Adherence to Medication administration guidelines among Nurses in a Mission Hospital in Meru, Kenya

Ms Mary Mumbi*, Dr. Catherine Mwenda **, Mr. George Njoroge, Mr. Stanley Njau****

* School of Medical Surgical Nursing
** Mount Kenya University

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Abstract- *Errors in medication administration are the most prevailing in medicine and can cause harm to the patient, morbidity and mortality as a result of negligence and failure to adhere to guidelines. A descriptive cross-sectional study was carried out among 117 nurses working at a mission hospital in Meru. A sample of 106 nurses was chosen using stratified and simple random sampling methods. Data was collected using a self-administered questionnaire and an observational checklist formulated from the Nursing Council of Kenya (NCK) manual of clinical procedures were used to collect data. Analysis was done using SPSS Version 21 software. 73.5% of the respondents adhered to hygiene measures, 65.5% adhered to medication safety guidelines while 65.9% adhered to medication record guidelines. Overall the adherence was poor with 37.6% (32) respondents had high adherence level while 62.4% (53) respondents had low adherence level. On observation the adherence level was 59.3%. An association was found between the mean of the two adherence levels (p=<0.001).*

Index terms-*Medication errors, Medication administration guidelines, Adherence, patient safety, Nursing Council of Kenya*

I. INTRODUCTION

Medication administration is a procedure that should be carried out with utmost care, since a small error can cause great harm or even death to the patient. The procedure is almost entirely the role of the nurse. Various bodies have stipulated guidelines for nurses to follow when administering medications. Hospitals have also designed and implemented policies, procedures and medication administration guidelines for practitioners in the clinical area, and come up with systems of risk management to help reduce medication errors [1]. Polypharmacy among patients, complex disease processes, multiple prescribers and a number of medical problems are among the factors that highly contributes to medication errors as nurses may fail to adhere to the guidelines as they deal with distinct matters. Irreversible consequences that are irreversible which may occur, as well as large sums of treatment costs every year as a result of malpractices in medication administration makes the matter to be of great importance [1].

According to [2], medication errors have been found to occur in 2 to 14% of the admitted patients with 1 to 2 per cent of them getting harm. It has been found that about 23,000 physical disabilities and 10,500 deaths occur every year in Iran due to medical errors that are approximated to be 55,000 [3]. In Ethiopia, medication administration error has been found to be approximately 51.8%. In Kenya, the prevalence has been found to be 20% despite that most errors are never documented, as reported in a study carried out in two referral hospitals [4].

The manual of clinical procedures by the Nursing Council of Kenya has stipulated various guidelines on medication administration. The manual is revised after every ten years as the profession advances and the last review was in 2009 [5]. Despite the guidelines being in place errors in medication administration have continued to occur with 20% prevalence.

II. DATA COLLECTION METHODS

The study was carried at a mission hospital in Meru County. The design was descriptive cross-sectional. The population of study was 117 nurses working at the hospital and a sample of 106 was used. The sampling methods that were applied were stratified random sampling followed by simple random sampling. Data collection was through a self-administered questionnaire and an observational checklist. The tool was pretested in a similar facility on 10% of the sample size. The data was coded and analyzed using SPSS version 21. To test significance of association between the study variables of the study Chi squared test was used at a p value of <0.05.

III. STUDY FINDINGS

Most respondents came from the medical department with 21.2% (18) respondents, then surgical and maternity departments each with 18.8% (16) respondents, then OPD with 15.3% (13) respondents, then pediatric ward with 11.8% (10) respondents and finally private ward and MCH each with 7.1% (6) respondents. Most of the respondents were aged between 20-29 years with 69.4% (59) respondents, 30-39 years were 10.6% (9) respondents, 40-49 years were 9.4% (8) respondents and 50-59 years were 10.6% (9) respondents.

Most of the respondents i.e. 72.9% (62) had served for 1-9 years, those who had served for 10-19 years were 12.9%, (11) respondents, 20-29 years were 8.2%, (7) respondents and those who had served for over 30 years were 5.9%, (5) respondents.

The departments, age and years of service were not significantly associated with adherence to the NCK guidelines (P=>0.05).

Table 1: Department, Age and Duration of Service

Department	Frequency	Percentage
Medical	18	21.2
Surgical	16	18.8
Maternity	16	18.8
OPD	13	15.3
Pediatric	10	11.8
Private ward	6	7.1
MCH	6	7.1
Total	**85**	**100**
Age (years)		
20-29	59	69.4
30-39	9	10.6
40-49	8	9.4
50-59	9	10.6
Total	**85**	**100**
Duration of service (years)		
1-9	62	72.9
10-19	11	12.9
20-29	7	8.2
>30	5	5.9
Total	**85**	**100**

Hygiene guidelines were followed by 54% of the respondents on overall with personal safety having only 9.4%, (8) respondents adhering, while majority 90.6%, (77) respondents were non-adherent. Among those who were non-adherent, 10.4%, (8) respondents did not employ any personal safety measure, 24.7%, (19) respondents employed one measure which was either gloving or avoiding recapping while 64.9%, (50) respondents employed at least two safety measures.

Concerning cleaning of injection site before giving an injection, 100%, (85) respondents were adherent whereby 76.5%, (65) used alcohol/spirit swab while 23.5%, (20) respondents were using unspecified agents.

Concerning the guideline of where to place prepared IV medications before administration, 88.2%, (75) respondents were adherent while 11.8%, (10) respondents were non-adherent. Being adherent meant placing the medications on a clean kidney dish. Among those who were non-adherent, 5.9%, (5) respondents placed medications on the trolley, 4.7%, (4) respondents placed medications on a tray and 1.2%, (1) respondent placed them on unspecified surface.

Majority 96.5%, (82) respondents were discarding sharps immediately, which meant they were adherent, (1.2%, (1) respondent discarded them once done with all patients and 2.4% (2) respondents did so at the end of the shift which meant the last two groups were non-adherent as shown below.

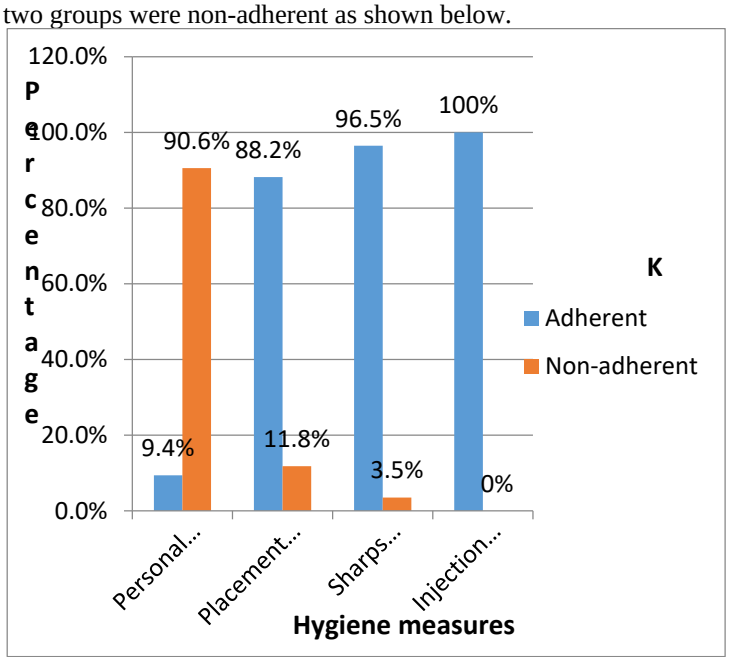

Figure 1: Adherence to Hygiene measures

Table 2: Observation Check-List on Hygiene Measures

Adherence guideline	Adhered to	Not adhered to
Swabbing injection site with alcohol based swabs	100% (40)	0%
Washing hands before and after each patient	30% (12)	70% (28)
Discards sharps immediately	50% (20)	50% (20)
Total	**72**	**48**

Source: Field Data (2019)

Medication safety guidelines were adhered to by 65.5% of the respondents on overall. Regarding specific guidelines, giving medication to the right patient was the guideline with the highest percentage of adherence at 100% (85) respondents. Double checking medication with second nurse was performed by 51.8% (44) respondents, explaining effects of drugs to patient and

relatives was performed by 24.7% (21) respondents, administration of drugs at the specified times was performed by 64.7% (55) respondents, administration of only the prescribed drugs was performed by 90.6% (77) respondents, administration of the exact dose of medication was performed by 94.1% (80) respondents, using only the prescribed routes of administration was adhered to by 88.2% (75) respondents, assessment of patient reaction during administration was performed by 71.8% (61) respondents, explaining of expected side effects to patients and relatives was performed by 31.8% (27) respondents and observation of patients for side effects was performed by 45.9% (39) respondents.

Table 3 Adherence to Medication Safety Guidelines

Guideline	Adherent	Non Adherent
I double check medications with a second nurse	51.8% (44)	48.3% (41)
I explain to patient and relatives the effect of medications	24.7% (21)	75.2% (64)
I administer medications at specified time	64.7% (55)	35.3% (30)
I assess patients reaction during administration	71.8% (61)	28.3% (24)
I explain expected side effects to patients and relatives	31.8% (27)	68.3% (58)
I observe patients for adverse effects	45.9% (39)	54.1% (46)

Source: Field Data (2019)

Record guidelines included when to record administered medications, where to record them, whether or not second nurse records administered medications and where to record adverse effects. Other guidelines were tested using likert form questions. As to when they recorded administered medications, 97.6%, (83) respondents recorded immediately (adherent) while 2.4%, (2) respondents recorded when patients retained medication. Concerning where to record the administered medications, 41.2%, (35) respondents recorded in the treatment sheet, meaning they were adherent, 54.1%, (46) respondents recorded both in the treatment sheet and the cardex, while 4.7%, (4) respondents recorded in an unspecified place on the patients' file. Most of the respondents 63.5%, (54) reported that a second nurse did not record administered medications on their behalf meaning they were adherent while 36.5%, (31) respondents reported that it happened meaning they were non-adherent. With regard to recording of adverse effects, 3.5%, (3) respondents used the adverse medication reaction book meaning they were adherent. Among those who were non-adherent, 1.2%, (1) respondent used unspecified part of the patients file, 90.6%, (77) respondents used the cardex, 2.4%, (2) respondents did not record anywhere, while 2.4%, (2) respondents recorded in the treatment sheet, and the cardex.

The adherence scores were computed and mean score; range and standard deviation calculated for hygiene measures, medication safety and hygiene guidelines. The mean adherence score for hygiene guidelines was 53.95%, range 25.6-85.7% and SD=16.99. The mean adherence score for medication safety was 65.5%, range 16.7-100% and SD=19.08. Finally, the mean adherence score for record guidelines was 65.9%, range 28.6-85.7% and SD=15.91 as shown in the figure below.

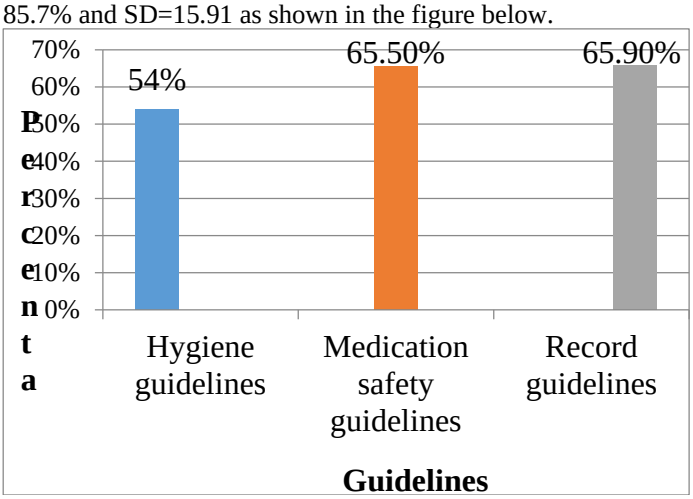

Figure 2: Adherence to Record guidelines

The researcher computed an overall adherence score which incorporated the three guideline areas (hygiene, medication safety and record guidelines). These constituted 26 adherence guidelines and the mean was 62.49% and standard deviation of 14.09. From the 26 practices, two adherence levels were computed whereby high adherence level referred to adherence to at least 18 practices while low adherence level referred to adherence to <18 practices.

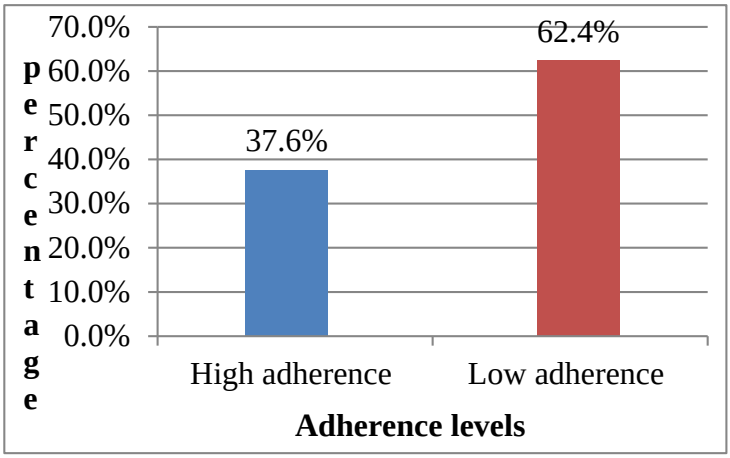

Figure 3: Adherence Levels

Figure 3 above shows that 37.6% (32) respondents had high adherence level while 62.4% (53) respondents had low adherence level.

Analysis of variance in the means of the two adherence levels revealed that the two group means were significantly different (p=<0.001).

IV. DISCUSSIONS

The overall level of adherence was low with 62.4% (53) respondents having low adherence level. There was 53.95%

adherence for hygiene guidelines, 65.5% for medication safety and 65.9% for record guidelines. Regarding adherence to hygiene measures, these findings agree with those of a study carried out in a referral hospital in Nigeria to determine nurses' compliance with a safe injectable medication administration protocol, where only 22% of the nurses observed practiced hand hygiene prior to administering the medications [6]. Regarding medication safety measures, the findings of the study tally with those of a study carried out in a University hospital in Korea on adherence to the five basic rights of medication administration which indicated that only 45.6% of the nurses confirmed the right medication on the vial ensured medication safety measures [1]. Record guidelines included when to record administered medications, where to record them, whether or not second nurse records administered medications and where to record adverse effects. As to when they recorded administered medications, majority adhered to the guideline. These findings are similar with those of a study carried out at C.S Mott's children's Hospital of the University of Michigan on ensuring safe administration of medication among nurses where 91.7% documented the medication administered immediately after administration [7]. Concerning where and who to record the administered medications, the guidelines were not followed by all. These findings disagree with those of an observational study in Korea on adherence to medication administration guidelines where it was reported that in regard to recording of the administered medications, the nurse who had administered the medications recorded him/herself in 100% of the cases [8].

The observation revealed that nurses' adherence to various guidelines was similar to what they had reported with only a few differences. These observations are in tandem with those of an observational study conducted by [9].

V. CONCLUSION

The level of adherence to the NCK medication administration guidelines was found to be low with adherence to hygiene measures being the least adhered to followed by adherence to safety measures and adherence to medication administration record guidelines respectively. The most cited challenges to adherence to the guidelines by the respondents were inadequate staffing levels, lack of CPD facilitation and lack of adequate resources for medication administration. This calls for the institution and other similar institutions to ensure that the staffing levels are upto standards and resources are available.

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AUTHORS

First Author – Ms. Mumbi M. Ng'ang'a, BScN, Mount Kenya University, mmumbi26@gmail.com
Second Author –Dr. Catherine S. Mwenda, Phd (Nursing), Mount Kenya University, mutungacs@gmail.com
Third Author – Mr. George K. Njoroge, MScN, Mount Kenya University, gnjoroge@mku.ac.ke
Fourth Author-Mr. Stanley K. Njau, MScN, Mount Kenya University, njaust@yahoo.com
Correspondence Author – Ms. Mary M. Ng'ang'a, BScN, Mount Kenya University, mmumbi26@gmail.com, +2540710716445