Annals of Pharmacy Practice and Pharmacotherapy
ISSN: 3062-4436
2025, Volume 5, Page No: 270-277

Available online at: www.galaxypub.co/page/journals

Galaxy Publication

Galaxy Publication

Self-Care and Over-the-Counter Medication Use among University Students: Evidence from the UAE

David M. Wong[1], Robert J. Chen[2]*

[1]Department of Pharmacy Practice, Faculty of Pharmacy, University of Toronto, Toronto, Canada.
[2]Department of Clinical Pharmacy, Leslie Dan Faculty of Pharmacy, University of Toronto, Toronto, Canada.

***E-mail** ✉ rj.chen.uoft@gmail.com

Received: 03 September 2025; **Revised:** 07 December 2025; **Accepted:** 09 December 2025

ABSTRACT

Appropriate self-medication using over-the-counter (OTC) medicines can offer advantages to both individuals and healthcare systems. However, despite being generally regarded as safe, inappropriate use of OTC medicines may result in significant health risks and adverse outcomes. This study examined self-medication practices involving OTC medicines among medical and non-medical university students across various universities in the United Arab Emirates (UAE). A cross-sectional study was conducted over a six-month period from January to June 2021. The study employed a three-stage cluster sampling technique, with a confidence level of 95% and a precision of 0.03. Data were collected using a self-administered questionnaire developed based on Andersen's Behavioral Model, which evaluated predisposing, enabling, and need-related factors associated with OTC medicine use. A total of 2, 355 students completed the questionnaire. The participants had a mean age of 20.94 years, and females constituted 76.3% of the sample. More than half of the respondents (57.5%) reported using OTC medicines within the 90 days preceding the survey. Additionally, 67.8% demonstrated a high level of self-care behavior. Significant associations were identified between advice-seeking behavior and several factors, including perceived health status ($p<0.0001$), educational background ($p=0.003$), use of leftover medications ($p=0.002$), reliance on informal information sources ($p=0.0001$), and reading medication information leaflets ($p<0.0001$). The findings indicate that a considerable proportion of university students did not seek advice from pharmacists when using OTC medicines. Consultation with pharmacists was less common among medical students compared to non-medical students and among individuals who did not read medication information leaflets. These results highlight the critical role pharmacists can play in enhancing the safe and appropriate use of OTC medicines through proactive patient engagement.

Keywords: United Arab Emirates, Self-medication, Non-prescription drugs, Medical students

How to Cite This Article: Wong DM, Chen RJ. Self-Care and Over-the-Counter Medication Use among University Students: Evidence from the UAE. Ann Pharm Pract Pharmacother. 2025;5:270-7. https://doi.org/10.51847/jHEhEysIPK

Introduction

Over-the-counter (OTC) medicines, also referred to as non-prescription drugs, are products that can be obtained without authorization from a healthcare professional [1]. When used appropriately, self-medication with OTC medicines may contribute to disease prevention and the management of minor health conditions that typically do not require professional medical consultation [1-3]. However, inappropriate or unsupervised use of these medications has been associated with potential health risks and adverse outcomes [1, 4, 5]. As self-medication continues to represent a global public health concern, various governmental authorities have implemented regulations aimed at controlling its practice and enhancing public awareness regarding medication use [4, 6]. Evidence indicates that consulting pharmacy personnel is essential to ensure the safe and effective use of OTC medicines [1, 7, 8].

Pharmacists play a critical role within the interprofessional healthcare team by providing guidance on the appropriate selection and use of OTC medications and supporting patients in making informed treatment decisions [1, 7, 8]. Despite reported concerns related to the deregulation of prescription-only medicines, pharmacy students

perceive the reclassification of certain medicines to OTC status as an opportunity for pharmacists to optimize pharmacotherapy and manage a broader range of clinical conditions [9].

Recent studies continue to report a high prevalence of self-medication among university students [10]. In particular, medical and pharmacy students have been shown to engage frequently in self-medication practices [11]. Nevertheless, despite their widespread use of OTC medicines, students generally regard pharmacists as reliable and valuable sources of drug-related information [12].

A range of factors influencing self-medication behavior has been identified in previous research. These include economic constraints, male gender, infrequent physician visits, and the perceived convenience of medication use [13]. Additionally, religious beliefs, occupational and educational status, as well as knowledge related to OTC medicines, have been identified as predictors of unsafe self-medication practices [14]. However, the determinants of OTC medicine use among university students—particularly those enrolled in healthcare and medical programs—have not been examined to the same extent.

In some studies, self-medication has been reported more frequently among females, younger individuals, students with a medical background, married students, and those with access to medications stored at home [10]. Factors independently associated with a higher likelihood of self-medication among students include having a medical background, perceived good health, limited concern for personal health, and the availability of a home pharmacy [10].

Despite evidence indicating regional variability in self-medication behaviors, studies examining medical advice-seeking behavior in the United Arab Emirates (UAE) remain scarce. Exploring the advice-seeking behavior of undergraduate students may provide valuable insights into their information-seeking patterns and how these relate to health-seeking behaviors involving OTC medicines. Therefore, the present study aims to evaluate the risk factors associated with self-medication using OTC medicines among university students in the UAE and to identify the reasons underlying the lack of consultation with pharmacists during the purchase and use of OTC drugs.

Materials and Methods

This cross-sectional study was carried out among students from three major universities in the United Arab Emirates (UAE) over a six-month period, from January to June 2021. The sample size was determined using a specified precision approach, with detailed calculations reported elsewhere [15]. A confidence level of 95% and a precision level of 0.03 were selected, indicating that the estimated proportion of inappropriate OTC medication use would fall within a margin of error of 3%. Based on these parameters, a minimum sample of 1, 068 OTC medicine users was required.

A multistage sampling strategy was employed to recruit participants from universities across the UAE. This approach followed a previously described three-stage cluster sampling method [15]. From the six universities in the UAE offering both medical and non-medical academic programs, three universities were randomly selected. Within each selected university, three colleges were chosen by stratifying colleges into medical and non-medical categories. Subsequently, one medical college and two non-medical colleges were randomly selected from each institution. Within each selected college, classes were chosen using simple random sampling techniques, following established methods described in earlier studies [16, 17].

Undergraduate students registered in the spring semester of the 2020-2021 academic year who reported previous experience with self-medication using OTC drugs were eligible to participate. Informed consent was obtained from all participants prior to data collection.

Data collection - questionnaire

Data for this study were obtained using a structured, self-completed questionnaire. The development of the instrument was informed by Andersen's Behavioral Model, which provided the conceptual basis for the study design [4]. The questionnaire was organized into three main domains reflecting the model components: (1) predisposing factors, (2) enabling factors, and (3) need-related factors. In total, the survey included more than 25 explanatory variables.

Predisposing factors consisted of demographic characteristics (three variables), a social-structural characteristic, and fifteen variables related to health beliefs. Enabling factors captured academic-related variables such as college affiliation and year of study, along with medication-related knowledge, sources of information regarding OTC

medicines [18], and participants' income and employment status. Variables categorized as need factors included self-care orientation and self-perceived health status.

Data analysis

All statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS), version 26 (Chicago, IL, USA). Descriptive analyses were used to summarize the data, with categorical variables expressed as counts and percentages, and continuous variables reported as means with corresponding standard deviations.

Associations between independent variables and the primary outcome variable—seeking advice from pharmacists—were initially assessed using Chi-square tests. Subsequently, binary logistic regression analysis was applied to determine predictors associated with not seeking pharmacist consultation when obtaining OTC medications.

Results and Discussion

Study participants

Among the 2, 875 students who were eligible for inclusion, 2, 519 agreed to take part in the study, corresponding to a participation rate of 88%. Of these respondents, 2, 355 provided complete questionnaire responses and were therefore included in the final analysis. A detailed flow of participant selection and exclusion is presented in **Figure 1**.

Sample characteristics

The average age of participants was 20.94 years. Females accounted for the majority of the sample (1, 797; 76.3%), and most respondents were single (2, 151; 91.3%) and unemployed at the time of the study (2, 190; 93%). The predominant age group was 18-23 years, representing 91.6% of the sample (2, 158 students).

With respect to nationality, nearly half of the participants were UAE nationals (1, 073; 45.5%), while a comparable proportion were from other Arab countries (1, 068; 45.4%). Academically, most respondents were enrolled in their second year (560; 23.8%) or third year (713; 30.3%) of study.

More than half of the participants (57.5%) reported using OTC medications within the 90 days preceding data collection, corresponding to 1, 348 students. Furthermore, a substantial proportion of respondents indicated a high level of self-care engagement (914; 67.8%). Detailed demographic and academic characteristics of the study population are provided in **Table 1**.

Risk factors

Bivariate analysis demonstrated that all examined predictors, with the exception of the frequency of OTC medication use ($p = 0.123$), were significantly associated with whether students sought medical advice from a pharmacist. Significant determinants of pharmacist consultation included perceived health status ($p < 0.0001$), educational background ($p = 0.003$), use of leftover medications ($p = 0.022$), reading medication information leaflets ($p < 0.0001$), and reliance on informal sources for drug-related information ($p = 0.001$). These factors were strongly associated with students' decisions to seek or avoid pharmacist advice when using OTC medicines. Overall, approximately 24% of the participants ($n = 323$) reported that they did not consult a pharmacist when using OTC medications.

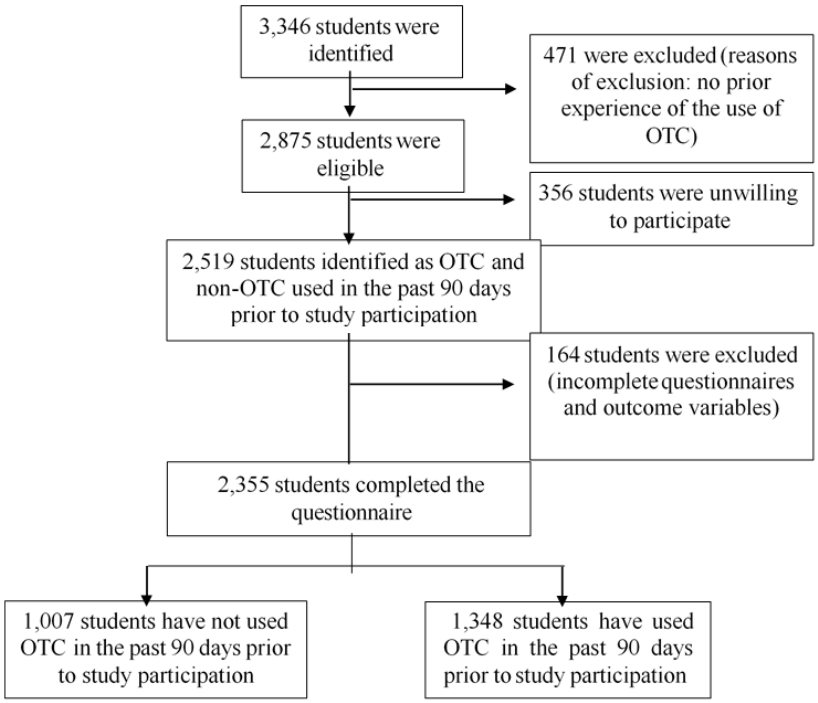

Figure 1. illustrates the process of participant inclusion and exclusion in the study.

A notable proportion of students reported that they never sought medical advice from a pharmacist when purchasing OTC medications. To further explore factors influencing this behavior, binomial logistic regression analysis was conducted to examine the impact of 26 potential predictors on the likelihood of failing to consult a pharmacist when buying OTC medicines. Explanatory variables that demonstrated statistically significant associations with pharmacist consultation are presented in **Table 2**.

The logistic regression findings indicated that students who frequently used OTC medicines were less likely to avoid seeking pharmacist advice. Specifically, those using OTC medications on a weekly basis ($p = 0.039$) and daily basis ($p = 0.034$) were 41.5% and 49.3% less likely, respectively, to refrain from consulting a pharmacist when purchasing OTC products. In contrast, students who relied on informal sources for drug-related information exhibited a higher likelihood of not seeking pharmacist advice, with an odds ratio of 1.495 ($p = 0.005$).

Similarly, the use of leftover OTC medications was identified as a significant risk factor. Students who reported using leftover drugs were 1.414 times more likely to not consult a pharmacist compared to those who did not engage in this practice (OR = 1.414; 95% CI: 1.029-1.944; $p < 0.05$). Not reading medication information leaflets was also strongly associated with failure to seek pharmacist advice; students who typically ignored drug leaflets had significantly higher odds of not consulting pharmacists than those who read them (OR = 2.647; 95% CI: 1.940-3.612; $p < 0.001$).

Academic background further influenced advice-seeking behavior. Students enrolled in non-medical programs were 42.5% less likely to avoid pharmacist consultation compared to their medical student counterparts. Additionally, self-perceived health status emerged as a significant determinant, as students reporting poor to average health were more likely to not seek pharmacist advice (OR = 1.716; 95% CI: 1.174-2.510; $p = 0.005$). The full logistic regression model evaluating factors associated with pharmacist consultation is summarized in **Table 3**.

Table 1. Demographic characteristics of the participants (n=2355)

Demographics	N (%)
Age (years)	20.94±0.050
Gender	
Female	1797(76)
Male	558(24)
Ethnicity	

UAE[1] National	1073(45.5)
Arab	1068(45.4)
Asian	86(3.7)
Iranian	88(3.7)
Others	40(1.7)
Marital Status	
Single	2151(91.3)
Married	186(7.9)
Divorced	11(0.5)
Others	7(0.3)
Year of study	
First year	175(7.4)
Second year	560(23.8)
Third year	713(30.3)
Forth year	670(28.5)
Fifth year	190(8.2)
Sixth year	47(2)
Universities	
University of Sharjah	681(28.9)
United Arab Emirates University	837(35.5)
Ajman University	837(35.5)
Self-care orientation	
Low level of self-care	434(32.3)
High level of self-care	914(67.8)
Employment status	
employed	165(7)
not employed	2190(93)
Total	2355(100)

[1] UAE, United Arab Emirates

This study aimed to examine the range of factors influencing self-medication with over-the-counter (OTC) medicines among medical and non-medical university students, with particular emphasis on understanding why students may not seek pharmacist consultation for appropriate OTC use. The findings indicated that 57.5% of participants reported using an OTC medicine within the 90 days preceding the study. Reported rates of self-medication vary widely across different populations [19-22], which may be attributed to differences in sociodemographic characteristics, study design, and how self-care behaviors are conceptualized and measured. In the present study, OTC use was more prevalent among students enrolled in medical programs compared with those from non-medical backgrounds, and medical students were less likely to seek advice from pharmacists.

Several factors were identified as being associated with a higher likelihood of not consulting pharmacists. These included frequent OTC use, reliance on informal sources of drug-related information, use of leftover medications, failure to read medication information leaflets, enrollment in medical programs, and reporting poor to average perceived health status. Approximately one-quarter of the study population reported not seeking pharmacist advice when purchasing OTC medicines. This behavior may be explained by prior experience with similar symptoms, habitual use of specific OTC products, or a perceived adequacy of personal medication knowledge.

Notably, students who did not routinely read drug information leaflets were more likely to avoid pharmacist consultation. To the authors' knowledge, this study is the first to explore the association between reading medication leaflets and advice-seeking behavior from pharmacists among university students. Previous research has shown that nearly half of students do not read medication information leaflets [23]. These findings highlight the importance of pharmacists adopting a more proactive role in counseling patients on the safe and effective use of OTC medicines [1, 24]. Pharmacists have also been shown to hold positive attitudes toward expanding their professional roles and providing enhanced pharmacy services [25].

The results further demonstrated that students from non-medical disciplines were less likely to avoid pharmacist consultation compared with medical students. This observation may be related to a "false sense of confidence" in self-diagnosis and self-treatment among healthcare students [26]. Similarly, the use of leftover OTC medications was associated with increased odds of not seeking pharmacist advice (OR = 1.414, 95% CI: 1.029-1.944), potentially reflecting accumulated personal experience with medication use that reduces the perceived need for professional consultation.

Avoidance of reading medication information leaflets was also identified as a risk factor for not seeking advice. This finding can be interpreted through the lens of health-seeking and information-seeking behaviors. Information-seeking behavior has been defined as a deliberate effort to obtain information in response to a perceived knowledge gap or need [27]. Individuals who intentionally avoid seeking information may similarly refrain from consulting healthcare professionals, including pharmacists.

Students who rated their health status as poor or average were also more likely to not consult pharmacists. While further investigation is required to better understand this relationship, it is possible that these students may underestimate the importance of pharmacist guidance for ensuring the safe and effective use of OTC medicines.

To minimize recall bias, participants who had used OTC medicines more than 90 days prior to completing the questionnaire were excluded. However, this criterion may represent a limitation, as the selected timeframe could have restricted the sample. Additionally, excluding students who had not used OTC medicines limited the ability to compare behaviors between users and non-users. Although this comparison was beyond the scope of the present study, including such participants in future research may provide more comprehensive insights into OTC medication use and advice-seeking behaviors among university students.

Table 2. Factors showing significant relationships with seeking medical advice from pharmacists (n = 1348)

Predictors	Sought pharmacist	Did not seek pharmacist advice	df	χ2	p-value
	N (%)	N (%)			
Self-perceived health status					
Poor too average	177(17.3)	90 (27.9)	2	18.213	<0.0001*
Good	848(82.7)	233(72.1)			
Frequency of use			3	5.770	0.123
Monthly	579 (56.5)	200(61.9)			
Weekly	233(22.7)	60(18.6)			
Daily	105(10.2)	24(7.4)			
Use of leftover medications					
Yes	228(22.2)	92(28.5)	1	5.281	0.022*
No	797(77.8)	231(71.5)			
Academic discipline					
Medical programs	358(34.9)	134(41.5)	1	4.559	0.033*
Non-medical programs	667(65.1)	189(58.5)			
Reliance on informal drug information sources					
Yes	523(51)	198(61.3)	1	10.424	0.001*
No	627(49)	125(38.7)			
Reading medication information leaflets					
Yes	924(90.1)	262(81.1)	1	18.948	<0.0001*
No	101(9.9)	61(18.9)			

Table 3. Logistic regression analysis predicting the probability of seeking medication advice from pharmacists

Variables	Response categories	Exp (B)	OR	95% CI		p-value
Frequency of use	Monthly	-0.141	0.869	0.563	1.340	0.524
	Weekly	-0.537	0.585	0.351	.973	0.039*
	Daily	-0.680	0.507	0.270	.949	0.034*
Informal source of drug information	Yes	0.402	1.495	1.130	1.979	0.005*
Reading the drug information leaflet	No	0.974	2.647	1.940	3.612	<0.001*

Use of a left-over drug	Yes	0.347	1.414	1.029	1.944	0.033*
Perceived health status	Poor-average	0.540	1.716	1.174	2.510	0.005*
	Good	-0.090	0.914	0.664	1.258	0.582
Educational background (healthcare vs. non-healthcare)	**Non-Healthcare**	**-0.553**	**0.575**	**0.421**	**0.786**	**0.001***

Conclusion

A considerable number of university students do not consult pharmacists when using over-the-counter medications. Medical students were found to use OTC drugs more frequently than their non-medical peers and were less inclined to seek pharmacists' guidance on appropriate use. Dependence on informal information sources or failure to read medication leaflets were identified as factors linked to increased OTC use without professional support. Pharmacists play a crucial role in enhancing students' understanding of self-care and responsible self-medication, and they should be encouraged to offer counseling at the point of sale to promote safe and effective medication use.

Acknowledgments: None

Conflict of Interest: None

Financial Support: None

Ethics Statement: None

References

1. Sansgiry S, Bhansali A, Bapat S, et al. Abuse of over-the-counter medicines: a pharmacist's perspective. Integr Pharm Res Pract. 2016;6:1-6. https://doi.org/10.2147/iprp.s103494
2. Limaye D, Limaye V, Krause G, et al. A systematic review of the literature on survey questionnaires to assess self-medication practices. Int J Community Med Public Health. 2017;4(8):2620. https://doi.org/10.18203/2394-6040.ijcmph20173192
3. Shankar PR. Essential medicines and health products information portal. J Pharmacol Pharmacother. 2014;5(1):74-75. https:// doi.org/10.4103/0976-500X.124434
4. Andersen R, Newman JF. Societal and individual determinants of medical care utilisation in the United States. Milbank Mem Fund Q Health Soc. 1973;51(1):95-124. https://doi.org/10.2307/3349613
5. Dalton K, Byrne S. Role of the pharmacist in reducing healthcare costs: current insights. Integr Pharm Res Pract. 2017;6:37-46. https://doi.org/10.2147/iprp.s108047
6. World Health Organization. Guidelines for the regulatory assessment of medicinal products for use in self-medication. World Health Organization; 2000.
7. Mamo S, Ayele Y, Dechasa M. Self-medication practices among community of Harar City and its surroundings, Eastern Ethiopia. J Pharm (Cairo). 2018;2018:1-6. https://doi.org/10.1155/2018/2757108
8. Bell J, Dziekan G, Pollack C, et al. Self-care in the twenty first century: A vital role for the pharmacist. Adv Ther. 2016;33(10):1691- 1703. https://doi.org/10.1007/s12325-016-0395-5
9. Hanna L-A, Murphy A, Hall M, et al. Future pharmacists' opinions on the facilitation of self-care with over-the-counter products and whether this should remain a core role. Pharmacy (Basel). 2021;9(3):132. https://doi.org/10.3390/pharmacy9030132
10. Helal RM, Abou-ElWafa HS. Self-medication in university students from the city of Mansoura, Egypt. J Environ Public Health. 2017;2017:1-7. https://doi.org/10.1155/2017/9145193
11. Bekele KM, Abay AM, Mengistu KA, et al. Knowledge, attitude, and practice on over-the-counter drugs among pharmacy and medical students: A facility-based cross-sectional study. Integr Pharm Res Pract. 2020;9:135-146. https://doi.org/10.2147/ IPRP.S266786

12. Albusalih FA, Naqvi AA, Ahmad R, et al. Prevalence of self-medication among students of pharmacy and medicine colleges of a public sector university in Dammam city, Saudi Arabia. Pharmacy (Basel). 2017;5(3):51. https://doi.org/10.3390/pharma- cy5030051
13. Roien R, Bhandari D, Hosseini SMR, et al. Prevalence and determinants of self-medication with antibiotics among general population in Afghanistan. Expert Rev Anti Infect Ther. 2022;20(2):315-321. https://doi.org/10.1080/14787210.2021.1951229
14. Tesfamariam S, Anand IS, Kaleab G, et al. Self-medication with over the counter drugs, prevalence of risky practise and its associated factors in pharmacy outlets of Asmara, Eritrea. BMC Public Health. 2019;19(1):159. https://doi.org/10.1186/ s12889-019-6470-5
15. Al-Kubaisi, Khalid A, De Ste Croix, et al. Appropriateness assessment and identifying the risk factors of oral non-prescription drugs' use among university students in the United Arab Emirates. https://eprints.glos.ac.uk/4968/1/Appropriateness%20 assessment%20and%20identifying%20risk%20factors.pdf
16. Sample design for educational survey research: Module 3. Unesco.org. [cited 2022 May 28]. https://unesdoc.unesco.org/ ark:/48223/pf0000214550
17. Li X. Emerging media: Uses and dynamics. London, England: Routledge; 2015.
18. Robert CC, Bradley H. Sociocultural, economic and regulatory influences on medicine use by consumers in a rural. South Med Rev. 2011;4(1). https://doi.org/10.5655/smr.v4i1.73
19. Håkonsen H, Sundell KA, Martinsson J, et al. Consumer preferences for over-the-counter drug retailers in the reregulated Swedish pharmacy market. Health Policy. 2016;120(3):327-333. https://doi.org/10.1016/j.healthpol.2016.01.016
20. Balbuena FR, Aranda AB, Figueras A. Self-medication in older urban mexicans : an observational, descriptive, cross-sectional study: An observational, descriptive, cross-sectional study. Drugs Aging. 2009;26(1):51-60. https://doi.org/10.2165/0002512- 200926010-00004
21. Gama ASM, Secoli SR. Automedicação em estudantes de enfermagem do Estado do Amazonas - Brasil. Rev Gaucha Enferm. 2017;38(1):e65111. https://doi.org/10.1590/1983-1447.2017.01.65111
22. Arrais PSD, Fernandes MEP, Pizzol T da SD, et al. Prevalence of self-medication in Brazil and associated factors. Rev Saude Publica. 2016;50(2):13s. https://doi.org/10.1590/S1518-8787.2016050006117
23. Scuri S, Petrelli F, Tanzi E, et al. European university students of pharmacy: survey on the use of pharmaceutical drugs. Acta Biomed. 2019;90(1):83-91. https://doi.org/10.23750/abm.v90i1.7572
24. Hughes CM, McElnay JC, Fleming GF. Benefits and risks of self medication. Drug Saf. 2001;24(14):1027-1037. https://doi. org/10.2165/00002018-200124140-00002
25. Luetsch K. Attitudes and attributes of pharmacists in relation to practice change - A scoping review and discussion. Res Social Adm Pharm. 2017;13(3):440-455.e11. https://doi.org/10.1016/j.sapharm.2016.06.010
26. Xiao X, Wu Z-C, Chou K-C. A multi-label classifier for predicting the subcellular localisation of gram-negative bacterial proteins with both single and multiple sites. PLoS One. 2011;6(6):e20592. https://doi.org/10.1371/journal.pone.0020592
27. Cole C. Looking for information: A survey of research on information seeking, needs, and behavior (4th edition). Donald O. Case and Lisa M. Given. Bingley, UK: Emerald Group Publishing, 2016. 528 pp. $82.95 (hardcover). (ISBN: 9781785609688). J Assoc Inf Sci Technol. 2017;68(9):2284-2286. https://doi.org/10.1002/asi.23778