Attitudes towards e-learning among community pharmacists in Hanoi, Vietnam: An exploratory study

T. Le[1]*, T. Duong[1], H. Tran[1], T. Do[1]
[1] Hanoi University of Pharmacy; 13-15 Le Thanh Tong, Hoan Kiem, Hanoi, Vietnam

ABSTRACT

E-learning is now emerging as the advance paradigm for continuing pharmacy education and it has been widely utilized for continuous professional development (CPD) in most countries. However, e-learning has still been a new teaching method and has not been widely used in pharmacy education in Vietnam. Therefore, determining the factors associated with the pharmacists' intention of using continuous e-learning courses for CPD and assessing conditions to implement e-learning courses in continuous education are vital in order to improve the number of participants in continuing pharmacy education in Vietnam. The aim of this study was to identify the attitudes of Vietnamese pharmacists towards e-learning for CPD and the factors influencing the e-learning adoption of participants. A cross-sectional survey of 111 community pharmacists was conducted from November 2016 to March 2017 in Hanoi, Vietnam. A self-administered questionnaire was used to measure pharmacist's internet facilities and attitudes toward e-learning. The dependent variable of study was the participants' intention of using e-learning in continuing education (CE). Multivariable logistic regression model was performed to identify factors significantly associated with the participants' acceptance of e-learning courses. The finding showed that 61.26% of respondents used high speed internet. The percentage of participants using smartphone to connect to the internet accounted for 91.89%. In general, the participating pharmacists had a positive attitude toward e-learning for CPD. Accessing to internet at work significantly decreased the likelihood of participants taking e-learning in CE (OR= 0.22, 95%CI=0.06-0.75). Accordingly, pharmacists having sufficient skills of using internet devices (OR=2.52, 95%CI=1.44-4.41) and internet usage for study (OR=4.67, 95%CI=1.82-11.98) were more likely to adopt e-learning in CE. The study found three main factors affected the behavioral intentions related to e-learning systems. The continuing pharmacy education e-learning courses should be designed simple and flexible so that pharmacists with different levels of skill can participate in at anytime.

1. INTRODUCTION

The pharmacy profession has been changing continuously and pharmacists are increasingly involved in patient monitoring and consultation with other healthcare professionals as partners. Therefore, in many countries, continuing professional training is a requirement for pharmacists, as is for many healthcare professions, to keep their license valid[1]. The new Vietnamese pharmacy law (No 105/2016/QH13) also obligated pharmacists to take part

*Corresponding author: lethuy274@gmail.com

in CE courses. Continuing education (CE) plays an important role in maintaining and updating pharmaceutical skills and knowledge[1]. CE courses for pharmacists, provided by professional associations, pharmacy boards, universities, teaching hospitals, and pharmaceutical companies, vary widely in their scope and breadth of content[2].

E-learning is a method of teaching and learning using electronic media[3]. E-learning is also called web-based, online learning, distributed learning, computer-assisted instruction and internet-based learning[4]. E-learning is now emerging as the advance paradigm for continuing pharmacy education and it has been widely utilized for CPD in most countries[5]. Numerous studies on medical and pharmaceutical staff have been conducted in the past decade to assess the efficiency of e-learning in their current and continuing education. The results have been varied but there exists a consensus on the benefits of this alternative medium of learning: high accessibility, flexibility, time and cost/investment benefits[5]. Some studies conducted on the efficiency of e-learning have shown that the well-designed courses resulted in the similar or more knowledge gaining as on-site learning[6, 7]. In addition, several courses have shown evidence of significant self-reported practice change[5].

Lately, e-learning has started to make way into the developing countries and is believed to have enormous potential for governments struggling to meet a growing demand for education while facing an escalating shortage of teachers[8]. E-learning is also an attractive solution to educate large numbers of geographically diverse populations. Nevertheless, e-learning has still been a new teaching method and it has not been widely used in pharmacy education in Vietnam. Therefore, determining the factors associated with the pharmacists' intension of using e-learning courses for CPD is vital in order to improve the number of participants in continuing pharmacy education. Besides, it is necessary to assess conditions to implement e-learning courses in CE. Challenges mentioned were network connectivity, bandwidth availability and learner computer skills[9, 10]. Therefore, the goal of the study is explore the attitudes

towards e-learning for CE and the factors influencing the e-learning adoption of participants. We hypothesized that pharmacists who had better internet facilities or more positive attitude towards e-learning would be more likely to intend to using e-learning in CE. Findings from the study may inform future interventions to improve e-learning system in continuing pharmacy education in Vietnam.

2. MATERIALS AND METHODS

A cross sectional survey was conducted from November 2016 to March 2017 in three districts in Hanoi, Vietnam. A validated self-administered questionnaire was distributed among retailer at pharmacies. Drug retailers were approached in person and recruited through a convenient sampling technique. Participants will be selected according to the following criteria: retailers had graduated from a pharmacy university or college and agreed to interview. The survey was conducted by personal interview. The interview then handle the questionnaire to the pharmacists in charge. The interviewer did not influence the response provided by the pharmacist as he waited in a remote area inside the pharmacies until the pharmacist finished the questionnaire and he received the filled questionnaire. We wanted to estimate the percentage of pharmacists who intend to using e-learning in CE in population to within ± 10 percent of the true value. This percentage in the pilot is 37%, the required sample size is:

$$\frac{1.96^2 \times p \times (1\text{-}p)}{0.1^2} = \frac{(1.96^2 \times 0.37 \times (1.00\text{-}0.37)}{0.1^2} = 89.5$$

A sample of 90 pharmacists is required.

Based on validated instruments about attitudes and internet facilities used in previous studies, 25 items were devised into criteria to assess retailers' access to internet facilities, attitudes and e-learning adoption. These items were translated from English into Vietnamese. The translation was an iterative process with principles of translation/back translation. The questionnaire was piloted by 30 pharmacists to assure the clarity of each item. Reliability and the internal consistency of the questionnaire

was carried out by calculating the Cronbach Alpha coefficient. Face and content validity were assessed by these pharmacists who evaluated the questionnaire to mention if the question were clear, easy to understand, a logical order, and totally representative of the questionnaire objective.

The study outcome was the participants' intension of using e-learning in continuing education. Accordingly, the respondents were classified as "no e-learning adopter" if they have not intended to use e-learning in CE and "e-learning adopter" if they have intended to use e-learning in CE by the time of the survey.

Internet related items encompassed basic internet information about connection speed, where, how long to connect to the internet, what purpose to connect to the internet and which device to connect to the internet. Attitude related items assessed perceived usefulness, e-learning self-efficacy and technology factors. Each item was measured with a five-point Likert scale ranging from strongly disagrees to strongly agree. In addition, personal characteristics (i.e, age and gender), professional factors (i.e, length of career and professional qualification) and experience with e-learning were also collected.

Descriptive statistics were conducted to compare the respondents' characteristics by e-learning adoption status (No e-learning adopter vs. e-learning adopter). Frequencies and distributions of variables related to internet facilities and attitude towards e-learning were also described. Student t-test and Mann-Whitney test were used for normally and non-normally distributed continuous variables, respectively. Chi-square statistics were used for categorical variables. Logistic regression was performed to identify factors significantly associated with intension of using e-learning in CE. Models were built based on the strategy recommended by Hosmer & Lemeshow[11]. Accordingly, any variable whose univariate test had a p-value <0.25 was a candidate for the multivariable model. We then applied a stepwise backward model approach based on the log-likelihood ratio test including variables with a p-value <0.1. Well-documented predictors (i.e internet usage for study) were kept in the final models

regardless of statistical significance. Collinearity was checked by variance inflation factors. All potential interactions were examined. We assessed model calibration using Hosmer-Lemeshow goodness-of-fit test[11]. All tests of hypotheses were two-tailed with a significance level of α less than 0.05. Statistical analyses were performed with STATA version 12.0.

3. RESULTS

A total of 137 pharmacists participated in the survey (The response rate was 68.5%). Twenty-six subjects were excluded due to missing responses on the outcome variable, resulting in 111 participants included in data analysis. 39.64% respondents had intention of using e-learning in CE. The proportion of pharmacist graduating from a university, pharmacist graduating from a college and people having associate degrees in pharmacy in the sample were 12.61%, 39.64% and 47.75%, respectively. The majority was female (90.09%), had a mean age of 28.808 years old (SD=6.402), and had an average practice year of 5.78 years (SD=5.538). E-learning adoption group (vs no e-learning adoption group) were more likely to be younger, had shorter practice time but more e-learning experience (Table1).

Regarding face and content validity, the 30 pharmacists who evaluated the questionnaire reported that the statements were clear, easy to understand, in a logical order, and totally representative of the questionnaire objective. The internal consistency of the questions was high (Cronbach's ∞ =0.925). It ensured the reliability of the questionnaire for further investigation.

Internet facilities and purpose were shown in Table 2. The percentage of access to the internet at home and at work of participants in the survey were 70.27% and 81.98%, respectively. The most popular devices connected to the internet was smartphone (91.89%), followed by the percentage of using computer (desktop or laptop) to connect the internet (42.34%). The average hour of using internet per day was 4.93 (SD=2.87). The purpose of using internet was multiform. 82.57% participants used the internet for entertainment compared with 73.39%

Table 1. Socio-demographic characteristics of respondents

	No e-learning adopter	E-learning adopter	Total	p-value
N (%)	67 (60.36)	44 (39.64)	111 (100.00)	
Age, mean (SD)	29.54 (6.309)	27.68 (6.459)	28.81 (6.402)	0.0735
Gender, n (%)				
Female	58 (86.57)	42 (95.45)	100 (90.09)	0.125
Male	9 (13.43)	2 (4.55)	11 (9.91)	
Years of practice, mean(SD)	6.49 (5.915)	4.73 (4.801)	5.78 (5.538)	0.0861
Professional qualification, n (%)				
Graduated from a college	12 (17.91)	2 (4.55)	14 (12.61)	
Graduated from a junior college	25 (27.31)	19 (43.18)	44 (39.64)	0.116
Had associate degrees in pharmacy	30 (44.78)	23 (52.27)	53 (47.75)	
E-learning experience, n(%)	9 (13.64)	12 (27.27)	21 (19.09)	0.075

Table 2. Internet facilities and purpose

	No e-learning adopter	E-learning adopter	Total	p-value
Frequent internet connection, n (%)	57 (91.94)	43 (100.00)	100 (95.24)	0.077
Access to the internet, n (%)				
At home	43 (64.18)	35 (79.55)	78 (70.27)	0.083
At work	58 (86.57)	33 (75.00)	91 (81.98)	0.121
High speed internet, n (%)	38 (56.72)	30 (68.18)	68 (61.26)	0.225
Device connected to the internet, n (%)				
Smart phone	61 (91.04)	41 (93.18)	102 (91.89)	1.000
Desktop or Laptop	27 (40.30)	20 (45.45)	47 (42.34)	0.591
Tablet	11 (16.42)	5 (11.36)	16 (14.41)	0.585
Average internet usage time per day (hours), mean (SD)	5 (2.799)	4.83 (3.01)	4.93 (2.87)	0.611
The purpose of internet usage, n (%)				
Business	44 (67.69)	36 (81.82)	80 (73.39)	0.124
Study	24 (36.92)	32 (72.73)	56 (51.38)	<0.01
Entertainment	55 (84.62)	35 (79.55)	90 (82.57)	0.608

for business and 51.38% for study. The percentage of the internet usage for study was the lowest value and had significant difference between two groups (p<0.01). 72.73 % respondent of e-learning adoption group used internet for study compared with 36.92% respondents of no e-learning adoption group.

Table 3 shows the attitude of two groups about e-learning. We found significant differences in all e-learning attitudes between two groups.

The attitude means of e-learning adoption group was higher than that the attitude means of no e-learning adoption group. Some benefits of e-learning such as flexibility of learning with regard to time and place had the highest mean at 3.62 (SD=0.763) and 3.61(SD=0.788), respectively. Meanwhile, the mean of having the necessary skills for using an e-learning system was the lowest value equivalence to 3.23 (SD= 0.934).

Table 3. Attitude of participants about e-learning

	No e-learning adopter, mean (SD)	E-learning adopter, mean (SD)	Total, mean (SD)	p-value
Having experience to use handled device (laptops, tablets, smartphones)	3.16 (1.039)	3.68 (0.909)	3.37 (1.017)	0.003
Having experience to use internet	3.12 (1.038)	3.57 (0.899)	3.30 (1.005)	0.008
Having the necessary skills for using an e-learning system	2.97 (0.887)	3.64 (0.865)	3.23 (0.934)	<0.01
Using the e-learning enhanced my effectiveness in learning	3.34 (0.827)	3.75 (0.781)	3.50 (0.829)	0.001
Easier to study course content	3.30 (0.871)	3.79 (0.765)	3.49 (0.862)	0.0005
Saving time	3.34 (0.897)	3.73 (0.758)	3.49 (0.862)	0.009
Saving cost	3.36 (0.899)	3.73 (0.817)	3.50 (0.883)	0.007
Flexibility learning place	3.52 (0.746)	3.77 (0.773)	3.62 (0.763)	0.020
Flexibility learning time	3.51 (0.823)	3.77 (0.711)	3.61 (0.788)	0.022
Giving me self-confidence	3.36 (0.899)	3.70 (0.795)	3.49 (0.873)	0.013
Up to date content and information	3.19 (0.802)	3.45 (0.875)	3.29 (0.838)	0.040
Having the necessary devices and internet facilities to use e-learning system	3.28 (0.794)	3.55 (0.951)	3.39 (0.865)	0.026

Results from the multivariate logistic regression are presented in Table 4. After adjusting for other variables, those found to be significantly associated with intention of using e-learning in CE were (1) access to the internet at work, (2) the purpose of using internet for study and (3) the necessary skills for using an e-learning system. Accordingly, access to the internet at work significantly decreased the likelihood of e-learning adoption in CE (OR= 0.22, 95%CI=0.06-0.75). However, the respondents who using the internet for study were more likely to e-learning adoption in CE (OR=4.67, 95%CI=1.82-11.98). Besides, other advantage for intension of using the internet was having the necessary skills for using an e-learning system (OR=2.52, 95%CI= 1.44-4.41).

Table 4. Associated factors of choosing e-learning among study participants

	Univariate regression		Multivariate regression	
	Unadjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Age	0.95 (0.89-1.02)	0.153		
Gender				
Male	1			
Female	3.25 (0.67-15.86)	0.144		
Year of practice	0.94 (0.86-1.02)	0.123		
Professional qualification				
Graduated from a college	1.00			
Graduated from a junior college	4.56 (0.91-22.85)	0.065		
Had associate degrees in pharmacy	4.6 (0.94-22.61)	0.060		
E-learning experience	0.42 (0.16-1.11)	0.079		
Access to the internet:				
At home	2.17 (0.89-5.27)	0.087		
At work	0.47 (0.17-1.24)	0.126	0.22 (0.06-0.75)	0.015
Highspeed internet	1.63 (0.74-3.63)	0.227		
Internet usage for				
Business	2.15 (0.85-5.42)	0.106		
Study	4.56 (1.98-10.48)	<0.01	4.67 (1.82-11.98)	0.001
Having experience to use handled device	1.76 (1.14-2.71)	0.011		
Having experience to use internet	1.63 (1.07-2.49)	0.024		
Having the necessary skills for using an e-learning system	2.46 (1.48-4.08)	<0.01	2.52 (1.44-4.41)	0.001
Using the e-learning enhanced my effectiveness in learning	2.04 (1.15-3.65)	0.015		
Easier to study course content	2.34 (1.29-4.23)	0.005		
Saving time	1.82 (1.07-3.09)	0.026		
Saving cost	1.72 (1.03-2.85)	0.036		
Flexibility learning place	1.59 (0.92-2.78)	0.096		
Flexibility learning time	1.59 (0.93-2.74)	0.088		
Giving me self-confidence	1.69 (1.01-2.85)	0.047		

4. DISCUSSION

The study was conducted to assess whether the internet facilities among Vietnamese community pharmacists can meet the requirement of e-learning courses and the e-learning courses is accepted by pharmacists. To our knowledge, the current study is one of the first to address internet facilities and associated factors e-learning adoption in CE among Vietnamese community pharmacies.

Drug retailers who sell medicines and consultant for customers at pharmacy are diverse in terms of pharmacy education. Pharmacists graduated from university or junior college). It is compulsory for pharmacists who graduated from university or junior college to participate in CE according to the new Vietnamese Pharmacy law (No QH 106/2016). Hence, we conducted a survey on these pharmacies to evaluate their attitudes about e-learning and assess whether the level of education associated with the intention of e-learning.

Basic information about internet conditions was collected. This is valuable information because network connectivity and bandwidth availability are the key obstacles to the effective delivery of online e-learning[9, 10]. 95.25% of participants used the internet frequently and 61.26% respondents connected to the high speed internet. Therefore, there are advantages of implementing e-learning in CE in Vietnam. Learners can now select a distance learning environment to meet their needs. The percentage of internet usage at pharmacy was higher than that at Bachmai hospital (56%)[12]. When the living standards have been raised, the percentage of Vietnamese people having the connected devices improved. By June 30, 2017, according to Internet World Stats, the number of internet users in Vietnam reached 64 millions people. Vietnam is in the top 20 countries with highest number of internet users[13]. Most pharmacy retailers had access to the internet at both home and workplace (70.27%, 81.98%, respectively). Therefore, the participants could use internet and take part in e-learning anywhere.

Some pharmacy universities or colleges in Health Human Resources Sector Development Program were educated to can design e-learning courses on Modular Object Oriented Dynamic Learning Environment system. In order to benefit from e-learning, learners should have a personal computer (PC) and an internet connection or other network connection. However, 91.2% participants in this study used smart phone to connect the internet, while the figure for using PC was 42.34%. These results were the same results of a previous study among health workers. The percentage of connecting internet by smartphone was the highest value (over 75%)[12]. Accordingly, we should design online pharmacy courses in CE on mobile (m-learning). Currently, many well-known online learning sites at Vietnam such as www.coursera.org designed both e-learning and m-learning. They have designed more software applications on mobile phones to maximize the number of student using the online learning.

Only 19.09% respondents had e-learning experience. This percentage was the same results of some previous studies in Vietnam and Malaysia, while the figure for other developed countries was higher[12, 14, 15]. Hence, e-learning has still been a new teaching method and it has not been widely used in pharmacy education in Vietnam. The effectiveness of e-learning in pharmacy education was examined by Sandra, et al. The study confirmed that e-learning in pharmacy education is effective at increasing knowledge immediately after training. Additionally, in comparisons, e-learning was as effective as traditional learning and superior to no training[16].

In the atmosphere of constant changes, updates and new findings in pharmaceutical sciences, nobody doubts the need to keep the knowledge up to date in order to stay professionally active and reliable. More and more countries implement CE as obligatory lifelong learning programs. The role of e-learning in CE has become crucial in recent years. It is a convenient way of learning, which can take place anytime and anywhere. The finding of study shown that some benefit of e-learning such as flexibility of learning with regard to time and place had the highest mean (3.62 (SD=0.763) and 3.61 (SD=0.788), respectively).

We found that pharmacists recognized that this learning model had certain strengths such as flexibility in time and space, consistent with some previous studies[15, 17]. This flexibility is particularly attractive to professionally active pharmacists who often have no time to travel and attend conventional courses in big academic centers. E-learning helped to save cost (3.50 (SD= 0.883)) since it reduces e-cost for participants (i.e., travel and accommodation) as well as for providers (i.e., renting the venue and printing materials). However, this means that learners need to take more responsibility for their own learning.

In our study, the respondents having the necessary skills for using and e-learning system were more likely to adopt e-learning in CE (OR= 2.52, 95%CI=1.44-4.41). This is consistent with previous researches which found that perceived having skillful at using the e-learning influenced attitudes toward the use of e-learning[18, 19]. The lack of technological or internet skills was the biggest challenge, therefore, learning courses must be designed with multiple-level to fit pharmacists with diverse levels of the skills. Designers should plan their courses for easy access, navigation, and participation, to increase the positive experience of first time users and to increase repeat participation. Additionally, learning should be enjoyable and simple. Therefore, courses designers must consider several issues regarding their designs: simplicity/intuitiveness, visual/esthetic appeal, level of complexity, and degree of interactivity and engagement. Efforts to motivate potential participants to take advantage of online CE should be considered beyond uncomplicated design. Besides, training necessary e-learning skills for pharmacists should be considered to encourage the participation of e-learning courses in continuing pharmacy education.

Participants using internet for learning were more likely to use e-learning in CE. Apparently, because of their experience, those people were in an advance stage and adopted e-learning system easier. Stills others felts that access to the internet at work pose challenge on e-learning adoption (OR= 0.22, 95%CI=0.06-0.75). Working time seem to not be the appropriate time for learning, therefore, flexible courses should be implied to benefit learners.

Several limitations should also be considered. First, due to the nature of a cross-sectional design, we cannot establish temporal or causal relationships between independent variables and e-learning adoption. Second, the generalization of our study results is limited by the convenience sampling strategy. Therefore, caution should be taken in generalizing findings from our study to other pharmacist populations in Vietnam. Third, the sample size was small. Fourth, data gathered using Likert scales are subject to biases caused by participants who may agree to a given survey statement, simply out of the desire to give a favorable response. Besides, most previous studies used technology acceptance model theory to evaluate the intention of using e-learning in CE. However, we could not use this theory in this study due to insufficient databases and e-learning course shortage for community pharmacists. We suggest that further studies be conducted.

5. CONCLUSION

This is the first study to explore the attitude of pharmacists towards e-learning for CE in Vietnam. The results showed that most pharmacists had a positive attitude toward e-learning, implying that it may be used as a new in-service educational method for pharmacists. Besides, this study found that variables, including "*where have access to the internet*", "*purpose to connect the internet*" and "*necessary skills for using the e-learning system*". Providers should design e-learning simple and flexible courses so that pharmacists with different levels of skill can participate anytime. Besides, training necessary e-learning skills for pharmacists should be considered to encourage the participation of e-learning courses in continuing pharmacy education

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