

Prevalence of Trismus Causes among Sudanese in Patients at Khartoum Teaching Dental Hospital

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ABSTRACT

Background: Trismus is a restricted mouth opening due to muscle spasm, it's one of the common problem encountered by dental practitioners and maxillofacial surgeons. It has several potential causes, and its treatment depends upon the cause. Patients suffering from trismus experience difficulties in performing activities of daily living and quality of life.

Objectives: To study the causes and treatment options of trismus at Khartoum Teaching Dental Hospital in patients among the Sudanese patients.

Methodology: This is a retrospective cross-sectional hospital-based study, with records of 501 patients with trismus who enrolled during the period from 2019-2021 to determine the most common causes of trismus in patients.

Results: A total of 501 records were included, the most common age group ranged from 16 to 30 years with male predilection 328(65.5%). Infection was the most common cause of trismus at KTDH 278(53.5%) and the most common infection was submassetric space infection (36.6%), the second most common cause of trismus was trauma 182(36.3%) and mainly mandibular fracture 107(58.8%) due to pain. Almost 339(67.7%) of records were dentate patients. About (60.3%) of trismus cases presented within days, there was a high significance between duration and prognosis (P .value=0.000), also there was a significance between patients with a history of tumors complaining of trismus and poor prognosis (P .value=0.000).

Conclusion: The most common cause of trismus was infection followed by trauma, the significance of the prognosis of trismus is associated with the causes and duration. Causes of trismus can be a life-threatening condition so the right diagnosis and correct treatment modality should be applied and put into consideration.

credited.

Keywords: Khartoum teaching; Infection; Trismus; Muscle spasm; Odontogenic

INTRODUCTION

Trismus is the inability to open the mouth due to muscle spasm, according to Dorland's, trismus. Trismus is one of common problems among patients of maxillofacial surgery. Patients suffering from trismus experience difficulties in performing activities of daily living, and adversely affect their quality of life. Moreover, as access to the oral cavity is restricted, intubation, dental treatment, clinical examination, and oncologic follow-up may become more complicated [1,2].

The normal range of mouth opening varies from patient to patient, it has been reported as wide as 32-62 mm (for both sexes) and 38-58 mm (for women only). Although some authors place the lower limit at 35 mm. Dentists must be familiar with the differential diagnosis of limited jaw opening, as some of the conditions attributed to it can be life-threatening. A good perception of its causes can help the dentist to refer the patient early for specialist care [3,4]. Involvement of the muscles of mastication is the main cause of trismus, the muscles of mastication are the Masseter, Temporalis, Medial pterygoid, and Lateral pterygoid. The Lateral pterygoid muscles open the mouth (depresses the mandible) with suprahyoid muscles, whereas the medial pterygoid, Temporalis, and masseter close the mouth (elevates the mandible).

Several conditions may cause or predispose an individual to develop trismus which are infection, trauma, dental Treatment, Temporomandibular Joint (TMJ) disorders, tumors, drugs, radiotherapy, chemotherapy, developmental disorders, congenital problems, and miscellaneous disorders.

Causes of trismus are many including subdivisions of Temporomandibular Disorder (TMD), TMD may be divided into extra-capsular (mainly myofascial) and intra-capsular problems (including internal dearrangement, arthritis, fibrosis, etc.) [5,6]. Another cause of trismus is an infection, the hallmark of a masticatory space infection is limited jaw opening. Trismus may be related to dental infections and must be systematically evaluated so that a potentially life-threatening situation is discovered as early as possible, infections causing trismus may be of an odontogenic or non-odontogenic nature. Odontogenic infection if untreated can spread to various fascial spaces of the head and neck and lead to serious complications such as cervical cellulitis or mediastinitis. Non-odontogenic infections such as tonsillitis, tetanus, meningitis, parotid abscess, and brain abscess may also cause trismus. Trauma may cause limited jaw opening. Depending upon the type of injury and the direction of the traumatic force, fractures of the mandible may occur in different locations, producing mandibular hypo mobility [7,8].

A potential problem in treating patients with trismus is the risk of misdiagnosing the patient who has a neoplastic disease, either primary or metastatic, in the para-pharyngeal region, parotid gland, jaws, or TMJ. A thorough clinical and radiographic examination must be performed to rule out neoplastic possibilities. Rarely, trismus is a symptom of nasopharyngeal or infratemporal tumors or fibrosis of the insertion of the temporalis tendon, resulting in limited jaw movement. Some drugs are capable of causing trismus as a secondary effect, succinylcholine, phenothiazines, and tricyclic antidepressants being among the most common. Trismus can be seen as an extrapyramidal side-effect of metoclopramide, phenothiazines, and other medications. Other rare miscellaneous causes of trismus are hysteria (psychogenic), lupus erythematosus, (The present study is aimed to study the causes of trismus in patients among Sudanese patients who were diagnosed and treated at Khartoum Teaching Dental Hospital) [9-12].

MATERIALS AND METHODS

A descriptive Retrospective cross-sectional hospital-based study was conducted at (KTDH) Khartoum state, form Records of Sudanese patients at Khartoum Teaching Dental Hospital complaining of trismus during the study period from January 2019 to the end of December 2021. A custom-designed data collection sheet was designed and was used to record secondary data which are the relevant socio-demographic information, medical status, time of presentation, causes of trismus, and treatment done from recorded files in the hospital. The sample size was determined by several patients included during the study period (2019-2021) and it was 501 records.

Data were analyzed using Statistical Package for Social Science (SPSS) Version 25 and the associations between different variables were checked using chi -a square test at the significant level of 0.05.

Inclusion Criteria were all patients presented with trismus at KTDH except for Oral cancer patients who had radiation therapy and post-surgical trismus (Tables 1-11).

Table 1. Demographic data of present study. **Note:** (n=501)

Variables	No	Percent
Gender		
Male	328	65.5
Female	173	34.5
Age group		
1-15 years	48	9.6
16-30 years	193	38.5
31-45 years	124	24.8
46-60 years	87	17.4
61-75 years	46	9.2
76-90 years	3	0.6
Marital status		
Single	146	29.1
Married	282	56.3
Divorce	4	0.8
Widow	3	0.6
not applicable	66	13.2
Occupation		
Employed	32	6.4
Trader	5	1
Student	110	22
Freelancer	207	41.3
Housewife	118	23.6
None	26	5.2
not applicable	3	0.6

RESULTS

There hasn't been a study conducted before to determine the prognosis of trismus concerning the duration of the cause, as wise the present study revealed that there is significance between the duration of trismus and prognosis, meaning that the longer the duration of trismus the worse the prognosis is. There are also some exceptions to this case in which there was a short time interval of trismus with a worse outcome than those with a long time interval

such as patients with tetanus and they should be aware of the poor prognosis so that they can be treated in an early matter of time (Figures 1-5).

Table 2. Status of dentition among the study patients. **Note:** (n=501)

Status	Frequency	Percent
Partially edentulous	122	24.4
Dentate	339	67.7
Primary dentate	35	7
Edentate	5	1
Total	501	100

Figure 1. Distribution of participants according to Gender. **Note:** (■) Male; (■) Female

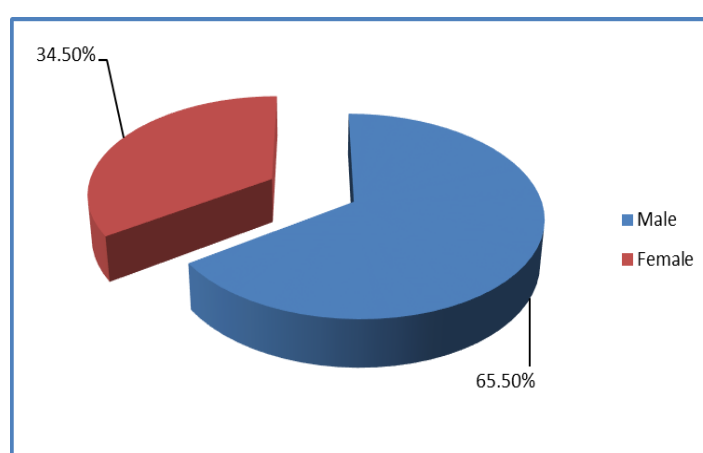


Figure 2. Distribution of participants according to age group.

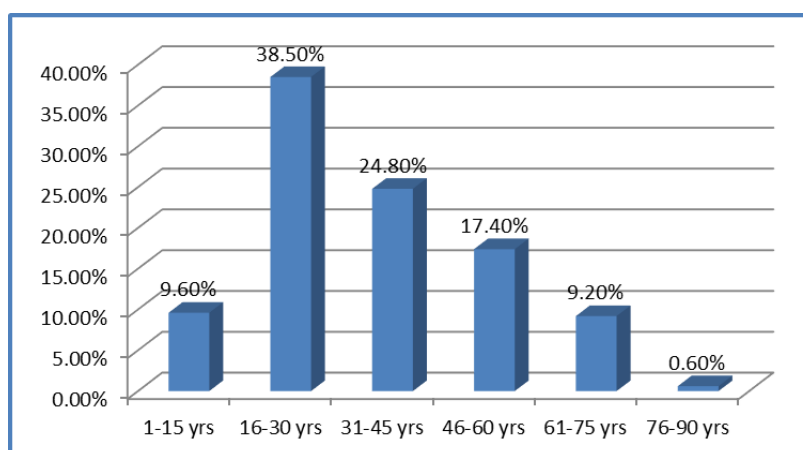
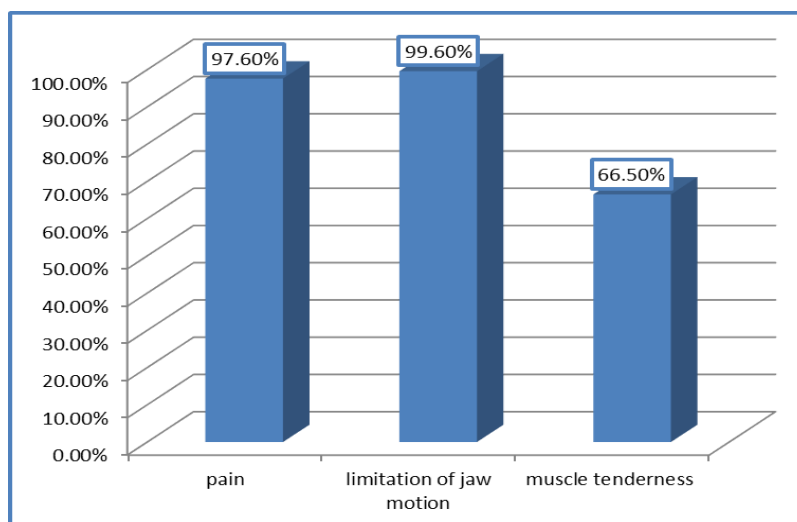
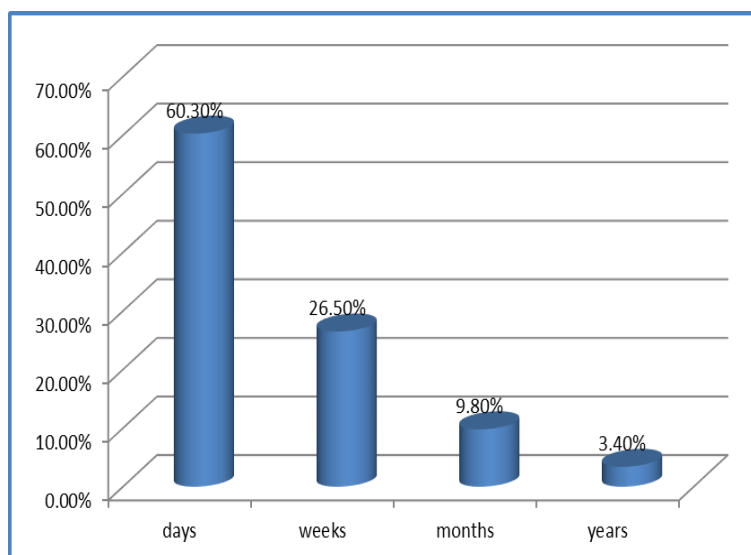
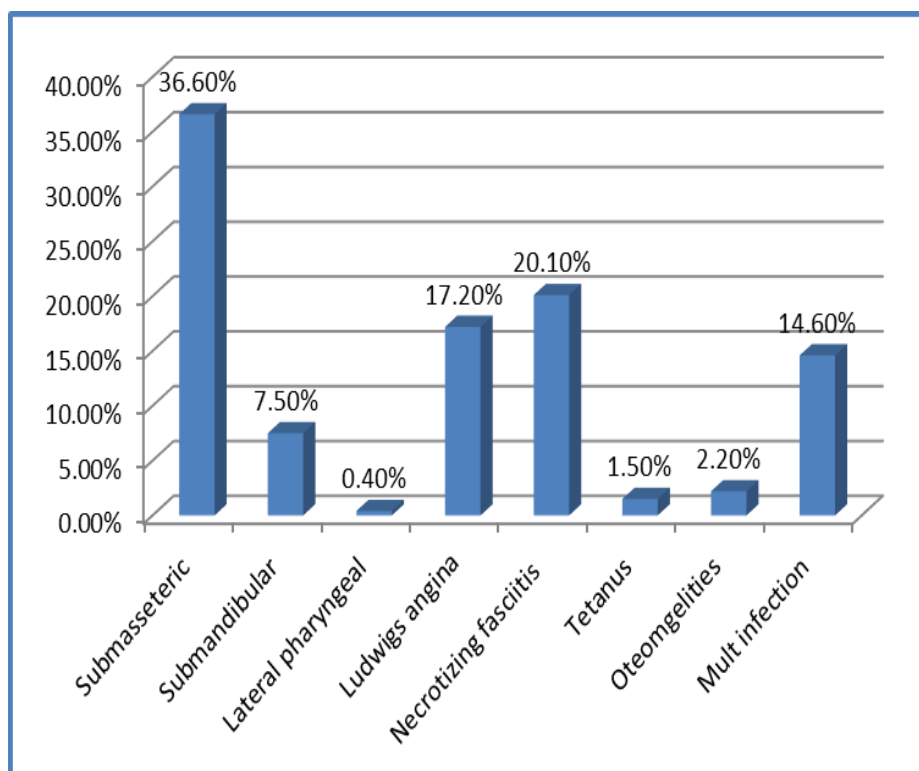


Table 3. Accompanied clinical presentations with trismus among the study patients.

Signs and symptoms	Frequency	Percent
Pain	2	0.4
Limitation of jaw motion	11	2.2
Pain and limitation of jaw motion	154	30.7
Pain muscle tenderness and limitation of jaw motion	329	65.7
All above	5	1
Total	501	100

Figure 3. Accompanied clinical presentations with trismus among the study patients.**Figure 4.** Duration of trismus among the study patients.**Table 4.** Causes of trismus among the study patients. **Note:** (n=501)

Causes of trismus	Frequency	Percent
Infection	268	53.5
Trauma	182	36.3
Tumors	35	7
TMJ	11	2.2
Eagle syndrome	1	0.2
Elongated coronoid process	1	0.2
Erythema multiform	1	0.2
Congenital	2	0.4
Total	501	100

Figure 5. Sub causes of infection among the study patients. **Note:** (n=268)**Table 5.** Sub causes of trauma among the study patients. **Note:** (n=182)

Sup causes	Frequency	Percent
Mandibular fracture	107	58.8
Zygmoatic complex fracture	68	37.4
Myositis	1	0.5
Gun shot	5	2.7
Lefort II	1	0.5
Total	182	100

Table 6. Sub causes of tumors among the study patients. **Note:** (n=35)

Sup causes	Frequency	Percent
Benign	5	14.3
Malignant	30	85.7
Total	35	100

Table 7. Sub causes of Benign among the study patients. **Note:** (n=5)

Sup	Frequency	Percent
Fibromatosis	1	20
Angiofibroma	1	20
Ossifying fibroma	1	20
Osteoma in coronid	1	20
Ameloblastoma	1	20
Total	5	20

Table 8. Sub causes of TMJ among the study patients.

Sup causes	Frequency	Percent
Ankyloses	11	100
Total	11	100

Table 9. Prognosis among the study patients. **Note:** (n=501).

Sup causes	Frequency	Percent
Good	462	92.2
Poor	37	7.4
None	2	0.4
Total	501	100

Table 10. Prognosis among the study patients. **Note:** (n=501).

Causes of trismus	Prognosis and complications			Total
	Good	Poor	3	
Infection	249%	17%	2%	268%
	92.90%	6.30%	0.70%	100.00%
Trauma	181%	1%	0%	182%
	99.50%	0.50%	0.00%	100.00%
Tumors	16%	19%	0%	35%
	45.70%	54.30%	0.00%	100.00%
TMJ	11%	0%	0%	11%
	100.00%	0.00%	0.00%	100.00%
Eagle syndrome	1%	0%	0%	1%
	100.00%	0.00%	0.00%	100.00%
Elongated coronoid process	1%	0%	0%	1%
	100.00%	0.00%	0.00%	100.00%
Erythema multiforme	1%	0%	0%	1%
	100.00%	0.00%	0.00%	100.00%
Congenital syngnathia	2%	0%	0%	2%
	100.00%	0.00%	0.00%	100.00%
Total	462%	37%	2%	501%
	92.20%	7.40%	0.40%	100.00%

Table 11. The association between duration of trismus and prognosis among the study patients.

Duration of trismus	prognosis and complications			Total
	Good	Poor	None	
Days	291%	10%	1%	302%
	96.40%	3.30%	0.30%	100.00%
Weeks	124%	8%	1%	133
	93.20%	6.00%	0.80%	100.00%
Months	34%	15%	0%	49%
	69.40%	30.60%	0.00%	100.00%
Years	13%	4%	0%	17%
	76.50%	23.50%	0.00%	100.00%
Total	462%	37%	25%	501%
	92.20%	7.40%	0.40%	100.00%

DISCUSSION

Trismus is a restricted mouth opening and painful condition that occur due to several causes, it is one of the common problems among patients with maxillofacial diseases. Patients suffering from trismus experience difficulties in performing activities of daily living which adversely affect their quality of life. Moreover, as access to the oral cavity is restricted, intubation, dental treatment, and oncologic follow-up may become more complicated.

This study wasn't done before in Sudan about trismus. Several conditions may cause or predispose an individual to develop trismus which is wisdom tooth removal, surgery in or around your mouth, infection, trauma, prolonged dental treatment, TMJ disorders, head and neck cancers, prolonged intubation, drugs, radiotherapy, chemotherapy, developmental disorders, congenital problems, and miscellaneous disorders.

It is a common topic of interest due to its vast causes and prevalence in the dental and medical community.

Regarding demographic data of the present study, there was male predilection (65.5%) which is in agreement with the findings of Gonzalez AJ, Chang CM and Rubab Z, with male predominated (83.75%) (64.29%) and (84.4%) respectively. These findings diverge from studies published by Garcia AG and Bisseling P, with female predilection (64.4%) and (64%). The most affected age group was from (16-30) years old which is consistent with Chang CM, (20-29) years old [13-17].

The present study revealed that most of the patients were dentate (67.7%) followed by partially edentulous (24.4%), this is similar to the study done by Van der Geer SJ et al.¹⁸ as they found that (80.7%) of their patients were dentate but followed by edentulous (9.9%), this diverges from other studies done by Dijkstra found that edentulous patients had more trismus than other patients and Martins said the chances of edentulous patients presenting with trismus before cancer treatment were almost eight times higher than for patients with complete or partial dentition [18,19].

Infections (53.5%) were the most common cause of trismus and submassetric space infection was in a higher percentage than other infections (36.6%) because it's mostly involved on presentation and there is the involvement of masticatory muscle [20].

In the present study, almost (58.8%) of patients presented with mandibular fractures as the second most common cause of trismus, followed by zygomatic complex fracture which is similar to the study published by De Matos Were (54.8%) of their patients presented with restricted mouth opening due to mandibular trauma [21].

Syngnathia is a rare anomaly due to soft tissue adhesion (synechiae) or bony adhesion between the maxilla and mandible (synostosis) which is considered a cause of restricted mouth opening. The present study showed two cases of congenital syngnathia that were managed surgically followed by active physical therapy to improve feeding [22].

One patient had a trismus caused by pain in the throat diagnosed with eagle syndrome as case reported by Maki. Another case found in records was erythema multiform patients facing difficulty in opening their mouth as reported in article done by Brice [23,24].

There is a significance between the causes of trismus especially tumors and prognosis, some malignant tumors were metastatic tumors in the area of condyle the only sign presented with was trismus history of cancer with a CT scan will lead to a diagnosis, also there is a case of benign tumor of a four years old child presented only with trismus, in CT scan revealed large lesion in infratemporal fossa diagnosed with angiofibroma.

Trismus is a condition caused by a variety of primary issues and treating each case is different so all treatment will not be the same nor will all physicians recommend the same approach [25].

Treatment and management of trismus varies depending on the severity and frequency of trismus and on a case by case basis contingent on the underlying cause. The various treatment options starting from conservative exercise to advance surgery include: physical therapy, medications, jaw stretching devices, acupuncture, craniosacral therapy and dietary change if severe surgery is an option.

CONCLUSION

Patients presented with trismus had variable duration and causes, the most common duration of trismus was within days and infection was the commonest cause of trismus among in patients. There was a highly significant association between patients who had tumors complaining of trismus with poor prognosis, there was significance between poorer prognosis and the prolonged duration, but there some patients died despite the shorter duration of the trismus, so should consider the right diagnosis to apply the correct treatment modalities.

Trismus affects many important aspects of daily life and overall health-related quality of life, and it's a common problem presented to the dental practitioner. Causes of trismus are many and can be easily misdiagnosed and some can be fatal. There is no previous study conducted in Sudan. Therefore, it's thought wise to carry out such study about trismus as it has significant clinical outcomes.

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