

Asymptomatic Carriage of *Salmonella* spp. Among Food Handlers at a Tertiary-Care Hospital

Syeda Ayesha Farooq, Roomail Nazir, Seema Irfan, Faiza Jamal, Farah Qamar, Sadia Shakoor

Aga Khan University, Karachi, Pakistan

Background: Carriage of typhoidal salmonellae is a well-known risk factor for food-borne enteric fever transmission. The burden of *Salmonella* carriage among professional food handlers in highly endemic countries such as Pakistan is unknown, but has been observed to be high among street vendors. Chronic carriage among food handlers operating in catering establishments, including in medical institutes and hospitals, can result in large nosocomial and community outbreaks, as catering services are trusted to be free of pathogens by the populace. We report carriage rates in a cohort of professional food handlers employed by food services at a medical institute in Karachi, Pakistan.

Methods: We examined employee records of all food handlers hired by the food services, at the Aga Khan University Hospitals, from 2006-2015. There were 152 unique records. The food services pre-employment and annual screening is linked to the Employee Health Unit of the institute and all employees found to be infected or carriers are treated by a physician. A hygiene education program is also mandatory for food service employees. Data was abstracted in MS Excel for employees followed up over the study years. The cohort is described.

Results: Our sample consisted of 145 men and 9 women. In 2006, 78 employees were inducted for pre-employment screening. Thereafter, on an average, 8 ± 6 employees were inducted each year. Approximately, 112 ± 20 follow-up stool cultures were performed each year. Over the 10-year period, 12 cases with *Salmonella* positive stool cultures were identified. All salmonella cases were identified on follow-up annual cultures and none on pre-employment screening. Furthermore, all positive species were non-typhoidal. These included the following: three cases of *Salmonella* Group B, one case of *Salmonella* Group C1, four *Salmonella* Group C2, one *Salmonella typhimurium*, and three cases of non-serotypeable *Salmonella enterica*. Additionally, 59 and 20 instances of positive cultures for *Campylobacter* spp. and *Shigella* spp. respectively were identified. Of these, only 9 and 1 cases respectively of *Campylobacter* and *Shigella* were identified on pre-employment screening, implying asymptomatic shedding whereas all other cases were detected on investigation of gastroenteritis or annual follow-up.

Conclusions: The carriage rate of *Salmonella* spp. among professional food handlers in our cohort is low. Since typhoidal salmonellae were not observed, their carriage in the larger population of professional food handlers is likely to be very low. Routine pre-employment screening and hygiene education of all food handlers, as in our model cohort, can identify asymptomatic shedding of gastroenteritis pathogens which can be a potential trigger to improve hygiene practices among professional food handlers.