AlQalam
Alq J Med App Sci
https://journal.utripoli.edu.ly/index.php/Alqalam/index eISSN 2707-7179

Original article

Assessment of Errors in Handwritten Prescriptions in Zliten City- Libya

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ARTICLE INFO

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Received*: 03-08-2024*
Accepted*: 01-11-2024*
Published*: 10-11-2024*

Keywords*. Medical Prescription, Medical Errors, Prescription Errors.*

ABSTRACT

Errors in handwritten prescriptions are a major factor in medical errors and are the main cause of harm to patients due to the lack of clarity of the prescription or the lack of correct data, which leads to the prescription of the wrong medication, causing adverse events. The present study aimed to identify the common errors in handwriting prescriptions in Zliten City. To collect information about errors in handwritten prescriptions, we used two models: first, we distributed fifty-one questionnaires to fifty-one pharmacies distributed in all areas of Zliten city, and second, we collected one hundred and fifty prescriptions from different health facilities distributed in different areas within Zliten city. The questionnaires and prescriptions then analysed to identify medical errors. In the first model of the questionnaire, the results are as follows: the patient's name and age are often present, while the gender, doctor's name, and stamp are often absent. The main issue lies in the clarity of the font for the drug's name, dose, and dosage form. In the second model of the prescriptions, the results are as follows: the patient's name is mostly present, while gender and diagnosis are absent in about 40% of the prescriptions, the doctor's name is mostly absent, and only 2% of the prescriptions have the doctor's stamp and number in the syndicate, and the main issue lies in the clarity of the font for the drug's name, dose, and dosage form., as it is unclear in between 20-30% of the prescriptions. We found that the patient's information is present in most prescriptions the opposite of the questionnaire in which it is less. Also in the prescriber's information, the analysis in our result for prescription contradicted the questionnaires, as most prescribers in the questionnaire are present, we also found that during the analysis of drug information in prescription not clear more than in the questionnaire. From this research, we concluded that there are many errors in prescriptions, possibly because of the large number of cases that need to be seen by the doctor and the speed of writing, and perhaps because doctors forget the vocabulary of the names of medicines. Because of the many errors in handwritten prescriptions, we must immediately switch to computerized prescription writing.

Cite this article. *Abdalla A, Heshad A, Aldeen Ehmedh N, Gratem M. Assessment of Errors in Handwritten Prescriptions in Zliten City- Libya. Alq J Med App Sci. 2024;7(4):1194-1202. https://doi.org/10.54361/ajmas.247441*

INTRODUCTION

A medical prescription is the written form order issued by a physician or other medical practitioner to a pharmacist to dispense drugs or other medical services to the patient [1-3]. The prescription is one of the most important therapeutic

transactions between physician and patient, it is defined as a health care program implemented by a physician in the form of instruction that governs the plan of care for an individual patient. On the other hand, the pharmacist is responsible for dispensing medicines, reviewing the prescription and detecting prescription errors [4,5]. Prescriptions are medico-legal documents which need to be written legibly, accurately and completely [6,7].

An official prescription consists of four parts, the first part is the symbol for a recipe that is found in the superscription, the second part is in the inscription species the ingredients and their quantities, the dosage form, dosage strength, and route of administration., the third part is named subscription in which is written the directions for compounding, and the fourth part is usually preceded by sign are written the direction to be given and written on the dispensed medicine including how to take and how many and how long is the therapy [8-10].

A prescription errors are unintentional mistakes in the prescription, dispensing, transcription, and administration of drugs. Prescription errors may be due to wrong patient, incorrect medication, inappropriate dose, wrong time, wrong route or rate of administration [10,11]. A handwritten prescription error is a failure in the prescription writing process that results in a wrong instruction about one or more prescription content. The normal features of a prescription could be patient data such as name, age, and medical insurance number. Other features could be drug data such as dose, and dosage form [12,13]. Prescription errors may be slips and lapses errors (action errors), where writing does not go according to plan such as writing 5mg of a drug but unintentionally writing 50mg, or Mistakes, where the plan itself is wrong e.g., writing the wrong concentration of a drug not knowing the true dose. Commoner mistakes including, no plan, No clarity in writing or Spelling mistakes, Illegible or Bad handwriting [9,14]. The present study aimed to identify the common errors in handwriting prescriptions in Zliten City and the ways by which these can be resolved to improve the quality of the use of medicine and healthcare facilities.

METHODS

Study area

This study was conducted in the Zliten City in the northwestern Libya.

Data collection

For collection of information about errors in handwritten prescriptions, we used two models, the questionnaire and prescription models. The first model questionnaire was designed for the study in Arabic language, it was presented to experts for verification and review, then distributed to fifty-one pharmacies distributed in all areas of Zliten city containing many relevant questions including information about medical prescriptions such as prescriber information, drug information and patient information.

In the second model, we collected one hundred and fifty prescriptions from different health facilities in different areas within Zliten city. Each prescription was carefully examined to identify the errors.

Data analysis

Microsoft Office Excel with descriptive statistics used for analyzing the collected data from questionnaires and prescriptions to identify medical errors.

RESULTS

After analysis of 51 questionnaires filled by 51 pharmacies and 150 prescriptions based on prescription writing parameters defined by the World Health Organization and British National Formulary BNF 2022, [15] we obtained the following results.

The presence of name, age and sex of the patient in the prescription

The patient's name is present in 8 questionnaires (15.68%), often present in 26 questionnaires (50.98%), often absent in 14 questionnaires (27.45%) and absent in 3 questionnaires (5.88%), while age is present in 15 questionnaires (29.41%), often present at 27 questionnaires (52.94%) often absent at 9 questionnaires (17.64%) and absent at 0 questionnaires (0%), in addition, patient sex is present in 20 questionnaires (39.21%), often present in 14 questionnaires (27.45%), often absent in 14 questionnaires (27.45%) and absent in 3 questionnaires (5.88%). Data illustrated in figure 1.

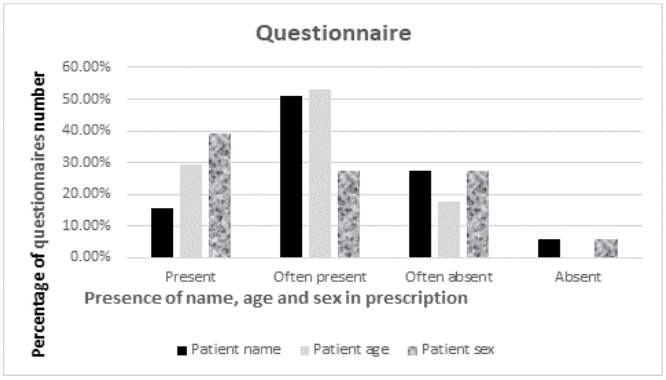

Figure 1. The presence of name, age and sex of the patient in the prescription

The presence of diagnosis, prescriber name and prescriber signature in the prescription

The diagnosis is present in 3 questionnaires (5.88%), often present in 23 questionnaires (45.10%), often absent in 11 questionnaires (21.50%) and absent in 14 questionnaires (27.45%), while the prescriber name is present at 3 questionnaires (5.88%), often present at 8 questionnaires (15.68%) often absent at 29 questionnaires (56.86%) and absent at 11 questionnaires (21.56%), in addition, prescriber signature is present in 15 questionnaires (29.41%), often present in 18 questionnaires (35.29%), often absent in 12 questionnaires (23.52%) and absent in 6 questionnaires (11.76%). Data illustrated in figure 2.

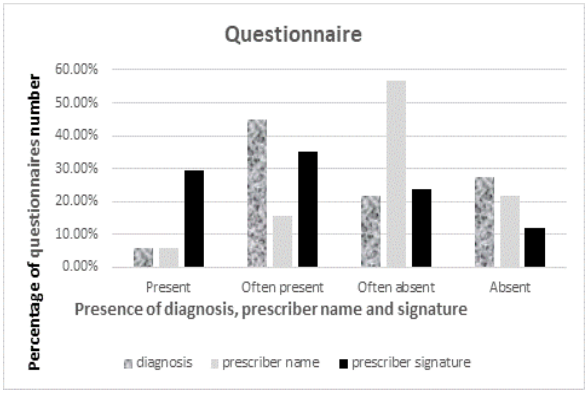

Figure 2. The presence of diagnosis, prescriber name and prescriber signature in the prescription

The presence of stamp, registration number of the prescriber and drug interaction in the prescription and date of prescription.

The Stamp and registration number of the prescriber are present and often present in 0 questionnaires (0%), often absent in 17 questionnaires (33.33%) and absent in 34 questionnaires (66.66%), but the drug interaction is present at 2 questionnaires (1.96%), often present at 8 (15.68%) often absent at 29 questionnaires (56.86%) and absent at 12 questionnaires (25.49%). In addition, the date is present at 11 questionnaires (21.5%), often present in 13 (25.49%) often absent in 18 questionnaires (35.29%) and absent in 9 questionnaires (17.6%). Data illustrated in figure 3.

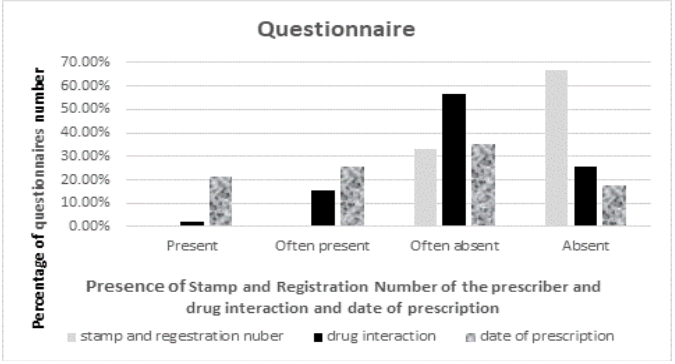

Figure 3. The presence of Stamp, registration number of the prescriber and drug interaction in the prescription and date of prescription.

Clarity of the font and drug name in the prescription

The font is clear in 2 questionnaires (1.96%), often clear in 22 questionnaires (43.13%), often not clear in 19 questionnaires (39.21%) and not clear in 8 questionnaires (15.68%), while the drug name is clear in 3 questionnaires (5.88%), often clear in 23 questionnaires (45.10%), often not clear in 11 questionnaires (21.50%) and not clear in 14 questionnaires (27.45%). Data illustrated in figure 4.

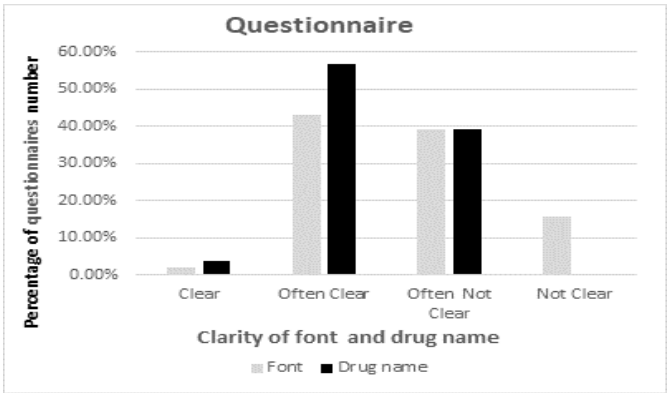

Figure 4. Clarity of the font and drug name in the prescription

Clarity of Drug Dose and dosage form in the prescription

The dose of the drug is clear in 19 questionnaires (37.25%), often clear in 29 questionnaires (56.85%), often not clear in 1 questionnaire (1.92%) and not clear in 2 questionnaires (3.92%), while the drug dosage form is clear in 18 questionnaires (35.29%), often clear in 29 questionnaires (56.85%), often not clear in 4 questionnaires (7.84%) and not clear in 0 (0%). Data illustrated in figure 5.

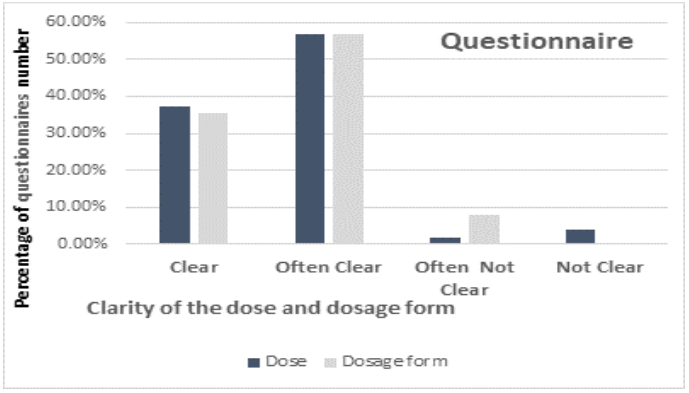

Figure 5. Clarity of drug dose and dosage form in the prescription

The presence of name, age and sex of the patient in the prescription.

The patient's name is present in 133 prescriptions (88.66%), absent in 12 prescriptions (8%), present but not clear in 5 prescriptions (3.33%), while age is present in 80 prescriptions (53.33%), absent in 70 prescriptions (46.66%), present but not clear in 0 prescriptions (0%), in addition, patient sex is present in 58 prescriptions (38.66%). absent in 92 prescriptions (61.33%), present but not clear in 0 prescriptions (0%). Data illustrated in figure 6.

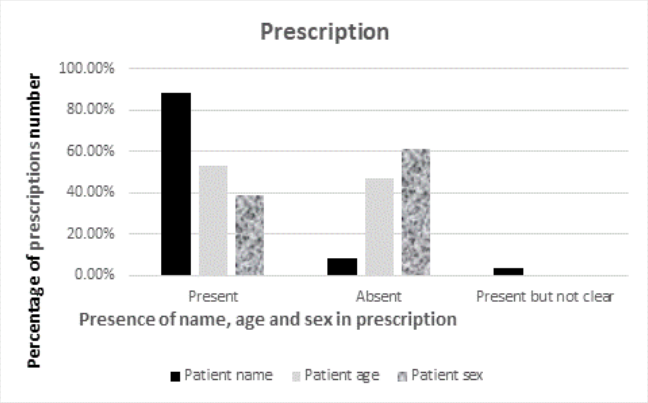

Figure 6. The presence of name, age and sex of the patient in the prescription

The presence of diagnosis, prescriber name and prescriber signature in the prescription.

The diagnosis is present in 8 prescriptions (5.33%), absent in 142 prescriptions (94.66%), while the prescriber's name is present in 25 prescriptions (16.66%), absent in 125 prescriptions (83.33%), in addition, the prescriber signature is present in 70 prescriptions (46.66%). absent in 80 prescriptions (53.33%). Data illustrated in figure 7.

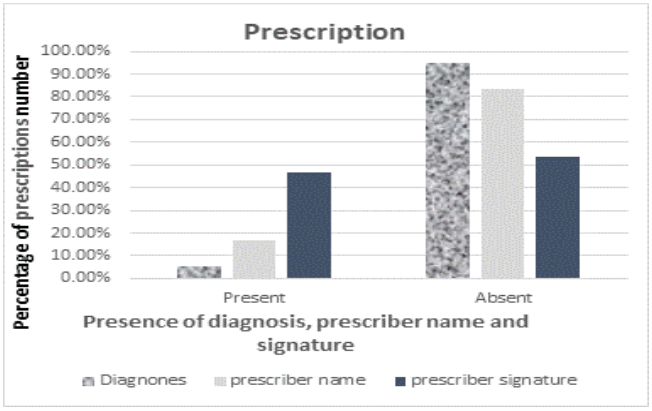

Figure 7. The presence of diagnosis, prescriber name and prescriber signature in the prescription

The presence of Stamp, registration number of the prescriber and drug interaction in the prescription and date of prescription

The stamp and registration number are present in 6 prescriptions (4%), absent in 144 prescriptions (96%), while the drug interaction is present in 3 prescriptions (2.5%). absent in 147 prescriptions (97.5%). On the other hand, the date is present in 123 prescriptions (82%). absent in 27 prescriptions (18%). Data is illustrated in figure 8.

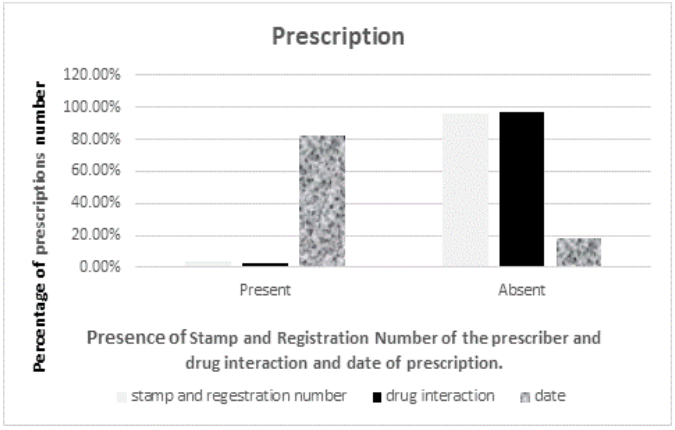

Figure 8. The presence of Stamp, registration number of the prescriber and drug interaction in the prescription and date of prescription

Clarity of the font and drug name in the prescription

The font is clear in 98 prescriptions (65.33%) and not clear in 52 prescriptions (34.66%), while the drug name is clear in 107 prescriptions (71.33%) and not clear in 43 prescriptions (28.66%). Data illustrated in figure 9.

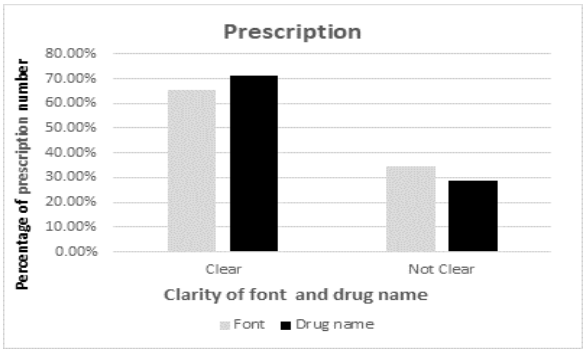

Figure 9. Clarity of font and drug name in the prescription

Clarity of dose and dosage form of drugs in the prescription

The dose of the drug is clear in 128 prescriptions (85.33%) and not clear in 22 prescriptions (14.66%), while the dosage form is clear in 102 prescriptions (68%) and not clear in 48 prescriptions (32%). Data illustrated in figure 10.

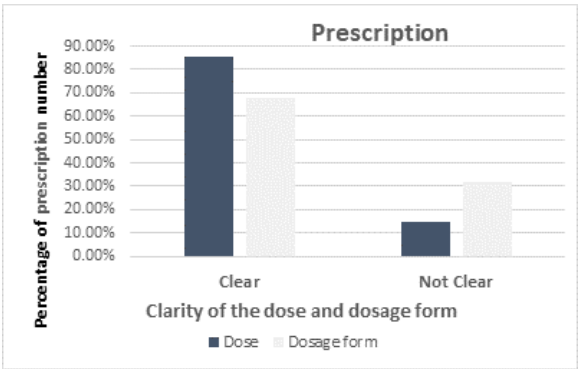

Figure 10. Clarity of dose and dosage form of drugs in the prescription.

DISCUSSION

A total number of 150 prescriptions and 51 questionnaires were analyzed based on prescription writing parameters defined by the World Health Organization and British National Formulary BNF 2022 [15]. In the first model of the questionnaire, the patient's name and age are often present, while the gender, doctor's name, date, and stamp are often absent. The main issue lies in the clarity of the font for the drug's name, dose, and dosage form. In the second model of the prescriptions, the patient's name is mostly present, while gender and diagnosis are absent in about 40% of the prescriptions, the doctor's name is mostly absent, and only 2% of the prescriptions have the doctor's stamp and number in the syndicate, and the main issue lies in the clarity of the font for the drug's name, dose, and dosage form., as it is unclear in between 20-30% of the prescriptions. We found that the patient's information is present in most prescriptions the opposite of the questionnaire in which it is less. Also in the prescriber's information, the analysis in our result for prescription contradicted the questionnaires, as most prescribers in the questionnaire are present, we also found that during the analysis of drug information in prescription not clear more than in the questionnaire.

Inappropriate use of drug resources and diminishes the quality of patient care, avoidance of prescription errors is important to improve health status. Complete patient information on the prescription is important as it helps the pharmacist review the order properly and contact the patient if needed. The patient's age and sex are the most important parameters for dose calculation; it helps the pharmacist review the prescribed dose if they are mentioned on the prescription [16]. In the present study patient names are present in 88% and absent in 9% while present but not clear in 3%, these results agree with Nadiya M et al 2012 [17] who found that the name of the patient was present in almost all the prescriptions and during assess of questionnaires, we obtain a different result, the patient name is present 16%, often present 51%, often absent 27% and absent 6%, this result disagrees with Nadiya M et al 2012 [17] who found

that name of the patient was present in almost all the prescription. Furthermore, our study revealed that only 53% of prescriptions possess the patient's age, while 47%. lacked patient age. Throughout the assessment of the questionnaire, we found age is present at 82% and absent at 18%, these results disagree with Raheela Saleem, et al 2013 [18] who found only 2.4% of prescriptions lacked the patient's age. There are some drugs which are only prescribed for one gender and contraindicated for others. Thus, mentioning the patient's gender on the prescription is important. Our data showed that on several prescriptions 61% failed to contain the patient's sex these results agree with Raheela Saleem, et al 2013 [18] who found that 70% failed to contain the patient's sex and through our assessment of the questionnaire we found 6% questionnaires no contain patient sex, these results disagree with the same study of Raheela Saleem, et al 2013 [18].

The date of prescription is a very important part of the knowledge of the starting of treatment and in case a patient suffers from an adverse reaction or the drugs. In the present study, the date was absent in 53% of the questioner model and 53% of the prescription model, these results were higher than the result of Ra'eda al- Madadha et al, [12] who found that the date error was 18.18%. In our study of prescriptions, we found the diagnosis is present in 5% and absent in 94.66% but in the assessment of the questionnaire, diagnosis is present in 51%, and absent in 49%. For any clarification in the prescription, prescriber information is necessary to help the dispensing pharmacist contact the prescriber. However, our results showed that a large number of prescriptions were missing to contain complete prescriber information. Doctor's name and signature were absent in 83% and 53% of prescriptions respectively this result agrees with Raheela Saleem, et al 2013 [18] who found that Prescriber's name was absent in 81.4% and disagreed about the signature who found signature was absent in 5.3% of prescription. Our results are in contrast to as reported by the questionnaire, we found that 22% and 12% of prescriptions lacked in doctor's name and signature respectively this result disagrees with Raheela Saleem et al., 2013 [18] who found that the Prescriber's name was absent in 81.4% and agree of signature who found signature was absent in 5.3% of prescription. Our findings demonstrated that the majority of prescriptions 94% not contain the seal and registration number of the prescriber. The study of the questionnaire revealed similar results; they identified that 67% of prescriptions were deficient in the prescriber's information on the seal and registration number, a similar result was obtained from Nadiya M et al., 2012 [17] who found that the seal and registration number of the prescriber is absent in 92.78% of prescription. The present study regarding drug information shows that 35%, 32% and 15% of the prescriptions contained the name, dosage form and dose of drugs respectively are not clear, these results agree with Nadiya M et al 2012 [17] found that dosage form is not clear in 23.11% of prescription and dose is omitted in 22.11% of prescription. On the other hand, the results obtained from the questionnaire recorded 0%, 3.92%,0% of the prescription information about the name, dosage form and dose of the drug respectively this result disagrees with Nadiya M et al 2012 [17].

The results of the present work are along the lines of Emira Bousoik et al, 2023 [19] who showed that most of the handwritten prescriptions in Eastern Libya had some deficiencies and did not adhere to the WHO guidelines. The errors in the prescriptions may be due to the large number of cases that need to be seen by the doctor and the speed of writing, and doctors may forget the vocabulary of the names of medicines, and the high number of drugs per prescription. The differences between the results obtained from prescriptions and questionnaires may be due to the few numbers of prescriptions collected and the period of collection. on the other hand, pharmacists filling the questionnaire see thousands number of prescriptions when compared with our study.

CONCLUSION

Our results show that handwritten prescriptions contain a very large number of errors ranging from minor to serious, possibly because of the overcrowding at the doctor's, the speed of writing, forgetting the vocabulary of the drug's name, and the high number of drugs per prescription. So, we must turn to computerized prescription writing to enable the prescriber to choose drug name, strength, dosage form, and dose from the database, in addition to the clarity of other prescription information.

Conflict of interest. Nil

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https://journal.utripoli.edu.ly/index.php/Alqalam/index eISSN 2707-7179

تقييم الأخطاء في الوصفات الطبية المكتوبة بخط اليد في مدينة زليتن- ليبيا

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المستخلص

تعد الأخطاء في الوصفات الطبية المكتوبة بخط اليد عاملاً رئيسيًا في الأخطاء الطبية وهي السبب الرئيسي في إلحاق الضرر بالمرضى بسبب عدم وضوح الوصفة الطبية أو عدم وجود بيانات صحيحة، مما يؤدي إلى وصف الدواء الخطأ، مما يتسبب في حدوث أحداث سلبية. هدفت الدراسة الحالية إلى تحديد الأخطاء الشائعة في الوصفات الطبية المكتوبة بخط اليد في مدينة زليتن. لجمع المعلومات حول الأخطاء في الوصفات الطبية المكتوبة بخط اليد، استخدمنا نموذجين: أولاً، قمنا بتوزيع واحد وخمسين استبيانًا على واحد وخمسين صيدلية موزعة في جميع مناطق مدينة زليتن، وثانيًا، قمنا بجمع مائة وخمسين وصفة طبية من مرافق صحية مختلفة موزعة في مناطق مختلفة داخل مدينة زليتن. ثم تم تحليل الاستبيانات والوصفات الطبية لتحديد الأخطاء الطبية. في النموذج الأول من الاستبيان كانت النتائج كالتالي: اسم المريض وعمره غالبا موجودين بينما الجنس واسم الطبيب والختم غالبا ما يكون غائبا، والمشكلة الرئيسية تكمن في وضوح الخط الخاص باسم الدواء والجرعة وشكل الجرعة، وفي النموذج الثاني من الوصفات الطبية كانت النتائج كالتالي: اسم المريض موجود في الغالب بينما الجنس والتشخيص غائبان في حوالي 40% من الوصفات الطبية، اسم الطبيب غائب في الغالب، و2% فقط من الوصفات الطبية تحمل ختم الطبيب ورقم النقابة، والمشكلة الرئيسية تكمن في وضوح الخط الخاص باسم الدواء والجرعة وشكل الجرعة، حيث أنه غير واضح في ما بين 20-30% من الوصفات الطبية، وجدنا أن معلومات المريض موجودة في معظم الوصفات الطبية على عكس الاستبيان الذي تكون فيه أقل. كذلك في معلومات الطبيب المعالج، تناقضت نتائج التحليل في نتيجتنا للوصفات الطبية مع الاستبيانات، حيث أن أغلب الأطباء المعالجين في الاستبيانات حاضرون، كما وجدنا أنه أثناء تحليل معلومات الأدوية في الوصفات الطبية لم تكن واضحة أكثر من الاستبيان. ومن هذا البحث استنتجنا أن هناك أخطاء كثيرة في الوصفات الطبية، ربما بسبب كثرة الحالات التي تحتاج إلى مراجعة الطبيب وسرعة الكتابة، وربما لأن الأطباء ينسون مفردات أسماء الأدوية. وبسبب كثرة الأخطاء في الوصفات الطبية المكتوبة بخط اليد، يجب أن ننتقل فورًا إلى كتابة الوصفات الطبية بالكمبيوتر.

الكلمات المفتاحية. الوصفة الطبية، الأخطاء الطبية، أخطاء الوصفات الطبية.