

Abstract of Master's Dissertation

No.1

Course	Master of Public Health	Name	Kenshi Furushima
Thesis Title	Antimicrobial resistance patterns among children in Siddhi Memorial Hospital in Bhaktapur, Nepal		
Abstract of Master's Dissertation			
Objective :			
To determine antimicrobial resistance (AMR) patterns among children in Bhaktapur, Nepal.			
1. To find out antimicrobial resistance patterns in different age groups (Neonatal, Infant, 1-4 years and School-going children).			
2. To compare the antimicrobial resistant patterns in pre-earthquake (1st Jan 2014 - 12th May 2015) and post-earthquake (13th May 2015 – 31st Dec 2017) situation.			
3. To determine the proportion of multi-drug resistant (MDR) pathogens.			
Method :			
A hospital based, cross-sectional retrospective study was conducted from 17th October 2017 to 15th January 2018 in Siddhi Memorial Hospital, Bhaktapur, Nepal. Laboratory data of four years from 1st January 2014 to 31st December 2017 were collected. The AMR data were clinical specimens of children under-15 years old who were admitted to the hospital. The laboratory data were existed in paper formats, which were extracted to Case Report Form designed in Epi Info (ver. 7.2, CDC). Statistical analysis was done in STATA (ver.14). The proportions were compared by using Chi-squared/Fisher exact test. For the statistical analysis, P value less than 0.05 is considered significant. The duration of pre-earthquake (1st January 2014 – 12th May 2015), post-earthquake (13th May 2015 – 31st December 2017) were determined. Age group was divided to four groups, neonate (0 day – 28 days), infant (29 days – 11 months), 1-4 years (12 months -59 months) and school-going children (5 years – 14 years). Ethical approvals were obtained from an ethical committee in School of Tropical Medicine and Global Health, Nagasaki University, Japan, and Nepal Health Research Council, Nepal.			

* The abstract, containing the objective, method, result and conclusion should not exceed c.1000 words (300-500words/page, double sided on A4 paper)

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<p>Result :</p> <p>The total number of admitted children was 5,173 over 4 years study period from January 1st, 2014 to December 31st, 2017. Total number of specimens collected in the laboratory was 8,848. Mean age: 32 months; sex ratio:(male 1:1.6). The proportions of positive samples were 4.0%, 8.3%, 0% and 45.7%, in blood, urine, CSF and pus, respectively. The common isolates from blood sample were <i>Staphylococcus aureus</i> (36.4%), <i>Salmonella spp.</i> (22.6%) and <i>Klebsiella spp.</i> (9.2%). Urine sample were occupied by <i>Escherichia coli</i> (77.6%), <i>Klebsiella spp.</i> (14.6%) and <i>Proteus spp.</i> (3.7%). The common isolates from pus were <i>Staphylococcus aureus</i> (84.8%), <i>Escherichia coli</i> (5.1%) and other isolates. To compare with age, a higher proportion of Ampicillin resistant <i>Escherichia coli</i> was found in 1-4 years group (97.4%) than neonate group (76.9%) ($p = 0.003$). <i>Klebsiella spp.</i> had a higher proportion of Amikacin resistance in neonate than 1-4 years group ($p = 0.018$). The proportion of Ofloxacin resistant <i>Salmonella spp.</i> were higher in 1-4 years group than other groups ($p = 0.013$). After the earthquake, <i>Escherichia coli</i> showed increased proportions of AMR to Amikacin (0% Vs 7.4%; $p = 0.018$) and Cefotaxime (46.6% Vs 71.8%; $p = 0.001$). And <i>Staphylococcus aureus</i> was resistant to Amikacin (2.4% Vs 33.3%; $p = 0.016$), Ampicillin (49.3% Vs 88.9%; $p = 0.002$), Cefoxitin (0% Vs 58.1%; $p = 0.045$) and Ofloxacin (6.5% Vs 60.5%; $p < 0.001$). MDR trend from 2014 to 2017 in all isolates showed an increased trend from 2014 (17.4%) to 2017 (71.4%). MDR in <i>Staphylococcus aureus</i> showed an increased trend from 2014 (12.7%) to 2017 (81.3%) ($p < 0.001$).</p> <p>Conclusion :</p> <p>This study will help doctors to understand current AMR pattern in the hospital and help in choosing proper empirical treatment when culture/AMR data is not available. Local public health policy makers should understand the present situation of AMR take appropriate actions to prevent the spreading antimicrobial resistance in Nepal. Natural disasters like earthquake not only increases the risk of spread of AMR pathogens, particularly <i>Staphylococcus aureus</i>, among the population. Public health officials and health providers must consider it for the prevention of spreading AMR after a natural disaster.</p> <p>Further study is needed to do surveillance of the trends of AMR in Nepal.</p>			

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