

DETERMINING FACTORS INFLUENCING IMPLEMENTATION OF HAND HYGIENE GUIDED BY WHO GUIDELINES AT THIKA LEVEL FIVE HOSPITAL.

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Abstract:-

Background: Hand hygiene (HH) is any action of hand cleaning while maintaining good skin integrity. Proper HH prevents more than 50 % of hospital acquired infections. This study was carried out in May 2015. The aim of this study was to assess the level of implementation of WHO HH guidelines (moments of hand hygiene and hospital facilitation) among nurses working at Thika level five hospital.

Methodology: A descriptive cross sectional study was carried out among nurses working at Thika level five hospital in May 2015. 140 respondents were selected using systematic random sampling. Data was collected using self-administered structured questionnaire and a standard HH checklist based on WHO guidelines. Quantitative data was analyzed using SPSS version 20 and Microsoft excel. Qualitative data was coded, categorized and analyzed using SPSS version 20.

Results: The researcher then created a dummy variable which showed that 81 (57.9%) of the nurses were knowledgeable of hand washing recommended practices by WHO. However at 95% level of significance, nurses did not have adequate knowledge about hand washing hygiene practices as recommended by WHO guideline with a p value of 0.000. There was poor practice of hand hygiene practices compared to that stipulated by WHO with a p value of 0.000 at 95% level of significance. The facilitation variable showed that 40 (28.6%) of the nurses interviewed mentioned that there was adequate facilitation and access to hand hygiene but the P Value of 0.000 implies that we accept H_0 . This implies that at 95% level of significance, there is inadequate facilitation of hand hygiene practices compared to that stipulated by WHO.

Conclusions: The results of the study suggest that the TPB provides a useful framework for conceptualizing HH among nurses. Though the healthcare institution ensured availability of most facilities/materials for effective hand hygiene practice, single use towels and alcohol hand rubs were inadequate; these two are very essential for effective outcome of hand cleaning. Several factors influenced implementation of hand hygiene guidelines e.g Availability especially for single use towels and availability of alcohol hand rub. Other factors included inadequate on job training of hand hygiene and inadequate guidelines availed to the nurses.

Recommendations The infection control department should avail chances for continuous hand hygiene education, facilitate practice and provide and environment that promotes the right attitude towards implementation of hand hygiene within the facility

Key words: hand hygiene, WHO Hand hygiene guidelines, moments of hand hygiene and hospital facilitation

INTRODUCTION

Hand hygiene refers to any action of hand cleaning such as removal of visible soil and removal or killing of transient microorganisms from the hands while maintaining the good skin integrity and includes surgical hand antisepsis (WHO, 2009). World Health Organization's (WHO) aim to create an environment safe for patients led to development of hand hygiene guidelines. The launching of new global guidelines on hand hygiene in health care by 2005 depicted health care associated infections (HAIs) as evidence of the importance of hand hygiene (WHO, 2011). The transfer of microorganisms by the hands of hospital staff was identified as a major factor in the transmission of hospital-acquired infections. Hand hygiene has been an effective strategy in prevention of HAI (PIDAC, 2014). Multiple factors influenced hand hygiene performance, and its promotion was particularly complex in developing countries where limited resources and culture-specific issues strongly influenced practices (WHO, 2009).

Health care associated infections (HCAIs) are a global concern affecting hundreds of millions of patients per year, with the highest prevalence in developing or low-income countries, where resources are limited and reporting and surveillance strategies are weak. It's reported that the prevalence of HCAIs in developed countries varied from 5–15% of hospitalized patients and could affect 9–37% of those admitted to intensive care units (ICUs) while in middle-income countries, it varied between 5.7% and 19.1%. HCAI has remained a hidden, cross-cutting concern that no institution or country can claim to have solved as yet (WHO, 2011).

According to WHO, 2011, in one-day prevalence surveys recently carried out in single hospitals in Albania, Morocco, Tunisia and the United Republic of Tanzania, HCAI prevalence rates varied between 19.1% and 14.8%. Haas and Larson (2008), argue that hospitals could best improve compliance by assessing the barriers to it, measuring the rates of compliance, educating staff on the importance of hand hygiene, making sanitizing products more available for staff use, and holding staff accountable. They emphasized as well that lasting improvement in hand hygiene was a collaborative effort that depended on the committed support of hospital administrators.

Several organizations came up with guidelines for hand hygiene including WHO, provincial infectious diseases advisory committee (PIDAC) and Center for Disease Control (CDC). These guidelines were intended to guide hospitals worldwide to reduction of HAIs. Adherence of health care workers (HCWs) to recommended hand hygiene procedures had been reported as variable, with mean baseline rates ranging from 5% to 89% and an overall average of 38.7% in developing countries including Kenya, (WHO, 2009). Previous similar study by Yawson and Hesse in Korle-Bu Teaching Hospital in Ghana (2013), based on WHO guidelines showed that the Overall compliance with care-related HH practices ranged from 9.2% to 57% among doctors and 9.6% to 54% among nurses.

Wazzan, (2011), assessed the compliance to hand hygiene guidelines among nursing staff in secondary care hospitals in Kuwait and reported that the overall compliance was 33.4%. Another study carried on Hand hygiene non-compliance among intensive care unit health care workers in Aseer Central Hospital, south-western Saudi Arabia using the standardized World Health Organization checklist, reported non-compliance of 41.0%. Rowley, (2011) stated that hospital staff believe they wash their hands more often than they actually do, and they also overestimate the duration of hand washing.

According to an audit on hand hygiene implemented in three Kenyan hospitals, the overall hand hygiene adherence was 22.2% and nurses had higher rates of adherence (31.74) as compared to other non-nursing staff (Linus k., 2010). Strict observance and adherence to hand hygiene guidelines has been found to reduce these infections by up to 80% in some settings (Ndegwa, 2014). At Thika Level Five Hospital, several studies have been done on HAIs but no specific reported study on hand hygiene practices. There has not been any hand hygiene guidelines formulated by the hospital but the nurses are generally believed to wash their hands during practice.

MATERIALS AND METHODS

Study design

This study adopted a descriptive cross-sectional research design to assess implementation of WHO guided hand hygiene practices among nurses at Thika level five hospital.

Study area

The study was conducted at Thika level five hospital. It is located in Kiambu county, Thika subcounty which falls within 01°03' south of Equator and 37°05' east of meridian. It is a 300-bed capacity government hospital in the town of Thika, about 500m from Thika CBD and approximately 40 km north east of Nairobi, in Central Province of Kenya (National bureau of statistics, 2009). Thika level five hospital has 264 nurses working in maternity, antenatal clinic, pediatric ward, surgical and medical wards, and outpatient casualty department and serves people from Thika town, Juja and Ruiru.

Population and sample

The study population included all the 263 licensed nurses working at Thika level five hospital minus the Nurse administrator of the hospital. This study employed systematic random sampling with the goal of achieving desired representation from the population. In this sampling procedure, every 2nd nurse was sampled to participate. The 263 nursing population was divided by the sample size to get the nth number sample of 145 respondents was determined using Fishers formula cited by (Kothari, 2004) for a finite population. Research instruments

Qualitative and Quantitative data was collected by use of a self-administered structured questionnaire and an observation checklist based on WHO hand hygiene guidelines.

Study variables.

Independent variables

Resources, Knowledge, Beliefs, Attitude and Demographic data

Dependent variable

Proper Hand hygiene practice

Data management and analysis

Collected quantitative data were coded, cleaned and entered into the computer ready for Analyses. The data were then analyzed using SPSS for windows Version 20 and Microsoft

Excel. Qualitative data was coded, cleaned, categorized and analyzed using IBM SPSS version 20 software package. Descriptive statistics and inferential statistics were generated using t-test as appropriate. The level of significance was set at 5% ($p < 0.05$). Knowledge and practice were scored in percentages and graded. A score of 0-33.3% was considered poor, >33.3-≤66.6% was fair and >66.6% was good. Attitude was assessed with Likert items. Each Likert item was rated on a 1-5 response scale; where strongly agree=5, agree=4, neutral=3, disagree=2, strongly disagree=1. The scores were graded into positive, neutral or negative. Both qualitative and quantitative data has been presented as frequencies and percentages in tables, bar graphs and pie charts.

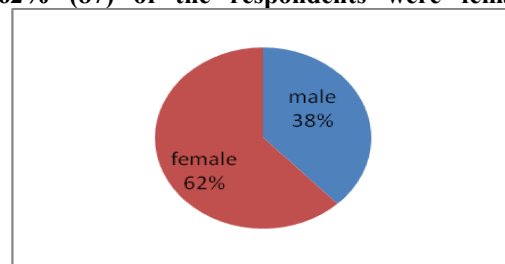
RESULTS

Demographic characteristics

This section covers gender; age; professional qualification and experience of respondents.

Participants Gender

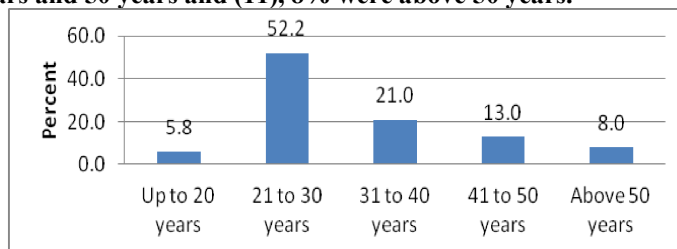
Figure 2. Shows that 62% (87) of the respondents were female while 38% (53) were male.



N=140
Figure 1 participants' gender

Participants Age

Figure 3 show that 5.8% (8) of the respondents were twenty years and below, another (72), 52.2% were between ages 21 and 30. Others included (29), 21% who were between 31 years and 40 years; 13% (18), were between 41 years and 50 years and (11), 8% were above 50 years.



N=140
Figure 2: participants' age distribution

Professional qualification

Figure 4 below shows that diploma level nurse formed 64.5% (89), degree level nurses formed 26.8%. (37), KRN 8.7%, KECHN 8% and others forming 0.7%

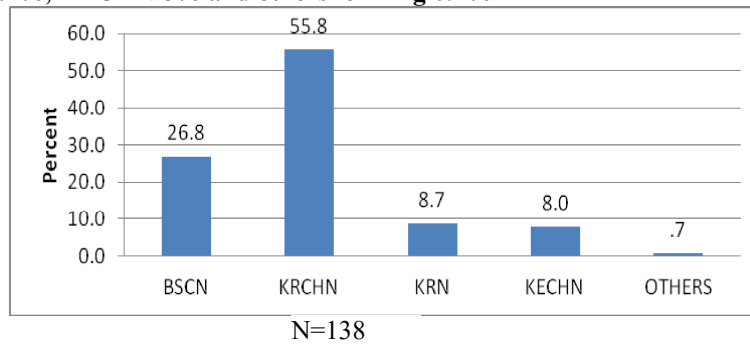


Figure 3: Participants Professional qualification

Participants Experience

Figure five below show that 37% (47) of the respondents had worked at Thika level five hospital For one year; 33% (42), for between 1 and five years and another 30% (38), for more than five

Years. Besides the experience, 52.1% (73), of the respondents had received additional training after basic training on hand hygiene.

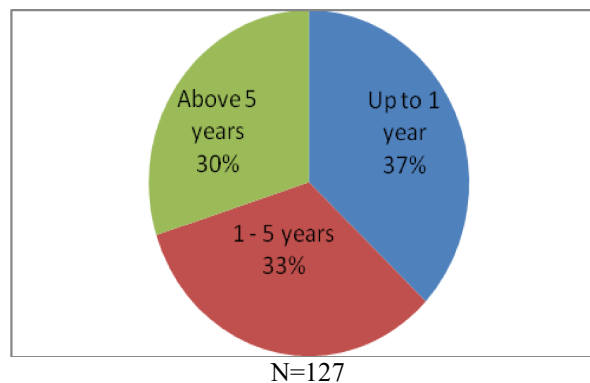


Figure 4: Participants 'experience

Factors influencing implementation of hand hygiene guided by WHO guidelines at Thika Level Five Hospital.

The factors influencing implementation of hand hygiene at Thika Level Five Hospital as recommended by WHO guideline were grouped into three main areas of knowledge, practice and facilitation/access by health facility.

Nurses' knowledge on hand hygiene guided by WHO hand hygiene guidelines Hand hygiene reflects knowledge, practice, facilitation and access. The knowledge about good hand washing practices and compliance of the same according to WHO guidelines amongst health care workers is essential for lowering the health care associated infections. In this study, several knowledge questions were asked. Knowledge was assessed using years of service, level of professional training and additional training on hand hygiene.

Figure 4 already showed that 63% of the nurses had been working at the facility for more than one year. Figure 3 showed that 81.3% of the nurses were Diploma nurses. Besides the academic and level of experience 73 (52.1%) had received hand hygiene training after basic professional training.

Scores were assigned to the three knowledge questions as shown in table below

Table 1. Scores assigned to knowledge questions

No	Knowledge Question	Old code	Score
Q23	level of qualification	1 to 4	1 - Else = 0
Q25	Number of years working in the health institution	5 years onwards	1 Below 5 years =0
Q26	have you received any hand hygiene training after your basic training	1	1 Else = 0

The sum of the scores was then taken to get the new variable "Knowledge" scores. A maximum score of three was expected for this variable. The researcher then created a dummy variable "Knowledge C" in which two or three was coded as knowledgeable whereas one and zero were coded as not knowledgeable. This showed that 81 (57.9%) of the nurses were knowledgeable of hand washing recommended practices by WHO.

A further statistical test was carried out to verify the significance of nurses' knowledge in hand washing. The hypothesis for this test was:-

H₀: Nurses do not have adequate knowledge in hand washing hygiene practices as recommended by WHO guideline

H₁: Nurses have adequate knowledge in hand washing hygiene practices as recommended by WHO guideline

Table 2. Hypothesis test on significance of knowledge among nurses One-Sample Test

	Test Value = 1					
	T	df	Sig. (2tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Level of knowledge	-10.062	139	.000	-.42143	-.5042	-.3386

This section addressed nurses' hand washing practices at Thika Level Five Hospital. The questions were arranged in a likert scale in which nurses were expected to answer '1- Not at all; 2- Rarely; 3- Moderately; 4- Most of the time and 5- All the time'. A Mean Score of responses to each of the questions was then calculated as shown in Table 3. The closer the Mean Score to '5', the better the practice of the nurses and Vis versa.

Table 3: Practice questions

Questions	Responses (%)						
	Not at all	(1) rarely (2)	moderately	(3) Most of the time (4) All the time	(5) Mean Score	CLS	
Do you perform hand hygiene after contact with body fluid	0	1.4	5	23.6	70	4.62	.651
Do you perform hand hygiene after removing gloves after patient care	0	5.1	6.5	29	59.4	4.43	.827
Do you perform hand hygiene after handling patients	0.7	7.3	12.4	27.7	51.8	4.23	.978
Do you perform hand hygiene after touching an object within the vicinity of the patient e.g touching the bed	1.4	5	13.6	38.6	41.4	4.14	.931
Do you perform hand hygiene between touching two patients sequentially e.g taking blood pressure	3.6	20.7	10	10.7	55	3.93	1.345
Do you perform hand hygiene each time it is required	4.3	7.9	16.5	35.3	36	3.91	1.109
Do you perform hand hygiene before touching a clean site during patient care e.g IV site	4.3	9.3	24.3	25	37.1	3.81	1.160
Do you perform hand hygiene practice before handling of client	2.2	19.7	20.4	25.5	32.1	3.66	1.185

Source: Primary data; n=140

Table 1 shows high level of hand hygiene after contact with body fluid (Mean Score of 4.62); after removing gloves after patient care (Mean Score of 4.43); after handling patients (Mean Score of 4.23); after touching an object within the vicinity of the patient e.g touching the bed (Mean Score of 4.14).

Average level Mean Scores were seen in performing hand hygiene between touching two patients sequentially e.g taking blood pressure (Mean Score of 3.93); performing hand hygiene each time it is required (Mean Score of 3.91); performing hand hygiene before touching a clean site during patient care e.g IV site (Mean Score of 3.81) and performing hand hygiene practice before handling of client (Mean Score of 3.66) Generally, practice questions registered a Mean Score of 4.07. To be able to conclusively understand the nurses' practice on hand hygiene

guideline as recommended by WHO hand hygiene guidelines, a further test of the difference in means was conducted. Under this test, hand hygiene practice was ranked as:

4 or 5- Good practice of hand washing hygiene practices as recommended by WHO

3, 2 or 1 = Poor practice of hand washing hygiene practices compared to that stipulated by WHO.

The researcher therefore run a T test to understand if nurses have good hygiene practices hence the hypothesis:

H₀: There is poor practice of hand washing hygiene practices compared to that stipulated by WHO

H₁: There is good practice of hand washing hygiene practices as recommended by WHO.

Table 4. Test of significance of practice in hand hygiene by nurses One-Sample Test

	Test Value = 1					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Practice	-8.248	139	.000	-.32857	-.4073	-.2498

This section looked at the availability of enablers at the health facility to be able to undertake hand hygiene practices as recommended by WHO. The responses were compiled as shown in Table 5

Table5:

Facilitation/accessquestions

Questions	Responses (%)						
	Not at all	Rarely (2)	Moderately	Most of the	All the time	Mean Score	STD
How often is hand hygiene included as a topic in the hospital CME	0.7	5	19.4	32.4	42.4	4.11	0.938
Does each nurse receives basic training on hand hygiene practices	7.4	16.3	26.7	27.4	22.2	3.41	1.211
Are there clear and easily understandable hand hygiene guidelines availed for every nurse	9.6	9.6	36	25	19.9	3.36	1.184
Are hand hygiene posters placed in all patient care areas as a reminder	8.8	22.1	29.4	14.7	25	3.25	1.292
Does the health care facility avails alcohol based hand rubs at all points of patient care	8.6	26.6	32.4	14.4	18	3.06	1.217

From Table 4.5 the frequency with which hand hygiene is included as a topic in the hospital CME had a Mean Score of 4.11; the frequency with which each nurse receives basic training on hand hygiene practices (Mean Score of 3.41); presence of clear and easily understandable hand hygiene guidelines availed for every nurse (Mean Score of 3.36); Existence of hand hygiene posters in all patient care areas as a reminder (Mean Score of 3.25) and if the health care facility avails alcohol based hand rubs at all points of patient care (Mean Score of 3.06). Further, the facilitation variable was created by summing up the five facilitation questions. A sum of twenty onwards was considered 'Adequately facilitated' while any number below twenty was considered 'Not adequately facilitated'.

The facilitation variable showed that 40 (28.6%) of the nurses interviewed mentioned that there was adequate facilitation and access to hand hygiene.

To test the significance of facilitation, the hypothesis was formulated as shown:

H₀: There is inadequate facilitation of hand hygiene practices compared to that stipulated by WHO.

The P Value of 0.000 implies that we accept H₀. This implies that at 95% level of significance, there is inadequate facilitation of hand hygiene practices compared to that stipulated by WHO.

DISCUSSION OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Respondents' socio-Demographic characteristics

At Thika Level Five Hospital, most of the respondents were female (62%) as compared to male (38 %) of the nurses' population. Of the total nursing population, 6.8% were below 20 years while majority were aged between 21-30 years, 21% aged between 31-40 years, and 13% aged between 41-50 years and 8% above 50 years. This shows that majority of respondents were young and 70% were employed within the past 5 years however the rest had worked in the facility for more than five years giving a real blend to the workforce experience.

Factors influencing implementation of hand hygiene guided by WHO guidelines at Thika Level Five Hospital.

	Test Value = 1					
	T	Df	Sig. (2tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Facilitation/enabler by health facility	- 18.641	139	.000	-.71429	-. .7900	- .6385

The factors influencing implementation of hand hygiene at Thika Level Five Hospital as recommended by WHO guideline were grouped into three main areas of knowledge, practice and facilitation/access by health facility.

Nurses' knowledge on hand hygiene guided by WHO hand hygiene guidelines

Hand hygiene reflects knowledge, practice, facilitation and access. The knowledge about good hand washing practices and compliance of the same according to WHO guidelines amongst health care workers is essential for lowering the health care associated infections.

81 (57.9%) of the nurses were knowledgeable of hand washing recommended practices by WHO. The significance of knowledge of hand hygiene practice among the nurses had a P Value of 0.000 which implied that at 95% level of significance, nurses did not have adequate knowledge about hand hygiene practices as recommended by WHO guideline.

In a study by Abdella, Tefera, Eredie, Landers, Malefia and Alene (2014), knowledge was found to be associated with hand hygiene compliance at a rate of 3.8 more than poor knowledge. The practice in this study was an average of 4.2 graded as good however the level of significance at 95% interval = 0.000 indicating that there was poor practice of hand hygiene compared to the stipulated guidelines by WHO. The knowledge and practice are both inadequate in this study.

In most health care institutions, adherence to recommended hand-washing practices remains unacceptably low, rarely exceeding 40 per cent of situations in which hand hygiene is indicated (Trampuz A. and Widmer A. 2004;79:109–16). Hand hygiene reflects attitudes, behaviors and beliefs. The knowledge about good hand washing practices and compliance of the same according to WHO guidelines amongst health care workers is essential for lowering the health care associated infections.

Generally knowledge had a Mean Score of 3.81. This was rated as average in this study. This finding is comparable to a study by Mahadeo and Vaishali, 2014, that found out that, nurses had an average knowledge on hand hygiene.

Nurses' practice on hand hygiene guided by WHO hand hygiene guidelines

This section addressed nurses' hand washing practices at Thika Level Five Hospital. This study shows high level of hand hygiene after contact with body fluid, after removing gloves, after patient care, after handling patients, and after touching an object within the vicinity of the patient. This indicated that nurses were likely to clean their hands in cases that posed risk to their health. Average level Mean Scores were seen in performing hand hygiene between touching two patients sequentially e.g taking blood pressure, performing hand hygiene each time it is

required, performing hand hygiene before touching a clean site during patient care e.g IV site and performing hand hygiene practice before handling of client.

Generally, practice questions registered a Mean Score of 4.07 (81.4%). This is rated as good in this study. A Test of significance of practice in hand hygiene by nurses had a P Value of 0.000 which implied that we accept H_0 . This implies that at 95% level of significance, there was poor practice of hand hygiene compared to that stipulated by WHO. A study by Abdella et. Al., (2014) reported good Hand hygiene compliance of healthcare providers to be 16.5%. This was different from this study due to the varying aspects of hand hygiene looked at and the different settings.

Nurses' facilitation/Access to hand washing hygiene guided by WHO hand hygiene guidelines this section looked at the availability of enablers at the health facility to be able to undertake hand hygiene practices as recommended by WHO.

The frequency with which hand hygiene is included as a topic in the hospital CME had a Mean Score of 4.11; the frequency with which each nurse received basic training on hand hygiene practices (Mean Score of 3.41); presence of clear and easily understandable hand hygiene guidelines availed for every nurse (Mean Score of 3.36); Existence of hand hygiene posters in all patient care areas as a reminder (Mean Score of 3.25) and if the health care facility avails single use hand towels (mean score of 1.82).

At 95% level of significance, there was inadequate facilitation of hand hygiene practices compared to that stipulated by WHO.

Conclusions

The results of the study suggest that the TPB provides a useful framework for conceptualizing HH among nurses. Though the healthcare institution ensured availability of most facilities/materials for effective hand hygiene practice, single use towels and alcohol hand rubs were inadequate; these two are very essential for effective outcome of hand cleaning. Several factors influenced implementation of hand hygiene guidelines e.g Availability especially for single use towels and availability of alcohol hand rub. Other factors included inadequate on job training of hand hygiene and inadequate guidelines availed to the nurses.

Recommendations

The infection control department should avail single use towels, alcohol hand rubs and hand cleaning steps postures should be availed at every hand cleaning site to promote adequate following of the hand cleaning steps. In this study there were inadequate single use towels, alcohol hand rubs and hand cleaning posters at care points.

Acknowledgement

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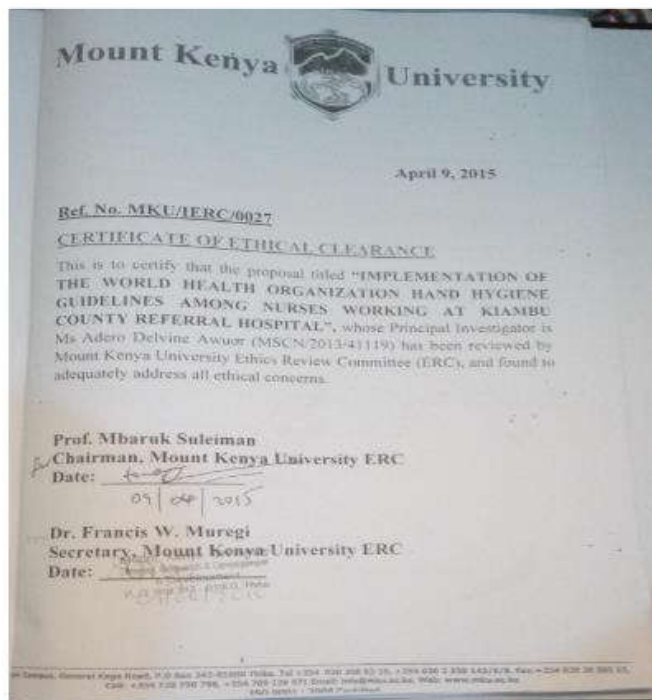
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APPENDICES

Appendix 1: MKU Ethical Clearance Certificate



Appendix 2: Ethical Clearance-Thika Level Five Hospital

MINISTRY OF HEALTH
Ethical Clearance Form
Form No. 100
Date: 22nd April 2015

RESEARCH APPROVAL

TITLE: IMPLEMENTATION OF WEB 2.0 HEALTH ORGANIZATION HAND TO GLOVE CHALLENGES AMONG NURSES WORKING AT THIKA LEVEL 5 HOSPITAL.

Having discussed your research proposal, the Thika Level 5 Hospital research and ethics committee hereby gives you the green light to conduct your research after you sign the requisite form.

You are advised to strictly adhere to the data collection protocol as you mentioned in the proposal. Request for extra data collection form may be made to the committee as well. It is our further request to strictly stick to research ethics and staff and patient's basic confidentiality must not be breached.

Any data or information you may come across which does not form part of your research must not be made available to other people without express authority of the hospital Medical Superintendent.

As you conduct your research, you will be attached to Mr. S. S. Mwangi during your data collection.

On completion of the research you are expected and required to return the hospital of your findings. This gives you an opportunity to help improve the provision of primary health care at Thika Level 5 Hospital.

In case you are found to be untruthful or violate the code of ethics the hospital reserves the right to terminate your research without prior warning.

We look forward to the findings of the research and we wish you the best.

Thank you
Dr. Abago
Chair
Research & Ethics Committee
Thika Level 5 Hospital

Agreed and will adhere to the above terms
Signed: [Signature]
Date: 22/04/2015

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