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The Knowledge and Attitude of Physicians working at the Benghazi Medical Center toward Electronic Prescribing Systems

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الملخص:

في الوقت الحاضر، توفر أنظمة الوصفات الطبية الإلكترونية حلولًا للأطباء لوصف الأدوية لمرضاهم إلكترونيا. العديد من دول منطقة الشرق الأوسط قد تبنت هذه الحلول، لكن السلطات الصحية في ليبيا لم تتبنّهَا بعد. لذلك، هدفت هذه الدراسة إلى التحقق من معرفة وموقف (معرفة مدى تقبل) الأطباء العاملين في مركز بنغازي الطبي (BMC) تجاه أنظمة الوصفات الإلكترونية واستكشاف مدى توافر التسهيلات المطلوبة لتطبيق نظام الوصفات الإلكترونية في مركز بنغازي الطبي. قد أُجْرِيَ مسح مقطعي للأطباء في مركز بنغازي الطبي على مدى شهر واحد في يناير 2018. جُمِعَتْ إجابات المسح وتحليل البيانات من جميع المستجيبين بواسطة SPSS 25.0 و Microsoft Excel 2010. أُجيب عن هذا الاستبيان من قبل 105-أطباء وجراحين وجراحاً من مختلف الأقسام بمركز بنغازي الطبي. حوالي 48٪ من المستجيبين ليس لديهم أجهزة كمبيوتر في أماكن عملهم، بينما 39% لديهم جهاز كمبيوتر، و11.4% يستخدمون أجهزة الكمبيوتر المحمولة الخاصة بهم. معظم الأطباء المستجيبين يستخدم أجهزة الكمبيوتر الخاصة بهم لتنفيذ مهام مختلفة من عملهم، مثل كتابة معلومات المريض ومراجعة معلومات الأدوية وكتابة التقارير الطبية. ما يقرب من 27% من المستجيبين لديهم اتصال بالإنترنت في أماكن عملهم، في حين أن حوالي 64% ليس لديهم أي اتصال بالأنترنت في مكاتبهم. باستخدام الإنترنت، بحث المستجيبون عن معلومات مختلفة حول الأدوية التي وصفوها، على سبيل المثال كانت التفاعلات الدوائية، والجرعات، والحساسية للأدوية، وموانع الاستعمال من أهم المعلومات التي يُبْحَثُ عنها. ومع ذلك، فإن غالبية المستجيبين لم يسمعوا قط عن أنظمة الوصفات الإلكترونية (63%)، لكن مع ذلك معظمهم كانوا على استعداد لاستخدامها في وصف الأدوية(82.9%) هذه دراسة أولية لاستطلاع مدى جاهزية مستشفى رعاية من الدرجة الثالثة في ليبيا لتُجَهَّزَ بنظام وصفات إلكترونية. كما رأينا، يظهر نقص الاحتياجات الأساسية، مثل أجهزة الكمبيوتر والإنترنت، لمثل هذه الأنظمة في منشآتنا الوطنية الليبية، لكن يظهر أيضًا جليا مدى رغبة الأطباء الليبيين في استخدام هذه الأنظمة. أخيرًا، يجب على السلطات الصحية الليبية دفع تنفيذ هذه الحلول الإلكترونية في المستشفى جزءاً من خطة إصلاح الصحة الوطنية.

الكلمات المفتاحية: أنظمة الوصفات الطبية الإلكترونية، معرفة مدى تقبل الأطباء، مركز بنغازي الطبي، تحليل البيانات.

Abstract

Background: Nowadays, Electronic Prescribing Systems (EPS) provide computer-based solutions for physicians to prescribe medicines to their patients. Many countries in the Middle East region have adopted these solutions, but health authorities in Libya have not yet adopted them. Aim: This study aimed to investigate the knowledge and attitude of physicians working at the Benghazi Medical Centre (BMC) towards EPS and the availability of facilities required for applying such an EPS in the BMC.

Methods: A cross-sectional survey of physicians in the BMC was conducted over one month in January 2018. The survey responses were collected and the data from all the respondents were analyzed by "SPSS" 25.0. and Microsoft Excel 2010.

Results: This questionnaire was answered by 105 physicians and surgeons from different departments at the BMC. About 48% of the respondents had no computers at their workplace, while 39% had one, and 11.4% used their own laptops. Most of the responding physicians use their computers to execute different tasks of their work, like writing patient information, reviewing drug information and writing medical reports. Approximately 27% of the respondents had internet access at their workplace, while about 64% did not. Using the internet, the respondents looked up different information about medications they prescribed; drug interactions, dosing, drug allergies, and contraindications were the most significant information sought. However, while the majority of the respondents had never heard about EPS (63%), most of them were willing to use it for prescribing medications (82.9%).

Conclusion: This is a preliminary study that perceives the readiness of a tertiary care hospital in Libya to be implemented via an electronic prescribing system. As seen, it shows the lack of basic needs, i.e., computers and internet access, for such systems in our Libyan national facilities, but it clearly shows the eagerness of Libyan physicians to use these systems. Finally, Libyan health authorities should push forward the implementation of these electronic solutions in hospitals as a part of a national health reform plan.

Keywords: electronic prescribing systems, benghazi medical centre, attitude of physicians, analysis.

1. INTRODUCTION

Over the years, hand-written prescriptions have been the preferred method of communication for physicians in therapeutic decisions related to medication and for pharmacists to distribute medications. [1] Nowadays, electronic prescriptions are considered an interesting issue among other electronic health solutions to process health-related data. [1] [2]

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Electronic prescribing (E-prescribing) systems can provide computer-based support for the creation, transmission, dispensing, and monitoring of pharmacological therapies. [3] E-prescription solutions capture and circulate prescription information between prescribers, pharmacies, and insurers that handle related payments, accelerating flows and eliminating legibility issues (frequently faced when using handwritten prescriptions). Such solutions can support aims for cost containment, enhancement of patient safety, control over doctors' prescription patterns, and process quality assurance. [4]

Implementing E-prescribing systems can overcome many problems of the paper-based prescribing process and result in many benefits, including cost saving, reducing prescription errors, increasing prescription legibility, improving medication therapy outcomes, reducing redundant paperwork as well as electronically accessing updated pharmacopeia information and patient medication history. [5] [6] [7] [8] [9] Such systems assure patient safety by reducing the time gap between the point of care (e.g., physician's clinic, hospital) and point of service (e.g., pharmacy), leading to a reduction in medication errors, and an improvement in the quality of care. [10] Patient safety is assured using these systems, because e-prescribing reduces adverse drug reactions (ADRs) by allowing patient allergies, past unpleasant experiences with certain drugs, and drug-drug interactions to potentially be identified, also pending pharmacist intervention. [11] E-prescribing also may catch dosage errors, especially regarding the differences between paediatric formulations and adult dosage levels. [12]

E-prescribing systems often form part of a larger electronic medical record (EMR) system, allowing physicians access to a broad range of patient information, including medical histories and details of diagnoses and treatment, besides prescription information. [13]

Health authorities around the world support the adoption of electronic prescription systems and reports of successful implementations are primarily from the inpatient setting; less frequently the ambulatory setting. [14] In the last years, many countries in the Middle East region have adopted these solutions successfully. [15][16] Health authorities in Libya have not yet adopted these solutions, but hopefully will in the next years.

For this, it would be useful to foresee the perceptions of physicians about these electronic solutions. Therefore, this study aimed to investigate the knowledge and attitude of physicians working at the Benghazi Medical Centre (BMC) towards EPS and the availability of facilities required for applying such an electronic prescribing system in BMC. Also, to compare the knowledge of physicians who had more than 10 years of experience versus less experienced physicians.

2. METHODS:

First, a draft of the questionnaire was piloted on 10 practicing physicians to check for readability, understanding, question design, and the length of the survey. Based on the result of this pilot test, the questionnaire was modified and the final version was distributed to participants and a cross-sectional survey of physicians in the Benghazi Medical Centre (BMC) was conducted over one month in January 2018.

The physicians were interviewed and asked to fill out the questionnaire form. It comprised of a series of 12 questions most of which were of the closed multiple-choice type. The first four questions were about the demographics of the physicians, including age, gender, position, and experience. The fifth to twelfth questions were about the availability of computers at their working office, the work they use their computers for, whether they have internet access at their working office, the information that usually they look for during prescribing that they would like to look for electronically, e.g., drug interactions, drug dose, drug-allergy, contraindications. The last two questions were about electronic drug prescribing systems and whether they would like to have the chance of writing prescriptions electronically.

The survey responses were collected and the data from all the respondents were analysed by "SPSS" 25.0. Descriptive statistics including percentages and frequency distribution were calculated for each of the variables. Later the graphs were illustrated using Microsoft Excel 2010. Additionally, a chi-square test was conducted to find if there is a relationship between the length of experience and the knowledge of the physicians about EPS. As the participants were grouped into 2 groups (experience >10 years and < 10 years), the chi-square test was done using the online website: Calculator.net. [17]

3. RESULTS:

This questionnaire was answered by 105 physicians and surgeons from different departments at the Benghazi Medical Centre, including medicine and surgery. The demographic data of the responding physicians revealed that the majority (53.3%) of the respondents were from the age group of 25–35 years, while approximately 9% were from the oldest age groups (50 years and more). The mean age of the participating physicians was 36.5 ±1.607. About 63% of the respondents were females, while 37% were males. About 50% of the respondents had work experience of fewer than 5 years, and about 18% had an experience of work of over 15 years. Almost 45% of the respondents worked as senior house officers (SHO), while almost 28% were consultants. A summary of the demographic data of the responding physicians is shown in Table 1.

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Table 1. Demographics of responding physicians.

Category		Frequency	Percentage (%)
	25-35 yrs.	56	53.3
	36-45 yrs.	28	26.7
Age group	46-50 yrs.	12	11.4
	Over 50 yrs.	9	8.6
Gender			
	Male	39	37.1
	Female	66	62.9
Current Position			
	Consultant	29	27.6
	Specialist	11	10.5
	Registrar	18	17.1
	SHO*	47	44.8
Work Experience			
	0-5 yrs.	52	49.5
	6-10 yrs.	21	20.0
	11-15yrs	13	12.4
	Over 15 yrs.	19	18.1

***SHO Senior Health Officer**

About 48% of the respondents had no computers at their workplace, while 39% had one, and 11.4% used their own laptops (Figure 1).

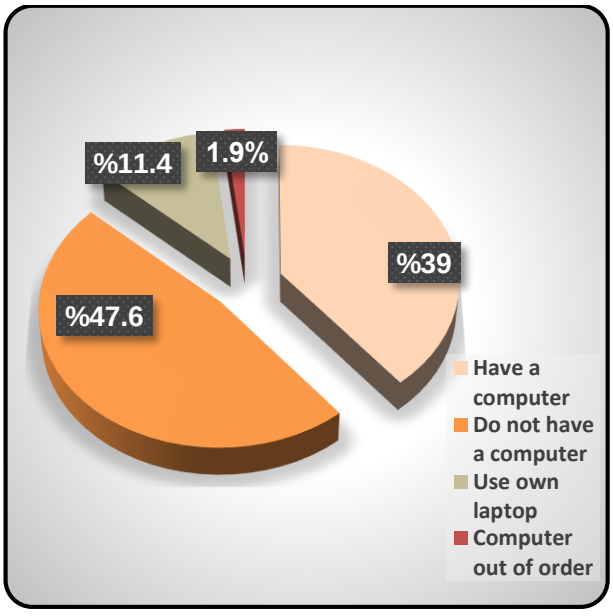

Figure 1. The distribution of responding doctors according to the availability of computers at their workplace.

Most of the responding doctors use their computers to execute different tasks of their work, such as writing patient information, reviewing drug information and writing medical reports (Figure 2).

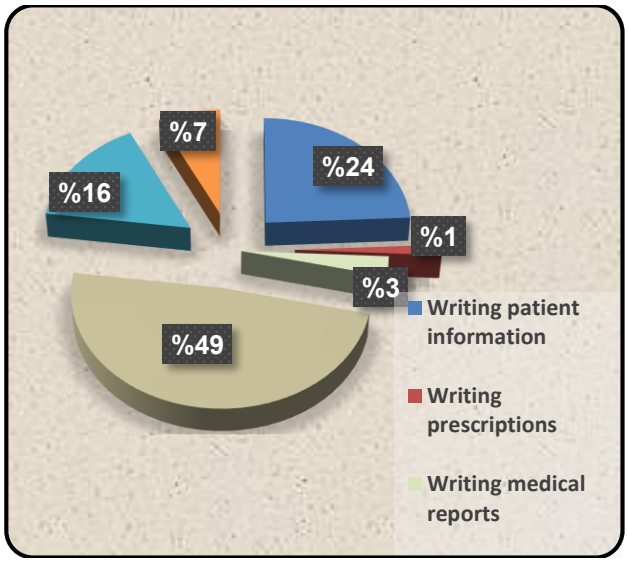

Figure 2. The work that the responding doctors accomplish using their computers.

Approximately 27% of the respondents had internet access at their workplace, while about 64% did not (Figure 3).

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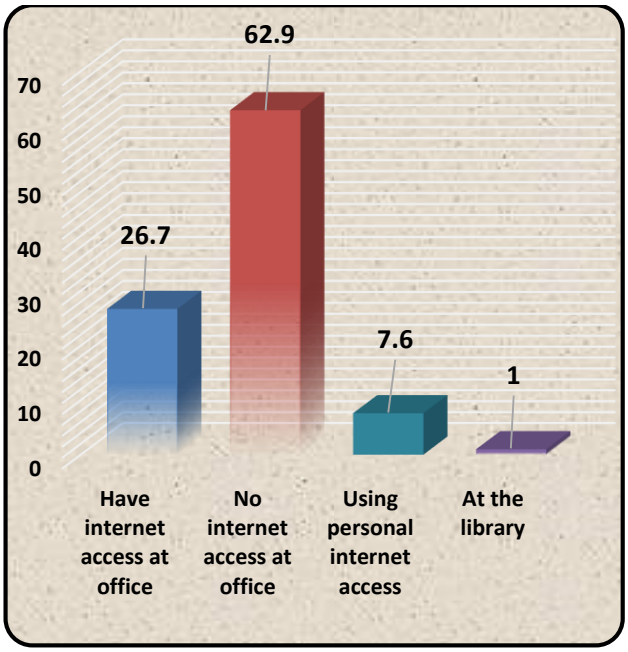

Figure 3. Distribution of doctors according to the availability of internet access at their workplace.

Using the internet, the respondents looked up different information about medications they prescribed e.g., drug interactions, dosing, drug allergies, and contraindications were the most important information (Figure 4).

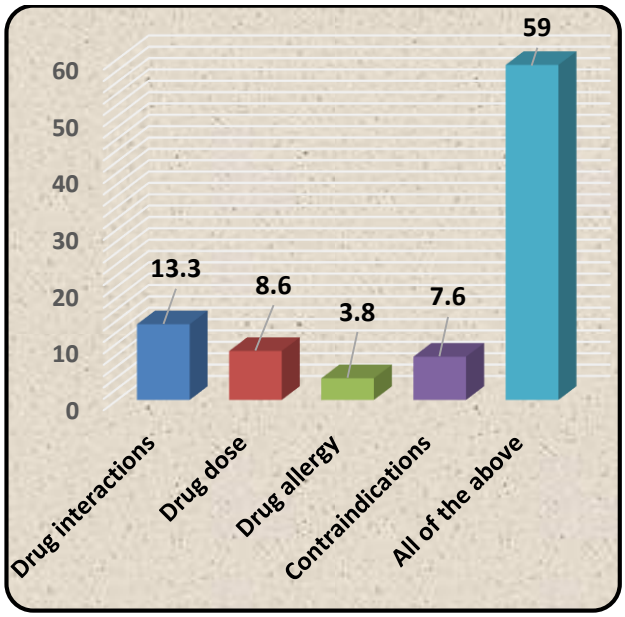

Figure 4. The type of information that the responding doctors look up on the internet.

However, the majority of the respondents had never heard about EPS (63%), but most of them were willing to use it for prescribing medications (82.9%). See Figures 5 & 6.

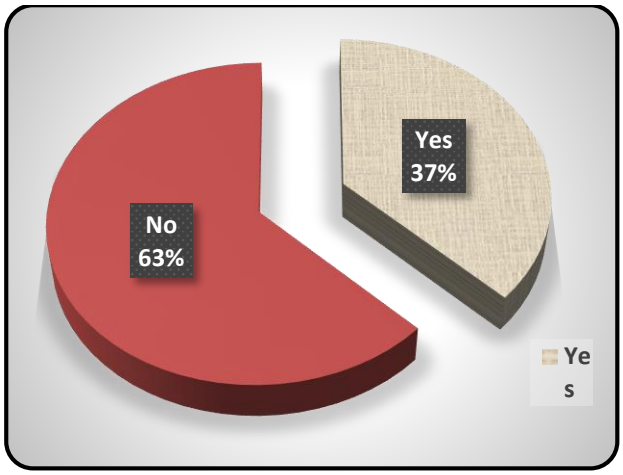

Figure 5. The respondents' knowledge about the electronic prescribing system

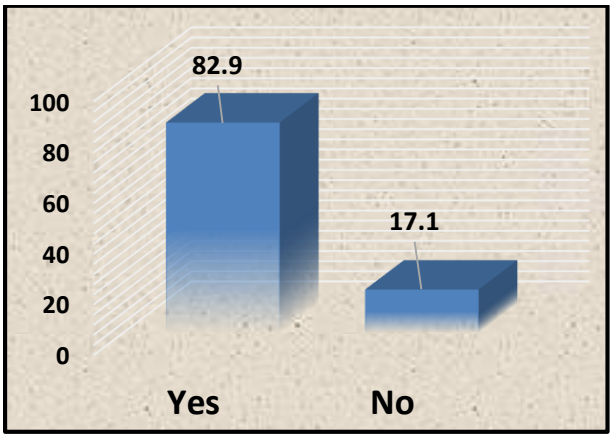

Figure 6. The distribution of the percentage of respondents who would like to use an electronic prescribing system.

The chi-square test of independence showed that there was no significant association between the knowledge of the physicians about EPS and the length of years of work experience, X2 (2, N = 105) = 3.047, p = .245.

4. DISCUSSION

Electronic prescribing systems (EPS) are a new trend in modern health technologies, especially in developing countries like Libya. These systems have specific requirements to be equipped in healthcare facilities. Therefore, we aimed in this to study the availability of such equipment, i.e., computers and internet access, and the preparedness of physicians at BMC to be provided with an electronic prescribing system.

For healthcare facilities to be installed and fully implemented with an EPS they should be fully equipped with computers. [18] Unfortunately, this was not the case at the BMC, where almost half of the physicians had no

computers at their desktops, and about 11% of the physicians used their own laptops for documentation work.

The majority of the physicians used their computers for looking up drug information. Meanwhile, approximately 19% of the physicians used computers for documenting patient information and writing medical reports. Though this could be a good sign that it is time for introducing an electronic medical record system at the BMC, it also shows how critical the readiness of medication information at the time of writing prescriptions for doctors is.

The internet is the major source of information all over the globe, and physicians in particular use internet resources for patient care. [19] At the BMC, the majority (63%) of the physicians had no internet access and only 27% had internet access and usually used their own mobile access.

Relevant and easily accessible drug information at point-of-care is essential for physicians' decision-making when prescribing. [20] This was the case at the BMC too, where all kinds of drug information, i.e., drug interaction, drug doses, drug allergies and contraindications, was a significant need for BMC physicians. This emphasizes the urgent need for implementing an EPS. The respondents' answers to the question, "Would you like to use an electronic prescribing system for writing prescriptions?" also confirmed this. Additionally, it shows the positive attitude of the physicians towards EPS, where the majority (82.9%) answered "Yes" though many (62.9%) had never heard about it before.

Similar results were found even in developed countries, e.g., the United States, as they began implementing such systems. This is seen in the results of the study by Devine et. al., where the physicians had positive attitudes that facilitated the adoption of these systems. [14]

Analyzing the relationship between the years of experience (more than 10 years) and the knowledge of physicians about EPS, showed no significant relationship. This can be due to the small sample size of the study.

5. CONCLUSION:

This is a preliminary study that assesses the readiness of a tertiary care hospital in Libya to be implemented with an electronic prescribing system. First, it shows the lack of basic needs, i.e., computers and internet, for such systems in our national facilities, but furthermore it obviously shows the eagerness of Libyan physicians to use these systems.

Finally, the Libyan health authorities should push forward the implementation of these electronic solutions in hospitals as a part of a national health reform plan.

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