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Prescription Errors and Pharmacist Intervention at Outpatient Pharmacy of Prince Zaid Bin Al Hussien Hospital (RMS), Jordan

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Abstract—
Background*: Prescribing errors are unsafe to the patients. The role of pharmacist in reducing possible harm from prescription errors have been highlighted by numerous studies. This study aimed to assess the drug related prescription error and pharmacist intervention at outpatient pharmacy of Prince Zaid bin al Hussein hospital.* ***Method****: A cross-sectional study will conduct in the outpatient Pharmacy from March 2019 to April 2019. The outpatient pharmacist will randomly select 1000 prescription and check for drug related prescription error using prescription error checklist. The pharmacist will discuss the prescription errors with Doctors. The prescriptions that will be corrected by Doctor will consider as pharmacist intervention. Descriptive statistics including Chi-square test will be used for statistical analysis using SPSS version 21.* ***Results****: Out of 1000 prescriptions 82 drug associated prescription errors were found. The commonest error was dose and dosing frequency error (40.3%), followed by repetition (30.5). The pharmacist intervention was successful in 81.7% of prescription.* ***Conclusion****: Prescription error usually happens in clinical situations and pharmacists can perform a vital role in decreasing such prescription errors. This study highlights the necessity of involvement to reduce prescription error. The inclusion of pharmacists, replacement of messy handwritten prescriptions by physician order entry and the application of drug supervision strategies are recommended to decrease drug related prescribing errors.*

Keywords— *Prescription error, Intervention, Pharmacist.*

I. INTRODUCTION

Prescription error could be a failure within the prescription writing method resulting in wrong instruction regarding identity of the recipient, the identity of the drug, the formulation, dose, route, timing, frequency, and duration of administration.[1] Studies have established the elevated missing of official or procedural requirements in educating hospital along with prescription errors such as repetition, incorrect strength, incorrect dosage form, incorrect route, and drug-drug interactions which results in several drug related problems such as over-dosage, under-dosage, drugs interactions, drug allergy, and non-compliance.[2-5] Prescribing errors may harmfully affect outcomes and sometimes unsafe to patients.[6,7] Pharmacist interventional studies not only found to improve the treatment effectiveness and adherence but also decrease the cost of treatment and the probable harm from serious prescription errors.[3,5,8]

in addition, merging of pharmacist as a health care team member in direct patient care have shown favorable effects transversely various patient outcomes, health care settings, and disease conditions. [9] Thus, the non-dispensing roles of pharmacist on patient outcomes and prescribing patterns have been increasingly highlighted. [10, 11] In spite of this, limited studies have been conducted about prescribing errors and usefulness of pharmacist's intervention. The current cross-sectional study was conducted to assess the drug associated prescription error and pharmacist intervention at outpatient pharmacy of prince Zaid bin Al Hussein hospital.

II. MATERIAL AND METHODS

The study was conducted in the outpatient Pharmacy of prince Zaid bin Al Hussein hospital from March 2019 to April 2019 after obtaining ethical approval from Royal Medical services Review Committee. The outpatient pharmacy dispenses around 400- 600 prescriptions per day. A total of 1000 prescriptions written by doctors were randomly collected and assessed by the outpatient pharmacists. The randomly chosen prescriptions were checked for dose and frequency error (dose error, frequency error and omission of dose), drug interaction, inappropriate drug and repetition using prescription error checklist. A copy of an established medication-prescribing errors detected by pharmacist was maintained in the outpatient pharmacy previous to discussion with doctors. The detected prescription error was discussed with the doctors and was confirmed as written, clarified, changed, or discontinued. The prescriptions that were corrected by the doctor were regarded as pharmacist intervention. Descriptive statistics including Chi-square test were performed for statistical analysis using SPSS version 21.

III. RESULTS

Out of 1000 prescriptions 82 drug associated prescription errors were found. The commonest error was dose and dosing frequency error (40.3%), followed by repetition (30.5), drug interaction (13.4%), dosage form related error (12.2%) and some degree of inappropriate drug (3.6%). Our result showed that approximately one third (31.7%) of prescription error occurred in antimicrobial drugs, 8.5 % in proton pump

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inhibitors, 26.8% in non-steroidal anti-inflammatory drugs & antipyretic-analgesics, 1.2 % in antidepressant drugs and 3.65 % error was found while prescribing vitamins and minerals. The pharmacist intervention was successful in 81.7% of prescription (Table 1).

TABLE 1. Prescriptions errors associated characteristics (N=82).

category		N (%)
Prescription error	Dose and dosing frequency	33 (40.3)
	Repetition	25(30.5)
	Drug interaction	11(13.4)
	Inappropriate drug	3(3.6)
	dosage form related error	10(12.2)
Drug category	Antibiotic drugs	26 (31.7)
	Non-steroidal analgesics and antipyretics	22(26.8)
	Antihistamines	9(10.9)
	Cough preparations	8(9.75)
	Antihypertensive drugs	1(1.2)
	Anti depressants	1(1.2)
	Ulcer protective drugs	3(3.65)
	Proton pump inhibitors	7(8.5)
	Muscle relaxant drugs	2(2.44)
	Vitamins and minerals	3(3.65)
Pharmacist intervention	Yes	67(81.7)
	No	15(18.3)

IV. DISCUSSION

At the present study, the prescription errors were 8.2 percent. Previous Studies have revealed prescription error ranging from 1.5 to 8.4 percent.2, 12, 13 so, the rate of prescription error may vary in different clinical setting and health care facility. Dose and dosing frequency error, repetition and dosage form related error were commonest prescription error in the study.

The dose and frequency error could lead to beneath dosing or overdosing leading to surprising outcomes.

Most of studies have also shown dose and frequency error as commonest error.3,4,12,13,14 Nevertheless, some studies informed that drug-drug interactions as the greatest commonly occurring type of error, followed by incorrect dosing interval and dosing errors.5,15 Consequently, the prevalence of type of prescription error may differ in dissimilar setting.

The duplication could increase the value of treatment however additional importantly adverse outcomes because of excess medical specialty impact.

The dosage form related error may or may not influence the quality of outcomes depending on nature of error. Study by Lesar suggest inappropriate use of medication dosage forms increase risk for adverse outcomes.16

Our study revealed antimicrobial drugs, proton pump inhibitors, nonsteroidal anti-inflammatory drugs and antipyretic-analgesics, and antidepressant drugs are most commonly prescribed with errors. Other studies done in different countries, have as well demonstrated antimicrobial agents as most commonly prescribed with errors.15,17,18. In contrast to present study, Al-Hajje et al. revealed antiulcer agents, NSAIDs, antibiotics and steroidal agents are furthermost commonly prescribed with errors.19

The pharmacist's suggestion was accepted in 90.3% of prescription in our study. Study conducted by Kuo et al. also revealed 89% of the recommendations by clinical pharmacist were accepted by the prescribers.18 Our study demonstrated a significant association between prescription errors and pharmacist intervention (p=0.019). This indicates that outpatient pharmacist performs a vital role in reducing prescribing error. The pharmacists were able to do an intervention on nearly all the cases of repetition and inappropriate drug. Study done by Meredith et al. also recommends enhancement in eliminating therapeutic repititon after pharmacist intervention.20 However, pharmacist failed to intervene some dose and frequency error and dosage form related error in the present study due unwillingness of prescriber to accept their error and do correction.

A study in Nepal done by poudel et al. (2015)22 suggests that stressful conditions, heavy workload, difficult working environment, insufficient communication within the team, and not being in good physical and psychological status of clinicians beside lack of skills and information of appropriate rules, tasks outside the routine, or taking care of another clinicians patient have also been associated with prescribing error .21 However, our study did not assess the features related to prescription errors.

V. CONCLUSION

Prescription error usually happens in clinical situations and pharmacists can perform a vital role in decreasing such prescription errors. This study highlights the necessity of involvement to reduce prescription error. The inclusion of pharmacists, replacement of messy handwritten prescriptions by physician order entry and the application of drug supervision strategies are recommended to decrease drug related prescribing errors.

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