

# Facility-linked factors and adherence to WHO blueprints on prevention of Surgical Site Infections in Kenya

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**Abstract-** The World health Organization has stipulated guidelines whose aim is to ensure that surgical site infections are prevented and diagnosed on time. This has helped in countering the burden that accrues from SSIs such as associated morbidity and mortality rates. However, it should be noted that the anticipated outcomes have not been fully achieved as SSIs incidences are still high. This study aimed at assessing the facility linked factors associated with adherence to the guidelines stipulated by the World Health Organization on prevention of surgical site infections in Kenya. A descriptive cross-section research design was adopted for the study. The study was conducted at a select hospital in Nyeri County, Kenya. The target population for the study was 115 nurses from which 98 nurses were selected as the study's sample. Data was collected through a questionnaire in addition to a checklist that was used to assess the level of adherence to The World Health Organization's stipulated guidelines on prevention of surgical site infections. Data collected was analyzed using Statistical Package for Social Scientists, Version 25.0. Analysis was through the use of descriptive statistics and Chi-Square test statistic. The findings of the study revealed that there was low level of adherence to stipulated guidelines on prevention of surgical site infections. The findings of the study also revealed that there were policies in place on prevention of surgical site infections and that there was no specialized training, sufficient support by mentors and sufficient surveillance on surgical site infections. Based on Chi-Square findings, it was evident that facility-based factors which included availability of policies, mentor support, specialized training and surveillance on surgical site infections had a significant association with adherence to the guidelines stipulated by The World health Organization on prevention of Surgical Site Infections. It can therefore be concluded that facility-linked factors have a significant influence on adherence to the guidelines stipulated by the World Health Organization on prevention of surgical site infections.

**Index Terms-** Facility-linked, adherence, surgical, site, infections

## I. INTRODUCTION

Surgical site infections (SSIs) refer to morbidity occurring at or near the surgical site within a period not exceeding 30 days after an operation or 1 year after an inserting an implant (Anderson, 2011). A discussion by Laloto, Gameda and Abdella (2017) reveal that SSIs lead to numerous nosocomial infections, protracted hospitalizations, in addition to high economic costs to the patient. Globally, SSIs comprise of 2.5-40% of the entire disease burden with intra-abdominal operations comprising of close to 20% of illnesses in developed countries. In Africa, rates of infection rank a bit high with approximately 5.6 cases/100 surgeries. Cumulatively, cases of SSIs are highest in Africa going as high as 30.9%. An example is in a country like Ethiopia whose SSIs cases ranging from 10.9-75% (Mamo *et al.*, 2017).

Though SSIs are essentially avoidable, they significantly contribute to mortality and morbidity among patients. Statistics indicate that among the patients who develop SSIs, there is 60% likelihood of being admitted to the Intensive Care Unit (ICU). Mortality likelihood doubles for patients who develop SSIs as compared to those who do not. Additionally, SSIs resort to an economic burden among the patients, with research showing that patients affected spend accumulatively 3.7 million days while being attended to in health care facilities. The economic burden related to the time spent seeking care translates to approximately 1.6 billion dollars excluding the resources spent on drugs (Curcio *et al.*, 2019).

As a result of these effects, The World health Organization (WHO) has stipulated guidelines whose aim is to ensure that SSIs are prevented and diagnosed on time. This has helped in countering the burden that accrues from SSIs such as associated morbidity and mortality rates. However, it should be noted that the anticipated outcomes have not been fully achieved as SSIs incidences are still high. In fact, WHO estimates that if there is adherence to the stipulated guidelines, SSIs would reduce by more than 50% all over the globe (Zucco *et al.*, 2019). In Kenya, a study conducted by Sway *et al.*, (2020) reveals that health care experts have adopted consistent mechanisms towards wound care. However, SSIs rates remain high.

Sandberg *et al.*, (2019) reveal that high rates of SSIs in developing countries such as Kenya arise from non-adherence to WHO guidelines on SSIs prevention. For example, there is poor adherence to periodic surveillance and feedback, as stipulated in WHO guidelines, which can help discover signs of SSIs occurrence during the early stages thus preventing further worsening of surgical sites. Additionally, studies such as Ntumba *et al.*, (2015) and Mwita *et al.*, (2021) demonstrate that health care facilities have utilized WHO guidelines on prevention of SSIs with health care personnel having an understanding of the guidelines. However, adherence levels still remain low. This study is informed by limited studies on factors influencing adherence to WHO stipulated guidelines on prevention of SSIs. Thus the study seeks to assess the facility-related factors that influence adherence to WHO guidelines on prevention of SSIs in Kenya.

## II. METHODOLOGY

The study adopted a descriptive cross-section research design. The location of the study was a select hospital in Central Kenya, specifically selected from Nyeri County. From the select hospital, 115 nurses were selected as the study's target population. Yamane (1967) was used to select a sample size of 98 nurses. The inclusion criterion was all the nurses registered with the nurses'

professional body in Kenya, The Kenya Nursing Council. The exclusion criterion was nurses who were on leave and those who did not consent. Questionnaires that were self-administered were used in collection of data. Additionally, a checklist was used to check the select hospital's adherence to WHO's blueprint on SSIs prevention. Data collected was analyzed using Statistical Package for Social Scientists (SPSS) Version 25.0. Analysis was done through descriptive statistics and the results presented using tables. Descriptive statistics involved the use of frequencies and percentages. The study also employed Chi-Square statistics to test the significance of the relationship between facility related factors and adherence to WHO blueprints on SSIs prevention. All the statistical tests were conducted at 95% level of confidence.

## III. RESULTS

### General Profile of the Respondents

From the findings, majority of the respondents, 62.3% (61) were aged 41 years and above. Most of the respondents, 85.7% (84) were female. The highest level of education of majority of the respondents, 72.4% (71) was diploma with most of the respondents, 93.9% (92) having no specialized training. From the findings, slightly more than half of the respondents, 55.1% (54) had nursing experience surpassing 15 years.

Characteristic		Frequency	Percentage
Age (years)	21-30	7	7.1
	31-40	35	35.7
	41-50	24	24.5
	>51	37	37.8
Gender	Male	14	14.3
	Female	84	85.7
Highest education level	Certificate	17	17.3
	Diploma	71	72.4
	Higher diploma	2	2
	Bachelors' degree	8	8.2
Specialized training	Yes	6	6.1
	No	92	93.9
Nursing experience	1-5 years	1	1
	6-10 years	22	22.4
	11-15 years	21	21.4
	>15 years	54	55.1

## IV. ADHERENCE BY NURSES TO WHO BLUEPRINTS ON SSIs PREVENTION

The checklist used in assessing the adherence by nurses to stipulated WHO guidelines on SSIs prevention had 20 items to evaluate. The highest a nurse could score was 20, with the lowest score being 0. The pass mark was set at 10, with nurses scoring

above 10 being considered to have high level of adherence; those who scored 10 and below were perceived to have low level of adherence to WHO stipulated guidelines. The findings of the study revealed that 55.1% (54) of the nurses had a low level of adherence to guidelines stipulated by WHO on prevention of SSIs. On the other hand, 44.9% (44) of the nurses had high level of adherence to WHO stipulated guidelines on prevention of SSIs.

Adherence level to WHO stipulated guidelines on SSIs		Frequency	Percentage
Low		54	55.1
High		44	44.9

## V. FACILITY-LINKED FACTORS INFLUENCING ADHERENCE TO WHO GUIDELINES ON SSIs PREVENTION

The study assessed facility-related factors that were perceived to influence adherence to WHO guidelines on SSIs prevention. The factors assessed included availability of policies on SSIs prevention, hospital training on SSIs prevention,

availability of support by clinical mentors on SSIs prevention, and availability of routine surveillance in the hospital on SSIs. It is evident from the findings that 42.9% (42) of the nurses' respondents indicated that there were policies on prevention of SSIs in the hospital. From the findings, 66.3% (66) of the respondents indicated that the hospital did not offer specialized trainings on SSIs prevention. Majority of the nurses, 82.7% (82) reported that they were not supported by their mentors on SSIs

prevention while 41.8% (41) indicated that there was no routine surveillance by the hospital on SSIs prevention.

Availability of policies on prevention of SSIs	Yes	42	42.8
	No	24	24.5
	Do not know	32	32.7
Specialized training on SSIs prevention	Yes	12	12.2
	No	65	66.3
	Not sure	21	21.4
Availability of support by clinical mentors on SSIs prevention	Yes	17	17.3
	No	81	82.7
Availability of routine surveillance in the hospitals on SSIs prevention	Yes	25	25.5
	No	41	41.8
	Not sure	32	32.7

Chi-Square test was used to assess the significance of the relationship between adherence to WHO stipulations on SSIs prevention and facility-linked factors. The Chi-Square findings show that the level of adherence was significantly associated with availability of policies on SSIs prevention (P-value=0.003,  $\chi^2=11.895$ ), specialized training on prevention of SSIs (P-

value=0.006,  $\chi^2=10.059$ ), availability of support by clinical mentors on SSIs prevention (P-value=0.019,  $\chi^2=5.487$ ), and availability of routine surveillance in the hospitals on SSIs prevention (P-value=0.036,  $\chi^2=6.621$ ).

Variable	Category	Adherence level		Chi-Square
		High	Low	
Availability of policies on prevention of SSIs	Yes	21	21	P- value=0.003 $\chi^2=11.895$
	No	16	8	
	Do not know	7	25	
Specialized training on SSIs prevention	Yes	9	3	P-value=0.006 $\chi^2=10.059$
	No	22	43	
	Not sure	13	8	
Availability of support by clinical mentors on SSIs prevention	Yes	12	5	P-value=0.019 $\chi^2=5.487$
	No	32	49	
Availability of routine surveillance in the hospitals on SSIs	Yes	16	9	P-value=0.036 $\chi^2=6.621$
	No	13	28	
	Not sure	15	17	

## VI. DISCUSSION

The study found a significant association between level of adherence to WHO guidelines on SSIs prevention and policies on prevention of SSIs. These findings agreed with Alfonso-Sanchez *et al.*, (2017) who conducted a study in Spain on patients who had undergone surgical interventions. Alfonso-Sanchez *et al.*, (2017) found that varying institutional policies on prophylactic antibiotic use and exposure to pathogens resulted to different levels of SSIs for the selected hospitals in Spain. Additionally, the results of the study disclosed that there was a significant relationship between level of adherence to WHO guidelines on SSIs and provision of specialized training on SSIs. The findings concurred with Molla *et al.*, (2019) who noted training of choices of incision during surgery is an important element in SSIs prevention. The findings also agree with Kantengwa (2017) who noted that training on the type of cut that should be made during caesarian section was critical in preventing SSIs for women delivering in Uganda. Training improved the performance of nurses in preventing

secondary infections among surgery patients in Sierra Leone (Di Gennaro *et al.*, 2020).

From the findings of the study, a significant association was found between level of adherence on WHO guidelines on prevention of SSIs and availability of mentor support. According to Harrop *et al.*, (2012), behaviors by mentors, for instance, in the operating room, choice of language, patient preparation, cleanliness practices among other behaviors influences nurses' adherence to guidelines on prevention of SSIs. Phan and Nguyen (2021) noted that poor practices by mentor nurses are transferred to the nurses entering the profession thus extending the vice. The number of SSIs will therefore not reduce. The significant relationship between adherence level on WHO stipulated guidelines on prevention of SSIs and surveillance by the hospital on SSIs agree with Olowo-Okere *et al.*, (2018) who insist that, surveillance mechanisms identify the routes of surface contamination. This helps in eliminating the contaminants that lead to SSIs in a facility.

## VII. CONCLUSION

From the study, it can be concluded that there was a significant association between level of adherence on WHO guidelines on prevention of SSIs and facility-linked factors such as policies on SSIs prevention, training on SSIs prevention, availability of mentor support and hospital surveillance on SSIs.

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