

SMN

SABTU MINGGU NGULI - GROUP 5

The Miracle of Machine Learning
and AI Capabilities in the Medical
Revolution that Brings Perfect
Accuracy to the Process of
Predicting Brain Tumors



INTRODUCTION

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GLOBAL CASE



Cases in Germany :

- German Brain Tumor Association: 25% of childhood cancer cases are brain and CNS tumors.
- Majority of cases occur in children aged 6.5 years.
- Cases are more frequent in boys than girls.



Cases in developed countries:

- Increased from 17.6/100,000 to 22.0/100,000 population in the US and Europe.
- 18,500 new cases in the US each year with a 3% mortality rate for 5-year survival.



Cases in South Korea :

- 10,004 cases diagnosed in 2010 from a population of 49.9 million.
- 601 cases (6%) in children under 19 years old.
- Male incidence 38.6% and female 61.4%.

source : (1) <https://www.alomedika.com/penyakit/onkologi/tumor-otak/epidemiologi>

(2) https://yankes.kemkes.go.id/unduhan/fileunduhan_1610423332_841380.pdf

(3) <https://www.dw.com/id/tumor-otak-pada-anak-bukan-berarti-vonis-mati/a-53746222>

INDONESIAN CASE

Cases in Medan :

- 131 cases of brain tumors between January 2018 and December 2019.
- 52 cases of meningioma (40%), 34 cases of glioma (26%), 12 cases of pituitary adenoma (9%), and 33 cases of brain metastasis (25%).



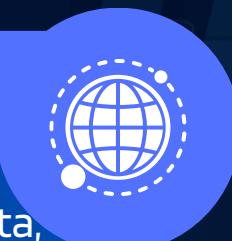
Cases at RSUD Dr. Soetomo Surabaya :

- 300 brain tumor patients operated on in 2023.
- The number continues to increase.
- Treatment modalities: chemotherapy, radiotherapy, surgery.



Case in Jakarta :

Brain Tumor is the third most common disease after stroke treated by the Prof. Dr. Mahar Mardjono National Brain Center Hospital (PON Hospital), Jakarta, throughout 2020.



source : (1) <https://www.suarasurabaya.net/kelankota/2024/penderita-tumor-otak-terus-meningkat-fk-unair-gandeng-ahli-bedah-saraf-belanda-untuk-adopsi-teknologi-terbaru/>
(2) <https://epaper.mediaindonesia.com/detail/kasus-tumor-otak-meningkat-kenali-gejalanya>

BACKGROUND

Traditional diagnosis of brain tumors is fraught with challenges: it is difficult, time-consuming, inaccurate, and invasive. Consequently, treatment is delayed, rendering it less effective. Machine learning (ML)-based brain tumor prediction has the potential to revolutionize this landscape. By analyzing medical data, ML can predict the presence of tumors more quickly and accurately, enabling physicians to determine appropriate treatment at an earlier stage.

This ultimately leads to improved patient survival rates and a reduced economic and psychological burden. While achieving 100% accuracy remains a challenge, ML-based brain tumor prediction offers a more promising future.



DATASET

- Code : [https://www.kaggle.com/code/summerakousar/brain-tumor-prediction-using-ml-with-100-accuracy/notebook#Logistic-Regression\(ipynb\)](https://www.kaggle.com/code/summerakousar/brain-tumor-prediction-using-ml-with-100-accuracy/notebook#Logistic-Regression(ipynb))
- Dataset : <https://www.kaggle.com/datasets/jillanisofttech/brain-tumor> (csv)

GOALS

- **Earlier and more accurate diagnosis**
- **Improved patient outcomes**
- **Reduced healthcare burden**

CONTACT US

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