

## Overview of the quality of life of meningioma patients operated at Dr. M. Djamil Padang year 2019

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### ABSTRACT

Meningioma is a primary brain tumor originating from leptomeningeal meningotheial (arachnoid) cells. These tumors can occur anywhere along the path of the arachnoid cells, are usually attached to the inner surface of the dura mater and are generally slow growing. Treatment of meningioma patients that lasts a long time has a high morbidity effect, usually leading to a weak condition and even depression. The suffering will encourage the patient to determine attitude. This will affect the quality of life of the patient itself. The purpose of this study was to describe the quality of life of meningioma patients who were operated on at Dr. M. Djamil Padang in 2019. The scope of this research is neuro-psychiatry and neurosurgery. Research was conducted in July 2021. The type of research is descriptive categorical. The reachable population in the study were meningioma patients at Dr. M. Djamil Padang in 2019 as many as 30 samples using the total sampling technique. Univariate data analysis was presented in the form of a frequency distribution and data processing using the computerized SPSS program IBM version 25.0. The results of this study explained that the most age was 45-64 years, namely 18 people (60.0%), the most sex was female, namely 17 people (56.7%), the most family history was none, namely 22 people (73.3 %), and the most quality of life is bad, namely 20 people (66.7%). The conclusion of this study is that the most age is 45-64 years, the most gender is female, the most family history is non-existent, and the most quality of life is poor.

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## INTRODUCTION

The incidence of brain tumors continues to increase. Patients with tumors have complex problems in their lives. One of them is a patient with a brain tumor (Ilawanda & Atsani, 2021) . All tumors that occur in the brain will be fatal (Nasor & Obaid, 2020) . The most common primary brain tumor is meningioma with a prevalence rate of 34% of all primary brain tumors. The incidence of

meningioma increases with age, peaking between 70 and 80 years of age. Meningioma is rarely found in children, and is more common in women than in men tumor (Damayanti, Kalanjati, & Wahyuhadi, 2021; Lapointe, Perry, & Butowski, 2018). Currently, meningioma is one of the most common intracranial tumors. Epidemiological data, the incidence in the world is eight cases per 100,000 people per year (Holleczeka et al, 2019; Suharyati & Widiyanto, 2019). There is no data on the number of meningioma cases in Indonesia, as well as in West Sumatra (Anggraeni, Diansari, & Hafy, 2022). Meningioma is a primary brain tumor originating from leptomeningeal meningotheial (arachnoid) cells. These tumors can occur anywhere along the location of the arachnoid cells, are usually attached to the inner surface of the dura mater and generally grow slowly (Damayanti & Rahmawati, 2020).

Based on the type, WHO divides meningioma into three levels which are further divided into fifteen types. Approximately 80% of these tumors are benign, grade I tumors, for which surgical resection is often curative and the overall 10 year survival has been estimated at 80-90%. Grades II and III meningiomas, which represent 15-18 and 2-4% of all meningiomas, respectively, are difficult to treat because of their aggressive growth and frequent recurrence, often within 5 years. Grade III malignant meningioma has a poor prognosis, with an average 10-year overall survival of 14-34%. These tumors are more common in men than women (Rahman, 2021; Lilo et al, 2020).

Although generally meningiomas are benign and do not have many genetic variations, the location of the tumor can result in serious and deadly conditions (Baldi et al, 2018). The location of a meningioma can cause various clinical symptoms and greatly determines the prognosis and choice of therapy, especially surgical resection. The majority of meningiomas are found in the supratentorial area, generally along the dural venous sinuses, including the convexity, parasagittal areas, and in the sphenoid wing area (Mahrani, & Lukito, 2019; Apra, Peyre, & Kalamarides, 2018)

Meningioma can cause sufferers to experience seizures, neurological deficits such as blindness, paralysis, personality disorders, changes in emotional behavior status, motor function abnormalities and cause death (Ahmed et al, 2022). Many of these problems have a potential risk of chronic disease severity, lower life expectancy, and disruption of daily functioning (Furman et al, 2019).

Treatment of meningioma patients that lasts a long time has a high morbidity effect, usually leading to a weak condition and even depression. The suffering will encourage the patient to determine attitude. This will affect the patient's own quality of life (Walbert & Stec, 2023; Giammalva et al, 2018).

Alborz (2017) suggests that quality of life is a person's perception in the context of culture and norms that are appropriate to the person's place of life and related to goals, expectations, standards and concerns throughout his life (Alborz, 2017).

Broadly speaking, the instruments for measuring the quality of life consist of general instruments and special instruments. The general instrument is used to measure the general quality of life in patients with chronic diseases, with components that are assessed for functional ability, disability and anxiety arising from the illness. One example of a common instrument is The Medical Outcome Study (MOS) 36-item Short-Form Health Survey (SF-36) (Kiling & Kiling-Bunga, 2019; Astesano et al, 2018).

The SF-36 is a questionnaire that measures the patient's quality of life including eight domains of questions based on physical and emotional activity. The SF-36 is used to evaluate the patient's quality of life. The SF-36 assesses restrictions on physical activity due to existing health problems, restrictions on social activities due to physical and emotional problems, restrictions on daily activities due to physical problems, whole body pain, general mental health, restrictions on daily activities due to emotional problems, vitality of life and outlook on health in general. This questionnaire is used in patients related to disease and as evaluation after medical and/or surgical

procedures, such as low back pain, urolithiasis, brain tumors, and tuberculosis. The advantages of SF-36 are that it is easy, simple and can be done at any time (Putra et al, 2021) .

Based on the background above, the authors are interested in conducting research on the description of the quality of life of meningioma patients who are operated on at RSUP DR. M. Djamil Padang Year 2019. Several previous studies have only investigated the quality of life of meningioma patients based on age and gender or gender and family background. The update of this research is to examine the description of the quality of life of meningioma patients based on age, gender, family background and quality of life. The purpose of this study was to describe the quality of life of meningioma patients who were operated on at Dr. M. Djamil Padang in 2019 based on age, gender, family background and quality of life.

## RESEARCH METHOD

The scope of this research covers the fields of neuro-psychiatry and neurosurgery. This research was carried out at Dr. M. Djamil Padang in July 2021. This type of research is descriptive categorical with a cross-sectional design using secondary data from medical records. The population is meningioma patients at RSUP Dr. M. Djamil Padang in 2019. The samples used in this study were patients who had complete medical records at Dr. M. Djamil Padang in 2019. The sampling technique is a total sample of 30 patients who meet the inclusion and exclusion criteria. In this study the sampling method used a total sampling technique, namely patients taking samples based on criteria set by the researcher. The material used in this research is medical records. Data collection was carried out by recording research variables from the medical records of meningioma patients at Dr. M. Djamil Padang in 2019. Data includes patient data on age, gender, education level, quality of life of patients. The collected data is then presented in tabular form which is then concluded and compiled in the form of a final research report.

The analysis in this study was univariate analysis aimed at explaining or describing the characteristics of each research variable, which were presented in the form of frequency and percentage distribution tables. Univariate analysis described based on age, gender, education level, quality of life of meningioma patients at Dr. M. Djamil Padang in 2019 in the SPSS program. Data is presented in the form of tables and narratives.

## RESULTS AND DISCUSSIONS

### Results

Research has been conducted on 30 respondents at RSUP Dr. M Djamil Padang in 2019. Data collection was carried out in July 2021 until completion. Respondents were selected by total sampling technique that met the inclusion criteria.

### Age

The results showed that the frequency distribution of meningioma patients at RSUP Dr. M Djamil Padang in 2019 based on age can be described as follows:

**Table 1.** Frequency distribution of meningioma patients at RSUP Dr. M djamil Padang in 2019 by age

Age	f	%
25-44 years	5	16.7
45-64 years	18	60.0
65-90 years	7	23.3
Total	30	100.0

Based on Table 1, it can be concluded that of the 30 respondents, the most age was 45-64 years, namely 18 people (60.0%).

## Gender

The results showed that the frequency distribution of meningioma patients at RSUP Dr. M Djamil Padang in 2019 based on gender can be described as follows:

**Table 2.** Frequency Distribution of meningioma patients at RSUP Dr. M Djamil Padang in 2019 by gender

Gender	<i>f</i>	%
Male	13	43.3
Female	17	56.7
Total	30	100.0

Based on Table 2. it can be concluded that of the 30 respondents, the most gender was female, namely 17 people (56.7%).

## Family History

The results showed that the frequency distribution of meningioma patients at RSUP Dr. M Djamil Padang in 2019 based on family history can be described as follows:

**Table 3.** Frequency Distribution of Meningioma Patients at RSUP Dr. M Djamil Padang Year 2019 Based on Family History

Family History	<i>F</i>	%
There is	8	26.7
There isn't any	22	73.3
Total	30	100.0

Based on Table 3, it can be concluded that of the 30 respondents, the most family history was absent, namely 22 people (73.3%).

## Quality of Life

The results showed that the frequency distribution of meningioma patients at RSUP Dr. M Djamil Padang in 2019 based on quality of life can be described as follows:

**Table 4.** Frequency distribution of meningioma patients at RSUP Dr. M Djamil Padang 2019 based on quality of Life

Quality of Life	<i>f</i>	%
Good	10	33.3
Bad	20	66.7
Total	30	100.0

Based on Table 4, it can be concluded that of the 30 respondents, the quality of life for the most part was poor, namely 20 people (66.7%).

## Discussions

### Age

Based on the results of the study it was found that out of 30 respondents, the most age was 45-64 years, namely 18 people (60.0%). In contrast to the research by Raharjanti et al (2022) regarding the characteristics of meningioma patients at Ulin Hospital, Banjarmasin in 2018-2020. The results showed that the widest age range was 46-55 years, namely 75%, which was also different from the study by (Damayanti et al, 2021) . regarding the correlation of age and sex with the incidence of meningioma. The results showed that the largest age range was 45-49 years, namely 22.2%. The difference in age in some of these studies could be due to different reference sources resulting in different age range findings.

In line with research conducted by (Ramhani, 2018) on the characteristics of meningioma patients at the Cicendo Eye Hospital National Eye Center for the period June - December 2019. The results showed that the average age of patients was 44.5 years and was also in line with previous

studies conducted by (Pangestika, 2021) regarding the Memory Impairment in Meningioma Patients. The results showed that most patients were found in the fifth decade, namely 40-49 years. Also in line with (Yuliawati, Utari, & Ratnasari, 2021) regarding the Karakteristik pasien sphenoid wing meningioma di poliklinik mata divisi rekonstruksi, okuloplasti, dan onkologi (ROO) Rumah Sakit Umum Pusat Sanglah Denpasar Tahun 2018-2020. The results of the study showed that most of the patients were aged 41-50 years, namely 46.9%.

It can be seen in the study that most patients were in the age group of 45-49 years and there were no cases in children and the elderly. This is similar to several previous studies. The phenomenon of increasing incidence before the age of 50 or the age of menopause for women and decreasing incidence in the age group above is associated with hormonal instability before menopause and a decrease in postmenopausal hormones. It is known that the average woman experiences menopause at the age of  $45.59 \pm 5.59$  years (Gandini et al, 2021) . At that time, there is a decrease in the hormones estrogen and progesterone. This decrease is thought to cause a similar decrease in the incidence of meningioma in postmenopausal women so that the risk of women at postmenopausal age is smaller than that of women of childbearing age (Cetinkaya et al, 2020) .

In accordance with previous studies which showed that the incidence of meningioma increased with age and reached a peak in the fourth to sixth decades. Although the exact cause of meningioma is unknown, deletion and inactivation of the neurofibromatosis 2 (NF2) gene locus, which is a tumor suppressor gene, is believed to be the predominant factor in sporadic meningioma. One of the mechanisms by which a cell can activate gene expression is by modifying the promoter region and preventing transcription factors from interacting with DNA. This process is mediated by DNA *methyltransferase* or is called DNA methylation (Nakasu & Nakasu, 2020) . According to a study by age Fioroto et al (2021) , DNA methylation deviations and mutations in these genes increase with aging (Fioroto et al, 2021) .

### Gender

Based on the results of the study it was found that of the 30 respondents, the most gender was female, namely 17 people (56.7%). In line with Sopyan's research (2021) . regarding the characteristics of meningioma patients at the West Nusa Tenggara Provincial General Hospital. The results showed that the most patients found were female, namely 90% and this was also in line with Raharjanti et al (2020) research on the characteristics of meningioma patients at Ulin General Hospital, Banjarmasin, 2018-2020. The results showed that 84% of patients were women, which is also in line with Damayanti et al (2021) study regarding the correlation of age and gender with the incidence of meningioma. The results showed that most of the patients were women, namely 71% .

In line with the research conducted by Ramdhani (2018) on the characteristics of meningioma patients at the Cicendo Eye Hospital National Eye Center for the period June - December 2019, the results showed that the majority of patients were women, namely 91.3%. In line with research conducted by Pangestika (2021) concerning the Characteristics of Meningioma Patients at Dr. Wahidin Sudirohusodo January - December 2016 period, the results showed that the majority of patients were women, namely 77.3% and this is in line with Gandinil (2021) .concerning the characteristics of meningioma patients at RSUP Dr. Mohammad Hoesin Palembang Year 2018-2020. The results showed that most of the patients were women, namely 89.6% .

The increased incidence of meningioma in women is associated with hormonal factors. The hormones FSH, LH, and hCG are thought to be able to suppress tumor cell growth, while hPL and prolactin can stimulate the spread of tumor cells in reverse age (Salem, 2022) . Several previous studies have also found a higher incidence of meningioma in women compared to men, especially at the post-pubertal age. This is associated with increased levels of the hormones estrogen, progesterone and androgens in post-pubertal girls. Changes in meningioma size mainly occur in the luteal phase of the menstrual cycle and pregnancy (Hutagalung & Dharmajaya, 2020) .

A meta-analysis study by Yang et al (2021) stated that the longer exposure to exogenous hormones in women will further increase the risk of meningioma age (Yang et al, 2021) .

Progesterone and estrogen receptors are found in many meningioma, it is known that the hormone estrogen plays a role in modulating proliferation and accelerating the cell cycle through a transcriptional mechanism, estrogen also stimulates tumor growth and prevents cell apoptosis (Relevation, 2018) .

Miyagishima et al (2020) research data also show that menopause and oophorectomy are protective factors against the development of meningioma, while adiposity is positively related to this disease age (Miyagishima et al, 2023) . Various studies have shown that most meningiomas express receptors for the hormone progesterone on the cell membrane, with various variations (Marosi et al, 2018) Study by Janah, Rujito dan Wahyono (2022) demonstrated that positive progesterone receptors were found significantly in benign meningioma (Janah, Rujito & Wahyono, 2022) .

### **Family History**

Based on the results of the study it was found that out of 30 respondents, the most family history was absent, namely 22 people (73.3%). In line with age Raharjanti et al (2020) research concerning the characteristics of meningioma patients at Ulin Banjarmasin Hospital in 2018-2020, the results of the study showed that all patients (100%) had no family history. In line with research conducted by Juanita (2017) concerning the Characteristics of Meningioma Patients at Dr. Wahidin Sudirohusodo Period January - December 2016. The results showed that most patients did not have a family history, namely 94.3%. Also in line with Delima (2021) research regarding the characteristics of meningioma patients at Dr. Mohammad Hoesin Palembang Year 2018-2020. The results showed that most of the patients did not have a family history, namely 94.8%.

It can be seen in research that most patients do not have a family history. This is in line with the literature which states that generally meningiomas are sporadic tumors, namely tumors that arise in patients who have no family history of sufferers of any type of brain tumor. This is due to an inherited genetic syndrome that triggers the development of meningioma only a few and rarely. As in the autosomal dominant gene disorder, namely NF2, which is caused by a germline mutation on chromosome 22q12, the incidence is only 1 per 30,000 - 40,000 people in the US (Nazir, Shakil & Khurshid, 2021) .

The factors that influence the occurrence of meningioma are sex hormones, radiation and chromosomes. Progesterone hormone triggers tumors through the expression of progesterone receptors, Platelet Deviated Growth Factor (PDGF), Epidermal Growth Factor (EGF), and Vascular Endothelial Growth Factor (VEGF). Chromosomal abnormalities found in meningioma patients are loss of chromosome long arms (Lee & Lee, 2020) .

### **Quality of Life**

Based on the results of the study it was found that out of 30 respondents, the most quality of life was poor, namely 20 people (66.7%). In line with research conducted by Fisher et al (2021) concerning the relationship Long-term health-related quality of life and neurocognitive functioning after treatment in skull base meningioma patients. The results showed that the quality of life for meningioma brain tumor patients was mostly unfavorable, namely 57.1% (16 people) (Fisher et al, 2021) .

According to the Bus et al (2020) , quality of life is an individual's perception of an individual's position in life in the context of culture and value systems between living individuals associated with goals, expectations, standards set by a person. Quality of life is also defined as an individual's perception of their position in life in the context of the culture and value system in which they live and in relation to their goals, expectations, standards and concerns (Bus et al, 2020)

It can be seen in research that most patients experience poor quality. This can be caused due to the impact caused by meningioma. As stated by Hakim that meningioma can cause sufferers to experience seizures, neurological deficits such as blindness, paralysis, personality disorders, changes in emotional status, behavior, abnormalities in motor function and cause death

(Parker et al, 2018) .. Many of these problems have a potential risk of chronic disease severity, lower life expectancy, and disruption of daily functioning (Furman et al, 2019) .

Treatment of meningioma patients that lasts a long time has a high morbidity effect, usually leading to a weak condition and even depression. The suffering will encourage the patient to determine attitude. This will affect the quality of life of the patient itself (Gold et al, 2020) .

Based on this, according to the researcher's analysis of this study, it was found that there were many patients who experienced a poor quality of life. In this case, it is necessary to have family support for the patient so that the patient still has a passion for life and does not feel alone so that they feel that their life is still of good quality. It is also necessary to educate patients about *self-management* so that patients can do good  *coping* with themselves so that they remain motivated in living life.

## CONCLUSION

Based on the results of research on the description of the quality of life of meningioma patients who were operated on at Dr. M. Djamil Padang in 2019, the authors can draw several conclusions, namely 1) Based on age, the age of the most meningioma patients is in the age range of 45-64 years. 2) Based on gender, the most meningioma patients were women compared to men. 3) Based on family history, the most meningioma patients come from families with no history of meningioma disease, this shows that this disease does not depend on the family and 4) Based on quality of life, the most meningioma patients come from families with poor quality of life, for that society needs to improve the quality of life.

Based on the conclusions about the description of the quality of life of meningioma patients who were operated on at Dr. M. Djamil Padang in 2019 as for the author's suggestions, namely 1) **for the Dr. Central General Hospital. M. Djamil**, should improve facilities and infrastructure for the treatment of meningioma patients, 2) **Society**, should maintain quality of life to avoid meningioma disease considering that most meningioma patients come from families with poor quality of life, 3) **for future researchers**, it is best to examine the factors that cause patients to suffer from meningioma disease so that they can provide recommendations regarding prevention of meningioma disease.

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