

Approaches to over-the-counter medications teaching in pharmacy education: A global perspective

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Abstract

Objective: The rise in patients seeking advice on symptoms and over-the-counter medications in community pharmacies requires that pharmacists possess the right knowledge and ability to make appropriate recommendations. The aim of this study was to investigate the current state of over-the-counter medication teaching in pharmacy schools worldwide.

Method: An internet survey was sent to 324 pharmacy schools. Descriptive statistics were calculated and qualitative data were analysed for themes. Ethical approval was gained by Wolverhampton Science Ethics Committee, United Kingdom.

Results: The response rate was 25.9% with 84 responses from 24 countries. Results showed that the main focus of teaching was: to provide students with knowledge on symptom presentation (97%); how to gather information, predominantly by using mnemonic acronyms (97%); and ensuring safety through referral mechanisms (74%).

Conclusion: Pharmacy schools, overall, provide appropriate teaching centred on diagnostic ability, to manage patients signs and symptoms, however, staff employed and teaching methodologies used could be reviewed to better equip future students with the right knowledge and skills.

Keywords: *Diagnosis, Non-Prescription Medicines, Over-the-Counter Medicines, Teaching, Undergraduate*

Introduction

Healthcare systems globally have gone through major changes in recent decades (Australian Government, 2010a; Australian Government, 2010b; Black, 2013; Keyhani, 2013; Marchildon, 2013). The introduction of new government healthcare and economic policies has seen the emergence of the concept of self-care, under which patients are empowered to take decisions about their health (The Kings Fund, 2013; Ministry of Health, 2014). This changing landscape has consequently affected the role of community pharmacists, who are now faced with new challenges in addition to their traditional role as suppliers of medicines (Pharmaceutical Society of New Zealand, 2004; van Grootheest, 2004; Emmerton, 2005; Department of Health, 2008; Paudyal, 2011; Canadian Pharmacists Association, 2015). Pharmacy teams are encouraged to play a pivotal role in protecting and improving public health through their daily consultations for minor ailments and chronic conditions alike, in a much more prominent way than in the past (Public Health England, 2017).

Increased medicine deregulation and the easy public access to community pharmacists often makes community pharmacies the first point of contact for patients seeking advice and guidance about health issues. This is largely for the management of acute conditions, although the prospect of non-prescription medicines targeting chronic conditions, such as statins, and tamsulosin is currently emerging (Wertheimer, 2007; The World Self-medication Industry, 2009; European Medicines Agency, 2018).

Community pharmacists therefore need to possess the knowledge and ability to correctly differentiate signs and symptoms to then recommend an appropriate course of action.

Globally, pharmacy educators need to adapt to these new practice paradigms and stay ahead of the practice curve by providing students with the right knowledge and experience for the challenges they will be faced with as professionals. Educational reforms have already started taking place and are evident as new curricula and degree offerings emerge, where the focus has shifted from product orientation to more patient centred care (Kheir, 2008; Medina, 2013).

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Pharmacy educators have tended to advocate mnemonic methods (based on acronyms and protocol-driven questioning) to diagnosis signs and symptoms, and these now appear to be important instructional tools (Shealey, 2014). However, this approach has been questioned as being inappropriate to optimising correct diagnoses (Consumers' Association, 1991; Iqbal & Rutter, 2013; Rutter & Patel, 2013). Clinical reasoning is an alternative method to aid diagnosis and is widely preferred by other clinicians, yet it is not known if and how pharmacy education institutions over the world have adopted it in their curricula.

Therefore, the aim of this study was to gain a global perspective to the current educational instruction to pharmacy students on over-the-counter medications and the approach institutions take towards it.

Methods

An online survey was piloted before being distributed to 324 directors/heads of Pharmacy Practice to all schools of pharmacy listed on the International Pharmaceutical Federation (FIP) global database. The authors acknowledged that the FIP database was far from complete, and thus, to ensure as maximum coverage as possible, personal contacts from Europe, United States of America (USA), Australia, Namibia, South Africa, Hong Kong and Bangladesh checked the FIP Schools of Pharmacy listings and where possible provided further email contacts. Further internet searching was also performed to identify additional contacts.

Surveys were sent out in March 2015 with two further email reminders two weeks after sending the first invitation. Participants were given four weeks to complete the survey, and the survey was open for six weeks. Directors of education or heads of pharmacy practice were instructed to complete the survey if they could, or pass on to the most relevant member of staff who taught this area of curriculum.

The survey included 22 questions separated in three sections, course information, course content and resources and assessments. Questions were mainly multiple choice (a mixture of binary yes/no and multiple option), but where further information was needed, open-ended questions were employed. The survey was developed through reference to the general literature on curriculum development toward inclusion of diagnosis in programmes; piloting included content and face validity checks and determined the survey should take no more than ten minutes to complete. The quantitative data were analysed with Microsoft Excel 2016 and descriptive statistics were calculated. Open-ended questions were analysed manually for the emergence of themes. Ethical approval for the study was granted by the University of Wolverhampton, United Kingdom (UK).

Results

Demographics

Eighty-four respondents from 24 countries consented to participate in the study, from the 324 to which participation invitations were sent (25.9% response rate). The vast majority of responses came from developed nations; 34 from the USA and Canada, 11 from Australia and New Zealand, five from South Africa, 12 from the UK, 21 from other European countries and one response from Turkey.

Course information

Doctorate of Pharmacy (Pharm.D) (39%, n=30), Master of Pharmacy (M.Pharm.) (35%, n=27) and Bachelor's (B.Pharm.) programmes (19%, n=15) were most offered. Most institutions tended to teach non-prescription medicines during the middle-to-later years of their programme (Year 1=36%, n=28; Year 2=36%, n=28; Year 3=52%, n=40; Year 4=56%, n=43; Year 5=21%, n=21; Year 6=6%, n=5), with teaching often spanning more than one year of study (across years=62%, n=48; single year=38%, n=29).

With regard to the primary methodologies used to deliver the course material, traditional methodologies, such as lectures, seminars and tutorials were the most prevalent, with 62% (n=46) of institutions using them to deliver their material. Non-traditional methodologies were used, and included problem- (18%, n=13), team- (7%, n=5), and case-based learning (5%, n=5). Other methodologies infrequently mentioned were 'flipped' classrooms and 'gaming'. Most teaching was delivered face-to-face (97%, n=75), but institutions responded that they also delivered the material *via* experience in community settings (61%, n=47), directed study (43%, n=33) and online (22%, n=17). On average, when asked about a relative breakdown, institutions (n=72) reported to be delivering the information face-to-face for 67% of the length of their courses, *via* experiential learning for 16%, *via* directed study for 12%, or online (4%).

University-employed pharmacists with regular patient/client contact most commonly (72%, n=55) delivered course material, although practicing pharmacists (26%, n=20) and university employed pharmacists with minimal patient/client contact (25%, n=19) were also regularly utilised. Medically qualified staff were infrequently employed in instructional delivery (4%, n=3). Respondents were asked in what capacity practicing staff were utilised; the most common answers were as placement supervisors or preceptors, delivering workshops and tutorials, facilitators in case/team-based learning, role play assessors, lab facilitators and guest lecturers.

Course content

When asked about the overall educational aim of the course, institutions provided answers grouped into four distinct themes; firstly, over-the-counter counselling, which spanned gaining knowledge of over-the-counter medications, being able to provide advice, treat symptoms, supply products and guide and educate the patients/clients *via* effective communication skills; secondly, clinical decision-making with the aims of being able to diagnose and refer, grounded in evidence-based knowledge; thirdly, information gathering with the aims of history-taking and questioning using mnemonics (*e.g.* WWHAM); and lastly, boundaries of work, safety with the aims of being aware of the legal and regulatory issues around over-the-counter medications.

Institutions were asked to indicate what aspects of over-the-counter medications they instruct their students on. Almost all covered how to gain information from the patient/client (97%, n=68) and knowledge of signs and symptoms commonly seen by pharmacists (97%, n=68), and on the differentiation (91%, n=64) between similar signs and symptoms to determine their cause. A further 93% (n=65) covered the circumstances on which non-prescription medicines can be sold (*e.g.* indications, cautions, interactions), with 80% (n=56) also teaching about the clinical evidence to support (or not) the use of over-the-counter medicines. The appropriateness of when to treat or refer was universally covered but only 74% (n=52) included conditional referrals.

When asked to choose what area they give the most prominence to, appropriateness of when to treat or refer a patient/client was the one most respondents chose, followed by knowledge of signs and symptoms and thirdly gathering of information. Regarding the techniques institutions adopt to teach students to gain patient information, 66% (n=47) responded that they used specific techniques. Respondents who replied that they did were asked to indicate which technique they used (Figure 1).

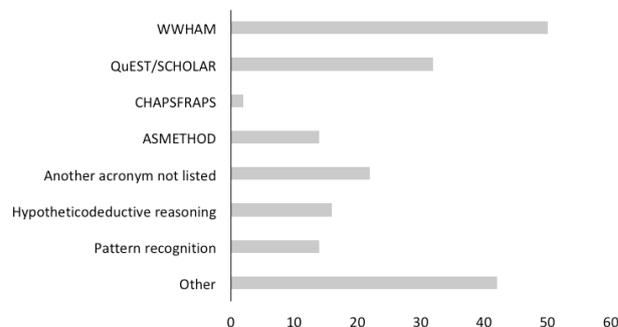
The majority of institutions responded positively (61%, n=42) reported that some level of physical assessments were taught, these are shown in (Figure 2).

Resources and assessments

A number of core/key texts were listed to help with student instruction and are presented in Figure 3. The ‘other’ category mainly represented handbooks of regional pharmaceutical associations, bespoke material especially developed for the course and journal articles or material found online. Respondents were also asked to name websites that were routinely used to aid student instruction. The websites of regional pharmacy organisations, databases and handbooks were mentioned such as the National Health Service (NHS) website, NICE (CKS), American Pharmaceutical Association, Food and Drug Administration (FDA), Australian Medicines handbook, the Australian Better Health Channel, Pharmaceutical Society of Australia self-care

cards, and others such as caseinteract.com, medicinechest.co.uk, natural medicines database, patient.co.uk, electronic medicines compendium, Micromedex, Lexicomp and product relevant websites.

Figure 1: Techniques instructed to students for gaining patient/client information (% , n=50)



(WWHAM=Who is the patient, What are the symptoms, How long have the symptoms been present, Action taken, Medication being taken; QuEST/SCHOLAR=Quickly and accurately assess the patient, Establish if the patient is a candidate for self-care, Suggest appropriate self-care strategies, Teach the patient/Symptoms, Characteristics, History, Onset, Location, Aggravating factors, Remitting factors; CHAPSFRAPs= Chief complaint, History of present illness, Allergies, Past medical history, Social history, Familial history, Review of other symptoms, Assessments, Plan, and SOAP; ASMETHOD=Age or Appearance, Self or Someone else, Medication, Extra medicines, Time persisting, History, Other symptoms, Danger symptoms).

Figure 2: Assessment techniques taught (% , n=25)

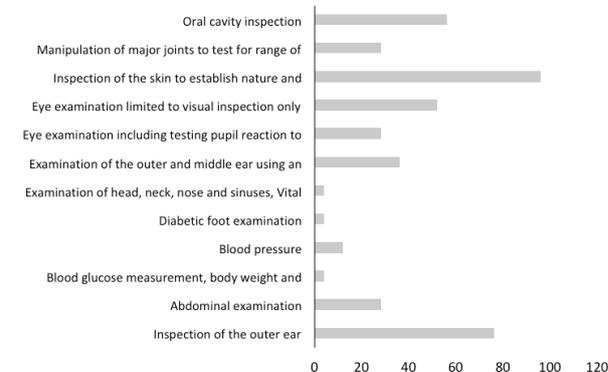
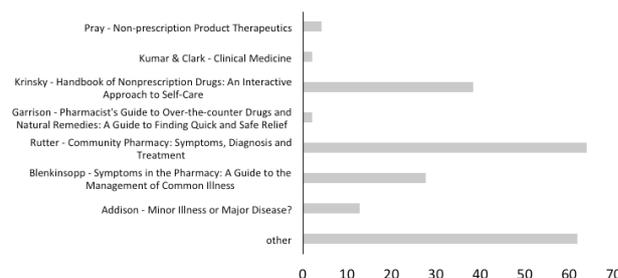
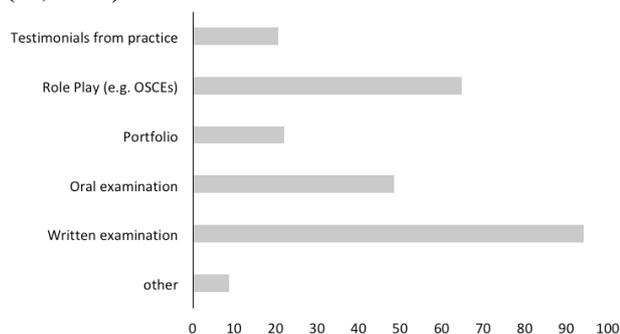


Figure 3 Textbooks used as core/key texts to help with student instruction (% , n=47).



Most institutions employed both formative and summative assessments (78%, n=52). Assessment type varied, although the written type examination was predominant (Figure 4).

Figure 4: Forms in which the assessments take place (% , n=68)



Discussion

This study was conducted in order to understand how over-the-counter medicine courses are taught in pharmacy educational institutions around the world. The results show that courses ostensibly cover the key concepts for students to perform this activity; information gathering; symptom knowledge and condition differentiation, and when to treat or advise the person to seek further help.

The emphasis on 'safety netting' implies that educators are mindful that students should not exceed their competency boundaries and ensure that patients/clients are not exposed to undue risk or danger. The prominence on knowing when to treat or refer is understandable, although context of when to refer (conditional referrals) was not universally adopted. This may mean that some institutions are potentially instructing students to refer inappropriately.

Information gathering was reported by almost all, and is of course, the cornerstone to managing patient problems. Methods predominantly involved some use of a mnemonic, with aspects of clinical decision making being infrequently used. This reliance on mnemonic driven questioning does have the potential to ask irrelevant questions or omit important questions as it is applied to all situations and does not have flexibility in approach, unlike clinical decision making. Authors have begun to question mnemonic driven information gathering as the most effective tool in pharmacy settings (Iqbal & Rutter, 2013; Rutter & Pstel, 2013; Sinopoulou, 2017). As the scope of practice widens in pharmacy settings allowing for more signs and symptoms to be managed through pharmacies, then educators need to re-assess the tools they use to ensure that students are equipped with the most appropriate skills to manage this expanding case load.

It was encouraging to see that many institutions now routinely incorporate some elements of physical assessment, as where appropriate, the inclusion of physical assessments in combination with history taking does increase the diagnostic likelihood of arriving at the correct diagnosis. However, the breadth of these assessments was limited. Assessments tended to be limited to visual inspections rather than the use of diagnostic aids, e.g. otoscopes, thus limiting their usefulness to some extent. It is hoped that over time institutions begin to embrace the use of physical assessments more routinely.

Interestingly, over-the-counter medicine courses tended to be taught in the latter years of pharmacy programme. This might be an indication that institutions do not regard this topic as a foundational subject of pharmacy education, and is seen as a more specialised subject to be taught closer to the end of studies and the beginning of the pharmacists' professional life. This approach appears to be sensible given students require high levels of knowledge on conditions and their presentation in order to be in a position to differentiate one from another, especially if institutions adopt clinical decision making which relies on high levels of cognition and experience. Educators did indicate that practical experience was given to students, although instructional delivery mainly used traditional methodologies *via* face-to-face teaching. While it is not unexpected to see traditional methods like lectures, tutorials and seminars being the most popular method used, as happens in most university courses, practical experience is essential in order for the knowledge gained to be applied in real settings. Institutions might therefore want to incorporate these more frequently in their teaching. Furthermore, the person delivering the material may also be called in to question. Material was almost exclusively taught by pharmacists. This is hardly surprising given these are pharmacy programmes, however, pharmacists (until very recently) are not prescribers and have not been educated to the same extent regarding diagnosis as their medical prescribing counterparts. There is therefore the risk that students are being taught by educators who themselves are not best qualified to teach such skills. Institutions should therefore either look to using prescribers more or ensure that the pharmacist staff have the pre-requisite knowledge and skills to deliver the information.

Respondents highlighted many resources used to help in their teaching, which included textbooks, online resources, handbooks and specially developed material. Most institutions relied on locally produced materials, especially for handbooks and online resources, which can possibly better address regional needs and language differences. Only one resource seemed to cross national boundaries and was used in various countries.

A major limitation with this study, was the limited 'global' perspective. The intention was to gain a universal view but unfortunately even though schools all around the world were contacted, the responses the authors received were virtually all from western

developed nations, meaning that the scope of the study was eventually restricted to this demographic. Additionally, there is a possibility that the email invitations for participation were not received at all or not received by the intended recipient. It is also possible that activities the authors aimed to capture with this questionnaire might have been included in other parts of the curriculum and labelled differently and thus might be underreported in our results.

Conclusion

Overall, pharmacy educational institutions that teach over-the-counter medicines appear to provide well-balanced courses, for the most part. However, major changes in community pharmacy see pharmacists performing more patient/client consultations than ever before. For this reason, institutions should review their courses with regard to teaching methods and staff to ensure future pharmacists are equipped with the right knowledge and skills. Further research could be done in the future on how pharmacy institutions are shaping their curricula to address the expanding role of the pharmacy profession and on how pharmacy students' diagnostic skillsets can be optimal upon graduation.

References

- Australian Government. (2010a). Department of Health and Ageing. Building a 21st Century Primary Health Care System. Australia's First National Primary Health Care Strategy (online). Available at: http://www.nationalplanningcycles.org/sites/default/files/country_docs/Australia/6552_nphc_1205.pdf. Accessed 17th April, 2018
- Australian Government. (2010b). A National Health and Hospitals Network for Australia's Future (online). Available at: http://www.budget.gov.au/2010-11/content/glossy/health/download/health_overview.pdf. Accessed 26th April, 2018
- Black, N. (2013). Can England's NHS Survive? *New England Journal of Medicine*, **369**, 1-3
- Consumers' Association. (1991). Pharmacists: how reliable are they? *Which Way to Health?* **12**, 191-4
- Canadian Pharmacists Association. (2015). Blueprint for Pharmacy: Transition in a New Era (online). Available at: https://www.pharmacists.ca/cpha-ca/assets/File/pharmacy-in-canada/blueprint/Blueprint%20Transition%20Report_2015_ENG.pdf. Accessed 17th April, 2018
- Department of Health. (2008) Pharmacy in England: building on strengths - delivering the future (online). Available at: <https://www.gov.uk/government/publications/pharmacy-in-england-building-on-strengths-delivering-the-future>. Accessed 17th April, 2018
- Emmerton, L., Marriott, J., Bessell, T., Nissen, L. & Dean, L. (2005). Pharmacists and prescribing rights: review of international developments. *Journal of Pharmacy and Pharmaceutical Sciences*, **8**(2), 217-225
- European Medicines Agency. (2018). Available at: http://www.ema.europa.eu/ema/index.jsp?curl=pages/medicines/human/medicines/000854/human_med_000641.jsp. Accessed 17th April, 2018
- Iqbal, N. & Rutter, P. (2013). Community pharmacists reasoning when making a diagnosis: a think-aloud study. *International Journal of Pharmacy Practice*, **21**, 17-17
- Keyhani, S., Falk, R., Howell, E., Bishop, T. & Korenstein, D. (2013) Overuse and Systems of Care. *Med Care*, **51**(6), 503-508
- Kheir N., Zaidan, M., Younes, H., El Hajj, M., Wilbur, K. & Jewesson, P. (2008). Pharmacy Education and Practice in 13 Middle Eastern Countries. *American Journal of Pharmaceutical Education*, **72**(6), 133
- Kings Fund. (2013). NHS and social care workforce: meeting our needs now and in the future? (online) Available at: https://www.kingsfund.org.uk/sites/default/files/field/field_publication_file/perspectives-nhs-social-care-workforce-jul13.pdf. Accessed 26th April, 2018
- Marchildon, G. (2013) Canada Health System Review. *Health Systems in Transition*, **15**(1), 1-179
- Medina, M., Plaza, C., Stowe C, Robinson, E.T., DeLander, G., Beck, D.E., *et al.* (2013). Center for the Advancement of Pharmacy Education 2013 Educational Outcomes. *American Journal of Pharmaceutical Education*, **77**(8),162
- New Zealand Ministry of Health. (2014). The role of Health Workforce New Zealand. Available at: https://www.health.govt.nz/system/files/documents/publications/role-of-health-workforce-new-zealand-nov14-v2_0.pdf. Accessed 17th April, 2018.
- Paudyal, V., Hansford, D., Cunningham, S. & Stewart D. (2011). Pharmacy assisted patient self care of minor ailments: A chronological review of UK health policy documents and key events 1997–2010. *Health Policy*, **101**(3), 253-259
- Pharmaceutical Society of New Zealand. (2004). Ten-year vision for pharmacists in New Zealand, 2004-2014 (online). Available at: <http://www.worldcat.org/title/focus-on-the-future-ten-year-vision-for-pharmacists-in-new-zealand-2004-2014/oclc/156741033>. Accessed 17th April, 2018
- Public Health England. (2017). Pharmacy: A Way Forward for Public Health (online). Available at: <https://www.healthcheck.nhs.uk/document.php?o=1343>. Accessed 29th October, 2018
- Rutter, P. & Patel, J. (2013). Decision making by community pharmacists when making an over-the-counter diagnosis in response to a dermatological presentation. *SelfCare*, **4**(6), 125-133

Shealy, K.M. (2014). Mnemonics to assess patients for self-care: is there a need? *SelfCare*, **5**(1), 11-18

Sinopoulou, V., Summerfield, P. & Rutter, P. (2017). A qualitative study on community pharmacists' decision-making process when making a diagnosis. *Journal of Evaluation in Clinical Practice*, **23**(6), 1482-1488

van Grootheest K, Olsson, S., Couper, M., & de Jong-van den Berg, L. (2004). Pharmacists' role in reporting adverse drug reactions in an international perspective. *Pharmacoepidemiology and Drug Safety*, **13**(7), 457-464

Wertheimer A. (2007). Medication Errors Associated with Over-the-Counter Drugs: Prevalence and Reduction Strategies. *Journal of Pharmaceutical Finance, Economics and Policy*, **15**(4), 109-144

World Self-medication Industry. (2009). Prescription to non-prescription Switch (online). Available at: http://www.wsmi.org/wp-content/data/pdf/wsmi_switch_brochure.pdf. Accessed 28th April, 2018