BACTERIAL CONTAMINATION AND ANTIMICROBIAL SUSCEPTIBILITY PATTERN OF ISOLATES FROM STETHOSCOPES AT KILIMANJARO CHRISTIAN MEDICAL CENTRE MOSHI TANZANIA

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Introduction

- **Medical tools have been one of the major causes of nosocomial infections.**
- **Stethoscopes is just like an extension of the hand in the healthcare setting thus its linked to spread of nosocomial infections.**
- **Bacterial infections are example of nosocomial infections which have been suspected to be spread by stethoscopes in the hospital setting if the IPC guidelines are not practiced.**
- **Some of the bacteria found on the stethoscopes have been resistant to routine antibiotics used in our setting example being MRSA.**

Literature review on nosocomial infections

- **Nosocomial infections due to stethoscopes have been reported in Asia, Europe and America(Singh *et al.*,2013 Wilkins *et al.*,2007; Youngster *et al.*,2008).**
- **Stethoscopes have been linked to nosocomial infections among infants and immunocompromised patients.**
- **The magnitude of this problem global remains underestimated (Allegranzi *et al.*,*2011)*.**
- **In Africa few studies have been done in Ethiopia and Nigeria and contamination of stethoscopes in the later was as high as 80% (Uneke *et al.*,2008; Shiferaw *et al.*,2013).**
- **Currently no study has been done in Tanzania on bacterial contamination of stethoscopes.**

Research objectives

- **To determine type of bacterial contaminants present on the stethoscopes**
- **To assess the associated risks for transmitting bacterial contaminants**
- **To determine the prevalence of MRSA among contaminated stethoscopes**

Hypothesis

- **Stethoscopes are one of the sources of spread of nosocomial infections among healthcare workers and patients in hospital environments if the IPC protocol not practiced.**

Methodology

- A hospital based crossectional study was done
- Purposive sampling technique was used
- After a verbal consent from participants an anonymous questionnaire on disinfection and storage of stethoscopes was given to each participant.
- Each stethoscope was then swabbed used 70% physiological saline.
- Each swab was transported with Stuart transport media to the lab within 40 minutes of collection.
- Samples were cultured on MCA and BA and then incubated at 37 degree centigrade for 24 hours.
- Further identification tests was done to identify the organisms for positive culture.
- Sensitivity was done using Kirby Bauer method

Results

- **The study had 100 participants 56% male.**
- **60% were medical students, 10% were interns, 21% were residents 3% registrar and other were specialist.**
- **Out of all participants 78% were from inpatients.**
- **Forty six 46% of the stethoscopes were contaminated by different isolates.**
- **Some of the isolated species from all the stethoscopes were other staphylococcus 26%, staphylococcus aureus 18% (MRSA) and 2% enterococci**
- **The most resistant antimicrobial was oxacillin and the most susceptible was ciproflaxin.**
- **Fifty three 53% of the participants perceived that their stethoscopes were dirty**
- **Most of those who disinfected used alcohol 57% as a disinfectant.**
- **Ninety three 93% of the participant knew that a stethoscope could probably be a source of infection.**

RESULTS CONT….

Figure 1. Pie chart indicating different location of participants

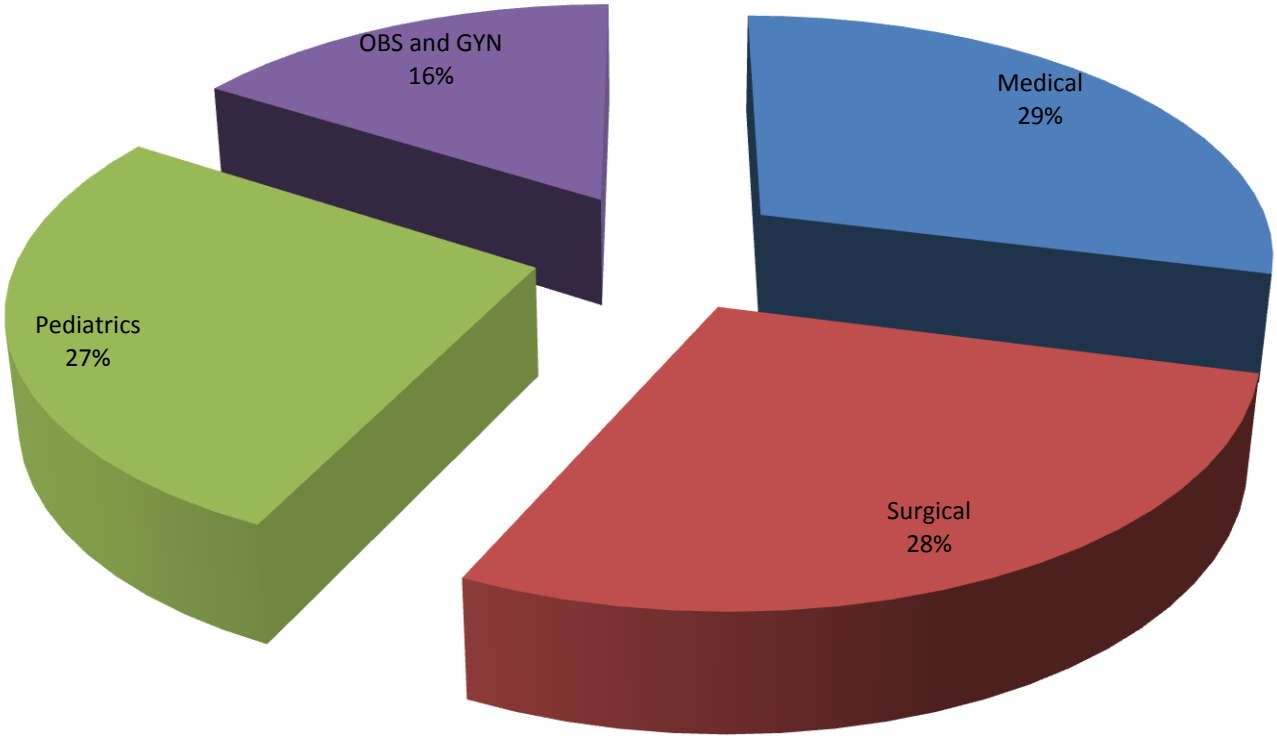

Table 3: Risk factors associated with the detection of pathogens from the stethoscopes

Variable	Pathogen		Crude OR ((95% CI)	P
	Yes	No		
Gender				
Female	20 (58.8)	36 (54.5)	0.8 (0.4 – 1.9)	0.683
Male	14 (41.2)	30 (45.5)		
Residence				
Off-campus	24 (70.6)	45 (68.2)	0.9 (0.4 – 2.2)	0.805
In-campus	10 (29.4)	21 (31.2)		
Position				
Medical Doctors	14 (41.2)	27 (40.9)	1.0 (0.4 – 2.3)	0.979
Medical Students	20 (58.8)	39 (59.1)		
Speciality				
Non-surgical	20 (58.8)	42 (63.6)	1.2 (0.5 – 2.9)	0.639
Surgical	14 (41.2)	24 (36.4)		
Duty station				
(Outpatient)	11 (29.4)	13 (19.7)	0.5 (0.2 – 1.3)	0.164
(In-patient)	23 (67.6)	53 (80.3)		
Interval of disinfecting stethoscopes				
Within a week	10 (29.4)	19 (28.8)	0.3 (0.1 – 1.4)	0.139
1 week – 3 month	3 (8.8)	17 (25.8)	1.3 (0.5 – 3.4)	0.555
More than 3 month	21 (61.8)	30 (45.4)		
Storage of stethoscopes				
At home	22 (64 .7)	55 (83.3)	4.3 (1.5 – 12.0)	0.007
In the Office	12 (35.3)	7 (10.6)	- -	
Car	0 (0.)	4 (6.1)		

Discussion

- **The 46% contamination in this study is lower than other research works.**
- **Studies done in Nigeria and Ethiopia had pathogenic contamination of 79% and 90% respectively.(Uneke *et al.*, 2008; Shiferaw *et al.*, 2013)**
- **Though majority of the participant had known that stethoscopes could be a vector, their storage habits were not good where by 82% stored them in living rooms.**
- **Majority of the participants (57%) reported to have used alcohol as a disinfectant just as in other studies.**

Implications

- **The study implicates on disinfections of stethoscope regularly after attending each patients by using alcohol.**

Conclusions

- **Stethoscopes could be one of the instruments in our healthcare setting that harbors' bacteria which are resistant to a number of antimicrobials.**
- **Medical personnel's awareness on nosocomial infections caused by instrument like stethoscopes is high but disinfection practices is not considered.**
- **This study recommends more studies should be done on other instruments in healthcare settings.**