scientific reports

Check for updates

OPEN

Perception of health professionals towards electronic prescription in a teaching hospital

Abyou Seyfu Ambaye[1]✉, Mekuanint Terefe Kassa[2], Yenesew Wudu Ejigu[3], Girma Teketelew Tadesse[4], Ebrahim Abdela Siraj[5] & Bedilu Linger Endalifer[1]

For many years, physicians have primarily relied on handwritten prescriptions to convey medication therapy decisions to pharmacists. However, in the past decade, electronic prescribing has emerged as the latest technological advancement, gradually replacing traditional paper prescriptions. There is evidence that design and technical issues, interoperability, data relevance, user attitudes toward e-prescribing, productivity, and available resources are key factors influencing the implementation of e-prescribing for users. A cross-sectional study design was employed to recruit 423 study participants among health care professionals of Mizan-Tepi University Teaching Hospital. descriptive statistics was used to report frequencies and percentages. Binary logistic regression was employed to determine determinant factors for perceived useful ness towards electronic prescription. The study surveyed 423 individuals, with 364 completing the questionnaire (86.05% response rate). Of these, 275 (75.55%) were male, and 132 (36.26%) were aged 36–45, showing a mostly middle-aged, male workforce. A total of 283 (77.75%) felt comfortable using computers, and 247 (67.86%) used them for personal activities, indicating strong digital engagement. Significant factors linked to positive perceptions included general practitioners being 2.21 times more likely to have favorable views (AOR = 2.21; 95% CI: 1.05–3.16; $p = 0.002$) and those with 16–20 years of experience 1.42 times more likely (AOR = 1.42; 95% CI: 1.19–2.88; $p = 0.001$). Participants handling fewer than 10 prescriptions daily were 68% less likely to have positive perceptions (AOR = 0.32; 95% CI: 0.21–0.49; $p = 0.001$), indicating lower motivation among those with lighter workloads. This study demonstrates that HCPs generally perceive e-prescriptions as highly useful, particularly for saving time and reducing errors. Notably, general practitioners and those with higher prescription volumes exhibit a stronger positive perception, likely due to their daily workflow.

Keywords E-prescription, Health care professionals, Perception, Mizan-Aman, Ethiopia

Background

For many years, physicians have primarily relied on handwritten prescriptions to convey medication therapy decisions to pharmacists. However, in the past decade, electronic prescribing (e-prescribing) has emerged as the latest technological advancement, gradually replacing traditional paper prescriptions[1]. There is evidence that design and technical issues, interoperability, data relevance, user attitudes toward e-prescribing, productivity, and available resources are key factors influencing the implementation of e-prescribing for users[2]. New health information systems can pose initial challenges for healthcare providers and other stakeholders. Among the difficulties linked to e-prescribing systems are communication breakdowns between prescribers and pharmacists, as well as prescriptions being sent to incorrect recipients[3]. The transformation of healthcare through digital technologies has established the use of electronic prescriptions, a fundamental instrument for the purpose of strengthening patient safety and refining the administration of medications. By converting the traditional prescription process into a digital format, e-prescriptions create a method to lessen the occurrence of medication

[1]School of Pharmacy, Asrat Woldeyes Health Science Campus, Debre Berhan University, Debre Berhan, Ethiopia. [2]School of Medicine, Asrat Woldeyes Health Science Campus, Debre Berhan University, Debre Berhan, Ethiopia. [3]Department of Pharmacy, College of Medicine and Health Sciences Tertiary Care Campus, Wollo University, Dessie, Ethiopia. [4]Department of Pharmacy, College of Medicine and Health Sciences, Mizan-Tepi University, Mizan-Aman, Ethiopia. [5]Department of Pharmacy, College of Medicine and Health Sciences, Bahir Dar University, Bahir Dar, Ethiopia. ✉email: aseyfu7@gmail.com

errors. This reduction in errors is achieved through the implementation of immediate, real-time evaluations of potential drug interactions, and by the utilization of standardized repositories of drug information, which in turn leads to the improvement of health results for patients[4,5]. The functionality of an electronic prescribing system allows for the digital transmission of medication prescriptions. This system can operate independently as a separate entity, or alternatively, it possesses the capability to be incorporated into a broader Electronic Health Record framework[1].

Traditionally, the standard practice involved physicians documenting prescriptions by hand or generating printed versions, which were then physically signed and given to patients. These paper-based prescriptions were then taken by patients to pharmacies for the medications to be dispensed. Nevertheless, this conventional approach is subject to certain disadvantages, notably the potential for mistakes caused by illegible handwriting from the prescribers, and the vulnerabilities related to the physical security of these documents, such as the risk of them being misplaced or fraudulently replicated[6]. Over many years, the practice of writing prescriptions by hand has been the customary and favored way for medical prescribers to communicate their determinations regarding a patient's medication treatment[7]. Nevertheless, research studies have demonstrated that the e-prescription system provides a higher level of suitability concerning patient safety when compared to the conventional method of using paper-based prescriptions[8].

While the e-Prescription system holds a position of essentiality within the healthcare sector, developing countries continue to exhibit a low rate of its adoption and utilization[9]. To a considerable extent, perceived usefulness and ease of use determine whether individuals will adopt a technological system[10]. Factors contributing to low adoption rates of electronic systems include user resistance, the reluctance to transition from paper-based methods, the technical competency of frontline users, the perceived ease of use of the electronic system, deficient organizational readiness, and concerns regarding security and confidentiality[11–15]. Because successful adoption of an electronic prescription system, or any electronic health information system, constitutes a change process, numerous behavioral modifications within the work environment are necessary[16].

Although all involved parties' perceptions are considered potentially crucial for the successful implementation of e-prescribing, research reports in Ethiopia that incorporate the perspectives of healthcare professionals (HCPs) beyond physicians are limited. However, a solitary study conducted at the University of Gondar did reveal that HCPs' perceptions vary according to their qualifications[17]. To identify potential causes of innovation failure, perception assessment serves as a comprehensive measure, providing a clear understanding of current circumstances and the readiness of healthcare organizations to adapt[18]. Furthermore, the question of perceptual variations among different HCPs remains largely unaddressed in existing reports. Consequently, this study intends to evaluate the perceptions of HCPs regarding e-prescribing and its related factors at Mizan Tepi University Teaching Hospital (MTUTH), Southwest Ethiopia.

Methods

Study design and setting

A cross-sectional study, conducted over a one-month period from September 15th to October 15th, 2024, was undertaken at MTUTH. The hospital, situated in Mizan Aman town within the Bench Sheko Zone of the Southwest Ethiopia Peoples Region, serves as a dual-purpose institution, providing both academic instruction and clinical services under the auspices of Mizan-Tepi University. Located 582 km from Addis Ababa, the capital of Ethiopia, MTUTH functions as one of the key regional healthcare and educational hubs.

Sampling and sample size

The sample size was determined using single population proportion formula taking 50% at 95% confidence level assuming a 5% margin of error.

$$\mathrm{n} = \frac{\left(\mathrm{Z}_{\alpha/2}\right)^2 \mathrm{P}(1-\mathrm{P})}{\mathrm{d}^2} \quad n = \frac{(1.96)^2 0.5(1-0.5)}{(0.05)^2} \quad \mathrm{n} = 384$$

Where;

- n = Estimated sample size.
- P = Single population proportion (50%).
- $Z_{\alpha/2}$ = Value of standard normal distribution (Z-statistic) at the 95% confidence level (α = 0.05) which is 1.96,
- d = Margin of error 5% (0.05).

By adding 10% non - response rate 10% = 38.4, $n = 423$. Each participant was then selected using a stratified simple random sampling technique. The participants were stratified based on their profession.

The stratification was done as follows (Fig. 1).

Population and eligibility criteria

HCPs working in the MTUTH were the source population, whereas HCPs who were working in the hospital during the study period, were selected as the study population. HCPs involved in the prescribing process in the study period were included. Individuals working for less than 6 months and those who are working with short term contractual agreement were excluded from the study.

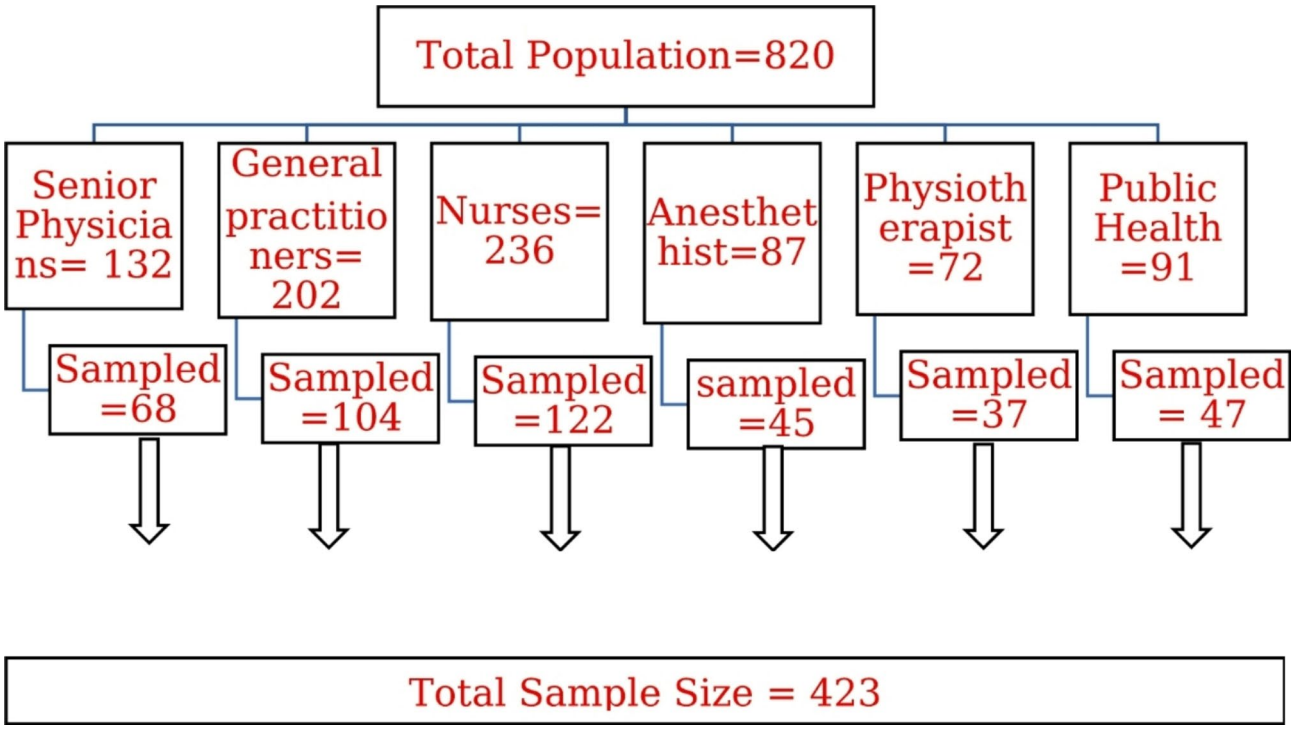

Fig. 1. Diagrammatic representation of sampling stratification.

Study variables

The dependent variable was the perception of HCPs towards the usefulness of e-prescription. The independent variables were sociodemographic variables like and sex, profession, working experience, internet access, technical skills and institutional factors.

Data collection instrument, and procedure

Data were collected using a structured, self-administered questionnaire developed based on an extensive review of the literature and tailored to the local context[13,19,20]. The questionnaire encompassed several key domains, including sociodemographic characteristics (such as age, sex, marital status, professional qualification, work experience, and daily prescription volume), computer usage status, and current prescription practices. It further assessed healthcare professionals' perceptions regarding the usefulness of electronic prescription systems and the readiness of their organization to implement such systems. Perceptions were measured using a 5-point Likert scale, capturing levels of agreement or disagreement on statements related to cost reduction, error minimization, time efficiency, safety, and system alerts. Additionally, the tool explored factors influencing these perceptions, including individual, professional, and organizational attributes, which were later analyzed statistically. The questionnaire was administered face-to-face, with participants completing it independently under the supervision of trained data collectors who provided clarifications as needed. This approach ensured data completeness and accuracy while maintaining respondent confidentiality.

Data processing and analysis

Data were entered and analyzed using the Statistical Package for Social Sciences (SPSS) version 23. Descriptive statistics, including frequencies and percentages, were summarized and presented in tables. Univariate analyses were initially conducted to identify variables associated with perception toward e-prescription. Variables with a p-value ≤ 0.25 in the univariate analysis were then included in a multivariable logistic regression model to assess their independent effects. Adjusted odds ratios (AORs) with corresponding 95% confidence intervals (CIs) were calculated to measure associations, and statistical significance was set at a p-value less than 0.05.

Perceptions of electronic prescribing were assessed using six statements, each rated on a 5-point Likert scale where 1 indicated "Strongly Disagree," 2 "Disagree," 3 "Neutral," 4 "Agree," and 5 "Strongly Agree." For each participant, numeric scores from the six items were summed and then divided by six to calculate an average (composite) perception score. This composite score ranged from 1 (entirely negative perception) to 5 (entirely positive perception). The composite perception score was then dichotomized into two categories: a mean score greater than 3 was classified as indicating a positive perception of electronic prescribing, whereas a mean score of 3 or less was classified as indicating a negative or neutral perception.

Variables	Category	Frequency	Percent
Sex	Male	275	75.55
	Female	89	24.45
Age	25–35	108	29.40
	36–45	132	36.26
	≥46	125	34.34
Marital status	Single	79	21.70
	Married	193	53.02
	Divorced	53	14.56
	Widowed	39	10.71
Professional qualification	Senior physicians	65	17.86
	General practitioners	97	26.65
	Nurses	83	22.80
	Anesthetist	41	11.26
	Public health	43	11.81
	Physiotherapist	35	9.62
Work experience (years)	<1	59	16.21
	1–5	87	23.90
	6–10	71	19.51
	11–15	55	15.11
	16–20	49	13.46
	≥21	43	11.81
Current daily prescription volume encountered	<10	85	23.35
	11–20	103	28.30
	21–30	91	25.00
	31–40	51	14.01
	>41	34	9.34

Table 1. Socio demographic characteristics of study participants ($n = 364$).

Variables	Responses, $n = 364$	
	Yes *n*/%	No *n*/%
I am comfortable with computer use	283/77.75	81/22.25
I use computer for personal activities	247/67.86	117/32.14
I use computer at home	219/60.16	145/39.84
I use computer at hospital	191/52.47	173/47.53
I have a good knowledge of computer usage	165/45.33	199/54.67

Table 2. Response of health care professionals about their current computer usage status.

Results

Sociodemographic characteristics

The study surveyed 423 individuals, with 364 completing the questionnaire, resulting in 86.05% response rate. Among the 364 respondents, 275 (75.55%) were male, and 132 (36.26%) were in the 36–45-year age group, indicating a predominantly middle-aged, male workforce. A total of 193 (53.02%) participants were married. General practitioners made up the largest professional group with 97 (26.65%), followed by nurses with 83 (22.80%) and senior physicians with 65 (17.86%). Regarding work experience, 87 (23.90%) had 1–5 years and 71 (19.51%) had 6–10 years of experience. Prescription workloads varied, with 103 (28.30%) handling 11–20 prescriptions daily (Table 1).

Self-reported computer usage status of healthcare professionals

A total of 283 (77.75%) participants reported feeling comfortable using computers, and 247 (67.86%) used computers for personal activities, indicating strong digital engagement. Meanwhile, 219 (60.16%) used computers at home and 191 (52.47%) at the hospital, reflecting limited workplace access or utilization. Importantly, only 165 (45.33%) considered themselves knowledgeable about computer use, suggesting that while many are comfortable with basic tasks, a significant proportion lacks confidence in their computer skills, which may affect successful e-prescription adoption (Table 2).

Variables	Responses	
	Yes (*n*, %)	No (*n*, %)
Incorrect drug was filled	97/26.65	267/73.35
Frequent pharmacists call to clear doubts	155/42.58	209/57.42
My prescription pad was stolen	39/10.71	325/89.29
My prescription was altered by patients	63/17.31	301/82.69
I encountered refill demands	187/51.37	177/48.63
Paper prescription is prone to error	231/63.46	133/36.54
I like paper prescriptions	119/32.69	245/67.31
I have legible hand writing	253/69.51	111/30.49

Table 3. Current prescription practice profile health care professionals.

Variables	Disagree *n*, %	Neutral *n*, %	Agree *n*, %
Using an electronic prescription system will decrease the cost of healthcare	85/23.35	103/28.30	176/48.35
Using an electronic prescription system promote the use of data for research	57/15.66	81/22.25	226/62.09
The electronic prescription system will provide an alert when the patient receives medication	43/11.81	79/21.70	242/66.49
The electronic prescription system will improve alert about the drug	31/8.52	65/17.86	268/73.63
The electronic prescription system will save time and reduce error	25/6.87	53/14.56	286/78.57
The electronic prescription system will be safe	69/18.96	97/26.65	198/54.39

Table 4. Perception of health care professionals towards perceived usefulness of electronic prescription system.

Variables	Disagree *N*, %	Neutral *N*, %	Agree *N*, %
I think the hospital can afford to improve the internet network	46/12.63	84/23.08	234/64.29
I think the internet network in the hospital is good	121/33.24	92/25.27	151/41.51
I think the hospital can afford to get all health care professionals a computer	59/16.21	97/26.65	208/57.14
The hospital firm Can manage and be consistent with the system over a long time	73/20.05	109/29.95	182/50.00
I think the hospital firm would be ready to adopt the new system based on the infrastructural facilities	95/26.10	115/31.59	154/42.31
I think the patient will be ready to adopt the new system	107/29.40	123/33.79	134/36.81

Table 5. Perceived readiness of the organization to implement electronic prescriptions.

Prescription practice profile of health care professionals

A total of 97 (26.65%) respondents reported experiencing incorrect drugs being filled from pharmacies, and 155 (42.58%) reported frequent calls from pharmacists to clarify prescriptions, highlighting key medication safety issues. Additionally, 63 (17.31%) experienced prescription alterations by patients, and 39 (10.71%) reported stolen prescription pads, both indicating vulnerabilities to errors and fraud. Refill demands were common, reported by 187 (51.37%), and 231 (63.46%) agreed that paper prescriptions are prone to error. Despite these concerns, 119 (32.69%) still preferred paper prescriptions, though 253 (69.51%) reported having legible handwriting, underscoring both perceived and actual challenges with paper-based prescribing (Table 3).

Perceived usefulness about electronic prescription system

A total of 176 (48.35%) participants agreed that e-prescriptions would decrease healthcare costs, while 286 (78.57%) felt e-prescriptions would save time and reduce errors, indicating strong support for efficiency improvements. Agreement was also high regarding improved medication alerts, with 268 (73.63%) supporting this benefit, and 242 (66.49%) recognizing that e-prescriptions can provide alerts when patients receive medication. Additionally, 226 (62.09%) believed that e-prescriptions could promote the use of data for research, and 198 (54.39%) considered e-prescriptions to be safe overall, reflecting broad recognition of the potential advantages of implementing electronic prescription systems (Table 4).

Perception regarding readiness of organizations to implement e-prescriptions

Two hundred eight (57.14%) of participants perceived that their hospital can afford computers for all health care professionals. How ever only 154 (42.31%) of participants perceived the hospital would be ready to adopt new e-prescription system (Table 5).

Variable	Perception *n*, (%)		COR (95% CI)	*P* value	AOR [95% CI]	*P* value
	Positive	Negative				
Sex						
Male	210(76.36)	65(23.64)	1.06 [0.61–1.85]	0.230	0.86 [0.51–1.23]	0.143
Female	67 (75.28)	22 (24.72	1		1	
Profession						
Senior physicians	55(84.62)	10(15.38%)	0.52 [0.13–2.01]	0.450	2.94 [0.64–5.21]	0.180
General practitioners	80(82.47%)	17(17.53%)	0.44 [0.15–1.3]	0.201	2.21 [1.05–3.16]	0.002*
Anesthetist	32(78.05%)	9(21.95%)	0.33 (0.09–1.22)	0.051	1.04 [0.87–1.99]	0.134
Nurses	65(78.31%)	18(21.69%)	0.34 (0.11–1.02)	0.432	1.87 [0.54–2.67]	0.543
Public health	33(76.74%)	10(23.26%)	0.31 (0.09–1.05)	0.063	0.65 [0.45–1.05]	0.240
Physiotherapist	32(91.43%)	3(8.57%)	1		1	
Work experience in years						
< 1	45 (76.27%)	14 (23.73%)	1.07 [0.52–2.22]	0.054	1.05[0.74–9.03]	0.420
1–5	66 (75.86%)	21 (24.14%)	1.02 [0.58–1.80]	0.067	0.92[0.58, 8.58]	0.480
6–10	53 (74.65%)	18 (25.35%)	0.99 [0.48–2.03]	0.154	1.66 [0.25–1.90]	0.210
11–15	41 (74.55%)	14 (25.45%)	0.99 [0.43–2.26]	0.100	2.14[0.77–3.86]	0.105
16–20	36 (73.47%)	13 (26.53%)	0.95 [0.48–1.89]	0.201	1.42 [1.19–2.88]	0.001*
≥ 21	32 (74.42%)	11 (25.58%)	1		1	
Daily prescriptions encountered						
< 10	65 (76.47%)	20 (23.53%	0.49 [0.13–0.96]	0.201	0.32 [0.21–0.49]	0.001*
11–20	83 (80.58%)	20 (19.42%)	0.62 [0.13–2.97]	0.100	1.15[0.55–13.46]	0.150
21–30	74 (81.32%)	17 (18.68%)	0.66 [0.13–3.32]	0.499	0.23[0.29–5.70]	0.312
31–40	43 (84.31%)	8 (15.69%)	0.77 [0.13–4.57]	0.531	1.44[0.16–2.41]	0.101
> 41	30 (88.24%)	4 (11.76%)	1			
Current computer usage						
Yes	220 (77.74%)	63 (22.26%)	1.48 [1.01–3.47]	0.012	0.88[0.70-10.48]	0.500
No	57 (70.37%)	24 (29.63%)	1			
Internet access						
Yes	240 (78.95%)	64 (21.05%)	1.71 [1.12–2.94]	0.031	1.16[0.6–2.6]	0.152
No	37 (68.52%)	17 (31.48%)	1			
Technical skill						
Yes	230 (77.97%)	65 (22.03%)	1.49 [1.02–5.73]	0.015	1.03[0.40–1.75]	0.280
No	47 (71.21%)	19 (28.79%)	1			
Organizational factor						
Yes	100 (68.49%)	46 (31.51%)	0.57 [0.20–1.71]	0.136	0.91[0.48–1.72]	0.129
No	177 (79.37%)	46 (20.63%)	1			

Table 6. Bivariable and multivariable logistic regression analysis of factors with perception among health care professionals.

Factors affecting perception of participants towards e-prescription

Several factors demonstrated significant associations with positive perceptions toward the intervention. General practitioners were 2.21 times more likely to express positive perceptions (AOR = 2.21; 95% CI: 1.05–3.16; $p = 0.002$), indicating a substantially greater level of receptiveness. Respondents with 16–20 years of professional experience were 1.42 times more likely to hold favorable perceptions (AOR = 1.42; 95% CI: 1.19–2.88; $p = 0.001$), suggesting that mid-career professionals exhibit a heightened openness to adopting new practices. Conversely, participants encountering fewer than 10 prescriptions per day were 68% less likely to report positive perceptions (AOR = 0.32; 95% CI: 0.21–0.49; $p = 0.001$), reflecting a substantial reduction in perceived usefulness or motivation among those with lower daily workloads (Table 6).

Discussion

This study reveals a strong positive perception of e-prescriptions among HCPs, with a significant majority (78.57%) indicating that they believe e-prescriptions save time and reduce errors. This underscores a perceived enhancement in both efficiency and patient safety. These findings are consistent with a study conducted in Greece, where a considerable portion of the participants acknowledged the positive role of e-prescriptions in minimizing medication errors[21]. Similarly, supporting evidence from a study conducted in Israel indicated that nurses held favorable views of e-prescriptions, recognizing their potential to reduce medication errors[22]. Another study in Ethiopia also revealed that majority of the study participants believed that paper based prescriptions are prone to error[19]. Collectively, these studies highlight a growing consensus among healthcare professionals across different

settings regarding the benefits of e-prescription systems in improving the quality of healthcare delivery. While nearly half (48.35%) also perceived potential cost reductions, this belief was less widespread, suggesting that the cost-saving benefits may be less obvious or less immediately felt by HCPs compared to the clear advantages in time efficiency and error minimization. Overall, the findings indicate e-prescriptions are viewed as valuable tools, though further investigation into the factors influencing cost perception is needed to fully understand their economic impact.

The perceived usefulness of e-prescribing significantly varied based on the qualification of the participants. In this study, being general practitioner was 2.21 times more likely to perceive the positive usefulness of e prescription, which is consistent with the findings reported by the studies conducted in Ethiopia and Pakistan and Ireland, where physicians showed a positive perception towards e-prescription[17,23,24]. In support of this evidence a study done in Ethiopia showed that the odds of physicians who thought the e-prescription system as useful to have positive perception was 3.31 times more likely than their counterparts[19]. This might be due to the possibility that physicians encounter a high volume of paper-based prescriptions in their day today activities. In contrary to this, a study done in Poland identified doctors was not positive about the adoption of e-prescriptions[25]. The finding that general practitioners were 2.21 times more likely to perceive the positive usefulness of e-prescribing has important clinical implications. It suggests that general practitioners, likely due to their frequent handling of paper-based prescriptions, recognize the benefits of e-prescribing systems more readily. However, this also indicates that other healthcare professionals may have lower adoption rates or less positive perceptions of e-prescribing. Therefore, targeted awareness campaigns and additional training programs may be necessary for these groups to improve their acceptance and effective use of e-prescribing systems. Enhancing familiarity and skills across all professional categories could facilitate smoother integration of e-prescription technologies, ultimately improving medication safety, reducing errors, and streamlining clinical workflows.

In this study the number of prescriptions encountered per day was also significantly associated with positive perception towards the use of e-prescriptions. In contrary a study done among physicians in Palestine reveled that the level of current work flow did not correlate with e-prescription[26]. This discrepancy might be due to the difference in the setting and arrangement of the health care institutions in Palestine and Ethiopia. Work experience was one of the independent determinant factors observed in this study. In this study those who had an experience of 16–20 years were 1.42 times more likely to perceive the use fullness of e-prescriptions, this might be due to the fact that experience professionals are prone to high load of prescriptions and be tedious to write paper prescriptions. However, a study done in Scotland showed junior physicians had a positive attitude towards e-prescription[27]. The possible justification for this discrepancy can be the difference in technological access between Scotland and Ethiopian HCPs. The study's findings suggest that implementation strategies for e-prescriptions should prioritize healthcare professionals who handle a high volume of prescriptions, as they are more likely to perceive and adopt the system positively. This targeted approach can lead to faster and more efficient integration of e-prescribing into clinical workflows. Policies should therefore focus on allocating resources—such as training, technical support, and infrastructure improvements—to these high-impact user groups first. Additionally, recognizing variations in perceptions across experience levels and settings highlights the need for adaptive policies that provide ongoing education and address technological barriers among other prescribers. By aligning implementation efforts with these insights, policymakers can ensure a phased, effective, and equitable adoption of e-prescription systems.

This study has several limitations that should be considered when interpreting the findings. First, the single-center design limits the generalizability of the results to other healthcare settings or regions with different demographic and organizational characteristics. Second, the use of self-administered questionnaires may introduce response bias, as participants might provide socially desirable answers or underreport certain behaviors. Third, selection bias is possible since participation was voluntary, potentially attracting respondents with greater interest or experience in electronic prescription systems.

Conclusion

In conclusion, this study demonstrates that HCPs generally perceive e-prescriptions as highly useful, particularly for saving time and reducing errors. Notably, general practitioners and those with higher prescription volumes exhibit a stronger positive perception, likely due to their daily workflow. Further research is needed to understand the complexities of perception and the varying impacts of professional experience and healthcare settings on e-prescription adoption.

Data availability

Raw data are available from the hands of the corresponding author. This cannot be shared for confidentiality reasons unless there are reasonable requests.

Received: 13 March 2025; Accepted: 4 August 2025
Published online: 28 August 2025

References

1. Oktarlina, R. Z. E-prescribing: benefit, barrier, and adopting challenge in electronic prescribing. *J. Med.* **21**, 98–101 (2020).
2. Alipour, J., Sharifian, R., Haghighi, J. D., Hashemzehi, M. & Karimi, A. Patients' perceptions, experiences, and satisfaction with e-prescribing system: a cross-sectional study. *Int. J. Med. Informatics*. **181**, 105282 (2024).
3. Alipour, J., Mehdipour, Y., Karimi, A., Khorashadizadeh, M. & Akbarpour, M. Security, confidentiality, privacy and patient safety in the hospital information systems from the users' perspective: a cross-sectional study. *Int. J. Med. Informatics*. **175**, 105066 (2023).
4. Ammenwerth, E., Schnell-Inderst, P., Machan, C. & Siebert, U. The effect of electronic prescribing on medication errors and adverse drug events: a systematic review. *J. Am. Med. Inform. Assoc.* **15**, 585–600 (2008).

5. Bates, D. W. et al. The impact of computerized physician order entry on medication error prevention. *J. Am. Med. Inform. Assoc.* **6**, 313–321 (1999).
6. Velo, G. P. & Minuz, P. Medication errors: prescribing faults and prescription errors. *Br. J. Clin. Pharmacol.* **67**, 624–628 (2009).
7. Samadbeik, M., Ahmadi, M., Sadoughi, F. & Garavand, A. A copmarative review of electronic prescription systems: lessons learned from developed countries. *J. Res. Pharm. Pract.* **6**, 3–11 (2017).
8. Pizzi, L. T., Suh, D. C., Barone, J. & Nash, D. B. Factors related to physicians' adoption of electronic prescribing: results from a National survey. *Am. J. Med. Qual.* **20**, 22–32 (2005).
9. Feldman, A. M. *Understanding Health Care Reform: Bridging the Gap between Myth and Reality* (CRC, 2011).
10. Davis, F. D. User acceptance of information technology: system characteristics, user perceptions and behavioral impacts. *Int. J. Man Mach. Stud.* **38**, 475–487 (1993).
11. Ketikidis, P., Dimitrovski, T., Lazuras, L. & Bath, P. A. Acceptance of health information technology in health professionals: an application of the revised technology acceptance model. *Health Inf. J.* **18**, 124–134 (2012).
12. Omotosho, A., Adegbola, O. & Adebo, A. A patient-based hospital referral decision support system. *Int. J. Comput. Appl.* **115**, 38–43 (2016).
13. Omotosho, A., Emuoyibofarhe, J., Ayegba, P. & Meinel, C. E-Prescription in Nigeria: a survey. *J. Global Pharma Technol.* **10**, 58–64 (2018).
14. Wu, B. & Chen, X. Continuance intention to use moocs: integrating the technology acceptance model (TAM) and task technology fit (TTF) model. *Comput. Hum. Behav.* **67**, 221–232 (2017).
15. Crosson, J. C. et al. Meaningful use of electronic prescribing in 5 exemplar primary care practices. *Annals Family Med.* **9**, 392–397 (2011).
16. Qureshi, Q. A., Qureshi, N. A. & Khan, I. U. E-Readiness: a critical factor for successful implementation of ehealth projects in developing countries like Pakistan. *Gomal Univ. J. Res.* **30**, 77–86 (2014).
17. Sema, F. D. et al. Perception of healthcare professionals towards electronic-prescribing at university of gondar comprehensive specialized hospital, northwest Ethiopia: a cross-sectional study. *BioMed Res. Int.* **2024**, 6553470 (2024).
18. Shah, G. H., Leider, J. P., Castrucci, B. C., Williams, K. S. & Luo, H. Characteristics of local health departments associated with implementation of electronic health records and other informatics systems. *Public Health Rep.* **131**, 272–282 (2016).
19. Hailiye Teferi, G. et al. Perception of physicians towards electronic prescription system and associated factors at resource limited setting 2021: cross sectional study. *PloS One.* **17**, e0262759 (2022).
20. El-Dahiyat, F., Kayyali, R. & Bidgood, P. Physicians' perception of generic and electronic prescribing: a descriptive study from Jordan. *J. Pharm. Policy Pract.* **7**, 1–8 (2014).
21. Grammatikopoulou, M. et al. Electronic prescription systems in greece: a large-scale survey of healthcare professionals' perceptions. *Archives Public. Health.* **82**, 68 (2024).
22. Naamneh, R. & Bodas, M. The effect of electronic medical records on medication errors, workload, and medical information availability among qualified nurses in Israel–a cross sectional study. *BMC Nurs.* **23**, 270 (2024).
23. Zaffar, V., Anwar, Y., Ilyas, S., Sajid, E. & Sherazi, B. A. Knowledge and attitude of health care professionals towards electronic prescribing system in a public sector hospital of lahore, Pakistan. *J. Pak. Med. Assoc.* **70**, 376–380 (2020).
24. Hor, C. P., O'Donnell, J. M., Murphy, A. W., O'Brien, T. & Kropmans, T. J. General practitioners' attitudes and preparedness towards clinical decision support in e-Prescribing (CDS-eP) adoption in the West of ireland: a cross sectional study. *BMC Med. Inf. Decis. Mak.* **10**, 1–8 (2010).
25. Wrzosek, N., Zimmermann, A. & Balwicki, Ł. Doctors' Perceptions of E-Prescribing upon Its Mandatory Adoption in Poland, Using the Unified Theory of Acceptance and Use of Technology Method. *Healthcare.* **8**(4), 563 (2020).
26. Falana, H., Najjar, S., Mimi, Y. & Al-Shami, N. m. Physicians' perceptions of electronic prescribing of controlled medications in the West bank, palestine: a pre-implementation assessment. *Int. J. Med. Informatics.* **176**, 105109 (2023).
27. McLean, E., McLean, A. & Bennie, M. A qualitative exploration of the impact of a hospital electronic prescribing and medicines administration (HEPMA) protocol on junior Doctor confidence and competence to prescribe end-of-life care medicines. *Int. J. Clin. Pharm.*, **46**, 1445–1452 (2024).

Author contributions

ASA: Wrote the manuscript, do the investigation, methods, write up, analysis and curationMTK: Wrote the manuscript, do the investigation, methods, write up, analysis and curationYWE: Wrote the manuscript, do the investigation, methods, write up, analysis and curationGTT: Wrote the manuscript, do the investigation, methods, write up, analysis and curationEAS: Wrote the manuscript, do the investigation, methods, write up, analysis and curationBLE: Write the manuscript, do the investigation, methods, write up, analysis and curation, In addition he did the supervision. All authors reviewed the manuscript.

Funding

No funding was available.

Declarations

Competing interests

The authors declare no competing interests.

Ethical approval

This research was conducted in accordance with the ethical principles outlined in the declaration of Helsinki. The research protocol was reviewed and approved by the research committee of School of Pharmacy, Mizan Tepi University. Written informed consent was gained from each participant before data collection. All participants' rights, dignity, privacy, and confidentiality were respected throughout the research process. No personal identifiers were used for data analysis.

Additional information

Correspondence and requests for materials should be addressed to A.S.A.