

# Foodborne Disease Outbreak in a Primary School for Girls- Saudi Arabia, Riyadh in 2023

P2-B19

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The current outbreak could be caused by chemicals or toxins in Chicken Burger, Shawarma, Balilah, and cotton candy. Cross-contamination may explain why so many food items were implicated.

## BACKGROUND

The current outbreak of foodborne diseases occurred in a girls' primary school in Riyadh City, Saudi Arabia, on December 21, 2023. It aimed to confirm the existence of the outbreak, confirm the diagnosis, define and identify the cases, identify the source of the outbreak, determine the causative agent or organism if possible and its mode of transmission, and recommend preventive measures to be applied to prevent similar outbreaks in the future.

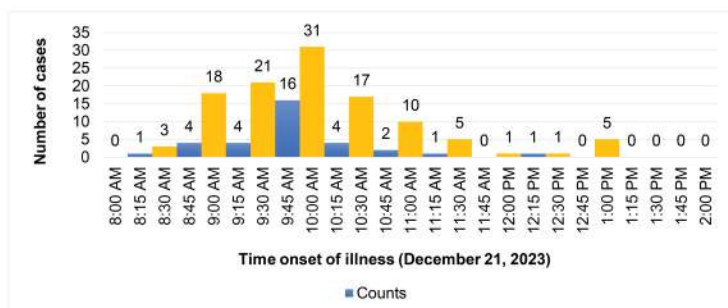
## METHODS

A retrospective cohort study was conducted to study the current outbreak. Cases were defined as any person who ate during an open day in the primary school for girls on December 21, 2023, and developed any or a combination of the following symptoms: diarrhea, vomiting, fever, or abdominal pain within 36 hours of food consumption. We collected information on demographics, symptoms, and food history using a semi-structured questionnaire. We reviewed hospital records for symptoms and vital signs. We reviewed available laboratory results for cases and retained food items, as well we conducted an active case search to identify more cases. The data obtained was analyzed using epi info and SPSS version 23. Risk ratios (RR) and 95% confidence intervals (CI) were calculated.

## RESULTS

145 female cases among 259 ate during an open day in the primary school in Riyadh, which indicated an attack rate of 55.98%. Of 145 cases, the ages ranged between 6-40 years. Among cases, 97.93% had abdominal pain, 57.93% had nausea, 23.44% had vomiting, 18.62 developed diarrhea, and 4.82% had fever. The incubation period ranged from 45 minutes to 5.5 hours, with a mean of 2.5 hours as showed in figure 1. Among nine food items consumed, chicken burger (relative risk 1.64, 95% CI 1.35-2), cotton candy (relative risk 1.69, 95% CI 1.4-2.04), balilah (relative risk 1.44, 95% CI 1.06-1.93) and shawarma (relative risk 1.31, 95% CI 1.05-1.64) were significantly associated with illness as showed in table.

Figure 1: A epi curve chart of the outbreak of a foodborne disease in the primary school for girls, Riyadh, 2023



## RESULTS CONTINUED

Laboratory investigation of food samples ( chicken burger, chips and grape leaves) and six rectal swabs were negative. There were no hospitalizations or deaths, and all cases were discharged.

Table: Food-specific attack rates and risk ratios for each food item of the foodborne outbreak in the Primary School for girls, Riyadh, 2023

Food items	Food-specific attack rates and risk ratios											
	Ate specified food				Did not eat specified food				%RR	CI 95		P VALUE
	ill	well	total	% AR	ill	well	total	%AR		LL	UL	
Chicken Burger	62	19	81	76.54	83	95	178	46.63	1.64	1.35	2.00	< 0.0001
Shawarma	34	15	49	69.39	111	99	210	52.86	1.31	1.05	1.64	0.018
Chips	98	70	168	58.33	47	44	91	51.65	1.13	0.89	1.43	0.31
Corn	38	21	59	64.41	107	93	200	53.50	1.20	0.96	1.51	0.11
Doughnut	43	37	80	53.75	102	77	179	56.98	0.94	0.74	1.19	0.633
Red juice	116	78	194	77.85	29	36	65	44.62	1.34	0.99	1.79	0.05
Grape leaves	29	15	44	43.18	116	99	215	53.95	1.22	0.96	1.56	0.11
Balilah	11	3	14	78.57	134	111	245	54.69	1.44	1.06	1.93	0.01
cotton candy	18	2	20	90	127	112	239	53.14	1.69	1.40	2.04	< 0.0001

## CONCLUSIONS

Based on symptoms, incubation period, epidemiological investigation and laboratory results there might be some differential diagnosis, but we were unable to more definitively identify the source of the outbreak. The current outbreak could be caused by chemicals or toxins found in Chicken Burger, Shawarma, Balilah, and cotton candy. Cross-contamination may explain why so many food items were implicated. We recommend increased supervision and periodic examinations for food handlers. Also, we recommend more education to food handlers about food safety.

## ADDITIONAL KEY INFORMATION

I would like to thank the food safety program manager in the general directorate of health affairs in the Riyadh region and administration team in the primary school as they help me in the arrangement for data collection and getting information about the outbreak.