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Prevalence of Acne among Preadolescent School Students in Damietta Governorate

Mohamed Samir Hassan Elawady[1], Hassan Abou Khodair Mohamed[1], Ramadan Mohamed El-Dahshan [1]; Ayman Ahmed Mahmmoud [2]

Department of Dermatology, Damietta Faculty of Medicine, Al-Azhar University, Egypt [1]

Department of Public Health, Damietta Faculty of Medicine, Al-Azhar University, Egypt [2]

Corresponding author
    Mohamed Samir Hassan Elawady
    Email: m.samirelawady@gmail.com

ABSTRACT

Background: Acne is one of the commonest chronic inflammatory dermatological disease among adolescents.

Aim of the Work: The aim of the study was to detect the prevalence of acne among pre adolescents in primary and preparatory schools in Damietta governorate Egypt**.**

Patients and Methods: This was a cross sectional study, that was conducted on 1624 pre adolescents in primary and preparatory schools in Damietta governorate.

Results: Age ranged from 8-13 years with mean value 11.44±1.680 years. Male cases were 781 [48.1%] while female cases were 843 [51.9%] and 251[65.8%] had mild acne grade, 122[31.9%] had moderate acne grade and 9[2.4%] had severe acne grade.

Conclusion: Acne is one amongst the most common skin disease and includes a great effect on quality of life among pre adolescents attending primary and preparatory schools in Damietta governorate, the prevalence of acne vulgaris among pre adolescents in primary and preparatory schools in Damietta governorate Egypt was 23.5%.

* Main subject and any subcategories have been classified according to research topic.

INTRODUCTION

Acne is a chronic disease of the pilosebaceous unit, which consists of open comedones [blackheads], closed comedones [whiteheads], papules, nodules, and Pustules [1]. Acne is a skin disease affecting approximately 9.4% of the world's population with the highest prevalence in adolescents. It affects over 90% of males and 80% of females[2]. Acne is considered a multifactorial disease where sebaceous hyperplasia, excess sebum production and ductal hyper proliferation, under androgenic stimulus, with propionibacterium acne colonization of the duct are the four main pathogenic factors[3]. Preadolescence, which called pre-teen, is a stage of human development following early childhood and preceding adolescence. It occasionally ends with the beginning of puberty[4]. Preadolescent acne is common to start to develop in children 8 to 13 years old, often before other signs of pubertal maturation. Preadolescent acne tends to be primarily comedonal and favors the forehead and central face[5]. There is few studies of acne in preadolescent, one study in Kingdom of Saudi Arabia showing that the prevalence of acne in preadolescent school students is 7.6% in children with mean age 10.3 years old[6]. Acne is one of the most concerning dermatological condition occurring in patients, affecting them at a time once they are undergoing massive psychological, social and physical changes. Acne can cause a huge problem for a few patients, disturbing their social functioning and will be related to decreased self-esteem/self-confidence, interpersonal difficulties, and increased prevalence of stress and depression[7].

We considered that Facial acne is considered to be a common disorder and appears to possess a substantial impact on quality of life among pre adolescents attending primary and preparatory schools, particularly in severe cases. Primary health care professionals and school authorities should actively identify, manage and educate adolescents on facial acne that's why we conduct that study.

AIM OF THE WORK

The aim of this study is to determine the prevalence of acne vulgaris among pre adolescents in primary and preparatory schools in Damietta governorate Egypt.

PATIENTS AND METHODS

This was a cross sectional study disbursed on pre adolescents in primary and preparatory schools in [New Damietta, Kafr Saad, El Zarqa, Ras El Bar, Damietta] in Damietta governorate. It's been applied on 1624 students from 11 randomly selected schools from October 2019 to February 2020, after approval Al-Azhar Faculty of Medicine [Damietta] Scientific Research Committee and from Ministry of Education. According to Damietta Educational Administration the quantity of scholars attending the 4th, 5th, 6th grades of primary schools and every one grades in preparatory schools in 2019 were about 155000 students.

The sample size [n] was calculated in step with the formula: $n = [z^2 * p * [1 - p] / e^2]/[1+[z^2 * p * [1 - p]/[e^2*N]]]$ Where: z = 1.96 for a confidence level [α] of 95%, p = proportion [expressed as a decimal] is that the probability during this study and was taken as prevalence of acne in pre adolescents students which is about 27.7 % in keeping with the Chinese study of **Shen et al.**[8], N = population size, e = margin of error. z = 1.96, p = 0.27699, N = 155000, e = 0.05 $n = [1.96^2 * 0.27699 * [1 - 0.27699] / 0.05^2] / [1 + [1.96^2 * 0.27699 * [1 - 0.27699] / [0.05^2 * 155000]]]$ n = 307.7444 / 1.002 = 307.135 n ≈ 308 So the minimum sample size calculated was 308 .The sample size was then multiplied by 5 thanks to stratified cluster sampling method. Schools were visited by the researcher, each student was examined for acne, and written consent letters describing the method obtained from parents of all participants.

Every student with acne was subjected to: 1] full history taking including age, sex, case history, duration of the disease, any received treatment whether systemic or topical and also the response of this treatment and 2] dermatological examination of acne sites. Acne patients were classified into mild, moderate, and severe consistent with the classification of American Academy of Dermatology [AAD][9]. Mild acne is characterized by the presence of few to many papules, pustules and comedones, but no nodules. Moderate acne has several papules and pustules, few nodules. Severe acne has numerous or extensive papules and pustules, scars, likewise as many nodules

Figure [1]: Male preadolescent 11 years old, with acne - mild grade

Figure [2]: Male preadolescent 9 years old with acne-mild grade

Figure [3]: Male pre adolescent 11 years old with acne - moderate grade

Figure [4]: Female preadolescent 10 years old with acne-moderate grade

Figure [5]: Female preadolescent 13 years old with acne – mild grade

Figure [6]: Female preadolescent 11 years old with acne – sever grade

Statistical analysis: The data analyzed by IBM-SPSS version 19 [SPSS Inc., Chicago, USA] statistical package. Frequency and percentage were used to represent qualitative data, while mean and SD used to represented quantitative, normally distributed data. Chi square test was used to compare between categorical groups. All statistical tests have been judged to have p-value < 0.05.

RESULTS

Demographic data of the studied group, Age ranged from 8-13 years with mean value 11.44±1.680 years. Male cases were 781[48.1%] while female cases were 843[51.9%]. Duration of disease ranged from 1-3.5 years with mean value 2.36±0.749 years. **Table [1]**

Acne of the studied group show that 382[23.5%] out of studied group with acne. **Table [2]**

Acne grade of the studied group show that 251[65.8%] had mild acne grade, 122[31.9%] had moderate acne grade and 9[2.4%] had severe acne grade. **Table [3]**

Relation between sex and patient's acne show highly statistically significant difference between sex group according to acne where P=0.019. **Table [4]**

Relation between sex and patient's treatment use show highly statistically significant difference between sex group according to topical treatment and response to topical treatment where P=0.001 and 0.006 respectively **[Table 5].**

Table [1]: Distribution of studied sample according to patient's demographic data

		Number	Percent
[Age [years	≤10	569	35.0
	>10	1055	65.0
	Range	8-13	
	Mean±S.D.	11.44±1.680	
Sex	Male	781	48.1
	Female	843	51.9
Duration of the disease	Range	1-3.5	
	Mean±S.D.	2.36±0.750	

Table [2]: Distribution of studied sample according to patient's acne

Acne	[Number [1624	Percent
No	1242	76.5
Yes	382	23.5

Table [3]: Distribution of studied sample according to patient's acne grade

Acne grade	[Number [382	Percent
Mild	251	65.7
Moderate	122	31.9
Severe	9	2.4

Table [4]: Relation between sex and patient's acne

Acne	[Male [781		[Female [843		P value
	Number	Percent	Number	Percent	
No	618	79.1	624	74.0	**0.019***
Yes	163	20.9	219	26.0	

Table [5]: Relation between sex and patient's Treatment Used.

Treatment Used	Male		Female		P value
	Number	Percent	Number	Percent	
Systemic	6	3.7	13	5.9	0.170
Response	3	50.0	9	69.2	0.148
Topical	34	20.7	72	32.9	0.001*
Response	21	61.8	46	63.9	0.006*

DISCUSSION

Analysis of demographic data of the studied cases revealed that, age ranged from 8-13 years with mean value 11.44±1.680 years. Male cases were 781[48.1%] while female cases were 843 [51.9%]. Duration of disease ranged from 1-3.5 years with mean 2.36±0.749 years. Each patient was asked about the duration of disease and [76.0%] of patients knew when their acne started, [16 %] were not sure about the date and [8%] didn't remember the exact date.

Another cross sectional study of **Tasoula et al.**[10] showed that, the sex distribution of the 1531 respondents within the study was 51.3% female and 48.7% male. Prevalence of self-reported acne in this sample was 51.2% [female 51% and male 49%]. The mean age was 15, 77 years old.

Within the present study, it's been found that 383[23.6%] out of studied group with acne, which is far less than reported in previous studies of **Bhate and Williams**[11] in other countries: Australia, UK, Turkey, Malaysia, China, South west Nigeria and Egypt.

Also, it's much below that reported by other studies of **Alajlan et al.**[12] conducted in Kingdom of Saudi Arabia, including Qassim, Riyadh, Jizan and Makkah. While within the study of **Alanazi et al.**[13] showed that the general prevalence of Acne vulgaris was 14.3%.

Furthermore, the present study demonstrated that 252 [65.8%] had mild acne grade, 122 [31.9%] had moderate acne grade and 9 [2.3%] had severe acne grade. Mild degree is that the commonest clinical presentation. Concerning severity of acne cases, this study established that 251[65.8%] had mild acne grade, 122[31.9%] had moderate acne grade and 9[2.4%] had severe acne grade.

This establishment is in agreement with an Indian study of **Hazarika and Archana**[14] that showed that mild acne was the most typical because it affected 60.2% of participants and a Chinese study of **Shen** et al.[8] that found 68.4% of patients with acne were mild.

A study of **Al Robaee**[15] in Riyadh also reported that quite half [57.5%] of cases mild acne.

Comparable figures were showed by **Okoro et al.**[16] who revealed that 88.6% of the members were classified as having mild acne and 11.4% as having moderate acne.

These results were in line with those of **Shyam et al.**[17] who found that 81.0% of the patients had mild grade of acne consistent with Global Acne Grading System. 7.8% of patients had moderate severity acne and 1.2% of the patients had severe grade of acne.

A study by **Kokandi**[18] found that 73.2% of the patients were classified as mild acne consistent with Global Acne Grading System [GAGS]. 25% of the patients were classified as moderate severity, 1.8% of the patients were classified as severe acne, and no cases were classified as very severe.

Hanisah et al.[7] found that 90.2% of the patients had mild acne vulgaris. 7.3% of the patients had moderate severity acne and pair of 5% of the patients had severe acne on school-aged adolescents in Malaysia.

Interestingly, as regard sex and patient's acne, this study illustrated that highly statistically significant difference between sex group were found in line with acne where P=0.019.

Šijak et al.[19] reported that as regard sex distribution between different age groups showed a statistically significant difference [P < 0.001] , within the cohort 0-6 weeks, 91.7% [n=11] were male patients, and in 6 weeks to one year age group all patients [100.0%] were male [n=13]. However, within the people 1-7 yrs., 69.2% of patients were female [n=9], similarly to those within the 7-12 yrs. group where 76.1% were female [n=127].

In contrast to the study of **Karciauskiene et al.**[20] no differences between sexes were found in numerous age groups, although most studies of

Amado et al.[21] indicate higher prevalence of acne among older boys than among girls.

In agreement with the study of **Šijak et al.**[19] during which there was no statistically significant correlation was found when comparing age of acne onset and family history of acne [P=0.33, results from non-parametric Mann-Whitney U Test]. Among patients with positive family history, 45 were male [37.2%] and 76 were female [62.8%], while in group with negative family history 143 were male [38.1%] and 232 were female [61.9%]. In line with the results, there was no statistically significant correlation between sex and family history of acne [P=0.85].

The present study demonstrated that 19[5.0%] of cases received systemic treatment, while 106[27.7%] received topical treatment. Studies have concluded that embarrassment, stigma and misconceptions about acne, like poor diet and hygiene are the likely causes that prevent the youth from seeking help. There are important racial differences in help-seeking behaviors, as high-lighted in other studies [22].

Acne is a common skin condition that can lead to physical, psychological, social disturbance. Early detection and management decrease those complication and improve the quality of life. Primary health care professionals and school authorities should educate parents, teachers and students about the spectrum of the problem, its complications, allow the patients to seek help and not to be embarrassed as it's a common finding in their age and during their development. The educational process should be through interactive discussions, meetings and well-illustrated video materials showing the different shapes of acne and when to develop and the benefit of rapid detection, management and transferring cases to dermatologists. The study also recommends school doctors not only waiting for complains from students, as some of them may feel embarrassed by the question, but also going to their classes periodically, doing a quick check, reminding them of the nature of the disease, its spread, the ability of treatment and transferring the affected cases to the school clinic for more accurate examination and management. In addition, the school authorities should allow, facilitate researchers to collect accurate data regularly, compare it with previous years in order to know the extent of prevalence and evaluate the effectiveness of detection and management. Lastly, the prevalence of acne among pre adolescents in primary and preparatory schools in Damietta governorate Egypt was 23.5%. Proper dermatological care should be offered in schools.

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None

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