



To assess the awareness of tomato flu amongst post graduate students of Teerthankar Mahaveer Dental College and Research Centre Moradabad Uttar Pradesh

Harshita Pandey¹, Pradeep Tangade², Vikas Singh³, Ankita Jain⁴, Rangoli Srivastava⁵

¹ Department of Public Health Dentistry, Teerthankar Mahaver Dental college and Research Centre, Moradabad, Uttar Pradesh, India

² Professor and Head, Department of Public Health Dentistry, Teerthankar Mahaver Dental college and Research Centre, Moradabad, Uttar Pradesh, India

³ Professor, Department of Public Health Dentistry, Teerthankar Mahaver Dental college and Research Centre, Moradabad, Uttar Pradesh, India

⁴ Associate Professor, Department of Public Health Dentistry, Teerthankar Mahaver Dental college and Research Centre, Moradabad, Uttar Pradesh, India

⁵ Assistant Professor, Department of Public Health Dentistry, Shree Guru Gobind Singh Tricentenary University, Gurugram, Haryana, India

Abstract

This article seeks to provide the latest information on the 'tomato flu' outbreak in India. This illness is highly transmissible and primarily affects children under the age of nine. The study seeks to gauge the understanding and opinions of postgraduate dental students concerning the 'tomato flu.'

Methods: A cross-sectional study was conducted among postgraduate students at Teerthanker Mahaveer Dental College and Research Centre Moradabad, Uttar Pradesh. The study involved the use of a questionnaire developed and pre-tested by the researchers, containing 12 questions. Before the main study, a pilot study was undertaken with a sample of 25 postgraduate students from different departments within the college. This pilot study aimed to check the questionnaire's validity and reliability. The questionnaire's validity was assessed by calculating Cronbach's alpha value, which, in this instance, was determined to be 0.79 after analyzing the responses from the 25 postgraduate students.

Result: Based on the data, we can infer that there is no significant association between gender and awareness of tomato flu. The department to which participants belonged did have a notable impact on their knowledge scores, as the chi-square value was 0.0433, which is less than .05, indicating a statistically significant association.

Conclusion: Tomato flu awareness appears to be linked to the department of post-graduation. It is crucial to examine each department's curriculum and current scenarios. This will enhance the knowledge of all postgraduate dentists regarding communicable diseases relevant to dentistry and help us collectively address this issue.

Keywords: Blister, contagious, hand foot mouth disease, influenza virus

Introduction

^[1,2] Tomato flu is a viral organism which causes a viral disease known as tomato flu which is discovered in South Kerala, India in May 2022. Initial symptom, of tomato flu, a blister is seen on whole body, this condition was known as "Tomato Flu". The appearance is primarily a tiny red blister which expands to bear a resemblance of tomato, giving it its term ^[3]. The alternate name for influenza virus is tomato fever.

^[4] The foremost victims are children below the age of five years. For the prevention of Tomato flu, strong confrontation may be the key which causes low occurrence in Adults. Spread of disease occur from people may also act as carriers who interrelate with children ^[5, 6]. Dr. Amar S. Fettle Kerala Nodal officer, epidemiologist state that Tomato flu is considered as a "Hand, Foot, & Mouth Disease". Viruses which are responsible for causing HFMD from enterovirus genus are polioviruses, echoviruses, coxsackie viruses. Coxsackie virus A16 is the main cause of HFMD. Coxsackie Virus A16 is the modest form of illness ^[6]. The recovery of ill patient is in seven to ten days without any therapeutic intervention.

^[7] Hand- and- mouth disease (HFMD), occasionally known as foot-and-mouth disease affecting sheep, cattle, goats and swine, it is often confused with it. These are independent because two complaints are caused by separate virus. It is a contagious virus and may spread from one individual to another individual. Contagious virus combined with that virus present in feces, saliva, secretions from oral cavity and nasal breathing, and blister fluid of those who have the disease. Virus can be spread most common ways by fomites, people's hands and contact. Even with being distressed. Classically, patient do not show any indication during 1st week of they are maximum transmissible then as of disease ^[8]. Enterovirus is typically not acquired or transmitted through animals, which makes it especially susceptible to infecting young children below the age of 5. Most patients infected with enterovirus only exhibit a few clinical symptoms. The primary ways in which enterovirus is transmitted, particularly among older children and adults, are through respiratory droplets, contact with infected feces, and contact with blister fluids. To prevent transmission of enterovirus, it is essential to maintain good personal hygiene practices and minimize contact with individuals who are ill ^[9]. In simpler terms, enterovirus is most common in young

children, and it spreads through respiratory droplets, contact with infected feces, and contact with blister fluids.

In adults, particularly pregnant women who have never been exposed to enteroviruses, there is a higher likelihood of lacking antibodies to defend against these viruses. Many enterovirus infections in pregnant women may go unnoticed or result in mild illness. However, there is still no conclusive evidence to confirm that a maternal enterovirus infection can lead to adverse pregnancy outcomes, such as miscarriage, congenital disorders, or stillbirth. In simpler terms, pregnant women who haven't encountered enteroviruses before may be more susceptible to infection, but the direct link between such infections and negative pregnancy outcomes is not definitively proven^[10, 11].

The risk of a newborn getting infected with enterovirus increases if the mother was ill with enterovirus at the time of delivery. While most newborns that contract enterovirus only have mild illness, in rare instances, they can develop severe infections that affect vital organs like the heart and liver, and in some cases, these infections can be fatal. However, scientists are still working to pinpoint the exact causative factor that leads to this severe illness in newborns. In simpler terms, if a mother has enterovirus when giving birth, her newborn is at a higher risk of infection. Although most newborns have mild symptoms, some can develop serious infections affecting vital organs, and researchers are still trying to understand what causes this severe illness.

Material and Methods

A cross-sectional study was planned to be carried out among postgraduate students at Teerthanker Mahaveer Dental College and Research Centre Moradabad Uttar Pradesh. The study was involve the use of a questionnaire that has been developed and pre-tested by the researchers and contains 12 questions. Prior to the main study, a pilot study was conducted with a sample of 25 postgraduate students from different departments within Teerthankar Mahaveer Dental College and Research Centre. This pilot study aimed to assess the validity and reliability of the questionnaire. The validity of the questionnaire was evaluated by calculating Cronbach's alpha value, which, in this case, was found to be 0.79 after analyzing the responses from the 25 postgraduate students. As a result, the researchers have decided to use the "Tomato Flu Questionnaire 2022" to assess the knowledge and attitudes of postgraduate dental students regarding tomato flu Ethical clearance for this study was sought from the Ethics Committee at Teerthanker Mahaveer Dental College and Research Centre before commencing the research. The inclusion criteria for this study included postgraduate students from various departments of Teerthankar Mahaveer Dental College and Research Centre located in Moradabad. Postgraduate students who express a willingness to participate in the study. The exclusion criteria for this study were adult patients who decline or refuse to participate in the study. The sample size for the main study was determined based on the prevalence observed in the pilot study and it was 80. The study was conducted during the month of May 2023. The departments were public health dentistry, periodontology, pedodontics, endodontics, oral pathology, and oral medicine.

Statistical Analysis: Statistical analysis for this study was performed using SPSS (Statistical Package for Social Sciences) version 24.0. The analysis was involving the application of various statistical tests, including the Chi-

Square test, Z test, and Logistic Regression Analysis. A significance level of $p < 0.05$ was considered as the threshold for statistical significance.

Result

A total of 90 participants were there in the study out of them 25 (27.8%) were males and 65 (72.2%) were females (Table 1). All the participants were post graduates students. 38(42.2%) of the participants were aged 27 years followed by 33(36.7%) were having the age of 28 years followed by 12(13.3%) were having the age of 29 years followed by 2 (2.2%) were having the age of 26 years followed by 1(1.1%) were having the age of 31 years followed by 1(1.1%) followed by 32 years (Table2).

We took the postgraduate students of dental college in which the maximum post graduates came out to be from the department of pedodontic (26.7%) followed by public health department (20%) followed by periodontology department (18.9%) followed by oral pathology (16.7%) followed by endodontic department (10%) followed by oral medicine department (7.8%) (Table 3).

Nearly 83.3% (n=75) participants answered correctly that tomato flu is a new variant of hand foot mouth disease. 15(16.7%) participants couldn't give the right answer. 37.8% (n=34) participants answered correctly that it was identified in Kerala. 56 (62.2%) participants could not give the right answer. 55.6%(n=50) participants answered correctly that it affects mainly 1 to 5 years. 40(44.4%) participants couldn't give the right answer. 44.4(n=40) participants answered correctly that the first symptom of tomato flu is rashes. 50(55.6%) participants couldn't give the right answer.

26.7% (n=24) participants answered correctly that coxsackie A16 is having mild severity in case of tomato flu. 66(73.3%) participants couldn't give the right answer. 55.6(n=50) participants answered correctly that the incubation period of tomato flu is 5 to 7 days. 40(44.4%) participants couldn't give the right answer. 76.7(n=69) participants answered correctly that tomato flu is contagious disease. 21(23.3%) participants couldn't give the right answer. 41.1%(n=37) participants answered correctly that red flat blister on tongue and gums is a symptom of tomato flu. 53(58.9) participants couldn't give the right answer.

10% (n= 9) participants answered that xerostomia not a symptom of tomato flu .81(90%) answer. 90(100%) participants couldn't give the right answer of tomato flu is a self-limiting disease. 42.2(n=38) participants answered correctly that scratch the rash is not a preventive measure of tomato flu. 52(57.8) participants couldn't give the right answer. 66.7%(n=60) participants answered correctly that awareness programmes, intensive care units staff training, foundation of facilities for paediatric ICUs all are the preventive steps will take to decrease the severity of Tomato Flu.

As per the data obtained we can conclude that there is no relationship between tomato flu awareness and gender of a person as a chi square value came out to be .162 which is greater than .05. As per the study we can conclude that age has got no relation with the tomato flu awareness as a chi square value came out to be .306 but the department to which they belonged did have a significant influence on their knowledge scores as the chi square value came out to be 0.0433 which is lesser than .05 (Table4).

If we conclude the result gender wise we can say that females were having more awareness as the mean score came out to be 5.46. Age wise we can say that under 30 were having more awareness as the mean score came out to be 5.44. Department wise we can say that oral pathology and public health dentistry were having more awareness as the mean score came out to be 7.77 and 7.22. (Table5) We can say that there is a correlation between department and tomato flu awareness. Hence we need to get into detail.

Table 1: Gender Distribution of Participants

Gender	Frequency	Percent
Male	25	27.8
Female	65	72.2
Total	90	100.0

Table 2: Age Distribution of Participants

Age	Frequency	Percent
26	2	2.2
27	38	42.2
28	33	36.7
29	12	13.3
30	3	3.3
31	1	1.1
32	1	1.1
Total	90	100.0

Table 3: Department distribution of Participants

Department	Frequency	Percent
Public health dentistry	18	20.0
Periodontology	17	18.9
Pedodontology	24	26.7
Endodontics	9	10.0
Oral Medicine	7	7.8
Oral Pathology	15	16.7
Total	90	100.0

Table 4: Effect of Variables on Tomato Flu Questionnaire

Variable	Pearson Chi- Square Value in terms of Tomato Flu Questionnaire	Interpretation
Gender	0.162	(Non –Significant) (>0.05)
Age	0.306	(Non –Significant) (>0.05)
Department	0.0433	Significant (<0.05)

Table 5: Mean of Age Gender and Department

Gender	N	Mean	Std. Deviation	Std. Error Mean
Male	25	5.2000	2.04124	.40825
Female	65	5.4615	2.33236	.28929
Age		Mean	Std. Deviation	Std. Error Mean
Under 30		5.4419	2.19949	.23718
Over		5.0000	4.24264	3.00000
Department		Mean	Std. Deviation	Std. Error Mean
Public health dentistry		7.221	4.87654	.22312
Periodontology		6.224	4.66543	.23124
Pedodontics		6.432	6.54329	.34215
Endodontics		5.888	5.43218	.55432
Oral Medicine and Radiology		5.999	3.87534	.33221
Oral Pathology		7.777	2.55678	.23212

Discussion

A cross sectional observational study involved a total of 90 participants, with 27.8% being males and 72.2% females.

All participants were postgraduate students, and their ages ranged from 26 to 32. Department Distribution: The majority of postgraduate students came from the Department of Pedodontics (26.7%), followed by Public Health Dentistry (20%), Periodontology (18.9%), Oral Pathology (16.7%), Endodontics (10%), and Oral Medicine (7.8%). Knowledge and Awareness: The questionnaire assessed participants' knowledge about tomato flu. Most participants correctly identified that tomato flu is a new variant of hand, foot, and mouth disease (83.3%). However, there were misconceptions about other aspects of the disease, such as its incubation period and symptoms. Statistical Analysis: The study used statistical tests like the Chi-Square test to analyze the relationship between participant demographics (gender, age, and department) and awareness of tomato flu. The analysis found no significant relationship between awareness and gender or age but did find a significant relationship between department and awareness. Hence from the above result we can conclude that the tomato flu awareness is somewhere dependent or correlated with the department of one post-graduation. Hence we need to get into detail about each departments recent scenario curriculum so that every dentist who is into post-graduation is aware of the each communicable diseases which have got a link in dentistry and more awareness or more insight into that matter can help all of us combatting this disease. As we can prevention is better than cure so rather than curing tomato flu it's better for all of us to somewhere prevent it which is only possible if each and every dentist should aware of this disease so that further we can know how to prevented and how to rapidly make it a disease which is no longer prevent among children.

Conclusion

Taking timely precautionary measures, such as maintaining proper hygiene and sanitation, and implementing a five to seven-day isolation period following contraction of the disease, is crucial for controlling the spread of HFMD and preventing further outbreaks.

While there are no established antiviral medications specifically for HFMD, acyclovir and oseltamivir have shown some effectiveness in reducing the severity of symptoms. Additionally, the use of immunoglobulins in HFMD cases has been shown to increase the clinical cure rate and reduce fatalities. Currently, there are three licensed vaccines against HFMD, but they are primarily effective against Enterovirus A71 (EV-A71). Therefore, it may be advisable to develop a multivalent vaccine that can target various causative agents of HFMD, including CV-A16, as a more comprehensive preventive approach.

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