



THE IMPACT OF CLINICAL PHARMACIST COOPERATION WITH NEUROSURGERY TEAM AT RMS; REVIEW OF ONE YEAR OF COLLABORATION.

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ABSTRACT:

INTRODUCTION: The new perspective in pharmacy practice have modulated the pharmacist's role to be more focused on the patient therapeutic needs rather than on just the traditional dispensing^[6,14,16]. AT RMS the clinical pharmacy services have improved to be more patient-focused. One of the latest achievements is establishing the clinical pharmacy unit that follows a new philosophy by ensuring appropriate use of the medications as being a part of the healthcare team.

Objective: The aim of this study is to evaluate the impact of clinical pharmacist's collaboration with neurosurgery team by using three clinical pharmacy documentation templates (Initial, Reconciliation, Intervention notes).

Methodology: A retrospective study on Hakeem system by reviewing the three clinical pharmacy templates that have been done in neurosurgery ward from (Jan, 2022- till Dec, 2022) while maintain patient confidentiality and privacy.

A frequency analysis test on Microsoft Excel Spreadsheet Software will be conducted to count the occurrence rates of the intervention of interest (IOI). Our investigated IOI will encompass 7 major categories of Adjustment, Initiation, Replacement, Discontinuation, Monitoring, Education, and Assessment. Each major category includes 5 subcategories.

Clinical pharmacy unit has three templates on CPRS Hakeem System (Initial, Reconciliation, Intervention notes), In our study we will review the number of notes done on Initial, Reconciliation, and Intervention templates during 2022 According to its impact on medication, patient care or cooperation with healthcare providers.

KEYWORDS: pharmacy, traditional dispensing, clinical pharmacy, Hakeem system, intervention

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INTRODUCTION:

The pharmacy service has changed significantly during the past years to cope with rapid changes and increasing demand of a better health service [5, 7]. One of the newly emerged and rapidly growing areas of impacts for pharmacists in this new practice is limiting and preventing unsafe medicine usage which is a significant health concern that has a devastating impact on patient's treatment outcomes and medical expenses [3, 6, 10].

In recent years, the role of clinical pharmacist at the Jordanian Royal Medical Services (RMS) have evolved to be more patient oriented and focused toward patient specific therapeutic needs rather than the traditional job of pharmacist (medication dispensing and stock maintenance and follow up). A clinical pharmacy unit has been established to follow patient medications and ensure full medication documentation process to implement the new vision of RMS to provide the most appropriate use of the medications and minimizing medication related problems (MRPs) through the involvement of highly trained and experienced clinical pharmacist as a part of RMS healthcare teams in different wards throughout its hospitals and medical centers.

One example of such centers is the neurosurgery ward at King Hussein Medical Center (KHMC) where the work of the clinical pharmacist working

there included being involved with health team rounds and providing highly specified and technical medical information when it comes to medications use and precautions thereby assisting them in making the appropriate treatment decisions, examining patient progress notes and case records, assessing physicians orders and checking lab results and educating patients regarding their treatment options including their benefits and potential risks.

METHOD:

The Jordanian Royal Medical Services (RMS) uses Hakeem System (an electronic health recording system) in all its hospitals and medical centers including the neurosurgery ward at KHMC, the work of pharmacist working there is always documented on Hakeem System using three documentation templates: Initial, Reconciliation, Intervention notes. The data of all patients admitted during January 2022 until December 2022 to the neurosurgery ward at KHMC was recorded on Hakeem System and we collected it for the purpose of making this retrospective study to investigate the effect the ward clinical pharmacist had during this period.

In this study we analyzed the data to identify any medication interventions made and categorized them into seven categories each category with five sub-categories (table. 1)

TABLE 1: Medication Interventions

Adjustment	Initiation	Replacement	Discontinuation
1. Efficacy 2. Safety 3. Priority 4. Shortages 5. Cautions	1. Untreated 2. Efficacy 3. Replacement 4. Counteract 5. Psychological	1. Efficacy 2. Availability 3. Safety 4. Convenience 5. Economical	1. Unnecessary 2. Safety 3. Duration 4. Ineffective 5. Duplication
Monitoring	Education	Assessment	
1. Diagnostic 2. Safety 3. Efficacy 4. Prognosticating 5. Follow-Up	1. Efficacy 2. Safety 3. Non Compliance 4. Psychological 5. Caring	1. Risk 2. Candidacy 3. Adherence 4. Dependency 5. Workflow	

2134 patients were admitted in this 51 bed ward and 1474 intervention were made and recorded on Hakeem System from January 2022 until December 2022.

Using Microsoft Excel Spreadsheet Software a frequency test was used on the data to calculate the occurrence rates of the various previously mentioned

medication interventions and the results were presented in percentages form.

RESULTS:

2134 patients were admitted and 1474 recommendation were made and 1378 were accepted

by physicians resulting in approximately 69% recommendation rate and 93.5% acceptance rate. The total number of recommendations and there percentages are shown in (Table2, Figure1).

TABLE 2: Recommendations and Percentage

Category	Sub-Categories	Sum	Total / Category	Percentage
Adjustment	Efficacy	63	158	10.72%
	Safety	79		
	Priority	0		
	Shortages	1		
	Cautions	15		
Initiation	Untreated	126	258	17.50%
	Efficacy	59		
	Replacement	60		
	Counteract	4		
	Psychological	9		
Replacement	Efficacy	31	116	7.87%
	Availability	14		
	Safety	25		
	Convenience	15		
	Economical	31		
Discontinuation	Unnecessary	65	272	18.45%
	Safety	85		
	Duration	50		
	Ineffective	49		
	Duplication	23		
Lab Monitoring	Diagnostic	68	207	14.05%
	Safety	29		
	Efficacy	17		
	Prognosticating	26		
	Follow-Up	67		
Patient Education	Efficacy	47	232	15.74%
	Safety	101		
	Non-compliance	19		
	Psychological	8		
	Caring	57		
Assessment	Risk	48	231	15.67%
	Candidacy	3		
	Adherence	10		
	Dependency	1		
	Workflow	169		

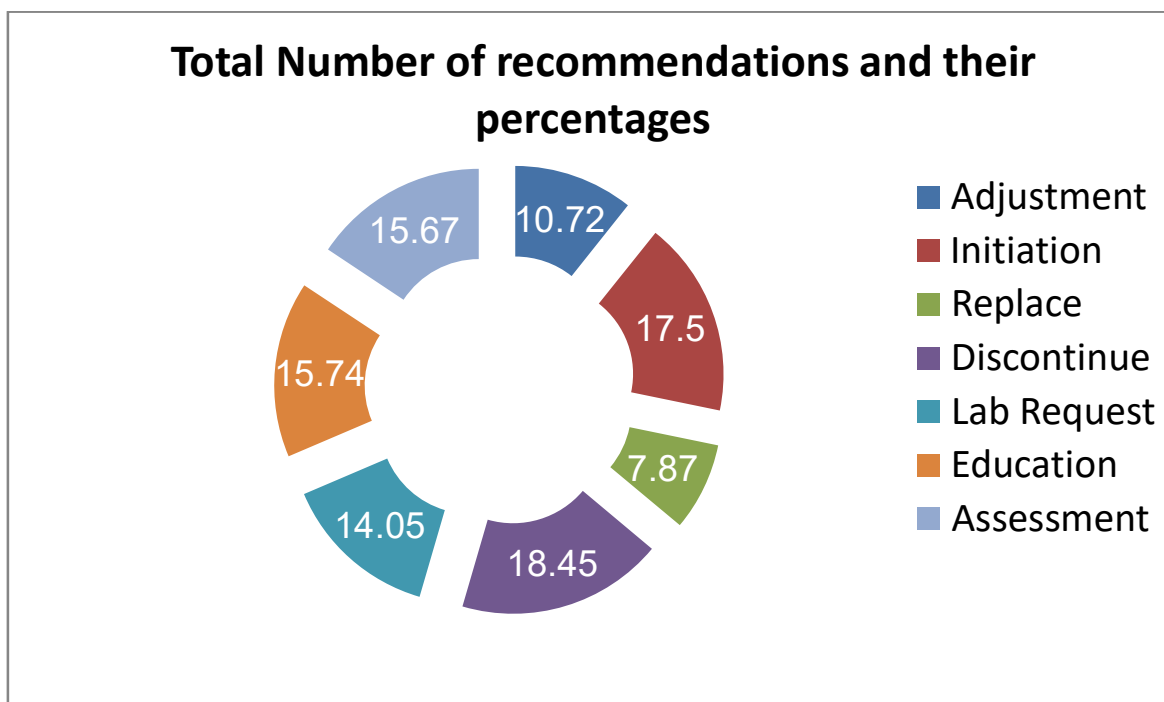


Fig.1: Recommendations and Percentage

Our Analysis showed that most of the recommendations made were relative to drug discontinuation (272 recommendation, 18.45%) and initiation (258 recommendations, 17.50%) with approximately 35.92% of the total recommendations recorded, which features the importance of clinical pharmacists existence as a part of the health team and the importance of his/her role in minimizing MRPs and other issues related to drug management^[1,8,9].

Other recommendations were also given related to many other issues including dosing scheduling, and medication-medication interactions, lab follow ups, risk assessment and patient's education. All of which, has led to a reduction of drugs adverse events (ADE) and the risk of re-hospitalization^[11, 12, 13].

DISCUSSION:

The majority of the observed MRPs were discontinuation related, especially sub-category (Safety) (31% of discontinuation MRPs and 5.8% of total MRPs) which highlights the importance of the clinical pharmacist as a part of the health team involved in managing patient medications by reducing the risks caused by improper treatment options^[8,9].

Another area of interest was initiation related MRPs especially sub-category (Untreated) (48.8% of Initiation MRPs and 8.55% of total MRPs) which highlights the importance of the clinical pharmacist in improving patient's condition, decrease their stay in the hospital period, and reduce care cost^[2,4,15].

Lab-tests, physical measures and unreported signs and symptoms indicating undertreated / untreated conditions were used to support recommendations concerning treatment.

Another important factor that must be taken into consideration is how other members of the health team accept the clinical pharmacist as a crucial part of their team (acceptance rate (AR)) and how they perceive her/his recommendation and how they value it in our study a 93.5% AR was observed however a lower AR may narrow any effects a clinical pharmacist may has as a part of the health team^[2,4].

CONCLUSION:

MRPs area serious problem which needs a great deal of attention and its highly common in neurosurgery ward patients especially those on poly-therapy regimens^[6, 8, 14]. The results of our study showed a positive effect of clinical pharmacist presence as a part of the health team.

Improved drug management (safety and efficacy), patient education and cost reduction all were observed due to the involvement of the clinical

pharmacist, contributing to better healthcare services [6,10,16].

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