

Research Paper

Community pharmacists' perceptions and role in the management of common dermatological problems in Lebanon: a cross-sectional study

Bahia Chahine^{1, }, Michelle Cherfane^{1,2,3,* }, Fouad Sakr¹, Jihan Safwan¹, Mariam Dabbous¹, Marwan Akel^{1,2} and Mohamad Rahal¹

¹School of Pharmacy, Lebanese International University, Beirut, Lebanon

²Institut National de Santé Publique, Epidémiologie Clinique et Toxicologie (INSPECT-LB), Beirut, Lebanon

³College of Health Sciences, Abu Dhabi University, Abu Dhabi, United Arab Emirates

*Correspondence: Michelle Cherfane, College of Health Sciences, Abu Dhabi University, Zayed City, P.O. Box 59911, Abu Dhabi, United Arab Emirates. Tel: +971 2 5015819; Email: michele.cherfane@adu.ac.ae

Received February 8, 2021; Accepted August 1, 2021.

Abstract

Objective To explore the types and frequency of dermatologic disorders routinely encountered by community pharmacists in Lebanon, identify their educational preparedness and confidence, reasons for referrals to dermatologists and their attitude toward the potential pharmacist role in the treatment of dermatologic disorders.

Methods A cross-sectional descriptive study was conducted between June and October 2017. It involved the use of a self-administered questionnaire, distributed to a randomly selected sample of 500 community pharmacists from all Lebanese districts.

Key findings A total of 456 pharmacists completed the questionnaire. Sixty-four per cent of participants had received a dermatology course at university and 38.7% had undertaken some form of postgraduate education in dermatology. Pharmacists believed that the most commonly encountered disorders were sunburn (22.6%) and acne (15.6%) during spring/summer and skin dryness (18.8%) followed by head lice (13.1%) during autumn/winter. Additionally, more than half of respondents reported that skin-related advice requests were 6–15% of the total advice offered to patients. Sixty-four per cent were confident or extremely confident in advising patients with dermatological complaints. Pharmacists ranked 'unsure of diagnosis' as the most common reason for patient referral to dermatologists. Pharmacists who received postgraduate dermatology training had higher self-reported confidence in tackling skin diseases and their treatments ($P < 0.05$).

Conclusions Our study revealed that community pharmacists in Lebanon commonly encounter a limited number of dermatologic disorders and the majority believed that they can confidently advise and manage patients. Nonetheless, they admitted a gap in their dermatology education at both undergraduate and postgraduate levels.

Keywords: community pharmacist; dermatology; skin diseases; attitude; perception

Introduction

Skin diseases are ranked as the fourth leading cause of all human illnesses, with nearly one-third of the global population being affected by at least one dermatologic disorder.^[1] Albeit most skin illnesses are not life-threatening, they have a great impact on the overall health status and the quality of life (QOL) of patients.^[2] Various studies have shown the negative impact of chronic skin disorders, such as psoriasis and atopic dermatitis on QOL.^[3–5] Despite this, many people with symptomatic skin problems do not consult a physician and seek self-care.⁶

Because community pharmacists are the most accessible and affordable healthcare practitioners, they are at times patients' first and only healthcare resource.^[7] In Lebanon, 90% of pharmacists reported that patients approach them first for medication counselling and advice on minor health problems.^[8] Internationally the World Health Organization and the International Pharmaceutical Federation have promoted the expansion of pharmacists' role beyond dispensing medication, to include cognitive services designed to improve drug therapy and achieve better patient outcomes.^[9]

Several studies have shown that community pharmacists are in a unique position to take on a larger role in the management and education of patients with skin diseases to improve health outcomes.^[10, 11] In an Australian study, more than 60% of consumers purchasing pharmaceutical products sought advice from community pharmacists for their skin conditions.¹² Other findings showed that patients more often seek advice from community pharmacists for reasons of professional advice, accessibility, familiarity and trust and because they perceive their skin conditions as non-serious and superficial.^[13]

However, the major barriers to pharmacy-supported self-care of skin disorders are the lack of dermatology knowledge and availability of postgraduate training programs, the potential for misdiagnosis and insufficient time to deal with patients effectively.^[13, 14] Other conceivable barriers to looking for advice from community pharmacists include negative perceptions of pharmacists and lack of privacy.^[15, 16]

In Lebanon, available data on dermatologic disorders were obtained from studies conducted in a hospital setting, which may not reflect the practice in this field in the community.^[17, 18] The aim of the work reported in this paper was to explore the types and frequency of dermatologic disorders routinely encountered by community pharmacists' in Lebanon, identify their educational preparedness and confidence, reasons for referrals to dermatologists and their attitude toward the potential pharmacist role in the treatment of dermatologic disorders.

Methods

Study design

A cross-sectional descriptive survey was conducted between June and October 2017 with community pharmacists. At the time of this survey, the Order of Pharmacists in Lebanon (OPL) reported a total of 3198 licensed pharmacies. A list of all pharmacies in Lebanon including name, address and contact information was provided by the OPL. The list was transferred to an Excel sheet, randomized using SPSS (Statistical Package for Social Sciences) version 23, and a proportionate sample was selected from all Lebanese districts (Beirut, Mount Lebanon, North, South and Beqaa). To be included in the study, the pharmacist should (1) be licensed to practice by the ministry of public health (2) be registered with OPL (3) have 2 years or more working experience.

Minimal sample size was determined based on the assumption that there would be one pharmacist working in each pharmacy. According to Epi info sample size calculations, a minimum sample of 400 pharmacists was needed based on a population size of 3198 pharmacies, a confidence level of 95% with a 5% margin of error. A 10% refusal rate was reported in similar surveys,^[8] thus 500 subjects were targeted to generate the required sample.

Data collection

The selected community pharmacies were visited by three of the study investigators. Prior to the interview, the investigators informed the pharmacist about the study objectives. After receiving informed oral consent, participants were asked to complete the self-administered questionnaire with no compensation in return. The questionnaire took 10 min to complete.

The questionnaire was adapted from a similar study^[19] with slight modifications to fit the Lebanese community. It was written in English and then translated into Arabic. Following the completion of the translation, the questionnaire was back-translated from Arabic to English to ensure consistency. It was piloted with a sample of 20 community pharmacists to ensure the appropriateness of questions. The questionnaire consisted of 25-items considering socio-demographic characteristics and the frequency of skin conditions encountered. They were asked to specify, using an open-ended question, what they believed were the three most frequent dermatologic diseases for which patients sought their advice in the spring/summer and autumn/winter seasons, and the major reasons for dermatologist referrals. Pharmacists were also asked to report how many times per week they offer advice about any skin problem (1–5, 6–15, >15) and the percentage of all requests for advice that was about a skin problem (1–5%, 6–15%, >15%).

A 5-item Likert scale (not confident at all = 1 and extremely confident = 5) was used to assess community pharmacists' confidence level in advising patients on skin problems and providing counselling on the use of prescribed oral or topical medications. Subjects were also asked to rate, on a five-point scale (very little = 1 and a great deal = 5) the degree to which skills attained by postgraduate training have helped them in treating or advising patients. Respondents also answered to what extent they agree with four attitude variables related to the role of community pharmacists in the management of patients presenting with dermatologic diseases.

Statistical analysis

Data entry was performed by one of the study investigators who was not involved in the data collection process. Statistical analysis was performed using SPSS version 23. Descriptive statistics were calculated for all study variables, including means and standard deviations (SD) for continuous measures, counts and percentages for categorical variables. Friedman's test was used to compare the median rank scores for the reasons for referral to dermatologists. The chi-square test was also used to explore the association between categorical variables. Statistical significance was set at $P \leq 0.05$. Answers from partially completed questionnaires were included.

Results

A total of 456 community pharmacists completed the questionnaire making the response rate 91.2%. Table 1 presents the general characteristics of the study population. Twenty questionnaires were incomplete (4.4%), 9 participants did not respond to whether or

not they have a postgraduate degree, 20 did not respond to whether or not they had taken a dermatology course, 14 did not answer if they had received postgraduate training and 20 did not answer if they had a private consultation area. The mean age was 34 years, 253/456 (55.5%) were females, and around one-third of respondents described themselves as pharmacy owners. The mean time postregistration at the OPL was 10 years (SD 9), 142/447 (31.8%) were holders of a postgraduate degree and 171/442 (38.7%) were enrolled in a dermatology postgraduate training program. The mean

Table 1 Community pharmacists' characteristics

Characteristic	Frequency (%) or mean $\pm$ SD
Age in years ($n = 456$)	34 $\pm$ 11
Gender ($n = 456$)	
Male	203 (44.5)
Female	253 (55.5)
Length time postregistration at OPL in years	10 $\pm$ 9
Postgraduate Degree ($n = 447$)	
No	305 (68.2)
Pharm.D.	52 (11.6)
Masters	33 (7.4)
Ph.D	6 (1.3)
Masters & Pharm.D.	4 (0.9)
Other	47 (10.6)
Received dermatology course as part of the standard pharmacy curriculum at university ($n = 436$)	280 (64.2)
Postgraduate dermatology training ($n = 442$)	
No	271 (61.3)
CE lectures provided by OPL	87 (19.7)
Dermatology related conferences provided by pharmaceutical companies	29 (6.6)
Social media	12 (2.7)
Other	43 (9.7)
Private consultation area ($n = 436$)	313 (71.8)

Table 2 The top seven skin conditions encountered during the different seasons

Skin condition [†] ($n = 1282$)	Autumn/winter Frequency (%)	Skin condition [†] ($n = 1341$)	Spring/summer Frequency (%)
Dry skin	241 (18.8)	Sunburn	303 (22.6)
Head lice	167 (13.1)	Acne	209 (15.6)
Eczema	157 (12.2)	Fungal infections	195 (14.5)
Lip problem	135 (10.5)	Bites	169 (12.6)
Acne	110 (8.6)	Rash-adult	162 (12.1)
Cold sores	110 (8.6)	Dry skin	68 (5.1)
Fungal infections	95 (7.4)	Eczema dermatitis	65 (4.8)

[†] Other conditions representing < 5% of all responses included: warts, cold sores, shingles and impetigo.

Table 3 Reasons for referral of patients to dermatologist

	Requirement of prescription	Unsure of diagnosis	Physician supervision	Exemption from charges
N	456	456	456	456
Median Rank [†]	2.74	1.78	2.55	2.93

[†] Friedman test was used and showed a P value of <0.001

score that assessed the extent to which postgraduate training has helped in the management of skin problems was 3.7 (SD 1.12).

Table 2 shows the top seven skin conditions that community pharmacists believed were the most common for patients seeking advice in the spring/summer and autumn/winter seasons.

More than half of respondents (57.3%) reported that skin-related advice requests were 6–15% of the total advice offered to patients. Furthermore, 44.8% of pharmacists estimated that 6–15 patients seek advice about skin problems on weekly basis. Additionally, 42.8% of participants reported that 6–15% of cases needed dermatologist referral, while 33.5% and 23.7% believed that <5% and >15% of requests required referral respectively.

Pharmacists classified the reasons for dermatologist referral based on four categories with 'unsure of diagnosis' ranked first (**Table 3**). Related-samples Friedman's two-way ANOVA by ranks was conducted and showed that the difference among the four median values was significant ($P < 0.001$).

Topical antibiotics were the most common class of prescription-only medications dispensed followed by antibiotic/steroid combinations (**Figure 1**). Topical antifungal/steroid combinations were the most common OTC products dispensed by pharmacist followed by low potency steroids as hydrocortisone 1% cream (**Figure 2**). The majority of community pharmacists (86%) reported counselling patients with skin diseases, with acne (49.1%) and eczema (12.2%) being the most common; their rated confidence in counselling patients about skin problems, topical and oral treatments is shown in **Figure 3**.

Concerning the community pharmacists' characteristics associated with referral of patients to dermatologists, those who attended a dermatology course and postgraduate training significantly referred fewer patients ($P < 0.05$), also, they had higher self-reported confidence in tackling skin diseases and their treatments ($P < 0.05$). Finally, the percentages and mean scores for the four attitudinal statements are shown in **Table 4**.

Discussion

As far as we know, this is the first study to explore community pharmacists' perceptions and role in the management of dermatologic disorders in Lebanon. Our findings suggest that community pharmacists encounter a limited range of skin disorders. They were generally confident in counselling patients, while those with postgraduate dermatological training expressed higher self-confidence when dealing with skin disorders and treatments. Participants also had a positive attitude towards their role in assisting patients and ensuring effective management.

One of the key strengths of this research is that the survey was filled by a random sample of experienced subjects across all Lebanese districts. In addition, the representative sample size and the high response rate obtained can support the generalizability of our findings.

Nonetheless, we are aware that our study has several limitations, a selection bias is possible because some community pharmacies

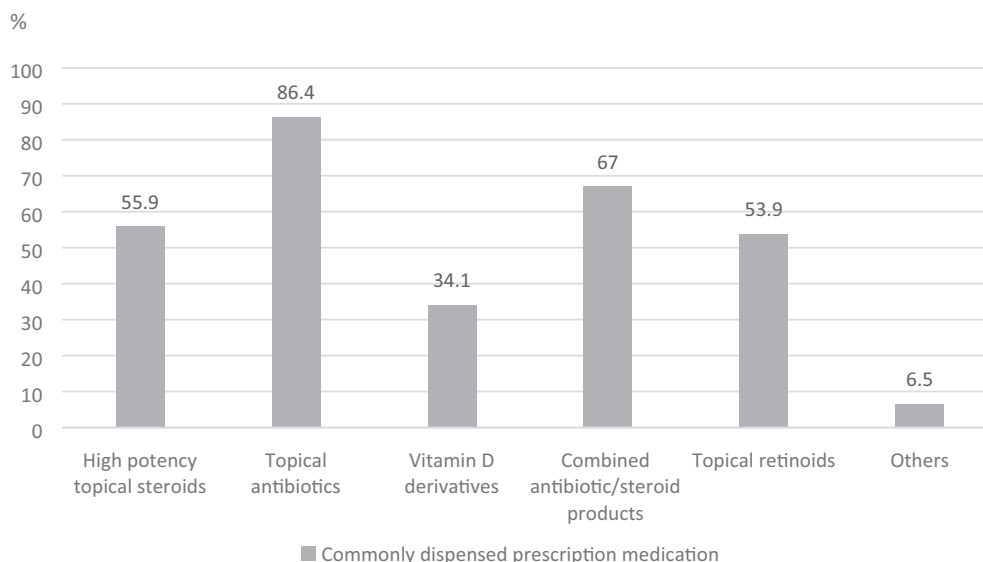


Figure 1 Commonly dispensed prescription-only medications for skin problem by community pharmacists.

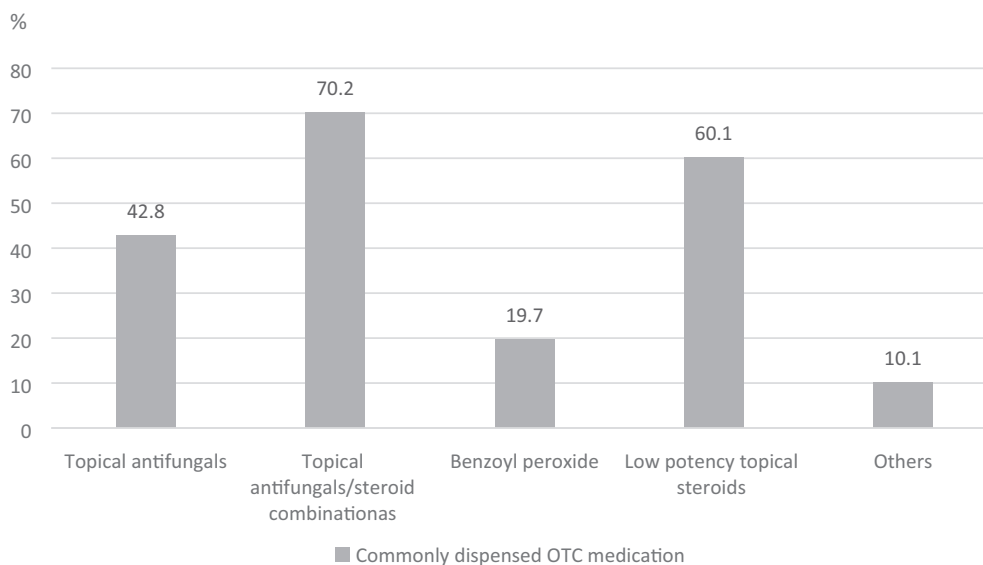


Figure 2 Commonly dispensed OTC medications for skin problem by community pharmacists.

were hard to reach especially in remote regions. Moreover, responses were based on their perceptions of encounters rather than documented patients' data and on their self-reported confidence which does not necessarily equate with competence. Additionally, 29% of respondents were part-time employees which could have affected their perceptions and attitudes.

Based on community pharmacists' observations in the present study, dry skin/head lice and sunburns/acne constituted the most common encounters in autumn/winter and spring/summer seasons, respectively. These findings are reasonable since the aforementioned skin conditions have seasonal patterns of exacerbations.^[20]

Although few community surveys are published in this domain, the types of skin disorders reported in our study throughout the year were comparable to two studies conducted in the UK.^[19, 21] Similarly, an Australian pharmacy survey conducted^[12] between June and July showed that dermatitis/dry skin, infections/

infestations and acne constituted the top three encountered skin conditions.

In the present study, we found that 42.8% of community pharmacists referred only 6–15% of skin problems they encountered to dermatologists. Findings were consistent with previous work that reported 10% referrals to medical doctors.^[12] On the contrary, our percentage was higher than that seen in a study conducted in the UK^[19] where the majority of community pharmacists referred less than 5% of encounters. Overall, these low rates of referral can be justified by the manageable nature of skin conditions in community pharmacies.

The primary reason for dermatologist referral was 'unsure diagnosis'. The diagnosis of dermatologic disorders can be difficult for community pharmacists to practice without training because it includes taking a patient medical history, knowledge of the fundamentals of a dermatologic examination, the ability to provide a potential differential diagnosis and in many cases laboratory tests

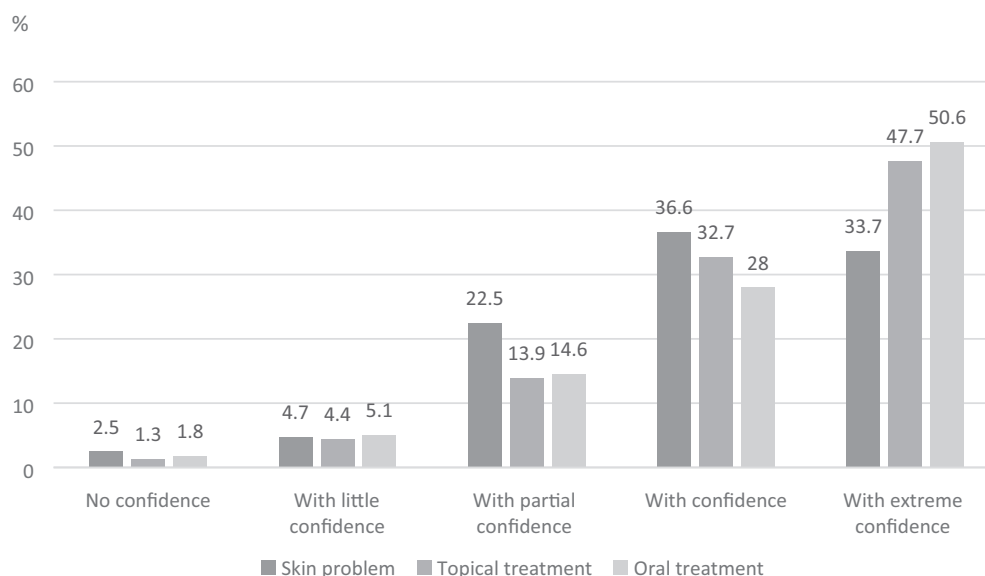


Figure 3 Pharmacists' self-reported level of confidence (%) in counselling patients about skin problems, topical and oral treatments.

Table 4 Scores of agreement with the attitudinal statements

Attitude variables	Strongly disagree (%)	Disagree (%)	Don't know (%)	Agree (%)	Strongly agree (%)	Mean [†] (SD)
Pharmacist should be the first port of call for patients with skin conditions	1.6	22.2	7.5	46.3	22.4	3.66 (1.1)
Pharmacists have a valuable role in assisting patients with dermatologic diseases	0.4	0	2.4	43.3	53.8	4.50 (0.59)
Pharmacists are an important source of advice on medications use for skin disorders	0.7	0.9	3.1	35.8	59.6	4.53 (0.66)
Pharmacy-based dermatology services are helpful for patients with dermatologic disorders	0.9	1.8	4.2	47	46.2	4.36 (0.72)

[†] Mean scores from strongly disagree = 1 to strongly agree = 5.

are needed.^[22] Besides, skin conditions that most frequently present to community pharmacists can vary remarkably from those routinely encountered by dermatologists.^[23] Other reasons for referral were conditions that required a prescription medication or physician supervision and if the patient was exempt from prescription charges. The latter was included because patients registered at the 'National Social Security Fund' are liable for 20% of medication expenses if they provide a prescription from the physician. Accordingly, it was considered possible that one potential reason behind dermatologist referral might be patients' unwillingness to pay for treatments.

Topical antibiotics were the most commonly dispensed prescription medication for skin conditions by 86.4% of community pharmacists. These drugs are used for various purposes in dermatology; acne, bug bites, secondary infections and impetigo. However, there is a lack of studies on the prescribing patterns of antimicrobials by the pharmacist for skin infections in the community pharmacy settings.^[24] Nonetheless, community pharmacists must be aware that the irrational, inappropriate prescribing and misuse of topical antimicrobials is a widespread problem that may lead to the emergence of resistant pathogens such as fusidic acid-resistant *Staphylococcus aureus*.^[25] Prescription-strength topical corticosteroids were the second most commonly prescribed drugs in the present study as single entity products or in combination with antibiotics

because they have multiple indications as dermatitis and psoriasis. In addition, potent strengths are easily dispensed in Lebanon as in other parts of the world.^[26]

Fixed-dose combinations of topical antifungals and corticosteroids were the most common OTC products dispensed by community pharmacists for skin disorders. Antifungal creams containing steroids are routinely used to treat fungal infections such as dermatophytosis, especially in developing countries.^[27] Although topical steroids can help relieve symptoms like itching, they don't eradicate the fungus from the skin, which can lead to antifungal resistance.^[28] It is worth noting that data from controlled trials revealed that the use of fixed-dose antifungal/steroid combination was inferior to antifungal monotherapy in terms of clinical cure rates of dermatophytosis.^[29] Taking that into account, recent reports are urging clinicians, dermatologists and pharmacists to refrain from using topical corticosteroids inappropriately in the treatment of superficial dermatophytosis.^[30]

In accordance with the findings of a previous study,^[31] we found that almost one-third of community pharmacists didn't receive a dermatology course at university as part of the standard pharmacy curriculum and only 38.7% received postgraduate dermatology training. It is evident that postgraduate training, by attaining skills and increasing knowledge, might enhance pharmacists' confidence in

managing skin diseases. Our results were consistent with one study that suggested that dermatology education improves pharmacists' dermatology diagnostic confidence.^[32]

The respondents' self-confidence in advising and counselling patients on common skin problems was remarkably high; more than 60% of community pharmacists were confident and extremely confident. These findings can be attributed to the experienced sample of participants (mean duration of experience >10 years), and the generally restricted range of skin problems encountered.

More than 90% of participants agreed on the importance of pharmacists' role in the management of skin disorders through assisting patients, addressing medication-related issues and providing pharmacy-based services. In a Swedish study, pharmacists were believed to be the first and the last healthcare professional that the patient meets in the process from developing the skin condition to collecting the prescribed medication.^[33] It is conceivable that community pharmacists could play a great role in terms of educating patients with skin disorders. A study revealed that a pharmacist-based educational intervention for caregivers of children with atopic dermatitis significantly improved itching and irritation.^[34] Another study showed that educational advice from pharmacists facilitated effective self-management, improved disease-related outcomes and quality of life of psoriatic patients.^[35]

Conclusion

To investigate how pharmacists can help patients with skin diseases, it was important to figure out what specific skin conditions community pharmacists encounter, their attitude towards pharmacist role and pharmacy-based services in dermatology. Community pharmacists in Lebanon reported encountering a limited range of skin conditions and perceived that they can confidently advise and manage patients. They also had a positive attitude towards their role in assisting patients and facilitating effective management of dermatological disorders. On the other hand, this survey shows that there are shortfalls in dermatology education both at undergraduate and postgraduate levels. Such findings will serve as the foundation for determining how to best develop appropriate training programs that improve pharmacists dermatological knowledge and how to employ their skills in the care of patients with skin diseases. Future research should look into the development and usefulness of pharmacy-based interventions and services for patients with skin diseases.

Author Contributions

B.C., M.C., J.S. and M.D. developed the research question. M.R., F.S., M.D. and M.A. contributed to the study design and analysis plan. F.S., J.S., M.A. and M.R. acquired the data. M.D. and B.C. performed the statistical analyses. B.C. and M.C. drafted the manuscript. All authors critically revised the manuscript, gave final approval and agree to be accountable for all aspects of work ensuring integrity and accuracy.

Funding

The authors declare that they didn't receive external financial support for this research.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

Ethics Approval

The Lebanese International University ethics committee approved this study. Respecting participants' confidentiality and voluntary participation were fundamental conditions in our study.

References

- Hay RJ, Johns NE, Williams HC, *et al.* The global burden of skin disease in 2010: An analysis of the prevalence and impact of skin conditions. *J Invest Dermatol* 2014; 134:1527–34. <https://doi.org/10.1038/jid.2013.446>
- Basra MK, Shahrubh M. Burden of skin diseases. *Expert Rev Pharmacoecon Outcomes Res* 2009; 9: 271–83. <https://doi.org/10.1586/erp.09.23>
- Golics CJ, Basra MK, Finlay AY *et al.* Adolescents with skin disease have specific quality of life issues. *Dermatology* 2009; 218: 357–66. <https://doi.org/10.1159/000205524>
- Rapp SR, Feldman SR, Exum ML *et al.* Psoriasis causes as much disability as other major medical diseases. *J Am Acad Dermatol* 1999; 41: 401–7. [https://doi.org/10.1016/s0190-9622\(99\)70112-x](https://doi.org/10.1016/s0190-9622(99)70112-x)
- Holm EA, Wulf HC, Stegmann H *et al.* Life quality assessment among patients with atopic eczema. *Br J Dermatol* 2006; 154: 719–25. <https://doi.org/10.1111/j.1365-2133.2005.07050.x>
- Tizek L, Schielein MC, Seifert F *et al.* Skin diseases are more common than we think: screening results of an unreferral population at the Munich Oktoberfest. *J Eur Acad Dermatol Venereol* 2019; 33: 1421–8. <https://doi.org/10.1111/jdv.15494>
- Habeed I, Deepack J, Jegan R. Pharmacists in the wider public health workforce – a review. *Arch Pharm Pract* 2012; 3: 166–9. <https://doi.org/10.4103/2045-080X.112812>
- Hallit S, Zeenny RM, Sili G *et al.* Situation analysis of community pharmacy owners in Lebanon. *Pharm Pract (Granada)* 2017; 15: 853. <https://doi.org/10.18549/PharmPract.2017.01.853>
- Addae-Mensah I, Bawazir S, Biwota A *et al.* Joint FIP/WHO Guidelines on Good Pharmacy Practice: Standards for Quality of Pharmacy Services. *WHO Technical Report Series*, No. 961 (2011) Annex 8. http://whqlibdoc.who.int/trs/WHO_TRS_961_eng.pdf (10 January 2021, last date accessed).
- Fabbro SK, Mostow EN, Helms SE *et al.* The pharmacist role in dermatologic care. *Curr Pharm Teach Learn* 2014; 6: 92–105. <https://doi.org/10.1016/j.cptl.2013.09.008>
- Taylor JG, Joubert R. Pharmacist-led minor ailment programs: a Canadian perspective. *Int J Gen Med* 2016; 9: 291–302. <https://doi.org/10.2147/IJGM.S99540>
- Yeatman JM, Kilkenny MF, Stewart K *et al.* Advice about management of skin conditions in the community: who are the providers? *Aust J Dermatol* 1996; 37: 46–7. <https://doi.org/10.1111/j.1440-0960.1996.tb01084.x>
- Tucker R, Stewart D. Why people seek advice from community pharmacists about skin problems. *Int J Pharm Pract* 2015; 23: 150–3. <https://doi.org/10.1111/ijpp.12126>
- Tucker R, Stewart D. An exploratory study of the views of community pharmacy staff on the management of patients with undiagnosed skin problems. *Int J Pharm Pract* 2015; 23: 390–8. <https://doi.org/10.1111/ijpp.12179>
- Hammond T, Clatworthy J, Horne R. Patients' use of GPs and community pharmacists in minor illness: a cross-sectional questionnaire-based study. *Fam Pract* 2004; 21: 146–9. <https://doi.org/10.1093/fampra/cmh207>
- Hassell K, Noyce PR, Rogers A. A review of factors that influence the use of community pharmacies as a primary health care resource. *Int J Clin Pharm* 1999; 7: 51–9. <https://doi.org/10.1111/j.2042-7174.1999.tb00948.x>
- Khattar JA, Hamadeh GN, Rahi AC *et al.* Common dermatologic diseases among students at a tertiary care center in Lebanon. *J Med Liban* 2010; 58: 195–8.
- Tomb RR. One century of dermatology in Lebanon. *Int J Dermatol* 2003; 42: 488–90. <https://doi.org/10.1046/j.1365-4362.2003.01766.x>
- Tucker R. An exploratory study of UK community pharmacist's perceptions of the skin conditions they encounter: Prevalence, reasons for referral and over-the-counter dermatological wish list. *Self/Care* 2013; 4: 3–17.

20. Hancox JG, Sheridan SC, Feldman SR *et al.* Seasonal variation of dermatologic disease in the USA: a study of office visits from 1990 to 1998. *Int J Dermatol* 2004; 43: 6–11. <https://doi.org/10.1111/j.1365-4632.2004.01828.x>
21. Tucker R. Community pharmacists' perceptions of the skin conditions they encounter and how they view their role in dermatological care. *Int J Pharm Pract* 2012; 20: 344–6. <https://doi.org/10.1111/j.2042-7174.2012.00212.x>
22. Federman DG, Kirsner RS. The patient with skin disease: an approach for nondermatologists. *Ostomy Wound Manage* 2002; 48: 22–8; quiz 29–30.
23. Wilmer EN, Gustafson CJ, Ahn CS *et al.* Most common dermatologic conditions encountered by dermatologists and nondermatologists. *Cutis* 2014; 94: 285–92.
24. Balakrishnan J, Appalasamy JR. Skin infection and the global challenges: a review. *Int J Pharm Pharm Sci* 2016; 8: 1–3.
25. Shah M, Mohanraj M. High levels of fusidic acid-resistant *Staphylococcus aureus* in dermatology patients. *Br J Dermatol* 2003; 148: 1018–20. <https://doi.org/10.1046/j.1365-2133.2003.05291.x>
26. Kimyon RS, Schlarbaum JP, Liou YL *et al.* Prescription-strength topical corticosteroids available over the counter: Cross-sectional study of 80 stores in 13 United States cities. *J Am Acad Dermatol* 2020; 82: 524–5. <https://doi.org/10.1016/j.jaad.2019.10.035>
27. Karekar SR, Marathe PA, Nagarajan VB *et al.* Use of topical steroids in dermatology: a questionnaire based study. *Indian Dermatol Online J* 2020; 11: 725–30. https://doi.org/10.4103/idoj.IDOJ_566_19
28. Verma S. Steroid modified tinea. *BMJ* 2017; 356: j973. <https://doi.org/10.1136/bmj.j973>
29. Erbagci Z. Topical therapy for dermatophytoses: should corticosteroids be included? *Am J Clin Dermatol* 2004; 5: 375–84. <https://doi.org/10.2165/00128071-200405060-00002>
30. Rana P, Ghadlinge M, Roy V. Topical antifungal-corticosteroid fixed-drug combinations: Need for urgent action. *Indian J Pharmacol* 2021; 53: 82–4. https://doi.org/10.4103/ijp.ijp_930_20
31. Hafejee A, Coulson IH. Community pharmacists' role in managing common skin problems. *Br J Dermatol* 2006; 155: 1297. <https://doi.org/10.1111/j.1365-2133.2006.07545.x>
32. Lau PM, Marks R, Stewart K. The outcome of an education programme to assist pharmacists in prescribing over-the-counter (OTC) products for common skin diseases. *Pharm Educ* 2001; 1: 83–90. <https://doi.org/10.1080/15602210210330>
33. Lindblad AK, Kjellgren KI, Ring L *et al.* The role of dermatologists, nurses and pharmacists in chronic dermatological treatment: patient and provider views and experiences. *Acta Derm Venereol* 2006; 86: 202–8. <https://doi.org/10.2340/00015555-0065>
34. Carr A, Patel R, Jones M *et al.* A pilot study of a community pharmacy intervention to promote the effective use of emollients in childhood eczema. *Pharm J* 2007; 278: 319–22.
35. Tucker R, Stewart D. The role of community pharmacists in supporting self-management in patients with psoriasis. *Int J Pharm Pract* 2017; 25: 140–6. <https://doi.org/10.1111/ijpp.12298>