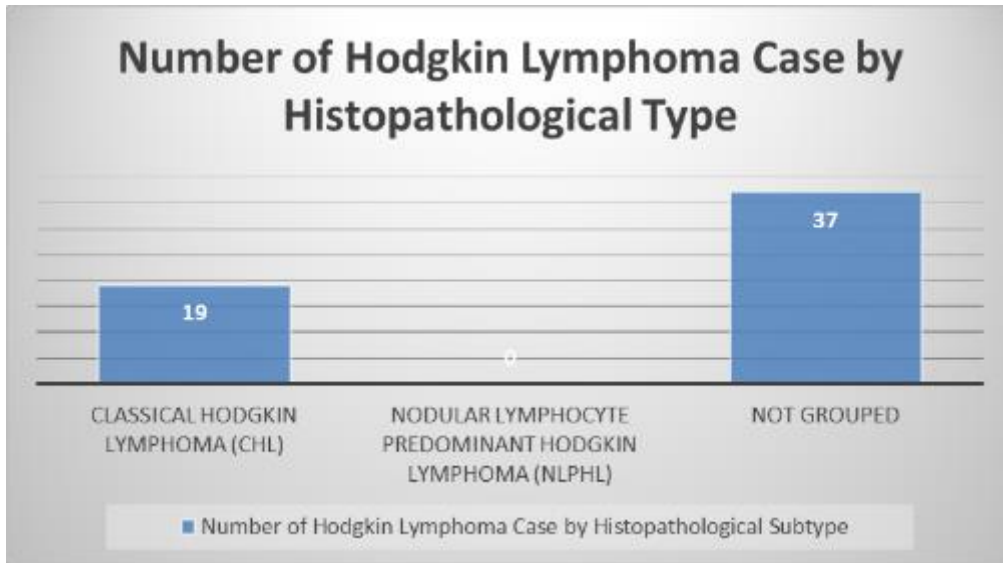


**Figure 3** Frequency of Hodgkin Lymphoma by Gender

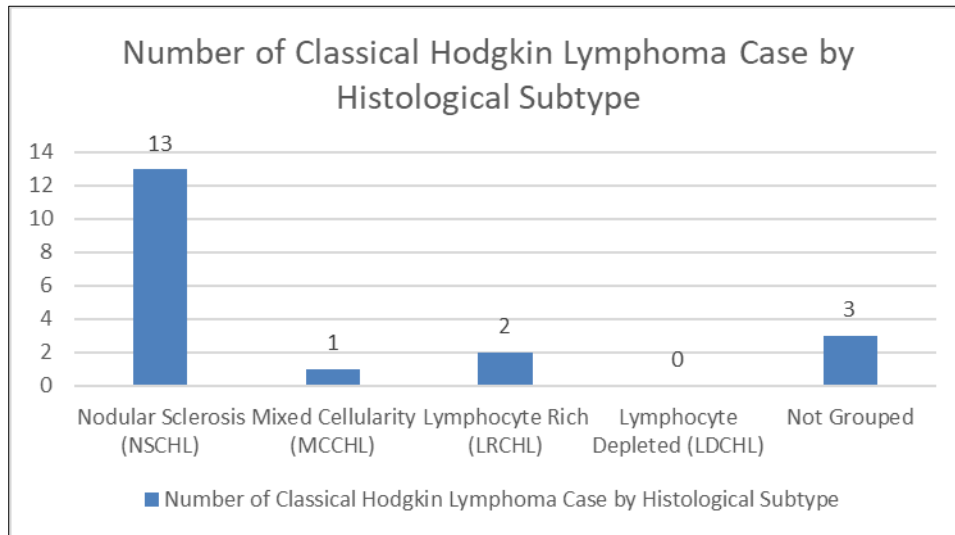


**Figure 4** Frequency of Hodgkin Lymphoma by Age Group

According to WHO, Hodgkin Lymphoma divided into 2 groups : Classical Hodgkin Lymphoma (CHL) and Nodular lymphocyte predominant Hodgkin lymphoma (NLPHL). There are four histological subtypes of CHL consist of nodular sclerosis (NSCHL), mixed cellularity (MCCHL), lymphocyte rich (LRCHL), and lymphocyte depleted (LDCHL). [7] In this study the number of events and presentation of each type of histopathology were grouped as follows.



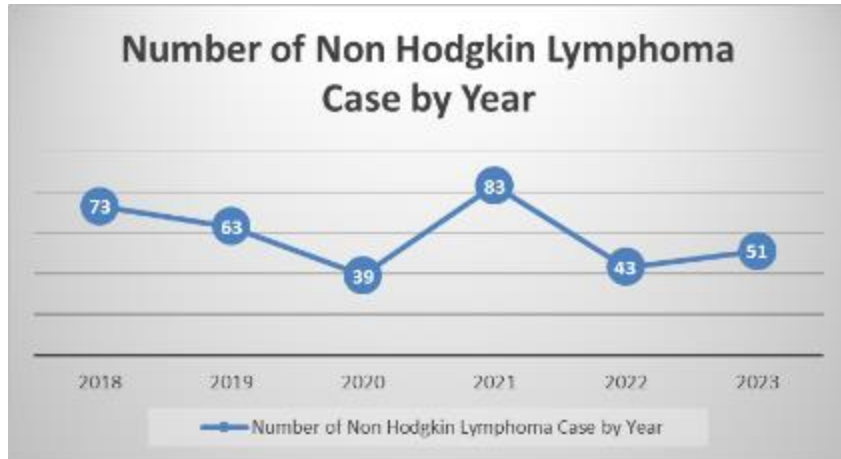
**Figure 5** Frequency of Hodgkin Lymphoma by Histopathological Type



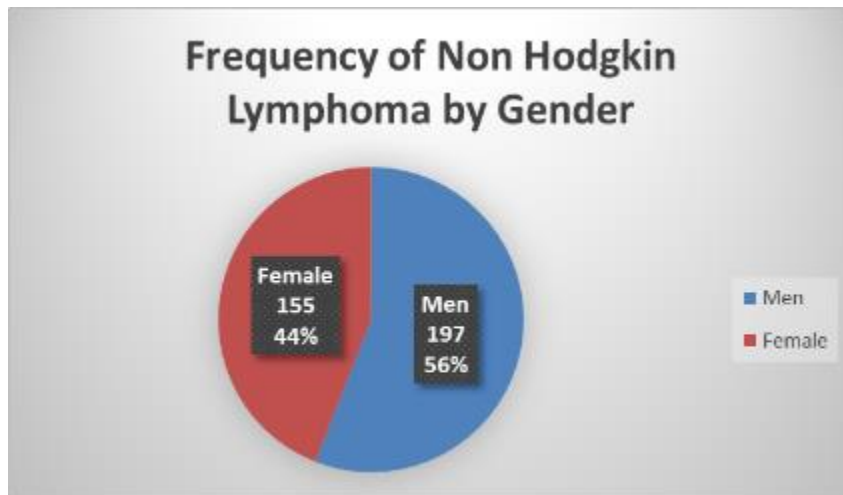
**Figure 6** Frequency of Classical Hodgkin Lymphoma by Histological Subtype

Non Hodgkin Lymphoma occurs most often in 2021, with distribution of case by years shown in the diagram below.

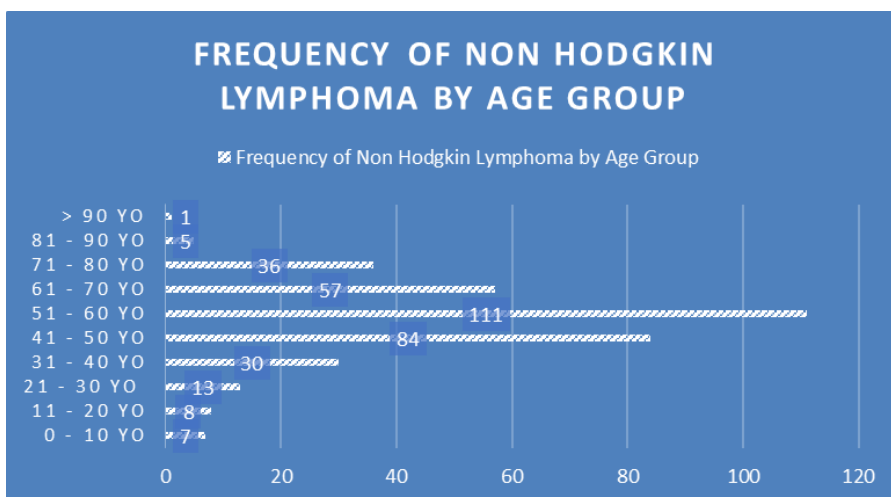
From 352 cases of Non Hodgkin Lymphoma, 56% cases occur in male and 44% occur in female. Most case of Non Hodgkin Lymphoma in this study occurred between 51 – 60 years old. This is in accordance with Farmanfarma et al, which states that Non Hodgkin Lymphoma are more observable in men than women and there is an upward trend among elderly people. Significant elevation in the incidence was found among patients over 50 years old. [8]



**Figure 7** Number of Non Hodgkin Lymphoma Case at Saiful Anwar General Hospital Malang from January 2018 until May 2023



**Figure 8** Frequency of Non Hodgkin Lymphoma by Gender

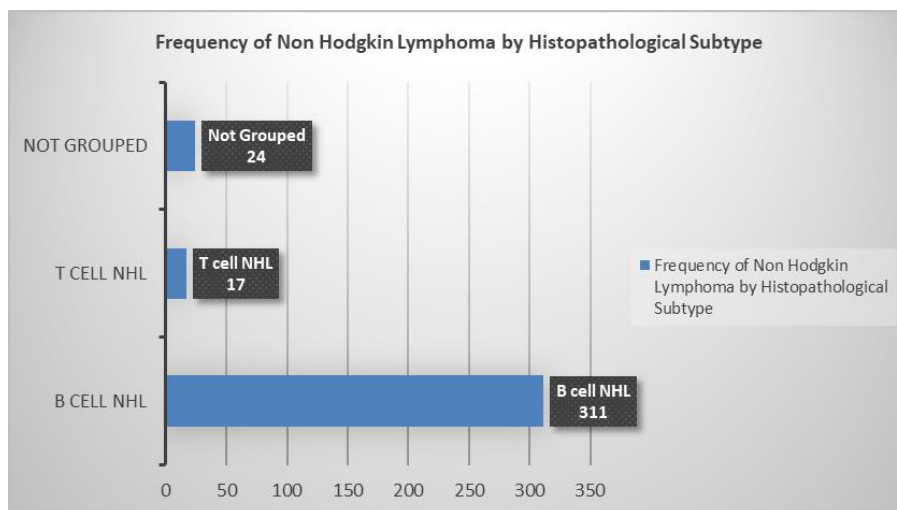


**Figure 9** Frequency of Non Hodgkin Lymphoma by Age Group

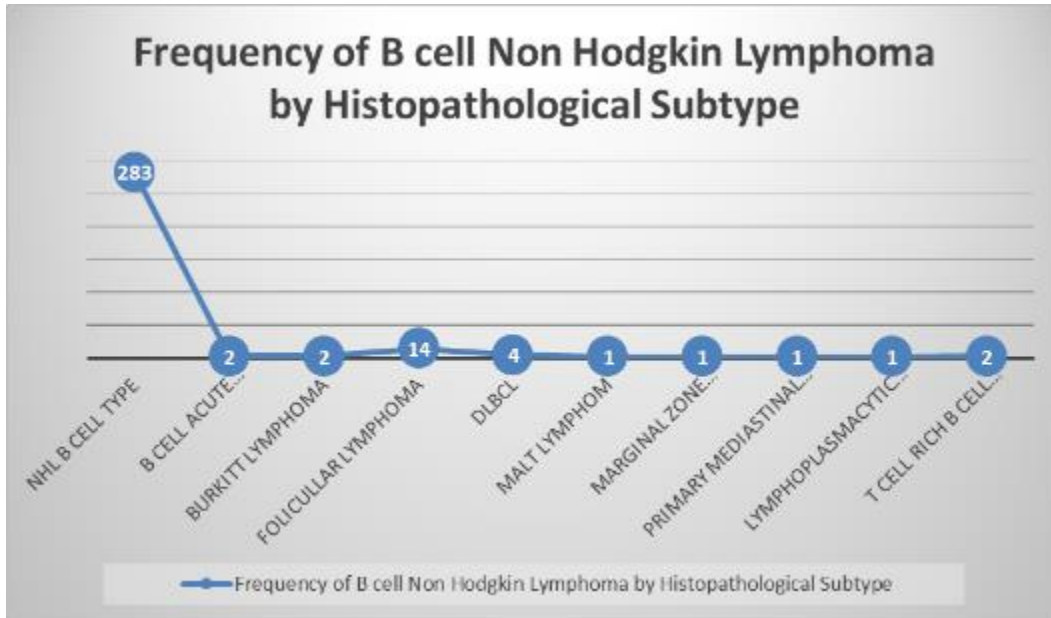
Non Hodgkin Lymphoma classified depending on the type of white blood cell in which the cancer begins: B cell or T cell. The most common B cell neoplasms are Follicular lymphoma, Burkitt lymphoma, diffuse large B cell lymphoma, Mantle cell lymphoma, marginal zone lymphoma, and primary CNS lymphoma. The most common T cell lymphomas are Adult T cell lymphoma and mycosis fungoides. [9,10] In this study the number of events and presentation of each type of histopathology were grouped as follows.

**Table 1** Histopathological Subtype of Non Hodgkin Lymphoma

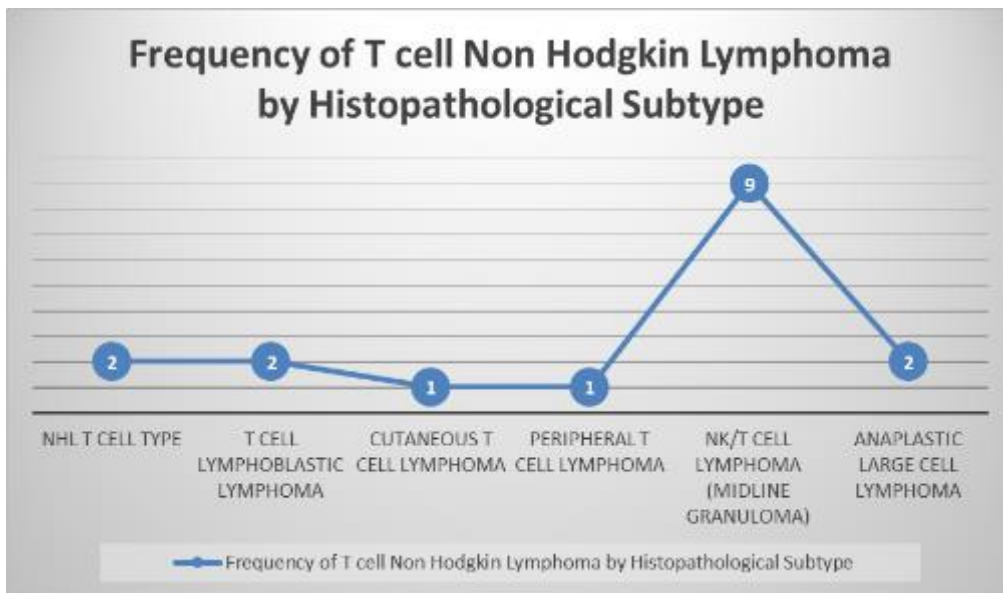
Histopathological Subtypes	Number of Case	Percentage
B cell Non Hodgkin Lymphoma	311	88%
Non Hodgkin Lymphoma B cell type	283	80%
B cell acute lymphoblastic lymphoma	2	1%
Burkitt Lymphoma	2	1%
Follicular Lymphoma	14	4%
DLBCL	4	1%
MALT lymphoma	1	0%
Marginal Zone lymphoma	1	0%
Primary Mediastinal B cell lymphoma	1	0%
Lymphoplasmacytic Lymphoma	1	0%
T cell rich B cell lymphoma	2	1%
T cell Non Hodgkin Lymphoma	17	5%
Non Hodgkin Lymphoma T cell type	2	1%
T cell lymphoblastic lymphoma	2	1%
Cutaneous T cell lymphoma	1	0%
Peripheral T cell lymphoma	1	0%
NK/T cell lymphoma (Midline Granuloma)	9	3%
Anaplastic Large Cell Lymphoma	2	1%
Not Grouped	24	7%



**Figure 10** Frequency of Non Hodgkin Lymphoma by Histopathological Subtype



**Figure 11** Frequency of B cell Non Hodgkin Lymphoma by Histopathological Subtype



**Figure 12** Frequency of T cell Non Hodgkin Lymphoma by Histopathological Subtype

#### 4. Conclusion

From total of 408 cases of lymphoma, there are 56 cases (14%) of Hodgkin Lymphoma and 352 cases (86%) of Non Hodgkin Lymphoma. Hodgkin Lymphoma mostly occurred during 2021 until 2023, with percentage higher in men (59%) than women (41%). Hodgkin Lymphoma occurred mostly during 21 – 30 years old age group. The most common histopathological type of Hodgkin Lymphoma is Classical Hodgkin Lymphoma, with mostly Nodular Sclerosis subtype. Non Hodgkin Lymphoma mostly occurred in 2021, with percentage higher in men (56%) than women (44%). Non Hodgkin Lymphoma occurred mostly during 51 – 60 years old age group. The most common histopathological type of Non Hodgkin Lymphoma is B cell type (88%).

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## Compliance with ethical standards

### *Acknowledgments*

The authors would like to acknowledge Anatomical Pathology Laboratory General Hospital Dr. Saiful Anwar Malang of permission from collecting data from medical record.

### *Disclosure of conflict of interest*

Authors declare no conflict of interest in constructing this manuscript.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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## Reference

- [1] Singh R, Shaik S, Negi B S, et al. Non-Hodgkin's lymphoma : A review. *Journal of Family Medicine and Primary Care*. 2020; 9 : 1834-1840. doi : 10.4103/jfmpe.jfmpe\_1037\_19
- [2] Lewis W D, Lilly S, Jones K L. Lymphoma : Diagnosis and Treatment. *American Academy of Family Physicians*. 2020. Available at <https://www.aafp.org/afp/2020/0101/p34-s1.html>
- [3] Fadli M L, Norahmawati E, Yudhanto H Y. Profil Klinikopatologi Lymphoproliferative Disorders (LPD) di Instalasi Patologi Anatomi Rumah Sakit dr. Saiful Anwar Malang Periode Tahun 2016-2017. 2018.
- [4] Huang, J. *et al.* (2022) 'Incidence, mortality, risk factors, and trends for Hodgkin lymphoma: a global data analysis', *Journal of Hematology and Oncology*, 15(1), pp. 1–11. Available at: <https://doi.org/10.1186/s13045-022-01281-9>.
- [5] Storck, K. *et al.* (2019) 'Clinical presentation and characteristics of lymphoma in the head and neck region', *Head and Face Medicine*, 15(1), pp. 4–11. Available at: <https://doi.org/10.1186/s13005-018-0186-0>.
- [6] Kaseb H, Babiker HM. Hodgkin Lymphoma. [Updated 2023 Jun 26]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK499969/>
- [7] WHO Classification of Tumours Editorial Board. Haematolymphoid tumours. International Agency for Research on Cancer; 2020. (WHO classification of tumours series, 5th ed.; vol. 3).
- [8] Farmanfarma, K.K. *et al.* (2020) 'NON-HODGKIN ' S LYMPHOMA IN THE WORLD : AN EPIDEMIOLOGICAL REVIEW', pp. 1–6.
- [9] Singh, P. *et al.* (2023) 'Histopathological Evaluation of Angiogenic Markers in Non-Hodgkin's Lymphoma', *Journal of Laboratory Physicians*, 15(02), pp. 282–288. Available at: <https://doi.org/10.1055/s-0042-1760400>.
- [10] Sapkota S, Shaikh H. Non-Hodgkin Lymphoma. [Updated 2023 Feb 24]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK559328/>
- [11] Chun, G.Y.C. *et al.* (2021) 'Trends in pediatric lymphoma incidence by global region, age and sex from 1988-2012', *Cancer Epidemiology*, 73, p. 101965. Available at: <https://doi.org/https://doi.org/10.1016/j.canep.2021.101965>.