Assessment of Patient Care Indicators in Three District Hospitals in Rural Rwanda: A Cross-Sectional Study

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Abstract :

Objective: The objective of this study was to assess patient care services using WHO drug use indicators in three district hospitals in rural Rwanda. **Methods:** This was a cross-sectional study of 108 patient encounters and records at outpatient departments at three District Hospitals (Kirehe, Rwinkwavu and Butaro) in rural Rwanda between December 2016 and February 2017. **Results:** Across three District Hospitals, the average consultation time was 10.1 minutes (SD=4.9) compared to the WHO target of at least 10 minutes. The average dispensing time was 222.2 seconds (SD=129.7) compared to the WHO target of >180 seconds. Overall, the percentage of prescribed medicines that are actually dispensed was 88.9% (95% CI: 81.4-94.1) and none of medicine packages was adequately labeled compared to the WHO standard of 100%. The aggregate percentage of patients with adequate knowledge of the correct dosage schedule was 84.3% (95% CI: 76.0-90.5) compared to the WHO target of 100%. **Conclusion:** Based on WHO guidelines, our findings show rational dispensing and medication counseling practices in relation to the average consultation and dispensing time. However, the proportion of medicines actually dispensed, medicine packages adequately labeled and patients with adequate knowledge of the correct dosage schedule, are below the WHO ranges. Periodic assessment of patient care indicators in health facilities will help to identify specific medicine use problems, sensitize healthcare providers to rational medicine prescribing, medication counseling and dispensing.

Keywords: Dispensing, Drug use evaluation, Medicines, Medication counseling, Patient care indicators.

I. INTRODUCTION

Medicines are important components of a health care system and play a crucial role in saving people's lives. Essential medicines are selected to fulfill the real need of the majority of the population in diagnostic, prophylactic, therapeutic and rehabilitative services using criteria of risk benefit ratio, cost effectiveness, quality practical administration as well as patient compliance and acceptance.[1] Increasing access to and ensuring appropriate use of essential medicines could improve health status and secure development gains.[2]

Drug use evaluation is a system of ongoing, systematic, criteria-based assessment that ensures the appropriate use of drugs.[3] WHO core drug use indicators include prescribing, patient care and facility indicators and they serve as a simple method of monitoring drug use in a standardized way.[4]

Patient care indicators include the average consultation time, the average dispensing time, the percentage of medicines actually dispensed, the percentage of medicine packages adequately labeled and the percentage of patients with adequate knowledge of the correct dosage schedule.[3]

The consultation time should be sufficient to conduct proper history taking, complete physical examination, appropriate health education instructions, and good physician–patient interaction to prescribe medications. The dispensing time should be enough to explain dosage regimen, adverse effects of medicines, necessary precautions, and actually label and dispense medicines.

It is clear that patient compliance and adherence to treatment directly depend on their knowledge about dispensed medicines. Prolongation of dispensing time is a necessary step towards improving patient care. All prescribed medicines should be dispensed and all patients should at least know the correct dosage schedule.

However, there are often problems with drug use practices, particularly in resource poor settings. Generally, irrational drug use is a global health concern involving the health system, prescribers, dispensers, patients and the community in general. According to WHO, more than 50% of all medicines are prescribed, dispensed or sold inappropriately, while 50% of patients fail to take the prescribed drugs correctly. Moreover, about one third of the world population lacks access to essential medicines.[2]

While some research studies have assessed patient care indicators in sub-Saharan Africa [5-9], no similar studies have been published in Rwanda.This study has assessed patient care services using WHO drug use indicators in three District Hospitals in rural Rwanda in order to identify gaps in practice, address knowledge

gaps and propose interventions to improve dispensing and medication counseling practices.

II. MATERIALS AND METHODS

This was a cross sectional study of randomly selected 108 patient encounters and records at outpatient departments of the three District Hospitals (Kirehe, Rwinkwavu and Butaro) in rural eastern and northern Rwanda from December 1,2016 to February 28, 2017. Rwinkwavu, Kirehe and Butaro District Hospitals are public health facilities that are supported by Partners In Health-Inshuti Mu Buzima, a US-based non-governmental organization that supports the Government of Rwanda to strengthen health care delivery.

The WHO core indicator of patient knowledge of the correct dosage schedule was considered the primary outcome and used for sample size calculation. We compared the proportion of patients with appropriate knowledge on correct dosage schedule to the WHO standard target of 100% using a two-sided test at α=0.05 significance level. Recent studies in the region have reported the proportion of patients with adequate knowledge of the correct dosage schedule that varies from 72.8-93.0%(average 83%).[5,10]Assuming that the true proportions of patients with adequate knowledge of the correct dosage schedule is 60%, we needed a sample size of 36 patient encounters at each of the three Hospitals to have 90% power to detect a difference.

Data collection forms were used to gather data from medical prescriptions, drug packages and patients interviews before entering them into an excel database. Stata software package version 13.0 was used for data analysis. In the statistical analysis, frequencies, means, standard deviations, percentages, confidence intervals and p-values were obtained. One way analysis of variance (ANOVA) and Fisher exact tests were performed to compare results across three District hospitals and to the WHO norms.

This study received ethical clearance from the Rwanda National Ethics Committee (No 040/RNEC/2014) and the Ministry of Health provided final authorization to use the data for the study.

III. RESULTS

Across three District Hospitals, 108 patient records have been assessed. The average consultation time was 10.1 minutes (SD=4.9) compared to the WHO target of at least 10 minutes. There was no significant difference between the three Hospitals (p=0.3).

The average dispensing time was 222.2 seconds (SD=129.7) compared to the WHO target of >180 seconds. The dispensing time was higher at Butaro Hospital (348.3) compared to Kirehe (151.7) and Rwinkwavu (166.7)(P<0.01).

Overall, the percentage of prescribed medicines that are actually dispensed was 88.9% (95% CI: 81.4-94.1) and there was no significant difference between Hospitals (p=0.9).

None of medicine packages was adequately labeled compared to the WHO standard of 100% while the aggregate percentage of patients with adequate knowledge of the correct dosage schedule was 84.3% (95% CI: 76.0-90.5) compared to the WHO target of 100%. The percentage was lower at Butaro Hospital (72.2%) compared to Kirehe (94.4%) and Rwinkwavu (86.1%)(p=0.04).

Table 1. Core Patient care indicators across three District Hospitals compared to WHO targets

Patient care indicators	Butaro Hospital			Kirehe Hospital			Rwinkwavu Hospital			All hospitals			WHO targets	P-value
	N	Mean or %	95% CI	N	Mean or %	95% CI	N	Mean or %	95% CI	N	Mean or %	95% CI		
Average consultation time in minutes (mean, 95% CI)	36	10.2	8.9,11.4	36	9.3	7.4,11.1	36	11.0	9.2,12.8	108	10.1	9.2, 11.1	>=100.0	0.3
Average dispensing time in seconds (mean, 95% CI)	36	348.3	321.4,375.3	36	151.7	120.8,182.5	36	166.7	129.4,204.0	108	222.2	197.5,247.0	>180	<0.01
Percentage of prescribed medicines actually dispensed (%, 95% CI)	36	88.9%	73.9, 96.9	36	91.7	77.5, 98.2	36	86.1	70.5, 95.3	108	88.9	81.4, 94.1	100.0	0.9
Percentage of medicine packages adequately labeled (%, 95% CI)	36	0.0%	0	36	0.0	0	36	0.0	0	108	0.0	0	100.0	----
Percentage of patients with adequate knowledge of the dosage schedule (%, 95% CI)	36	72.2%	54.8, 85.8	36	94.4	81.3, 99.3	36	86.1	70.5, 95.3	108	84.3	76.0, 90.5	100.0	0.04

IV. DISCUSSION

Findings of our study show that the average consultation time, 10.1 minutes is within WHO targets (>=10 minutes). Similar studies conducted in sub-Saharan Africa have reported the average consultation time in health facilities varying from 3.6 to 11.3 minutes.[5-10] The time that a medical personnel spends with a patient in the process of consultation and prescribing is very important and it should be sufficient for proper history taking, diagnosis and treatment. Although the average consultation time is within WHO norms but it tends to the lower limit. Shorter consultation times at those health facilities are attributed to limited number in human resources and high patient volume. In that regard, clinicians tend to be brief during the consultation process in order to serve many patients waiting for them.

The average dispensing time, 222.2 seconds is within WHO targets (>180 seconds) and greater than 39.9 to 211.8 seconds, the average dispensing time reported by other studies conducted in the region.[5-10] There was no significant difference between the three Hospitals.

The average time that dispensers spend with patients is crucial for medication counseling and dispensing. The patient should have basic drug information in order to adhere to treatment.

The average dispensing time at two of three Hospitals was below WHO targets but it was higher at one of the hospitals. We observed that dispensing times at those Hospitals were influenced by various factors including human resources, dispensing and medication counseling skills, patients literacy level, patient load, organization of dispensary area, availability and accessibility of health commodities at the dispensaries.

The aggregate percentage of prescribed medicines that are actually dispensed, 88.9% was lower than WHO target of 100.0% and there was no significant difference between Hospitals. Studies recently conducted in the region reported the percentage of dispensed medicines varying from 49.0 to 100.0%.[5,9,10] Inadequate drug supply has its implications on patients' health status and patient's convenience and trust in a health system. Inadequate supply of some health commodities at those health facilities is attributed to limited financial means, procurement delays or national stock outs.

According to other studies conducted in Sub-Saharan Africa, there is a high variability in terms of the percentage of drug packages adequately labeled from 37.0 to 92.8%.[5-9] Findings from our study revealed that none of the dispensed medicine packages was adequately labeled while WHO standard is 100.0%.We believe this was due to the fact that dispensers hadn't been informed about the importance of including the patient name on the drug package. However, we also realized that the manufacturer of current medication bags didn't provide appropriate space for the patient name as it is for the drug name and dosage schedule. This can mislead dispensers who may think it is not important to include the patient name on the package. Each drug package label should contain at least the patient name, drug name and dosage schedule to avoid potential serious consequences such as drug misuse, and drug abuse.[7,10]

We observed that most of drug packages only included the drug name, strength and dosage schedule. However, none of the drug packages included the patient name. Omission of patient's name on the drug package label is inappropriate as it can lead to irrational use of medicine by dispensing medicines to the wrong patient or patients taking wrong medicines.

Overall, the majority of patients (84.3%)were able to repeat the correct dosage schedule of the medicine they had received which is in line with other studies conducted in Sub-Saharan where the same percentage varied from 72.8 to 93.0%.[5,10]The percentage was lower at Butaro Hospital compared to Kirehe and Rwinkwavu hospitals. WHO recommends that all patients should be able to know at least the dosage schedule which guarantees that they can adhere to treatment. Patient's knowledge of the correct dosage is very crucial to avoid drug over use and abuse; and prevent adverse effects that harm patient's health status. A good patient's knowledge of the correct dosage will definitely improve patient care.[7,11]

V. CONCLUSION

Based on WHO guidelines, our findings show rational dispensing and medication counseling practices in relation to the average consultation and dispensing time. However, the proportion of prescribed medicines that are actually dispensed, medicine packages adequately labeled and patients with adequate knowledge of the correct dosage schedule are below the WHO ranges. Differences between hospitals were influenced by various factors including human resources, dispensing and medication counseling skills, patients' literacy level, patient load, availability and accessibility of health commodities at the dispensaries. Periodic assessment of patient care indicators in health facilities will help to identify specific medicine use problems, sensitize prescribers and dispensers to rational medicine prescribing, dispensing and medication counseling. This will also provide policy makers with relevant information that could be useful in reviewing medicine-related policies to improve the quality of care. Findings from this study can be used by healthcare providers,policy makers and researchers to improve patient care services at health facilities. Further studies should assess patient care indicators in other

Hospitals in Rwanda to identify gaps in patient care and plan for improvement of patients' health outcomes.

VI. ACKNOWLEDGEMENTS

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