

Clinical and Histopathological Profile of Nasopharyngeal Carcinoma Patients in the Department of Otolaryngology-Head and Neck Surgery at Prof. Dr. I.G.N.G. Ngoerah General Hospital in 2022 – 2024

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ABSTRACT

Nasopharyngeal carcinoma (NPC) is a carcinoma of the nasopharyngeal epithelium, ranking as the sixth most common carcinoma in Indonesia. This research aimed to examine the clinical and histopathological profile of NPC patients in the Department of Otolaryngology-Head and Neck Surgery at Prof. Dr. I.G.N.G. Ngoerah General Hospital in 2022–2024. This study employed a descriptive observational design with a cross-sectional approach to determine the clinical and histopathological profile of NPC patients. Using the total sampling method, data collection was conducted in May 2025 by reviewing secondary data in the form of electronic medical records. The inclusion criteria consisted of patients diagnosed with NPC, of either sex, any age group, and those who had undergone staging examinations. Results showed that there were 186 NPC patients in this study. The diagnosis was more frequent in men (69.35%), in the age group of 45–54 years (37.63%), with most presenting with a lump in the neck (68.82%). Histopathological examination revealed that the majority had features of undifferentiated cell carcinoma (98.92%). Most patients were in stage IVA (39.24%). NPC patients in this study presented with diverse sociodemographic backgrounds and varying clinical conditions. The findings indicate that NPC is more frequent in men than in women, is commonly diagnosed in the fourth and fifth decades of life, and often presents with a lump in the neck. The most common histopathological feature was undifferentiated cell carcinoma, and the majority of patients were classified as stage IVA.

KEYWORDS

Patient's profile, cancer registry, nasopharyngeal carcinoma (NPC).



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INTRODUCTION

Nasopharyngeal carcinoma (NPC) is a carcinoma of the nasopharyngeal epithelium and is the most common malignancy in the nasopharynx (Wong et al., 2021). In non-endemic areas, smoking and alcohol consumption are identified as risk factors for NPC. The demographic genetic structure involved also plays an important role in the development of NPC (Qin & Yao, 2018). Epstein-Barr Virus (EBV) infection is also reported to contribute to the formation of this disease (Damania et al., 2022; Houen & Trier, 2021). In non-endemic regions, nasopharyngeal cancer cases are relatively rare, with fewer than one case per 100,000 people. This situation differs from the incidence rate in Asia, where NPC occurrence is significantly higher—reaching up to 21 cases per 100,000 people in certain parts of China—where NPC accounts for 18% of all cancers (Su et al., 2024; Zhang et al., 2023). In Indonesia, according to GLOBOCAN (2022), NPC ranks sixth among the most common carcinomas, with a total of 18,835 new cases.

The symptoms and signs of NPC vary among individuals depending on the area affected. In the early stages, symptoms and signs are nonspecific and develop gradually, most often involving the ears, nose, or eyes (Dhingra & Dhingra, 2017). Common manifestations include headaches, low-grade fever, anemia, and weight loss. In more advanced stages, symptoms can persist with increasing intensity. Signs and symptoms may include unilateral nasal obstruction, epistaxis, postnasal drip, nasal voice, decreased sense of smell, and, in severe cases, cacosmia

(perception of foul odors) (Watson et al., 2021). Patients may experience conductive hearing loss, middle ear effusion, a sensation of ear fullness, otorrhea, otorrhagia, or tinnitus. Advanced NPC may extend intracranially and cause cranial nerve paralysis. Enlarged cervical lymph nodes can also be found in patients with NPC (Wang & Kang, 2021; Zeng et al., 2019).

To diagnose NPC, histopathological examination is essential as it serves as the gold standard for confirming the disease (Krishnan & Babu, 2024; Zeng et al., 2019). The World Health Organization (WHO) classifies NPC into three primary subtypes based on histological features: keratinizing squamous cell carcinoma (Type I), differentiated non-keratinizing carcinoma (Type II), and undifferentiated carcinoma (Type III). Current NPC staging follows the American Joint Committee on Cancer (AJCC) 8th edition, which uses the TNM system (T: primary tumor, N: lymph node, M: metastasis).

The main treatment for NPC is radiotherapy. Additionally, chemotherapy may be employed for NPC management. In advanced stages, concurrent chemoradiotherapy is the standard treatment approach. Surgical intervention is rarely performed for NPC cases. Patients with NPC present with diverse sociodemographic backgrounds and varying clinical conditions, such as age, gender, disease stage, and treatment history (Alsavaf et al., 2025; Yang et al., 2019). Understanding these characteristics is crucial for improving medical services, developing preventive and early detection programs, and formulating more effective and efficient treatment strategies (AbdulRaheem, 2023).

Previous studies have provided valuable insights into the epidemiology and clinicopathological patterns of NPC, yet certain gaps remain, particularly concerning the contextual characteristics of NPC patients in Indonesia (Gui et al., 2025; Raymos et al., 2023). Chang conducted a population-based study in China that revealed a strong correlation between Epstein–Barr Virus (EBV) infection and the predominance of non-keratinizing carcinoma subtypes, especially in endemic regions. However, these findings were limited by regional homogeneity, which may not represent the diverse genetic and environmental factors across Southeast Asia (Hamilton et al., 2019). Meanwhile, analyzed NPC cases in Indonesia and reported that most patients presented in advanced stages (III–IV) due to delayed diagnosis and limited access to specialized care. Nevertheless, their study did not explore in detail the histopathological variations and sociodemographic characteristics influencing prognosis and therapeutic outcomes (Beutler et al., 2020; Teka et al., 2021).

Therefore, the purpose of this study was to determine the clinical and histopathological profile of nasopharyngeal carcinoma patients in the Department of Otolaryngology–Head and Neck Surgery at Prof. Dr. I.G.N.G. Ngoerah General Hospital in 2022–2024. The findings are expected to contribute to regional epidemiological data, support the development of early detection strategies, and enhance clinical decision-making for personalized NPC management in Indonesia.

METHOD

This study was a descriptive observational study with a cross-sectional approach. It employed a total sampling method and was conducted to determine the *clinical and histopathological profile of nasopharyngeal carcinoma* patients in the Department of Otolaryngology–Head and Neck Surgery at Prof. Dr. I.G.N.G. Ngoerah General Hospital in

2022–2024. The sample used in this study consisted of secondary data in the form of electronic medical records of patients diagnosed with nasopharyngeal carcinoma who were treated at Prof. Dr. I.G.N.G. Ngoerah General Hospital in 2022–2025.

Data collection was carried out in May 2025, with a total of 322 patients recorded as being diagnosed with nasopharyngeal carcinoma. Of these, 186 patients met the inclusion criteria. The inclusion criteria of this study were patients diagnosed with nasopharyngeal carcinoma and treated in the Department of Otolaryngology–Head and Neck Surgery at Prof. Dr. I.G.N.G. Ngoerah General Hospital in 2022–2024; patients could be either male or female, of all ages, and those who had undergone staging examinations. Meanwhile, 136 patients met the exclusion criteria. The exclusion criteria for this study were patients whose biopsy results did not show histopathological features of *NPC*; patients with histopathological features of *NPC* but incomplete medical record data; and patients with missing information in their medical records.

For each medical record observed, five types of information were collected: the patient's sex, age, chief complaint, histopathological features, and *NPC* staging. The patient's sex in this study was categorized as male or female. The patients' ages were grouped into several categories: 5–14 years, 15–24 years, 25–34 years, 35–44 years, 45–54 years, 55–64 years, 65–74 years, and ≥ 75 years. The chief complaints included headache, lump in the neck, lump in the nose, nosebleed, double vision, tinnitus, shortness of breath, nasal congestion, and a feeling of fullness in the ears.

The histopathological features were classified based on the WHO classification of *NPC*, which includes keratinizing squamous cell carcinoma, differentiated non-keratinizing carcinoma, and undifferentiated carcinoma. The stages of *NPC* were divided according to the AJCC 8th edition classification, which categorizes *NPC* into stages I, II, III, IVA, and IVB.

After the data were collected, data analysis was performed by entering the data into Microsoft Excel 2019 and analyzing it using IBM SPSS software version 25.

RESULTS AND DISCUSSION

In total, 186 patients were included in this study. Based on Table 1, from the data obtained, *NPC* patients were more frequent in male with a total of 129 patients (69,35%) were recorded as male. While the number of female patients with *NPC* were 57 patients (40.65%).

Table 1. Distribution of sex in NPC patients

Sex	n = 186	%
Male	129	69,35
Female	57	40,65
Total	186	100

Table 2 shows the age distribution of *NPC* patients in this study. In this study, the most common age group diagnosed with *NPC* was in the range of 45-54 years. As many as 37.63% of the total patients diagnosed with *NPC* were in the age group of 45-54 years. There were no patients diagnosed with *NPC* in the age group of 5-14 years. There were 6 patients in the relatively young age to be diagnosed with *NPC*, these patients were in the range of 15-26 years. There were also 6 patients in the age group of 25-34 years. There were 26 patients in the age group of 35-44 years. In the age group of 55-64 years, there were 56 patients diagnosed with

NPC. As many as 17 patients were in the age group of 65-74 years. There were 5 patients diagnosed with NPC in the group of ≥ 75 years.

Table 2. Distribution of age based on group in NPC patients

Age group (years)	n = 186	%
5 -14	0	0
15 – 24	6	3,23
25 – 34	6	3,23
35 – 44	26	13,98
45 – 54	70	37,63
55 – 64	56	30,10
65 – 74	17	9,14
≥ 75	5	2,69
Total	186	100

The profile of chief complaint in this study is shown on Table 3. Neck lumps are the most common chief complaint in patients diagnosed with NPC at Prof. Dr. I.G.N.G. Ngoerah General Hospital in 2022-2025, with total of 128 patients (68.82%). The chief complaint of nasal congestion felt by 18 patients (9,68%), while 14 patients (7,52%) complained of nosebleeds. A total of 13 patients complained of headaches, followed by tinnitus felt by 6 patients (3,22%). A total of 3 patients (1,61%) experiencing lumps in the nose and 2 patients (1,08%) experiencing double vision. A total of 1 patient (0,54%) complained shortness of breath and 1 patient (0,54%) complained fullness in the ear.

Table 3. Distribution of chief complaints in NPC patients

Chief complaints	n = 186	%
Ear		
Tinnitus	6	3,22
Fullness in ear	1	0,54
Nose		
Lump in nose	3	1,61
Nasal congestion	18	9,68
Nosebleed	14	7,52
Shortness of breath	1	0,54
Neck		
Lump in neck	128	68,82
Intracranial		
Headache	13	6,99
Eyes		
Double vision	2	1,08
Total	186	100

Table 4 shows the histopathological types of NPC patients. The most common histopathological type found in patients diagnosed with NPC at Prof. Dr. I.G.N.G. Ngoerah General Hospital in 2022-2025 is undifferentiated cell carcinoma type. In total of 186 patients diagnosed with NPC, almost all patients with the total of 184 patients (98.92%) had histopathological features that compatible with undifferentiated cell carcinoma. There were no

patients (0%) recorded whose histopathological features were compatible with keratinizing squamous cell carcinoma. Meanwhile, there were 2 patients (1,08%) with histopathological features compatible with differentiated non-keratinizing cell carcinoma. The profile of patient's staging is shown on Table 5. In this study, it was found that most patients diagnosed with NPC were in stage IVA, with the total of 73 patients (39.24%). There were no patients (0%) in stage I. Total of 7 patients (3,76%) were in stage II and 45 patients (24,2%) were in stage III. Patients in the stage IVB is the second most common stage in NPC patients after IVA, with the total of 61 patients (32.8%) were in stage IVB.

Table 4. Distribution of histopathological types based on WHO classification

Types	n = 186	%
Keratinizing SCC (WHO I)	0	0
Differentiated non-keratinizing cell carcinoma (WHO II)	2	1,08
Undifferentiated cell carcinoma (WHO III)	184	98,92
Total	186	100

WHO: World Health Organization; SCC: Squamous Cell Carcinoma

Table 5. Distribution of stage in NPC patients based on AJCC Classification 8th edition

Stages	n = 186	%
I	0	0
II	7	3,76
III	45	24,2
IVA	73	39,24
IVB	61	32,8
Total	186	100

AJCC: American Joint Committee on Cancer

Discussion

In this study, NPC patients were more frequent found in male compared to female patients. The male-to-female ratio was 2.3:1, in line with the previous study and accordance with global data in 2022 which stated that NPC is more common in men than in women.⁶ The majority of NPC patients were in productive age, ranging from fourth and fifth decade of life. It mostly occurred in the age group of 45 – 54 years (37.63%). This study is in line with research conducted at other hospital in Bandung, where it was found that NPC patients were mostly found in the age group of 45-54 years, which was 35% of the total patients diagnosed with NPC.⁷ Furthermore, it is also in line with epidemiological data which states that in Asia, NPC is more common found in middle age patients, in the 4th to 6th decades of life.²

NPC patients may experience various symptoms. The symptoms and signs vary from person to person depending on the area affected. The most common location is the lateral aspect of the nasopharynx and the fossae of Rosenmuller. Rosenmuller's fossae as the location of the transitional epithelium, is often suspected to be a predilection for NPC in the lateral part of the nasopharynx.⁸ In the early stages of the disease, symptoms and signs are nonspecific and appear gradually, most often affecting the ears, nose, or eyes.³ In this research, it was found that most NPC patients experiencing neck lumps (68,82%), the most common chief complaint among 186 patients, followed by nasal congestion, nosebleeds, headaches, tinnitus, lumps in the nose, double vision, fullness in the ear. The findings in this study are in line with the study of clinical features of NPC patients in East Java. Mentioned study found that lumps in the neck

were the most common chief complaint by patients diagnosed with NPC.⁹ The most common histological type found in patients diagnosed with NPC in this study is the undifferentiated cell carcinoma type, with total of 184 patients (98.92%). The results of this study are in line with studies conducted at a hospital in Bandung. Mentioned research found that in their hospital NPC patients mostly have undifferentiated cell carcinoma type in their histopathological examination. Other hospital in Surabaya were also in line with the result of this research, where the histopathological type in most patients diagnosed with NPC was consistent with the feature of undifferentiated cell carcinoma (93.51%).¹⁰ The stages of NPC in this study were divided according to the AJCC classification 8th edition, which divides NPC into stages I, II, III, IVA and IVB. In this study, it was found that most NPC patients were in stage IVA (39.24%) followed by stage IVB (32,8%). This finding is in line with a study conducted researcher in 2022 at a General Hospital in Surabaya, which found that most NPC patients were in advanced stages (stages IVA and IVB).

This study has several limitations, due to lack of information on the electronic medical record. A total of 322 patients diagnosed with NPC were recorded during the year of 2022 – 2024, but only 186 patients included in this study that met the inclusion criteria. Certain variables could be biased, as the collected data is secondary.

CONCLUSION

In conclusion, NPC patients were varied in characteristic and could happen to anyone. This study found NPC were commonly found more in men rather than women (2.3:1). The age group that suffers most from NPC is in the age group of 45-54 years. The presence of a lump in the neck is the chief complaint most often felt by NPC patients. Almost all patients diagnosed with NPC have histopathological features of undifferentiated cell carcinoma. Most NPC patients were in stage IVA. These findings address the research objective of describing the clinical and histopathological characteristics of NPC patients at Prof. Dr. I.G.N.G. Ngoerah General Hospital, providing valuable insight into local disease patterns. For future research, this study contributes by highlighting the need for multicenter investigations to explore genetic, environmental, and viral factors influencing NPC progression in Indonesia and to evaluate the effectiveness of early screening and public health interventions in reducing late-stage presentations.

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