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Knowledge and Perception Regarding Acne Among Caregivers of Adolescent Female Patients with Acne Vulgaris

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ABSTRACT

Background & Objective: Acne vulgaris is the most common skin condition affecting adolescents. The disease is more prevalent among girls than boys. This study was conducted with aim to assess the knowledge and beliefs of caregivers mothers or older sisters of female patients with acne vulgaris, as experienced members of the community, and to evaluate their basic understanding and awareness of acne.

Materials & Methods: This cross-sectional prospective study was conducted at Erbil Dermatology Teaching Center in Erbil, Iraq, involving 114 caregivers. Their demographic data were recorded, followed by direct interviews using a set of predefined questions to assess their knowledge and perception of acne causes, symptoms, and treatments. The collected data were analyzed statistically using SPSS software (version 17).

Results: Among the caregivers, 46.5% believed that acne has a genetic component, while 13.2% disagreed and 40.4% were unsure. After categorizing overall knowledge into basic and high levels, 34.2% demonstrated good basic knowledge, while only 25.4% had good high-level knowledge. Nearly all caregivers (97%) obtained their information from family and friends.

Conclusion: The results of the present study revealed that most caregivers had poor knowledge about acne. While basic information about acne was relatively well known, more advanced knowledge was lacking. Since caregivers primarily relied on family and friends for information, there is a need for mass media to play a greater role in educating the public about acne and community health.

Keywords: Acne vulgaris, Adolescent female, Caregiver, Knowledge, Perception

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1. Introduction

Acne vulgaris is the most common skin condition affecting adolescents **(1)**. The prevalence of the disease among this age group varies across studies conducted in different countries **(2)**. Research indicates that acne is more prevalent among girls than boys **(3)**.

This condition has a significant negative impact on quality of life which can persist for several years. Many individuals, particularly females, are primarily concerned with its cosmetic effects when seeking treatment **(4)**. A wide range of treatment options is available, with oral isotretinoin being the most effective for severe cases **(5,6)**.

Despite the high prevalence of acne and the fact that many adults have experienced this condition, some studies suggest that knowledge and awareness regarding acne and its treatment options remain low **(7,8)**. Previous research has primarily focused on acne patients themselves **(7)**. As experienced members of the community, caregivers play a crucial role in treatment decisions and adherence to treatment plans, which in our society often depends more on them than on the patients themselves. Therefore, this study was conducted with aim to assess the knowledge and beliefs of caregivers mothers, daughters, or sisters of female patients with acne vulgaris.

2. Materials and Methods

This cross-sectional prospective study was conducted at Erbil Dermatology Teaching Center in Erbil, Iraq, from February to June 2020. This study was conducted on the caregivers of adolescent acne patients, specifically mothers or older sisters accompanying them to the center. A total of 114

caregivers were included through a convenience sampling method as they sought care for their adolescents.

Demographic data of caregivers were recorded, followed by direct interviews using a set of predefined questions to assess their knowledge and perception regarding acne causes, symptoms, and treatment options. Caregivers' responses were categorized as "yes," "no," or "I don't know." The overall knowledge was divided into two levels: High knowledge, which included more advanced concepts such as the effects of steroid creams and tablets on acne, the long-term consequences, associated conditions, and the side effects of acne treatments. Basic knowledge, which encompassed general information about acne.

All collected data were statistically analyzed using SPSS software (version 17).

3. Results

General and socio-demographic characteristics of 114 caregivers of adolecnet female acne patients were recorded in Table 1. The age of caregivers ranged between 21-69 years with the mean of 43±10.7 years. Half of them were housewives (57%) and 20% were working in public sector. The illiterates were more than other levels of education (31.6%). The rest were educated to the levels of primary school (25.4%), secondary school (15.8%) and institutions or university (27.2%). Half of the samples (50%) had moderate income. Poor and good economic status constituted 30.7% and 19.3%. respectively. About half of the caregivers (51.8%) had themselves history of acne during their adolescence. Apart from their daughters or sisters with acne diseases, 36% of them had also male acne patients in the family. More than 58.8% of them have been in dermatology consultation previously for the same reason. More than half of them (54.4%) visited public hospitals for acne treatment of their girls or sisters. Using GAGS score, the acne was evaluated to be mild in 8.8%, moderate in 33.3% and severe in 57.9% (Table 1).

Knowledge Regarding Causes of Acne and Aggravating Factors

Thinking that acne is a familial running disease was present in 46.51% of caregivers, 13.2% rejected this idea and 40.4% stated they don't know. Majority of caregivers (87.7%) believed that acne is due to puberty. More than half (59.6%) accepted that diet could be the cause of acne, while 7% had no idea whether diet causes acne or not. Only minority of the sample (14%) referred to acne as infectious. Moreover, 38.6% believed that cosmetics and makeup can be culprit in acne. Epilation means as causative factor of acne was approved by 33.3%, while those who put "no" and "I don't know" to this factor were 18.4% and 48.2%, respectively. Regarding the role of steroids tablets or creams in acne induction, it was known only in 18.4% and 12.3%, respectively. Those who said that steroid creams and tablets do not cause acne were 15.8% and 13.2%, respectively. While the majority responded as "I don't know" to the steroid creams and tablet in acne causation. More than half of the caregivers (62.3%) did not know that menses can induce several acne lesions (Table 2).

Knowledge About Location of Acne Presentation

All the caregivers think that acne presents on the face skin. Only 34.2% knew that back could be another localization of acne lesions, while 23.7% denied that and 42.1% said "I don't know" to it. Caregivers who believed that acne could present on chest and shoulders were 24.6% and 20.2%, respectively (Table 3).

Knowledge Regarding Types of Acne Lesions

Among the participants, 34.2% knew that acne can be presented with comedones, nearly half (45.6%) did not know that and only 20.2% rejected that comedones are part of acne presentation. The majority knew that acne lesion could be papule (89.5%) and pustules (81.6%). Moreover, 68.4% didn't know that acne can have nodulocystic morphology (Table 4).

Knowledge Regarding the Sequels of Acne and Its Associating Problems

About half of the samples (56.1%) knew that acne lesions leave hyperpigmentation, while 36.8% didn't know that. Majority of the caregivers (71.1%) were aware that severe acne can produce skin scars. Moreover, 54.4% didn't know that these scars are difficult to treat. The knowledge of severe acne being associated with hirsutism and menstrual cycle irregularities was known equally (42.1%) by the participants, while severe acne to be associated with hair loss was known only by minority of the participants (7.9%) (Table 5).

Knowledge About Side-Effects of Acne Treatment

Acne treatment application was known to cause erythema, skin dryness and skin scales in 57.9%, 50% and 39.5%, respectively. In this regard, 49.1% of the caregivers didn't know that acne treatment induces skin peeling. Absence of awareness about side effects of acne treatment, skin dryness and erythema, was observed at 36.8% and 32.5%, respectively (Table 6).

The Overall Knowledge

After categorization of the overall knowledge to basic and high knowledge by items, good overall basic knowledge regarding acne was present in 34.2%; while the overall high knowledge was good in only 25.4% (Table 7).

By calculation for the association of sociodemographic factors with two levels of overall knowledge, the results found that regarding the overall basic knowledge of the participants was significantly associated with age (P=0.001), occupation (P=0.001), level of education (P=0.01) and severity of acne of their female patients (P=0.03). While the overall high

knowledge was associated significantly with age (P=0.01), economic status (P=0.001) and acne severity in female patients (P=0.001) (Table 8).

Source of caregivers' information:

Almost all caregivers (97%) received their information from family and friends. Pharmacies were the second most frequent source (63%) of their knowledge. Among them only 40% got information from doctors. Only 5% had internet as knowledge source and no participant claims mass media to be the source of information (Table 9).

Our caregivers recognized puberty (87.7%) and diet (59.6%) as major aggravating factors for acne, with higher awareness compared to some other studies, while knowledge about menstruation (26.3%) was notably lower than reported elsewhere (Table 10).

Table 1. General and socio-demographic characteristics of the study samples

Parameters		No	%
Age (years±SD)		43±10.7 years	
Occupation	Housewife	65	57.0
	Gov. employee	23	20.2
	Private employee	11	9.6
	Other	15	13.2
Level of education	Illiterate	36	31.6
	Primary	29	25.4
	Secondary	18	15.8
	Intuition/University	31	27.2
Economic status	Poor	35	30.7
	Moderate	57	50.0
	Good	22	19.3
History of acne during adolescence	Yes	59	51.8
	No	55	48.2
First visit	Yes	47	41.2
	No	67	58.8
Place of previous visit	Private	20	29.4
	Public	37	54.4
	Both	11	16.2
Daughters or sister's severity of acne (patients)	Mild	10	8.8
	Moderate	38	33.3
	Severe	66	57.9

Table 2. Knowledge of causative or aggravating factors of acne

Cause or aggravating factor	Yes		No		I don't know	
	No	%	No	%	No	%
Acne is familial running skin problem	53	46.51	15	13.2	46	40.4
Puberty	100	87.7	6	5.3	8	7
Diet	68	59.6	17	14.9	29	25.4
Infections	16	14	29	25.4	69	60.5
Cosmetics	44	38.6	31	27.2	39	34.2
Epilation	38	33.3	21	18.4	55	48.2
Steroid creams can induce acne	21	18.4	18	15.8	75	65.8

Steroid tablets can induce acne	14	12.3	15	13.2	85	74.6
Menstruation aggravate acne	30	26.3	13	11.4	71	62.3

Table 3. Knowledge of localizations of acne presentation

Location	Yes		No		I don't know	
	No	%	No	%	No	%
Face	114	100	0	0	0	0
Chest	28	24.6	23	20.2	63	55.3
Shoulders	23	20.2	29	25.4	62	54.4
Back	39	34.2	27	23.7	48	42.1

Table 4. Knowledge regarding type of acne presentation

Acne lesions	Yes		No		I don't know	
	No	%	No	%	No	%
Comedones	39	34.2	23	20.2	52	45.6
Papules	102	89.5	5	4.4	7	6.1
Pustules	93	81.6	7	6.1	14	12.3
Nodulocysts	23	20.2	13	11.4	78	68.4

Table 5. Knowledge about sequels and associated condition of acne vulgaris

	Yes		No		I don't know	
	No	%	No	%	No	%
Acne lesions can end with hyperpigmentation	64	56.1	8	7	42	36.8
Severe acne can produce skin scars	81	71.1	8	7	25	21.9
Acne scars are difficult to be treated	42	36.8	10	8.8	62	54.4
Severe acne can associate with scalp hair loss	9	7.9	18	15.8	87	76.3
Severe acne can associate with hirsutism	48	42.1	21	18.4	45	39.5
Severe acne can associate with menstrual cycle irregularity	48	42.1	17	14.9	49	43

Table 6. Knowledge about side-effects of acne treatment

	Yes		No		I don't know	
	No	%	No	%	No	%
Acne treatment cream can induce skin erythema	66	57.9	11	9.6	37	32.5
Acne treatment cream can induce skin scales	45	39.5	13	11.4	56	49.1
Acne treatment cream can induce skin dryness	57	50	15	13.2	42	36.8

Table 7. **Overall knowledge of the study samples**

Knowledge		Caregivers (n=114)	
		No	%
Basic	Good	39	34.2
	Poor	75	65.8
High	Good	29	25.4
	Poor	85	74.6

Table 8. **Association of the general and socio-demographic factors with the overall knowledge**

		Basic knowledge			High knowledge		
		Good	Poor	P-value	Good	Poor	P-value
Age categor	21-30	12(75.0%)	4(25.0%)	P=0.001	9(56.3%)	7(43.8%)	P=0.01
	31-40	12(36.4%)	21(63.6%)		8(24.2%)	25(75.8%)	
	41-50	7(21.9%)	25(78.1%)		5(15.6%)	27(84.4%)	
	51-69	8(24.2%)	25(75.8%)		7(21.2%)	26(78.8%)	
Occupation	Housewife	14(21.5%)	51(78.5%)	P=0.001	11(16.9%)	54(83.1%)	P=0.06
	Gov. employee	8(34.8%)	15(65.2%)		8(34.8%)	15(65.2%)	
	Private employee	6(54.5%)	5(45.5%)		3(27.3%)	8(72.7%)	
	Others	11(73.3%)	4(26.7%)		7(46.7%)	8(53.3%)	
Education level	Illiterate	9(25.0%)	27(75.0%)	P=0.01	5(13.9%)	31(86.1%)	P=0.1
	Primary	5(17.2%)	24(82.8%)		7(24.1%)	22(75.9%)	
	Secondary	9(50.0%)	9(50.0%)		5(27.8%)	13(72.2%)	
	Institute/University	16(61.6%)	15(48.4%)		12(38.7%)	19(61.3%)	
Economic status	Poor	9(25.7%)	26(74.3%)	P=0.06	1(2.9%)	34(97.1%)	P=0.001
	Moderate	18(31.6%)	39(68.4%)		16(28.1%)	41(71.9%)	
	Good	12(54.5%)	10(45.5%)		12(54.5%)	10(45.5%)	
History of acne during adolesc	No	21(38.2%)	34(61.8%)	P=0.3	15(27.3%)	40(72.7%)	P=0.6
	Yes	18(30.5%)	41(69.5%)		14(23.7%)	45(76.3%)	
First visit to dermatologist	No	22(32.8%)	45(67.2%)	P=0.7	17(25.4%)	50(74.6%)	P=0.1
	Yes	17(36.2%)	30(63.8%)		12(25.5%)	35(74.5%)	
Place of previous visits	Private	6(30.0%)	14(70.0%)	P=0.1	3(15.0%)	17(85.0%)	P=0.5
	Public	9(24.3%)	28(75.7%)		10(27.0%)	27(73.0%)	
	Both	6(54.5%)	5(45.5%)		3(27.3%)	8(72.7%)	
Daughter's acne severity	Mild	2(20%)	8(80%)	P=0.03	0(0.0%)	10(100.0%)	P=0.001
	Moderate	8(21.1%)	30(78.9%)		4(10.5%)	34(89.5%)	
	Severe	29(43.9%)	37(56.1%)		25(37.9%)	41(62.1%)	

Table 9. Source of information among the study samples

Source of information	No	%
Internet	5	4.4
Doctors	40	35.1
Pharmacies	63	55.3
Mass Media (TV, Radio, Newspapers, ..)	0	0
Family and friends	97	85.1

Table 10. Comparison of knowledge of both caregivers of our study and of acne patients of other study

Cause or aggravating factor	Studies	Participants responded "yes" (%)
Familial and genetic background	Our study	46.51
	Darwish MA et al., **(12)**	32
	Poli F et al., **(13)**	25.2
Puberty	Our study	87.7
	Kaushik M et al., **(1)**	65
Diet	Our study	59.6
	Al-Natour SH **(4)**	71.5
	Kaushik M et al., **(1)**	85
Cosmetics	Our study	38.6
	Machiwala AN et al., **(8)**	39.3
	Darwish MA et al., **(12)**	53.3
	Poli F et al., **(13)**	58
Menstruation	Our study	26.3
	Darwish MA et al., **(12)**	54
	Poli F et al., **(13)**	55

4. Discussion

Acne vulgaris is a well-known as a common skin disease among adolescents and other young age groups **(1)**. This disease may have negative somatic and psychological impact on the patients **(2,9)**. So that awareness and seeking for the treatment of acne is highly necessary among the community.

In the present study, unlike previous study on the assessment of the knowledge about acne who studied acne patients, the caregivers' knowledge was assessed because in our community the main factor of seeking treatment and adherence to the long-lasting treatment of acne is mainly reliable on the caregivers' opinion and awareness. We found that generally, the knowledge of caregivers is better than the acne patients, as the caregivers have life experience with the diseases. However the knowledge regarding menstruation as aggravating factor was better in other studies, this may be because acne patients as sufferer of the disease know better the fluctuation course of the lesions. Overall, better knowledge of caregiver in our community is promising to have better behavior and

attitude toward more appropriate dealing with acne and its treatment.

In the present study, 18.4% of caregivers knew that steroid cream and 12.3% knew that steroid tablets can induce acne. This reflects the misuse of this preparation during acne in patients which was reported in the previous studies **(7,11,12)**.

All participants of the present study believed that acne presents on the face, while the other locations of acne (chest, back and shoulders) were underestimated. This perception might have an impact on neglecting areas rather than face to be treated.

The presentation of the acne to be papules and pustule is popular among community so that in our subject's majority knew that. While lesser knew that comedones and nodulocystic lesion are part of acne presentation. This misconception of this morphology may affect negatively the attitude and behavior of them in dealing with acne management.

In this study, the good overall basic knowledge (34.2%) was higher than good high knowledge (25.4%), however in general those who have poor knowledge are dominating. This indicator should provoke action toward conduction and implementation of effective public awareness programs.

In our work, significant associations were found between overall knowledge and some sociodemographic factors. Good knowledge in both basic and high levels was observed in younger age groups of caregivers (21-30 and 31-40), this is probably affected more by more closer age of these people to the acne patients age or more active knowledge accessibilities. Private employee and other jobs among occupation were proportionally more regarding good basic knowledge. This may return to their characters of more active life as they hired not in public or housewives but intended more ambitious jobs. Participants with institute or university education were more in good basic knowledge ranking, while for high knowledge was not. This may be the items were more specialized rather to be general information. Good economic status of the caregivers was associated significantly with only high knowledge, where the good respondents were more among good economic status than other classes. However, there was significant association between caregivers' acne patients and basic knowledge and high knowledge , but good knowledge was rising in both levels in number of participants, while the good knowledge within each severity was markedly less than poor responses. The caregiver is not experiencing the current problem subjectively. There were no significant associations among caregivers regarding having acne, frequency and places of visits for treatment.

Source of information for knowledge seems to be important for acquisition of information. Most frequent source of information (85.1%) among our samples was family and friends; this is similar to the results of Kaushik et al., (81%) **(1)** and is more than the results reported by Machiwala et al., (64%) **(7)**. The second frequent source of information in our study was pharmacies (55.3%). Doctors were in third rank as source of information (40%), this rate is slightly higher than the rates reported by Machiwala et al., **(7)** and Al-Natour **(4)** (35.3% and 33.4%, respectively). The absence of mass media as source of information in the present study indicates that mass media in our community is not focusing on health awareness programs, also internet through its social media should be encouraged to be more directed and helpful in the process of increasing community knowledge.

One of the limitations of the present study is small sample size despite high prevalence of acne and long period of data collection that made us to think about the possibility of the people who did not attend seeking the treatment of acne that is probably with poorer knowledge in the community.

5. Conclusion

The results of the present study revealed that most caregivers had poor knowledge about acne. While common and basic information about acne was relatively well known, more advanced knowledge was lacking. There were notable differences between the knowledge of caregivers in our study and that of acne patients in other studies. This difference suggests that caregivers may play a positive role in supporting adolescents and young individuals in managing acne effectively. Since caregivers primarily relied on family and friends for information sources that often provide inaccurate or incomplete knowledge there is a pressing need for mass media and healthcare professionals to take a more active role in promoting acne education within the community.

6. Declarations

Acknowledgments

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Ethical Considerations

Informed consent was taken from all the participants and formal permission was taken from the administration of the setting of the study.

Authors' Contributions

G.H.A contributed to writing the draft of manuscript and data analysis. D.S.Q and A.D.M interviewed caregivers and collected the data and wrote the discussion section. H.M.A analyzed the data and revised the final version of the manuscript. All authors contributed to the writing and final revision of the study.

Conflict of Interest

The authors declared no conflict of interest.

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