RESEARCH ARTICLE

Private vs public care for intracranial tumours: Findings from Pakistan

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Abstract

Objective: To observe the patient characteristics and centres providing neuro-oncological care in public and private health hospitals in Pakistan.

Methods: The Pakistan Association of Neuro-oncology carried out a retrospective, cross-sectional study in 2019 on patients admitted to 32 hospitals in Pakistan, with dedicated neurosurgical facilities. Patients with a histopathological diagnosis of an intracranial tumour were included.

Results: Public health care facilities catered for 84% patients with ages between 20 and 60 years and children having intracranial tumours. Private centres were utilised by 66.7% patients from the upper socioeconomic sector. More patients were lost to follow-up in the public sector (n = 784) versus in the private sector (n = 356). Mortality was also higher in the public sector hospitals, (13.9%) as compared to 9.6% in the private sector.

Conclusion: Public and private sector health services for neuro-oncological care in Pakistan still have a long way to go to cover the gaps for unmet needs. Strengthening health systems for brain tumour care is imperative to increase both the access to care and the quality of care to fulfil this need.

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Introduction

The global incidence rate of all primary brain tumours is estimated to be 10.82 per 100,000 person-years.[1] Diagnosis and treatment for brain tumours is multimodal; diagnostic imaging is followed by either surgical resection, chemoradiotherapy, or both.[2] Patients with brain tumours have a significantly higher mean number of outpatients consultations, hospital admissions, emergency room visits, laboratory investigations, and imaging visits. The mean length of stay and outpatient prescriptions are longer compared to those with other diseases.[3] Both public and private healthcare centres cater to patients requiring neuro-oncological treatment. However, an array of patient-specific factors, such as age, gender, poverty, education level, and employment status, contribute to health-seeking behaviour among the two sectors.[4]

In Pakistan, public hospitals fall under provincial Ministries of Health as well as the federal Ministry of National Health Service, Regulation and Coordination and typically provide care for a nominal fee, whereas private hospitals function on user charges or philanthropic donations.[5] It is important to identify, for health systems strengthening and epidemiological standpoints, the patient characteristics of those seeking brain tumour care in the two sectors. The Pakistan Brain Tumour Epidemiology Study (PBTES) has collated these data, and this short report provides an overview of patient-specific and centre-specific factors of those treated for brain tumours in Pakistan, stratified by the public and private health sectors.[6]

Methods

The Pakistan Association of Neuro-oncology (PASNO) carried out a retrospective, cross-sectional study on patients admitted in the participating major medical facilities in Pakistan between January 1, 2019, and December 31, 2019.[7] Patients with a radiological diagnosis of an intracranial tumour, primary or metastatic, presenting at these centres, were included in the study. These centres were the highest volume centres in the country and had dedicated neurosurgical facilities. Thirty-two centres participated in the study. Students, residents, and faculty compared data from medical charts and electronic health records. SPSS Version 25.0 and Stata Version 16.0 were used to analyse data.

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Out of the 32 highest volumes centres that were surveyed as part of the Pakistan Brain Tumour Epidemiology Study (PBTES), 21 were public sector hospitals, and 11 were private sector hospitals. It was observed that although hospitals maintained individual records of patient medical history, these were not homogenous. There is no centralised method to track patient characteristics or treatment and survival outcomes.

Results

Patients visit public health care facilities (n=1897, 68.98%) for intracranial tumours more often than they visit private health care facilities (n= 853, 31.02%). This is particularly true for young adults and middle-aged adults between the ages of 20 and 60 (n=1089). This is was also similar for paediatric intracranial tumour cases, with an overwhelming 241 (84%) patients presenting at public sector hospitals (Figure-1).

Table-1: Public and Private Sector Radiology.

Imaging Study	Public	Private
MRI	804	541
CT Scan	39	24
Both	1040	278

Table-2: Public and Private Sector Mortality.

	Public		Private		Total	
	n	%	n	%	n	%
Alive	850	44.8%	415	48.7%	1265	46.0%
Deceased	263	13.9%	82	9.6%	345	12.5%
Lost to follow-up	784	41.3%	356	41.7%	1140	41.5%

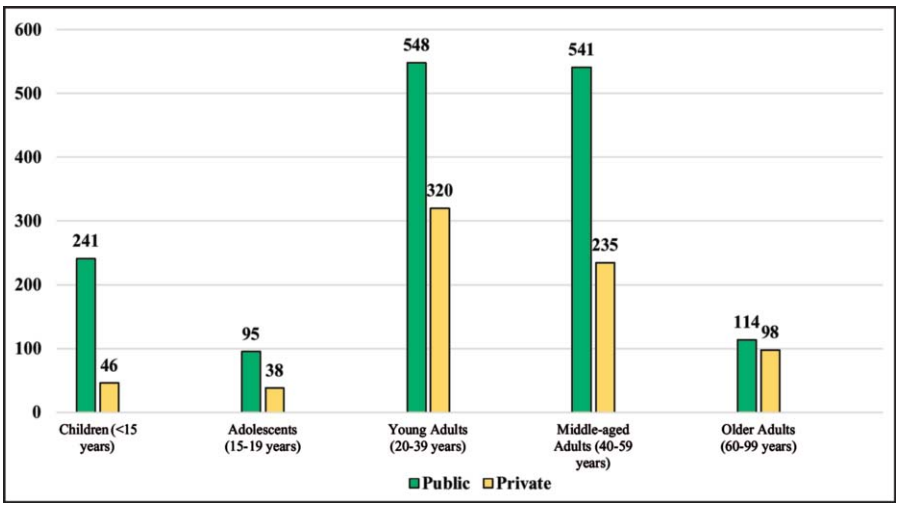

Figure-1: Age Distribution.

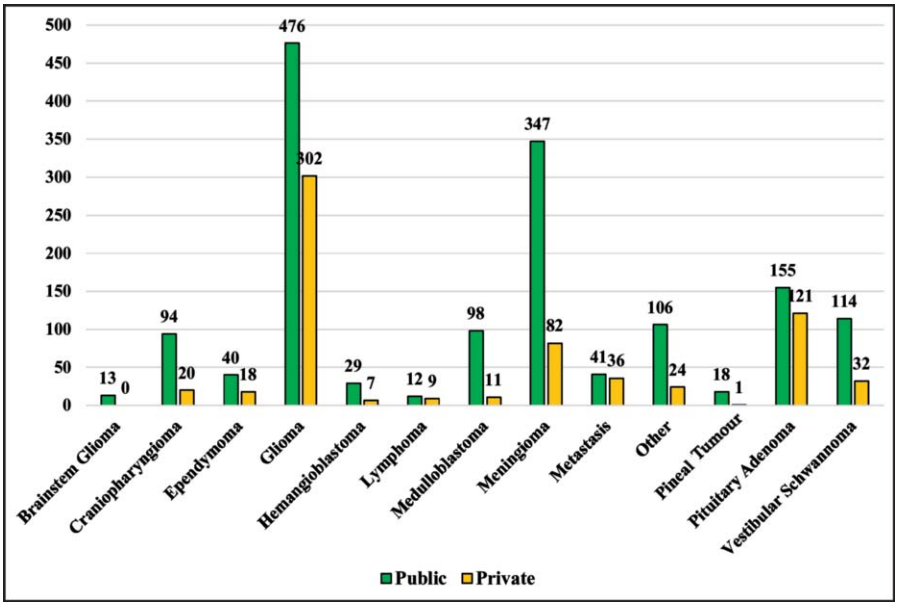

Figure-2: Age Histopathology Distribution.

All brain tumours reported in the PBTES were operated upon at public sector hospitals, and all tumour histopathology types except for brainstem gliomas were operated upon in private sector facilities. The two most common types of brain tumours found through PBTES were gliomas and meningiomas.[6] Of these, 476 glioma and 347 meningioma patients presented to public sector hospitals (Figure-2).

Both males and females attended the public sector hospitals in larger numbers than at private hospitals (Figure-3). The public sector treats 68% of males and 70.2% of the females seeking care for brain tumours. In contrast, 66.7% patients belonging to the upper socioeconomic tier attended the private sector facilities (Figure-4).

Radiological diagnoses for brain tumours were made using MRI and CT scans. MRI was used for 97.2% of patients in the public sector and 96% of the patients in the private sector. The details can be seen in Table-1.

More patients were lost to follow-up

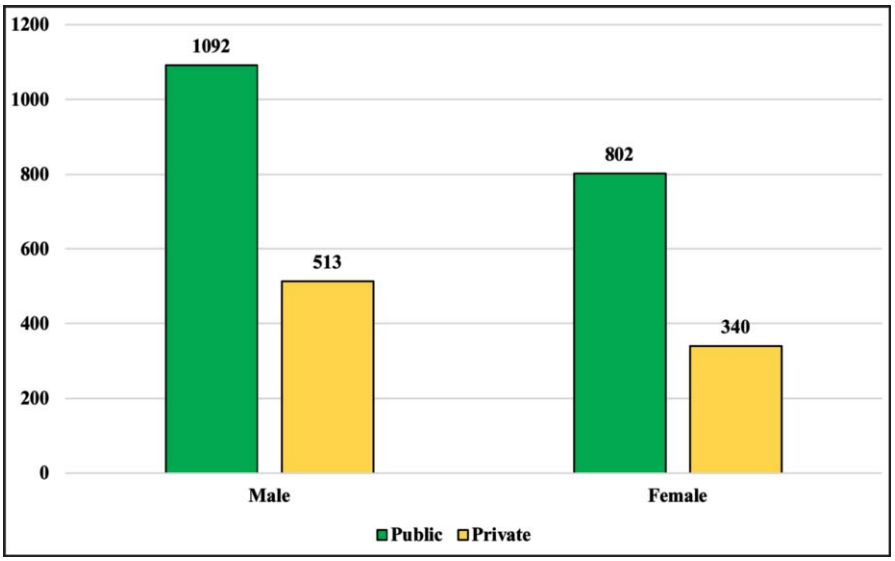

Figure-3: Gender Distribution.

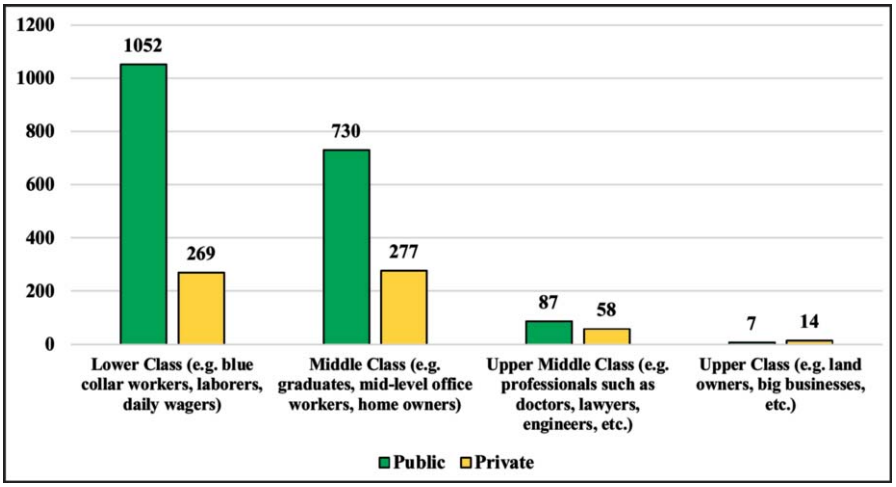

Figure-4: Socioeconomic Distribution.

Table-3: Mortality Ratios by Tumour Subtype.

Tumour Subtype	Public	Private	Public/Private Mortality Ratio
Metastasis	0.6	0.42	1.425
Glioma	0.31	0.13	2.43
Schwannoma	0.17	0.1	2.67
Craniopharyngioma	0.12	0.18	0.68
Meningioma	0.1	0.03	3.16
Pituitary Adenoma	0	0.03	0
Ependymoma	0.4	0.13	3.31

in the public sector (n = 784) compared to the private sector (n = 356). Table-2 shows that mortality was also higher in the public sector, with 13.9% patients of public sector resulting in death, as opposed to 9.6% of the private sector. Mortality ratios were calculated for deaths in the public sector versus deaths in the private sector by tumour subtype. The subtypes chosen were the most common ones found through PBTES, including metastases, glioma, meningioma, pituitary adenoma, ependymoma, schwannoma and craniopharyngioma.[6] Table-3 includes the mortality ratios and reveals that mortality by tumour subtype is greater for the most common tumours found in PBTES, except for craniopharyngiomas.

Discussion

Most patients presenting in 2019 belonged to a lower socio-economic status (SES), and of these, 79.6% sought care from public sector hospitals. In public sector hospitals, 97.2% of the intracranial tumours were diagnosed through MRI, while in the private sector, 96% of diagnoses were made with an MRI. The lost to follow up (LTFU) frequency was similar in both sectors with 41.4% patients from the public sector and 41.7% from the private sector. This is likely because public sector hospitals in Pakistan either offer free health services at the point of care or are heavily subsidised by government spending. This is characteristic of low-income patients, who often seek care at public hospitals and are unlikely to switch to private care. In Chile, it was also observed that a large percentage of the rural population sought care in public sector hospitals, reiterating that it is typically those in lower SES who attend public sector hospitals.[8]

In Uganda, despite health being free at the point of care, public sector hospitals often require patients to purchase consumable medical supplies out-of-pocket.[9] In Central China, follow-up attrition for breast cancer was significantly associated with low health insurance coverage, indicating that patients often cannot pay for holistic cancer care.[10] This also holds true for Pakistan, where many public sector facilities, despite providing free surgical care, insist on patients and their households purchasing additional medical supplies to provide holistic care.[11] This presents a potential for poor follow-up rates as patients approaching public health facilities are less likely to afford additional costs.

In terms of medical technologies, public and private sector hospitals perform well. The standard imaging study to make a radiological diagnosis for brain tumours is magnetic resonance imaging, which is performed at both public and private health facilities. This indicates that both the private and public sectors are using standard of care protocols for diagnosing brain tumours.[12] This also suggests that Pakistan's medical technologies and equipment for brain tumour care are better off than in many other LMICs; in Myanmar, public health facilities have CT scanners in all 15 states, but MRIs only exist in five regions of the country.[13] In Pakistan, on the other hand, MRI facilities are available at all the surveyed public sector hospitals, indicating that the availability of diagnostic radiological imaging facilities has been ensured across the country. PBTES indicates that both public and private sector hospitals must make improvements to their health information systems. However, when broken down further, disparities are seen between public and private sector care. Patients in both sectors were lost to follow-up for adjuvant treatment, but in the public sector, 56.5% were LTFU for chemotherapy, and 68.9% were LTFU for radiation therapy.[14] This vast difference does show that more patients are LTFU after surgery and before adjuvant therapy. Often, no information for these patients is recorded, so it is difficult to keep track of them — patient records must be provided to patients, but a comprehensive copy of the patient's medical history and treatment strategies must be on file at each hospital. Cross-cutting medical record-keeping systems, inclusive of diagnosis and imaging, surgery, and medical oncological care are crucial to track the multidisciplinary care that brain tumours require and must also be centralised so as to be able to follow patients between the various centres they attend.

There is higher mortality associated to public sector hospitals than private sector hospitals. This is true for many LMIC settings. In Chile, private hospitals have a lower risk of in-hospital mortality than public hospitals.[8] In Colombia, intensive care units also reveal higher mortality ratios in public care than in the private sector.[15] In Pakistan, public hospitals often have long waiting lists for consultations and surgical care, and the average waiting time between radiological diagnosis and surgery was found to be longer in public hospitals than in private hospitals.[16] This is a possible explanation for the higher mortality in public sector hospitals since patients are seen later in the course of their tumours and, therefore, have a higher surgical mortality risk. Interestingly, the mortality rate for craniopharyngiomas is higher in the private sector than it is in the public sector. This may be explained by the presence of specialised paediatric public sector hospitals and surgeons in the public sector that are trained to provide care specifically for paediatric tumours.

Limitations

Precise financial impact and differences in the public and private sectors could not be ascertained as data on out-of-pocket spending for neurosurgery, and associated neuro-oncological care were not collected. Further, true LTFU could not be determined, as patients can seek adjuvant treatment at hospitals other than the one where they received surgical care and may also be diagnosed at a hospital other than the primary surgical centre reported. Since patients were not tracked between healthcare facilities, we are unable to account for post-surgical treatment occurring at other hospitals.

Conclusion

Public and private sector health facilities for neuro-oncological care in Pakistan, still have a long way to go to cover the gaps in unmet needs. Strengthening health systems for brain tumour care is imperative to increase both the access to care and the quality of care to fulfil this requirement.

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Conflict of Interest: None to declare.

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