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Improving Pre-Discharge Health Education on Medications Especially Painkiller and Antibiotics to Orthopedic Patients at Butare Teaching Hospital (CHUB), Rwanda

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Abstract

Purpose: The World Health Organization (WHO) defined health education as consisting of "consciously constructed opportunities for learning involving some form of communication designed to improve health literacy, including improving knowledge, and developing life skills which are conducive to individual and community health. Locally health education included the communication of information concerning the underlying social, economic and environmental conditions impacting health, as well as individual risk factors risk behaviors, and use of the health care system. To improve pre-discharge health education on medications especially painkillers and antibiotics to orthopedic patients at Butare Teaching Hospital.

Materials and Methods: Patients file audit were conducted in August, September and October /2022 on the orthopedic surgical unit to see if there was any pre-discharge health education documentation on medications especially painkiller and antibiotics in patient files as results n=7(23%) patients who did not receive pre-discharge health education on medications while n=23(77%) patients who received pre-discharge health education on medications. This audit was conducted because on post discharge appointments patients arriving with infected or dirty wound delay an appointment, infected implant which could cause serious complications like reoperation and septicemia.

Findings: Based on the results**,** after one month of intervention pre-discharge health education on medications went up to 21(70%) and the gap remained was 9(30%), Improvement in pre-discharge health education was a key in medication adherence, enhanced self-medication, reduced infections, patients trust toward healthcare providers, quick recovery and improving respect of appointment to the health care setting.

Unique Contribution to Theory, Practice and Policy: Providing structured pre-discharge medication education at Butare Teaching Hospital will reduce barriers for healthcare providers, support accreditation through proper documentation, and enhance patient understanding. This will improve medication adherence and lower the risk of post-discharge complications, ultimately ensuring better outcomes for orthopaedic patients.

Key words: *Discharge planning (I11), Patient education (I12), Medication adherence (I18).*

INTRODUCTION

Medication adherence at hospital discharge is a critical factor influencing patient outcomes. Several studies have explored factors affecting adherence and the impact of pre-discharge education on patient knowledge and health outcomes.

The study done in American in 2006 on adherence to cardiovascular medications at discharge showed that 54% adhered to all their medications while the proportion of patients who did not adhere to all medications was low aspirin 18%, angiotensin receptor blockers 28% so health education for pre-discharge patients was very important (Kulkarni et al., 2006). While total number of prescriptions were influential in predicting someone's likelihood for continuing medications within over one year, level of education ,marital status, sex, mental health prior to discharge and age bracket were also important indicators.(Kulkarni et al., 2006).

A study conducted in china in 2020 on medications literacy of discharged patients with essential hypertension was found that 20% of patients did not know how often to take medications,30% did not know the name or dose of medications even 70% did not know side effects of medications they were taking. (Zhong et al., 2020).

The study done in Israel in2005 reported that 63% of patients with mean age 66 years old were interviewed on counseling reported knowledge and correct knowledge during hospitalization and at discharge ,58% were men and 42% were women.(Kerzman et al., 2005).

The majority of them were married at 72%, the 16% of patients had not taken medication prior to their hospitalization but were received new medication therapy upon discharge so that the health education on that new medication was crucial.(Kerzman et al., 2005).

The majority of patients 84% had been taking medication prior to current hospitalization, 54% had received new medication during the hospitalization.(Kerzman et al., 2005).

The patient's knowledge was necessary for performing their own self-care especially when dealing with new self-drug administration .(Kerzman et al., 2005).This study was aimed to assess patient' reported as opposed to correct knowledge about medication therapy after discharge from the hospital and to identify factors that increased corrected knowledge.(Kerzman et al., 2005). The study found that there was no significant impact on those factors: gender, age and education, only counseling during hospitalization and discharged with respect medication therapy increase adherence on that medications.(Kerzman et al., 2005).

The study done in USA 2015 found that new inter professional discharged /teaching processed significantly improved patient satisfaction levels from pre-to post implementation (P< 0.5).(Knier et al., 2015)

The study done in 2008 reported that 88% respondents were African American, 58% males, mean age 54.5 years.(Kripalani et al., 2008). Many patients reported it was very difficult to understand why they were prescribed medications (21%), how to take medications (11%) and 48% reported some degree of no adherence on medication after discharge. (Kripalani et al., 2008).

The study done in Iran 2018 on the effect of pre-discharge training on the quality of life of burn patients showed that pre-discharge training affects the quality of life scores and this effects s continues over time and pre-discharge training significantly increase the quality of life in patients with burns. (Lotfi et al., 2018).

The study done in Canada 2009 on timing for delivering individualized patients education intervention to coronary artery bypass graft patients showed that anxiety levels were found to

be significantly higher in the pre-discharge patients than post- discharge patients.(Fredericks, 2009).

The study done 2020 in France on impact of a pre-discharge education session on stroke knowledge showed that interactive education session in the stroke unit significantly improved stroke knowledge at 3 months and 12 months in patients with transient ischemic attack or minor stroke.(Benoit et al., 2020).

The study done in 2020 University Teaching Hospital of Butare (CHUB, University Teaching Hospital of Kiagili (CHUK) and Kabgayi District Hospital on adherence to antihypertensive medications in the primary care setting in Rwanda revealed that between 330 respondents, 93,3% finished 6 six months follow-up,78.9% were female with the average age of 60±12.8 years. The most 53.4% had completed primary school and the majority of respondents were married, the rate of medications adherence was 88%. Alcohol intake and forgetting to take medication were linked to poor adherence to medications with a gap of 12 %. Despite good adherence to medications everybody must put effort raising awareness through health education in order to remember taking their medications.(Sciences, 2020).

Problem Statement

There was a less number of pre-discharge health education on medications especially painkiller and antibiotics given compared to the number of orthopedic patients discharged every month in orthopedic unit at CHUB.

The Health Belief Model (HBM) **t**heory provided a strong theoretical foundation for studying the gap in pre-discharge medication education among orthopedic patients at CHUB. It supported the idea that improved patient education particularly around painkillers and antibiotics that could lead to better self-management, adherence, and health outcomes.

MATERIALS AND METHODS

Study Design and Study Setting

The study involved auditing patient files from August to October 2022 in the orthopedic surgery unit at University Teaching Hospital of Butare (CHUB) to assess documentation of health education on medications. On April 13, 2023, the audit revealed a 77% gap in pre-discharge health education documentation.

To address this, health education sessions were conducted on April 17-18, 2023, for patients and caregivers (approximately 50-53 attendees per day), focused on painkillers and antibiotics. Patients were encouraged to answer key questions about their medications to improve knowledge and adherence.

On April 19, 2023, a session was hold for orthopedic staff, including the unit manager, to discuss findings and identify barriers such as negligence, lack of forms, and workload. Interventions included meetings with staff, patient education, and ensured forms were available in-patient files.

One month later, in April 2023, the percentage of patients received pre-discharge medication education increased to 70%, compared to 40% in August, 30% in September, and 0% in October 2022.

Study Population, Eligibility and Exclusion Criteria

The target population of this study included 30 patents files of orthopedic unit were audited for recorded pre-discharge health education on medications including10 for August, 10 for September and 10 for December 2022 in surgery department at CHUB. The exclusion criteria were the patients' files of other unit than orthopedic and other month than August, September and October 2022 of surgery department at CHUB.

Sample Size and Sampling Procedure

Simple random sampling was used to select those 30 patients 'files. Sample size refers to the number of units or people that are chosen from which the researcher wished to gather information or data.

A sample size of 30 respondents was selected for the study. The sample size was determined using Slovin's formula (1960) below (Ellen Stephanie, 2018).

$$n = \frac{N}{1+N(e)^2}$$

Where;

n-the sample size

N - The population size (30)

e - The acceptable sampling error (0.05)

$n = \frac{30}{1+30(0.05)^2}$=30 participants

From the sample size calculation above, the total sample size from the study was30 patients' files.

Data Collection Tool and Procedure

The questionnaire had 2parts. Part1 A. Emphasized on socio-demographic characteristic of respondents that were composed by 3 variables including gender, health insurance and age group. Part2 had 1 section: Questions on pre-discharge health education on medications received or not from August to October/2022 for orthopedic patients in surgery department at CHUB. After pre-testing the instrument, the revised questionnaire was administered to collect data from the selected sample. The researcher was used archive to find those patients 'files to collect information during working hours. After completion, the questionnaires were put in a closed envelope by researcher.

Validity and Reliability of the Questionnaire

The researchers confirmed that the tool was valid according to the research objectives as well as research questions. The quality of the data collection tools was confirmed by pre-testing the questionnaire among few patients' files of the sampling frame before the actual data collection process.

Statistical Analysis and Data Management

Data analysis refers to as gathering elements or data together to present a clear picture of all of the information collected. This involves organization of information generated during data collection in a more meaningful manner. Data analysis aimed at making sense of the data received. The data analysis took place when all of 30 surveys were returned. In this context, the researcher undertook the data cleaning, data entry as well as the data validation. Data

analysis was done using excel and findings from participants were expressed in form of frequencies and percentages.

Ethical Considerations

This study was reviewed and approved by the Ethics committee of CHUB (Approval No: **REC/UTHB/020/2023**. Participants had the right to consent voluntary after being explained the benefits and the risks of participating in the study. The participants' privacy and confidentiality were preserved. Throughout the study, all data was kept confidential, privacy was carefully maintained, and the identities of respondents remained anonymous to ensure their protection and confirmed ethical standards.

FINDINGS

Table1. Demographic Data of Participants

Variables	N (%)
Gender	
Male	16(53)
Female	14(47)
Insurance	
CBHI	22(73)
RSSB	3(10)
CBHI- Indigent	3(10)
CBHI- FARG	2(7)
Age in years	
16-20	3(10)
21-25	4(13)
>25	23(77)

Table1 represented demographic information of participants as showed above where male were 16(53%), participants with Community Based Health Insurance (CBHI) were 22(73%) and participants with age superior of 25 year old were 23(77%).

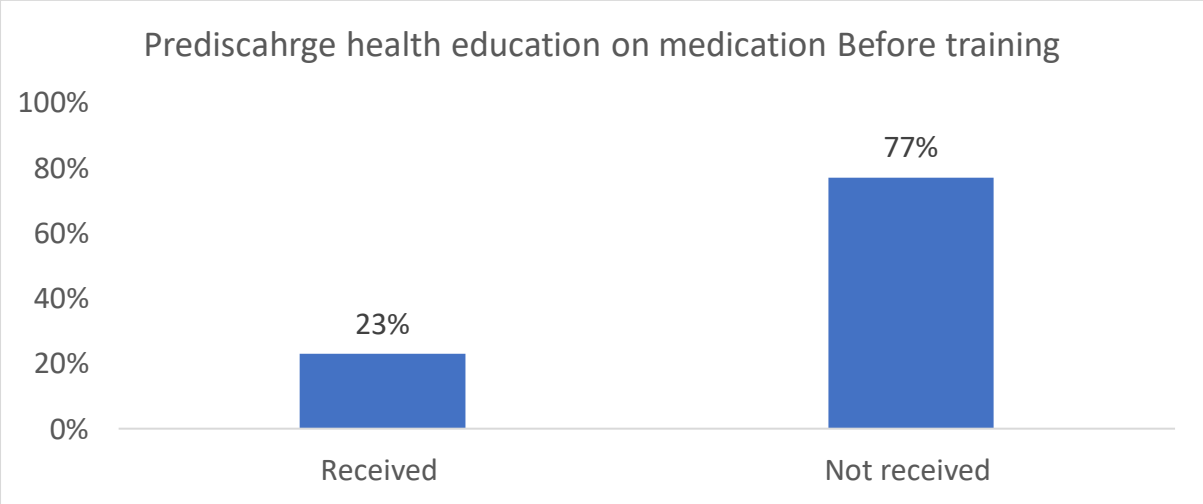

Figure 1: Pre-discharge Health Education on Medications Received or not (August to October/2022)

In figure 1 the number of patients received pre-discharge health education varied from 4patients in August to 3 patients in September to no patient in October 2022. Only 7(23%) of patients received pre-discharge health education on medications compared to 23(77%) who did not. These results indicate that there was a major gap in providing pre-discharge health education on medications.

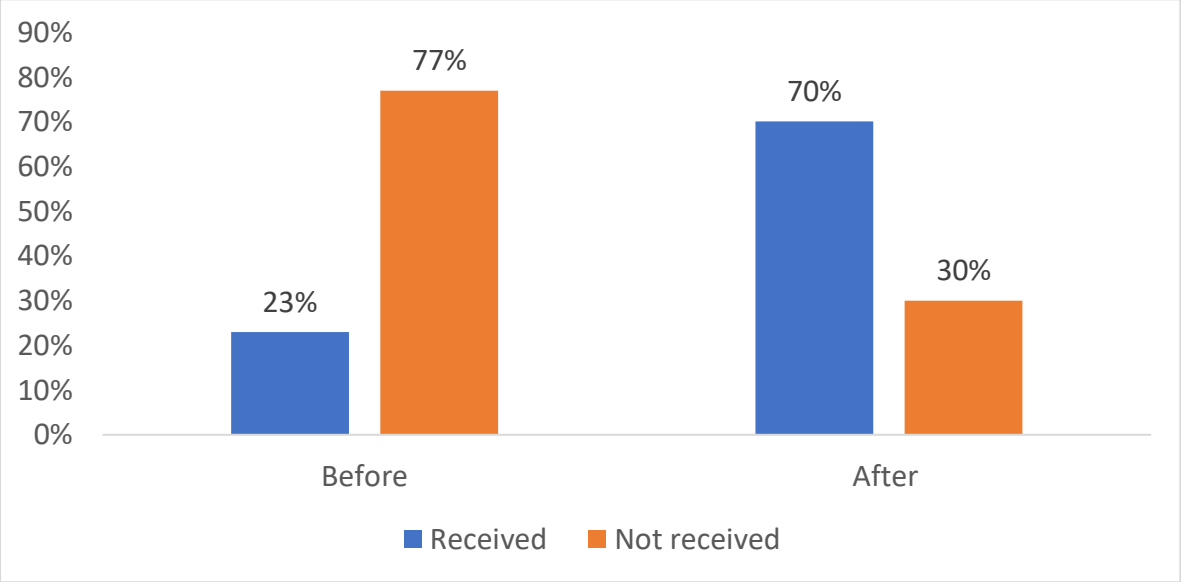

Figure 2: Predischarge Patients' Health Education after one Month of Interventions

Figure 2, represented combined data from before and after intervention. The number of patients received pre-discharge health education varied from 4patients in August to 3 patients in September to no patient in October 2022. Only 7(23%) of patients received pre-discharge health education on medications compared to 23(77%) who did not. These results indicate that there was a major gap for providing pre-discharge health education on medications.

After 1 month of intervention the number of patients received pre-discharge heath education on medication went up to 21(70%) and the number of patients who did not received pre-discharge health education go up to 9(30%) in May 2023. These results after intervention showed significant improvement in providing pre-discharge health education on medication from 23% to 70%.

Discussion

Based on current study results on pre-discharge health education on medication improved with health education agreed with the study founding in 2020 in France demonstrated that an interactive pre-discharge education session in stroke units significantly improved stroke knowledge at three months and one-year post-discharge (Benoit et al., 2020). And also agreed to the study founding at Canada in 2009 indicated that pre-discharge coronary artery bypass graft patients experienced significantly higher anxiety levels than post-discharge patients, highlighting the need for timely patient education interventions (Fredericks, 2009). A 2006 study in America found that 54% of patients adhered to all their cardiovascular medications at discharge, while a lower proportion failed to do so which was contrary to the current study founding. Factors such as education level, marital status, gender, mental health status, and age were significant predictors of adherence within a one-year period (Kulkarni et al., 2006). Similarly to the study in Israel 2005 reported that 63% of patients, with a mean age of 66, had knowledge of their prescribed medications at discharge. The study emphasized the importance of health education, particularly for the 16% of patients who were prescribed new medications

upon discharge (Kerzman et al., 2005). Counseling during hospitalization and at discharge significantly improved medication adherence.

As the current study results there was a gap for providing health education pre-discharge medication on health workers especially nurses working in orthopedic surgery unit which need further training on pre-discharge health education as agreed with the study done on as beyond medication adherence, pre-discharge education has also been shown to impact patient well-being the study done in 2018 study in Iran found that pre-discharge training improved the quality of life for burn patients over time (Lotfi et al., 2018).

Despite agreement with global literature, the local implementation environment at CHUB presented distinct challenges**:** staff shortages and high workload limited the time nurses could dedicate to each patient's discharge education, health literacy levels among patients were often low, especially in rural areas, requiring more simplified and culturally appropriate education tools**,** lack of standardized discharge protocols and documentation resulted in inconsistent health education deliver, limited in-service training for nurses on patient education practices, especially focused on orthopedic care.

Applicability to the Rwandan Context

While international evidence strongly supported the value of pre-discharge health education, several local challenges at CHUB affect implementation and outcomes: staff shortages and high workloads limited the time nurses could dedicate to patient education, low health literacy, especially among patients from rural areas, reduced the effectiveness of standard educational approaches, there was a lack of standardized discharge protocols and documentation systems, leading to inconsistent delivery of health education and the study also identified a training gap among nurses in delivering patient-centered, condition-specific education, particularly in the orthopedic surgery unit.

The limitation

The limitation was limited time and shortage of staff in orthopedic unit of surgery department at CHUB.

CONCLUSION AND RECOMMENDATIONS

Conclusions

Based on the results where pre-discharge health education on medications goes up to 21(70%) and the gap remains were9 (30). The improving pre-discharge health education on medication would save life of many patients through improving adherence to medications, enhanced self-medication, reduced infections, patients trust toward healthcare providers, quick recovery and improving respect of appointment to the health care setting. Different multidisciplinary would take a part in providing pre-discharge health education on medication especially painkillers and antibiotics in healthcare setting.

Recommendations

i. It will help reduce barriers for health care provider giving pre-discharge health education on medications to orthopaedic patients at Butare Teaching Hospital.
ii. It will improve the orthopaedic surgery unit ability to meet accreditation standards by documenting pre-discharge health education on medications on patient files.
iii. It will our patients better understand the importance of medications adhere to reduce the like hood of post discharge complications.

Applicability of International Findings to the Rwandan Context

Findings from diverse settings (France, Canada, USA, Israel, and Iran) largely align with the current study's findings at CHUB and are applicable to the Rwandan context. These studies support the need for: Nurse training on patient education, routine documentation of discharge education to meet accreditation, structured, interactive, and culturally sensitive health education strategies.

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Authors' Contribution

Dorothee NIYONSABA was the primary investigator and led the study design, data collection, data analysis and manuscript preparation, Theogene TWAGIRUMUGABE contributed to study design, data analysis, manuscript review and critical revision, Gratien NZAYIKORERA was responsible study design, Sylvain HABARUREMA was responsible for study design, data collection and data analysis, Theogene NDAHAYO was responsible for data collection and data analysis, and Felicite MUKAMANA was for manuscript review. All authors were revised the study with a common understanding.

Conflict of Interest

There are no competing conflicts of interest to disclose.

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