Original Article

Knowledge and Practice of Community Pharmacists Regarding Acne Vulgaris: A Cross-Sectional Descriptive Survey

Dalal Hammoudi Halat[1]*, Wassim El Basset[1], Nisreen Mourad[1], Samar Younes[2], Mohamad Rahal[1]

[1]Department of Pharmaceutical Sciences, School of Pharmacy, Lebanese International University, Bekaa, Lebanon. [2]Department of Biomedical Sciences, School of Pharmacy, Lebanese International University, Bekaa, Lebanon.

Abstract

Acne Vulgaris (AV) is a common dermatological disorder of adolescents, and patients often seek community pharmacists for professional advice regarding it. This study aimed to assess the knowledge and practice of community pharmacists regarding AV in Bekaa Governorate, a rural area of Lebanon. A cross-sectional survey was conducted in community pharmacies in Bekaa Governorate. A questionnaire was distributed to community pharmacists to assess their knowledge about AV and was composed of four sections addressing demographic data and various aspects of AV practice. Seventy-one community pharmacists responded to the questionnaire, with a mean age of 38 years. Overall, pharmacists displayed good knowledge regarding AV causes, with 68% of respondents aware of its risk factors. The treatment option most commonly used for mild AV was benzoyl peroxide, used by 79% of respondents, followed by topical antibiotics (68%) then facial washes with salicylic acid (66%). The treatment option most commonly used for severe AV was oral antibiotics (73%). The most commonly prescribed antibiotics were topical erythromycin and systemic doxycycline. Surprisingly, 66% of the participants prescribed Isotretinoin. About half of the participants recommended AV management for four weeks. Moreover, about half provided partial treatment and referred patients to dermatologists. The study revealed an overall acceptable knowledge of pharmacists regarding AV management. Still, given the common practice of community treatment of AV, further actions should be made to emphasize their role and keep them updated regarding the latest AV pharmacotherapeutic trends.

Keywords: Acne vulgaris, Community pharmacist, Treatment, Knowledge

Introduction

Acne vulgaris (AV) is one of the most common dermatologic ailments, with variable prevalence based on age and ethnicity, but with up to 85% of adolescents and up to two-thirds of individuals above 18 being somehow afflicted with this condition [1-3]. It is defined as a disease of the pilosebaceous unit [4], resulting from an androgen-induced increase in sebum production affecting the sebaceous glands on the face, neck, chest, and back [5].

AV has a major influence on skin appearance, emotions, daily and social activities, study, work, and interpersonal relationships [6]. The risk factors of AV fluctuate between hormonal [7], genetic [8], and bacterial with the involvement of *Propionibacterium acnes* [9], but the major cause of acne remains largely unknown. The treatment of AV is complex, tackling the key players in its pathogenesis. Topical treatments include antibiotics and comedolytics such as benzoyl peroxide or topical vitamin A derivatives. Oral treatments encompass oral antibiotics, hormonal therapy, or Isotretinoin, in addition to laser therapy and chemical peeling [10]. Counseling along with early treatment of AV is important [6], regarding its causes and pharmacotherapy to help improve adherence and to decrease some of the psychosocial burdens it carries [11], especially with evidence that AV counseling ensures compliance and decreases chances of treatment failure [12]. To obtain AV counseling and advice, patients usually present to community pharmacies early in their disease [13]. Many reasons stand behind the choice of community pharmacists for dermatological conditions, such as avoiding physician visits for skin problems, pharmacists being drug experts who provide patients with full knowledge regarding the proper medication use, and their easy accessibility in the community

Address for correspondence: Dalal Hammoudi Halat, Department of Pharmaceutical Sciences, School of Pharmacy, Lebanese International University, Bekaa, Lebanon.
dalal.hammoudi@liu.edu.lb

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[14, 15]. Added to these reasons, in Lebanon, pharmacist counseling is a service pharmacists perform for free from their community counters for the well-being of their patients. To offer proper patient advice, the community pharmacist should always be updated regarding AV pharmacotherapy, proper counseling tips when dispensing AV medications, and the proper directions for the use of both prescription and non-prescription medications [16], especially since patients can sometimes self-treat this condition [17].

Previous studies showed conflicting results regarding the knowledge and practice of pharmacists and prescribers in the field of AV. They recommended the need for a call of action to update and improve this knowledge [13, 18]. Only rare data regarding pharmacist knowledge and practices regarding AV exist. Previously, Dardari *et al*. investigated the knowledge level and practice management of AV among community pharmacists in Tripoli and showed unsatisfying results in treatment, practice, and referral in addition to the overall AV knowledge [19]. Furthermore, Khattar *et al*. investigated common dermatological diseases in Lebanon and discovered AV to be the most prevalent and showed its negative impact on patients [20].

In light of the above, the present cross-sectional study was conducted to evaluate community pharmacists' knowledge and practice regarding AV causes and pharmacotherapy models in their community pharmacy settings in the Bekaa governorate, a rural area of Lebanon. To our knowledge, no previous study has addressed AV knowledge and practices among community pharmacists in this area.

Materials and Methods

Study Design and Population

A cross-sectional survey about AV knowledge and practices was conducted among pharmacists in the Bekaa governorate over two months, from August through September 2017. All invited pharmacists accepted to participate.

Acne Vulgaris Questionnaire

The questionnaire about knowledge and practices regarding AV was prepared to administer to pharmacists in English. Given that some pharmacists have French as a second language to Arabic, the writing of the questionnaire used scientific English, and translation to Arabic (mother language) was verbally offered if needed. The questionnaire included a total of 35 questions structured into four parts as follows: (1) The first part was composed of 10 questions that included demographic participant data (gender, age, geographic area, educational level, years of experience, availability of a dermatologist or a dermatological company that promotes AV care in the pharmacy). (2) The second part of the questionnaire evaluated the pharmacists' knowledge on AV hormonal, genetic and microbial etiologies. It also investigated risk factors aggravating AV or worsening its symptoms, including stress, type of work, psychosocial factors, the correlation between Av and diet in general, and dairy products in particular. Questions also addressed AV incidence, the role of hygiene in AV, and knowledge regarding AV consequences in terms of scarring. (3) The third part of the questionnaire addressed the pharmacists' knowledge regarding AV treatment options. It included four questions identifying the common treatments used by the community pharmacists for either mild or severe AV, including common antibiotics they prescribe, both oral and topical. (4) The final part of the questionnaire was dedicated to investigating general AV treatment and referral practices. Also, it included four questions investigating the pharmacist's duration of treatment, AV case follow-up, general counseling tips offered, and referral frequency for severe AV. All participating pharmacists were asked to choose more than one answer when needed and if applicable.

Ethical Approval and Data Collection

The study was approved by the Lebanese International University, School of Pharmacy, Bekaa campus research group. The questionnaire was administered to pharmacists in their community pharmacy workplace by pharmacy interns during their clerkship after a face-to-face consultation between the interns and the pharmacists to explain the study's aim and obtain verbal consent. Participant pharmacists were informed that the data obtained from the study will be used to offer them ways for better care for AV patients and that their responses will be anonymous and confidential. They were also assured that participation in the study was voluntary and that they had the freedom to decide, at any time, to withdraw from answering the questionnaire. The agreement of the pharmacist to complete the questionnaire was considered an informed written consent to participate. Participating pharmacists first filled the questionnaire manually, then all filled questionnaires were entered in an online form to allow the analysis of the results.

Data Analysis

Variables were analyzed using descriptive statistics, including mean ± standard deviation for quantitative variables and frequencies and percentages for qualitative variables. Analyses were performed on the whole participants and grouped for compiling the results.

Results and Discussion

Demographic Participant Data

Seventy-one community pharmacists answered the questionnaire, with a mean age of 38 years (SD=10), where the majority were males (60.6%), and the rest were females (39.4%). Almost one-third of the interviewed pharmacists (33.8%) had a post-graduate degree (PharmD or Masters of Science in pharmacy), and 36.62% had work experience between 6-10 years. Moreover, 71.83% of the participants had received previous continuous education regarding AV, and 50.7% declared no promotional dermatology sessions conducted by specialists at their community sites. Additionally, pharmacists reported vast availability of dermatologists in their area of practice (85.82%). All

demographic data of participating pharmacists are shown in **Table 1**.

Table 1. Demographic Characteristics of the Participants

Respondents Demographic data	N (%)
Gender	
- Male	43 (60.6)
- Female	28 (39.4)
Years of experience in community pharmacy	
- 1-5 years	15 (21.13)
- 6-10 years	26 (36.62)
- 11-15 years	10 (14.08)
- 16-20 years	8 (11.27)
- 21-25 years	8 (11.27)
- More than 25 years	4 (5.63)
Highest pharmacy degree	
- BS in pharmacy	47 (66.2)
- MS in pharmacy	14 (19.72)
- PharmD	10 (14.08)
Previous continuing education on AV	
- Yes	51 (71.83)
- No	20 (21.17)
Dermatologist availability in the area	
- Yes	61 (85.92)
- No	10 (14.08)
Promotional dermatology session at the pharmacy	
- Yes	35 (49.3)
- No	36 (50.7)

AV = Acne Vulgaris

Assessment of Acne Vulgaris Causes

Regarding AV causes, respondents had adequate knowledge of hormonal, microbial, and genetic causes, as shown in **Figure 1**. Despite the good knowledge of community pharmacists regarding AV, only about 18.3% and 33.8% correctly answered questions related to the role of diet and dairy products, respectively, and about half of the respondents were not aware that appropriate hygiene does not prevent AV. Nevertheless, a good proportion (88.73%) were already aware of the effects of certain systemic drugs and cosmetics on acne production. Over 90% of participants were aware of the role of stress in aggravating AV, the persistence of AV beyond the age of 20, and the possibility of scars production in patients with AV **(Figure 2)**.

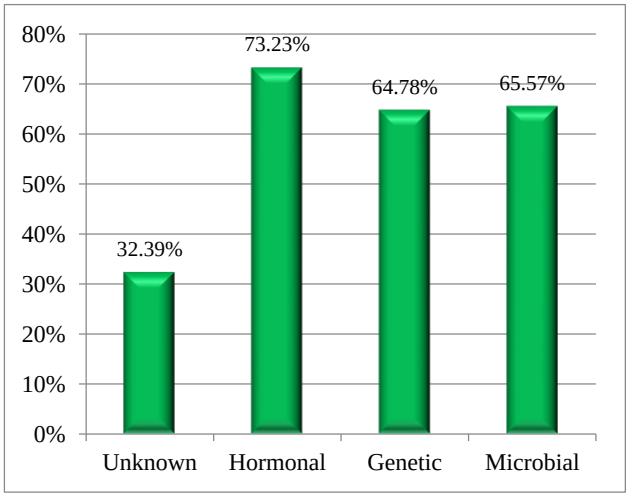

Figure 1. Knowledge, Expressed as Percentage of Correct Answers, of Participating Community Pharmacists regarding the Causes of Acne Vulgaris

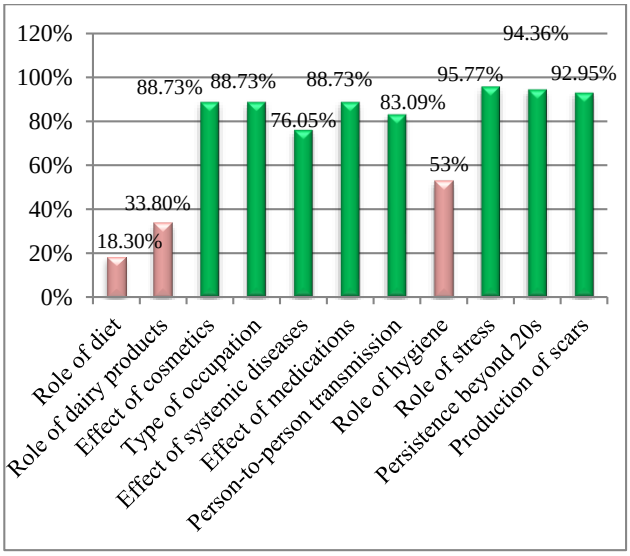

Figure 2. Knowledge, Expressed as Percentage of Correct Answers, of Participating Community Pharmacists regarding the Precipitating Factors of Acne Vulgaris

Acne Vulgaris Treatment and Drug Options

For mild AV, topical treatment was the most commonly used by the participants, starting with benzoyl peroxide, used by 78.87%, followed by topical antibiotics (67.6%), then facial washes with salicylic acid (66.2%). Some community pharmacists used less effective therapies such as facial washes and sulfur soaps (48.66%) more than recommended ones such as topical vitamin A derivatives (33.8%), and some even used Isotretinoin (1.40%), a systemic therapy not recommended for mild AV. In addition to Isotretinoin, some community pharmacists prescribed oral treatments such as oral antibiotics (11.26%), combined oral contraceptives (5.63%), or less frequently encountered topical therapies such as dapsone or zinc oxide (4.22 and 21.12%, respectively). Among the most commonly prescribed topical antibiotics for

AV was erythromycin (45.1%) followed by clindamycin (38%), whereas topical tetracycline was the least prescribed (1.4%).

For severe AV, oral treatment was the most commonly used with oral antibiotics (73.24%) followed by oral Isotretinoin (66.2%). Nevertheless, topical treatment was also prescribed, as facial washes with salicylic acid or topical vitamin A derivatives, both with similar frequency (39.43%), except dapsone, which any participating community pharmacists did not prescribe for severe AV. Among the most commonly prescribed oral antibiotics, doxycycline was the most commonly prescribed (76.1%), and lymecycline was the least prescribed (2.8%). Few community pharmacists mentioned minocycline as an alternative option (4.2%). All participants' responses regarding AV treatment options are presented in **Table 2**.

Table 2. Treatment Modalities Adopted by Participating Pharmacists for both Mild and Severe Acne Vulgaris

Treatment modalities	N (%)
Mild AV	
- Topical Therapy	
• Benzoyl peroxide	56 (78.87)
• Antibiotics	48 (67.7)
○ Erythromycin	22 (45.10)
○ Clindamycin	18 (38)
○ Fusidic acid	7 (16)
○ Tetracycline	1 (1.4)
• Acne washes with salicylic acid	47 (66.2)
• Acne washes/sulfur soap	31 (48.66)
• Vitamin A Derivatives	24 (33.8)
• Zinc Oxide	15 (21.12)
• Steroids	9 (12.67)
• Dapsone	3 (4.22)
- Systemic therapy	
• Oral antibiotics	8 (11.26)
• Combined oral contraceptives/hormonal therapy	4 (5.63)
• Isotretinoin	1 (1.40)
Severe AV	
- Topical therapy	
• Acne washes with salicylic acid	28 (39.43)
• Vitamin A derivatives	28 (39.43)
• Antibiotics	27 (38.92)
• Benzoyl peroxide	24 (33.80)
• Acne washes/sulfur soap	17 (23.94)
• Steroids	10 (14.08)
• Zinc oxide	3 (4.23)
• Dapsone	0 (0.0)
- Systemic therapy	
• Oral antibiotics	52 (73.24)
○ Doxycycline	39 (76.10)
○ Tetracycline	8 (12.70)
○ Erythromycin	2 (4.20)
○ Minocycline	2 (4.20)
○ Lymecycline	1 (2.80)
• Isotretinoin	47 (66.20)
- Combined oral contraceptives/hormonal therapy	17 (23.94)

Acne Vulgaris Management Practices

Table 3 summarizes the results regarding AV management practices among community pharmacists. Nearly half of the participating community pharmacists managed AV for more than four weeks (50.70%), with the vast majority (90.14%) following up with their patients. Almost half of the community pharmacists provided partial treatment. They referred if necessary (52.12%), whereas the rest either referred to the dermatologist without any treatment (46.47%) or managed patients without any referral to the dermatologist regardless of acne severity (1.41%).

Regarding the common counseling tips, almost all participating community pharmacists chose a combination of at least three counseling tips they usually provide. The most common among these was avoiding friction or picking at the acne lesions (95.77%), followed directly by frequent washing and cleaning of AV lesions, and avoiding stress (78.87% each). Adherence to treatment regimens and maintaining a healthy diet were among the last two counseling tips provided by the community pharmacists (76.05 and 66.2%, respectively).

Table 3. Participants' General Practices regarding Acne Vulgaris Treatment and Referral

Practices	N (%)
Average treatment duration recommended	
- More than 4 weeks	36 (50.70)
- 2-4 weeks	34 (47.89)
- 1 week	1 (1.41)
Do you usually make follow-ups for your patients?	
- Yes	64 (90.14)
- No	7 (9.86)
What supports besides medication do you usually recommend for your patients?	
- Avoid friction or picking at the acne lesions	68 (95.77)
- Avoid stress	56 (78.87)
- Frequent wash and clean the acne lesions	56 (78.87)
- Adhere to treatment regimens	54 (76.05)
- Adhere to a healthy diet	47 (66.20)
How often do you refer patients with severe acne to a dermatologist?	
- Provide partial treatment and refer if necessary	37 (52.12)
- Always refer without medications	33 (46.47)
- Manage patients without a referral	1 (1.41)

In the current study, the level of knowledge of community pharmacists and their scientific and pharmacotherapeutic background regarding AV in the Bekaa region of Lebanon was assessed. This is the first cross-sectional study that sheds light on this topic in this area. The impact of such investigation has its roots in AV creating a noteworthy cosmetic and psychosocial burden, and its incidence is one of the most common dermatological problems in Lebanon [19]. AV patients seek help from healthcare providers, including pharmacists who are readily available [14, 15]. This justifies the need for pharmacists to stay updated regarding the pathophysiology and pharmacotherapy of AV and stresses the need to assess their knowledge and practices in this regard.

The above results revealed that participants demonstrated an overall good knowledge regarding AV, which is in line with other previously published data inside and outside Lebanon [13, 18, 20]. Knowledge regarding factors contributing to acne leads to efficient counseling of patients and assists in decreasing AV burden [13]. Almost two-thirds of the participants (73.23%) indicated the important role of the hormonal factor in the pathogenesis of AV. Indeed, hormones are crucial in AV, and screening for their levels is important in some patients before initiating any treatment [7, 21]. The results agree with Prashar *et al*. in their study on pharmacists' knowledge regarding AV in Lusaka, where 87.6% of the participants also reported that the hormonal factor is the major key player in AV [13]. However, participants in their study did not regard genetics and family history as an important cause of AV in contrast to this study's findings and other supportive data [8]. Despite the importance of hormones in the pathogenesis of AV, there seems to be a cocktail of predisposing factors and proposed etiologies that also play an important role, such as genetics and family history, bacterial origin as the involvement of *P. acnes* [8, 9, 22], all which were acknowledged by the participating community pharmacists, reflecting a good background knowledge regarding this common skin condition.

In contrast, when it came to diet, some of the participants (33.8%) thought that dairy products could not aggravate acne, whereas the majority (78.87%) thought that spicy food, chocolate, and coffee could do. To date, several studies found a link between certain food triggers and AV [23-25]. These studies focused on carbohydrates generally, without establishing a strong link between AV and diet, which remains controversial. Some studies reported that a high glycemic index could actually aggravate AV and that a low glycemic load diet could actually help in AV by decreasing one probable pathophysiological pathway [24, 25]. This reflects that the participants' knowledge of AV risk factors was variable, which may lead to inadequate elucidating consistent counseling for patients. In addition, a similar trend was noticed regarding the role of hygiene, where some participants indicated that hygiene prevents AV, and a higher number indicated that hygiene plays a role in decreasing AV. Although some studies support that good hygiene can reduce AV symptoms by decreasing peeling, dryness, and irritation, AV is not a directly linked hygiene disorder [26-28]. As for the role of systemic drugs, a good proportion of the community pharmacists (88.73%) were already aware of the effects of certain systemic drugs as well as systemic diseases on AV production, which can help participants rule out some causes of AV before deciding on the right call for action whether they should provide a partial non-prescription treatment or refer directly to a dermatologist [29, 30].

Regarding AV treatment, shortfalls in pharmacists' diagnostic capacities in dermatological conditions were previously reported, probably due to lack of knowledge and expertise, leading to ineffective treatment [15]. Among this study's participants, pharmacological treatment modalities for acne management were investigated, and moderate knowledge was demonstrated, probably more modest in practice. For mild AV, the majority of the participants prescribed benzoyl peroxide in addition to topical antibiotics (with erythromycin and clindamycin the most frequently prescribed). Therefore, participants' perceptions agreed with current AV management guidelines [31]. However, according to the American Academy of Dermatology, only benzoyl peroxide in strengths between 2.5-10%, salicylic acid, and adapalene (a topical retinoid) 0.1% gel are regarded as non-prescription AV products [31, 32]. This may reflect that, in practice, the participants did not limit AV options to non-prescription ones, as they used topical antibiotics and topical retinoids. In addition, participants prescribed acne washes with salicylic acid and even topical steroids, which are not indicated as first-line treatment options, as they were shown to be less effective for mild AV.

Similarly, the study revealed good knowledge regarding AV pharmacotherapy among participants in severe AV, but with some malpractices. These included the prescription of oral antibiotics and oral Isotretinoin by most participants (73.24 and 66.2%, respectively). The standard recommendations for severe AV involve systemic therapy with oral Isotretinoin as the drug of choice for nodulocystic cases [31, 33]. Oral antibiotics such as tetracyclines (doxycycline or minocycline), macrolides (erythromycin) also play a role in severe AV in combination with other agents [31]. However, neither of them is a non-prescription product; antibiotics carry the risk of side effects and development of resistance in *P. acne* [34, 35]. Moreover, Isotretinoin should never be prescribed without the supervision of a dermatologist as it needs constant monitoring (complete blood count, liver function tests, cholesterol, and others) and constant skincare and follow-up [36]. Perhaps community pharmacists' practices regarding oral antibiotics and Isotretinoin should be further investigated, to avoid improper/nonindicated use, tackling the important adverse effects, as well as the emergence of antibiotic resistance in *P. acnes*. Furthermore, some participants prescribed topical treatments such as benzoyl peroxide or topical antibiotics, which are ineffective in severe AV cases. This should be addressed in terms of improving patient satisfaction with AV treatment and the need to use recommended products proved as safe and effective in severe AV.

Patient follow-up and counseling are also important in AV management, and their lack could lead to incorrect and outdated information [18]. This is an add-on point in participating pharmacists who largely (90.14%) asked patients for follow-up. In AV counseling, almost all participating pharmacists showed good knowledge, but surprisingly few of them did not match adherence to treatment regimens needed in AV care. Adhering to treatment regimens was proven to accelerate AV healing, prevent relapse, and decrease scarring [37, 38].

Finally, assessment of referral, which is considered an indicator of pharmacists' knowledge, care and counseling strategies, was also performed. Some studies suggested that the high rate of referral could indicate poor knowledge, decreased care, and minimal counseling strategies, while others suggested that the low rate of referral could also indicate low-level pharmacy practice by pharmacists [18]. Nevertheless, a referral is sometimes a convenient strategy for moderate to severe AV, which requires a dermatologist's advanced systemic therapy and care. The above results showed a good practice of the participating pharmacists regarding AV in terms of referral, where the majority referred to a dermatologist without medications or prescribed partial treatment and referred if necessary.

Conclusion

In conclusion, this study revealed that pharmacists in the Bekaa region demonstrated sufficient knowledge but a less informed practice regarding AV in general. Continuing education sessions, workshops, and other updating methods should be implemented to keep community pharmacists abreast of AV and other common dermatological problems. Indeed, ongoing studies should investigate community pharmacists' awareness about AV in other Lebanese regions and highlight gaps of knowledge and practice so that these can be adequately addressed in continuing education or training programs.

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