Acrobacter is a relatively new group of aerotolerant, curved and spiral rod shaped bacteria. Arcobacter butzleri, A. cryaerophilus and A. skirrowii are known in many developed countries as zoonotic agents of human gastroenteritis and infrequent extra-intestinal infections that are presumable acquired through contaminated water and food, particularly those of poultry origin. Foreign epidemiologic findings suggested that arcobacter enteric infection might be more prevalent in developing countries. There is no standard culture medium for Arcobacter, though a few Camplobacter related selective media are considered suitable for use. The bacterial strains exhibit variable antibiotic resistance and mechanisms of resistance had remained uninvestigated.

This study investigated the level of hospital awareness on the new pathogen in our environment and its association with cases of gastroenteritis in different age groups. Domestic birds and abattoir effluents were also screened for presence of Arcobacter and their responses to antibiotics commonly used in Nigeria, including ability to produce beta-lactamases. Prospective use of a Nigeria modified Campylobacter medium and freshly expired human blood for cultivation of Arcobacter species were studied. The discriminatory potentials of a novel molecular typing techniques, amplified fragment length polymorphism (AFLP) for genetic diversity of Arcobacter strains was also investigated.

Four hundred and ninety-five gastroenteritis patients (48% children) in Lagos metropolis were examined and 30 medical personnel interviews for awareness on the organism. Similarly, 150 wastewater effluent samples and 200 faecal droppings of mixed flock of guinea fowls, ducks, local fowls, broilers/layers and pigeons were analysed by different cultural techniques. Isolates were identified by classical phenotypic and comprehensive probabilistic scheme. AFLP analysis of A. butzleri involved stringent PCR amplification of fragments derived from digestion of genomic DNA with restriction enzymes BgII and Csp6I. Disk diffusion method and paper starch hydrolysis methods were used for determination of antibiotic sensitivity and beta lactamase activity. Growth supportive performances of
Campylobacter selective culture medium (BTM) and freshly expired human blood samples were determined using pure cultures of the bacterial isolates. None of the 495 patients was positive for the organism, though the medical personnel had no idea of the organisms. About 14% of the wastewater effluents yielded 26 A. butzleri strains and AFLP analysis identified 12 genotypes among 20 of the isolates. Twenty A. butzleri, 15 A. cryaerophilus and 2 A. skirrowii were isolated from the poultry birds. They were inhibited in vitro by streptomycin (70.6%), gentamicin (72.9%) and colistin (73.8%) but quite resistance to ampicillin (67%) and cotrimoxazole (54%). Intermediate inhibitions were observed in nalidixic acid and tetracycline. Only 3 of the A. butzleri were beta lactamase positive. All the isolates grew on the culture media containing freshly expired human blood but the Campylobacter BTM medium only supported the growth of 15/20 (75%), 9/15 (60%) and 0/2 (0.0%) of the A. butzleri, A. cryaerophilus and A. skirrowii strains respectively. Results suggested that Arcobacter infection in Nigerians might be very low contrary to foreign speculations and both domestic birds and abattoir effluents potential reservoirs of the organisms, with many genetically diverse strains in circulation. This is the first known report on AFLP analysis of Arcobacter sp. Antibiotics that inhibited the growth of test strains in vitro are prospective drugs for choice in the treatment of the bacterial infections. Freshly expired human blood is a good alternative medium for cultivation of the organisms where sheep blood cannot readily be obtained or expensive. Campylobacter BTM medium is not suitable for optimal recovery of arcobacter. This is the first report on Arcobacter in Nigeria and second of its type in Africa. However, further studies are required for better understanding of the bacterial health impacts in Nigeria, with more focus on geriatric patients, compost makers, and veterinary related workers.