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Findings of an URTI Outbreak at a Training Institution in Port Dickson District, Negeri Sembilan, Malaysia

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Introduction

- Upper respiratory tract infection (URTI) is a common infection with an average incubation period of 5-7 days.
- Viruses cause the majority of URTIs.
- There was an outbreak of URTI at one of the training institutions in Port Dickson which was declared on 26.02.2023 and ended on 18.03.2023 after the last case was reported on 4/3/2023.
- The investigation was triggered after 11 cases were notified from Hospital Port Dickson (HPD) to the Port Dickson District Health Office (PKD PD) on 26th February 2023.

Objective

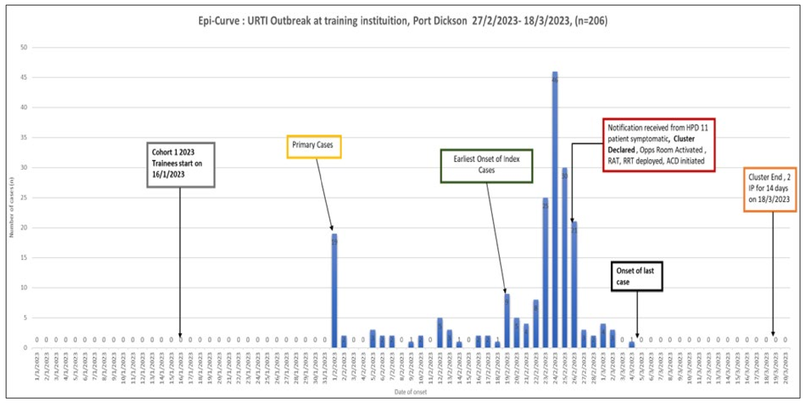
- To describe the outbreak investigation
- To identify the risk factors & causative agents
- To implement the preventive and control measures

Materials and Methods

The **case was defined** as any person in this training institute presenting with an acute URTI or having at least two of these symptoms; cough, sore throat, nasal congestion, or running nose with or without fever within the past 2 weeks. **Epidemiological, environmental** and **laboratory** investigations were carried out to determine the source of infection and the cause or aetiology of the outbreak, while a **cohort study** was conducted to identify the risk factors. Data collection was done and compiled in the Microsoft Excel application and analysed using the crosstabulation technique and chi-square test in the SPSS application.

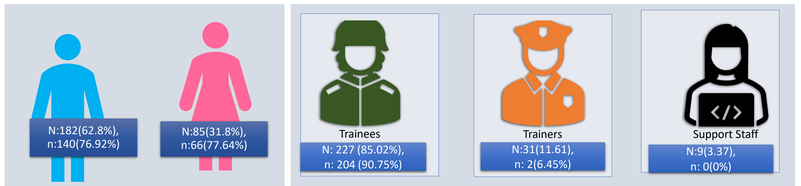
Prepare for field work	• Deployed RAT • Prepare RRT
Active case detection	• Epidemiological data: line listing • RTK was done to all symptomatic person
Assessment of environment	• Inspection to their living quarters, training areas & schedule, sick bay and common areas
Health education & disinfection	• Cough etiquette and PPE: face mask • Hand washing
Break transmission of infection	• Treatment given to symptomatic person • Isolation of symptomatic person • Refer severe cases to hospital
Communication, including outbreak report	• Inform the training institution authority and State Health Department • Write final report to Disease Control Division, MOH

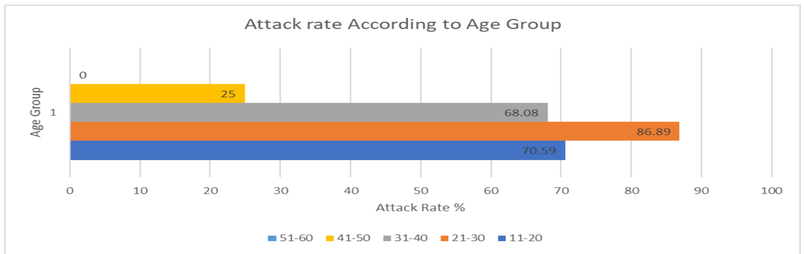
Result & Discussion

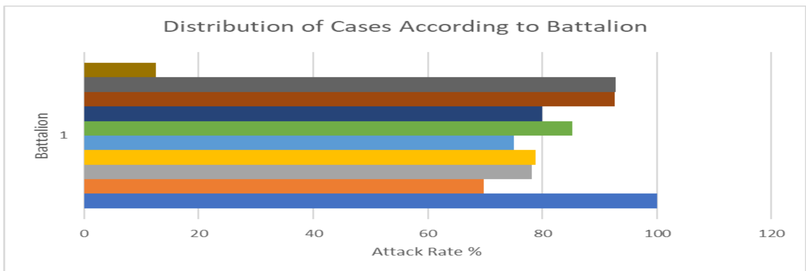


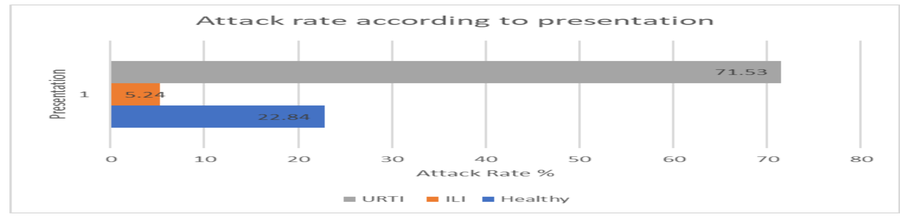
The **epidemic curve** indicates the propagated mode of spread of the outbreak, which supports the transmission from person to person (4). Of 267 people who are at risk of getting URTI, 206 cases were detected in the institution with an **attack rate of 77.2%.** The magnitude of the infection with a high attack rate shows that it is a viral infection that is airborne transmission (5). This finding is supported by confirmation of laboratory test results.

Sociodemographic Characteristics and Clinical Presentation of the Population in the training institution and Cases (N: Number of population/ n: number of cases)









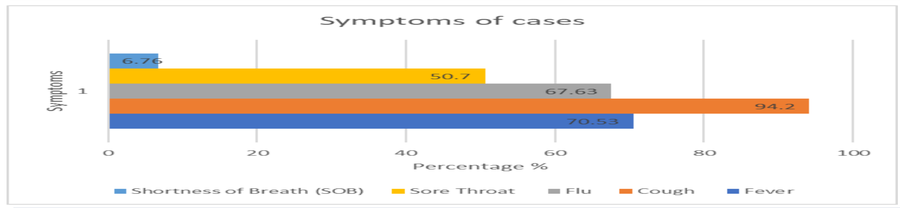


Table 1: Crosstabulation table for the relative risk of compliance with wearing masks and usage of hand sanitiser.

Variables		Symptomatic for URTI: Yes N (%)	No N (%)	RR	95% CI	p-value
Usage of face mask	Non-compliance	182 (83.5)	36 (16.5)	1.64	2.50-9.43	<0.001
	Compliance	25 (51.0)	24 (49.0)	0.34	0.22-0.51	
Usage of hand sanitiser	Non-compliance	173 (83.6)	34 (16.4)	1.48	2.07-7.30	<0.001
	Compliance	34 (56.7)	26 (43.3)	0.38	0.25-0.58	

- No significant difference in cases between gender and battalion.
- Cases' ages ranged from 20 to 42 years, with a median of 25 years.
- Discrepancies in attack rate among trainees and trainers are huge with **90.4%** and **6.45%** respectively. Attributed to environmental factors and individual factors such, as poor distancing in mass gathering activities, physical exertion, and poor compliance with proper health practices.
- Statistical analysis found that a person who had poor compliance with hand hygiene and did not wear a mask had a higher risk of getting URTI with **RR of 1.475 and 1.636** respectively (See Table 1).
- Only **10 cases (4.85%)** had **positive** results from the **SARS CoV-2 Rapid Test Kit (RTK**).
- 10 nasopharyngeal swab samples were sent for culture and PCR (Polymerase chain reaction), 4 were positive for COVID-19, 8 were positive for influenza A virus, 8 were also positive for Seasonal Flu A (H3), 1 for Adenovirus, 1 for Rhinovirus, 5 for Coronavirus OC43 and 1 for Bocavirus.
- The result shows that a person is infected by more than one virus; most are 4 viruses concomitantly. The most prominent cause of infections in this outbreak was **Influenza A** viruses and **Seasonal Flu A(H3**) viruses.

Conclusion

The URTI outbreak in this training institution was caused by multiple viral infections with probable sources being the primary cases. The outbreak was attributed to environmental and human factors. Proper isolation of cases, wearing masks and self-hygiene were among the vital factors in breaking the transmission of the URTI outbreak. The cases were all mild to moderate symptoms and were treated as outpatients

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