Knowledge on Acne Vulgaris and Menstrual Cycle: A Study on Adolescent Girls

Nasrin Sultana*

Abstract

Acne vulgaris is a common, chronic inflammatory diseases of skin, several factors has been suggested to influence acne including diet, menstruation, sweating, UV radiation, stress, occupation. A cross sectional study was carried out among 164 respondents aged 10-19 years. The aim of this study was to find out the relationship between acne vulgaris and menstrual cycle among adolescents in selected school of Dhaka city. Data were collected through face to face interview of the respondents by using a semi-structured questionnaire. This present study revealed that mean age of the students was 14.3, mean age onset of menstruation (menarche) was 11.9 years ranging from 10 to 15 years. Bi-vitiate analysis revealed that the proportion of acne vulgaris was found to be high among the students aged 15 years and above, 53(51.5%) among 103(62.8%) acne students and without acne 61(37.2%) out of total 164 respondents and the association was statistically significant p value =0.034 .The present study reflects that there is significant difference in treatment with acne which was found statistically high during postmenstrual phase p =0.010 (p<.010) than premenstrual phase p value =0.053 (p<.05).

Key words: Acne vulgaris, Menstrual cycle, Global Acne Grading System, Comedones

Introduction

Acne vulgaris a multifactor disorder of the pilosebaceous apparatus is an almost universal problem in the adolescents. It is now an established fact that the development and the secretary activity of sebaceous glands in women are strikingly influenced by hormonal factors. The mean of acne lesions in the pre-menstrual phase was compared with that in the post-menstrual phase. Acne has its onset at the age 10-14 years and regresses by the age 20-25years. Menstrual cycle means Periodic and cyclical shedding of progestational endometrial accompanied by loss of blood. It is also divided into three phases.
Premenstrual phase: It denotes period before menstruation.
Menstrual phase: It denotes period during menstruation.
Postmenstrual phase: It denotes period after menstruation.

Many women with acne note a premenstrual exacerbation of papule-pustules lesion. Usually 5 to 10 lesions will appear a week or so before menstruation. The clinical spectrum of acne ranges from mild manifestations (a few comedones with occasional inflamed papulopustules, sometimes termed “physiologic” acne in contrast to “clinical” acne in more severe cases) up to severe inflammation and abscess formation on the face or upper trunk.

*Lecturer, Dept. of Public Health, ASA University Bangladesh

Site of acne

The face and upper neck are the most commonly affected, on the face it occurs more frequently on the cheeks and to a lesser degree on the nose, forehead and chin. But the chest, back and shoulders may have acne as well. The upper arms can also have acne.
Acne develops as a result of blockages in follicles**:**

Primary cause

Family/Genetic history, Hormonal activity, such as menstrual cycles and puberty Stress**,** Hyperactive sebaceous glands, secondary to the three hormone sources above. Bacteria in the pores. Exposure to certain chemical compounds and the cause's are- Dietary cause: Chocolate, Carbohydrates, Hygiene.[1]

To control acne:

- Keep your skin clean.
- Avoid skin products that clog your pores.
- Wash your skin once or twice a day with a gentle soap or acne wash. Try not to scrub or pick at your pimples.

An ideal global scale would include:

- A limited number of levels so as not to be too cumbersome and impractical for use.
- Levels which are sufficiently described so as to limit intra- and inter-observer variability.
- Levels which indicate when treatment is no longer needed or when maintenance therapy is undertaken e.g. "clear" (no acne) or "almost clear".
- Static measures to reflect a point in time.
- Universality for clinical and investigational use.
- A high degree of correlation with lesion counts.

Literature Review

There is relationship in acne patients with the socio-demographic and clinical characteristics of acne as well as to depression, self esteem and negative automatic thoughts. The degree of social anxiety, social avoidance/withdrawal, general anxiety, depression and negative automatic thoughts were significantly higher and self-esteem was significantly lower in acne patients. Severe psychological consequences such as depression, eating disorder and body dimorphic disorder are common among people with acne.

Usually skin changes occur in different phase of menstrual cycle, as many adolescents' girls are not so hygienic during menstruation and not conscious about their skin and they do not know what changes take place during menstruation. They use cosmetics unnecessarily which is harmful for their skin. They become tense, feel stress.

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[1] Odom R B, MD. James W D, MD. Berger G T, MD

There are many studies worldwide about acne and the researcher measures the severity of acne by using different grading scale. In our country dermatologist diagnose the acne case on clinical basis, but the severity of acne vulgaris in different phase of menstrual cycle cannot be measured accurately. The GAGS scale score was interpreted by five categories, which is used as check list.

An example of an acceptable global assessment scale is:

- 0 = Normal, clear skin with no evidence of acne vulgaris.
- 1 = Skin is almost clear: rare non-inflammatory lesions present, with rare non-inflamed, papules (papules must be resolving and may be hyper pigmented, though not pink-red).
- 2 = some non-inflammatory lesions are present, with few inflammatory lesions, (papules/pustules only; no nodulo-cystic lesions).
- 3 = Non-inflammatory lesions predominate, with multiple inflammatory lesions, evident: several too many comedones and papules/pustules, and there may or may not be one small nodulo-cystic lesion.
- 4 = inflammatory lesions are more apparent: many comedones and papules/pustules, there may or may not be a few nodulo-cystic lesions.
- 5 = highly inflammatory lesions predominate: variable number of comedones, many papules/pustules nodulo-cystic lesions.[2]

Methods of measuring the severity of acne vulgaris include simple grading based on clinical examination, lesion counting .Lesions were counted on one side of the face as time-saving measures, after it was established that the number of lesions of the left side was nearly equal to those on the right. They found that assessment of the severity of acne vulgaris is a challenge for dermatologists. No grading system has been accepted universally. They advised that an ideal grading system should be accurate and reproducible, simple to use by clinician over serial office visits, less time consuming, less expensive and simple, capable of documentation for future verification.

Methodology

1. The study was conducted in selected schools in Dhaka city. Namely, Community Centre Adarsha Uchcha Bidyalaya" situated at 446, Tejgaon industrial area, Dhaka-1208, Which is a private school, where large number of adolescent girls were available, easy communication, and well co-operation from the authority.
2. Data were collected through face to face interview of the respondents by using a semi-structured questionnaire. Study Population was purposively selected from class VII to X for this study.
3. A pre tested questionnaire with check list was used to collect data. Pre testing was done on respondents of other than selected schools for checking the wording sequence, length and appropriateness of the questionnaire. On the basis of pretesting, questionnaire was finalized. The questionnaire has three parts, namely, question related to the socio-demographic variables, question related to the history of menstrual cycle and question related to the acne vulgaris.

[2] Adityan B, Kumari R, Thappa DM

Findings

This cross sectional study was conducted in Community Centre Adarsha Uchcha Bidyalaya school, Tejgaon industrial area of Dhaka city with an aim to assess the acne vulgaris and menstrual cycle among the adolescent school girls. A total of 164 school girls were interviewed using semi structured questionnaire. The mean age of the students was 14.3 ± 1.2 years ranging from 11 to 19 years. More than two fifths 49.4% were age group13-14 years followed by 40.2% in the age group 15-16 years and 5.5% were in the age group 11-12 years and 4.9% were in the age group up to 19 years.

One third 60(36.6%) of the students were in class VIII followed by 50(30.5%) were class IX, 40(24.4%) were in class X and 14(8.5%) were in class VII. It was found that about half of the fathers were service holders 79 (48.2%) followed by 49 (29.9%) having business and 27 (16.5%) were staying abroad. However, 9 (5.5%) of the father's were teachers. In case of mother's occupation most of the mother were housewives 132 (80.5%) followed by 22 (13.4%) who were in service and 10 (6.1%) were teachers.

Distribution of the respondents by socioeconomic condition:

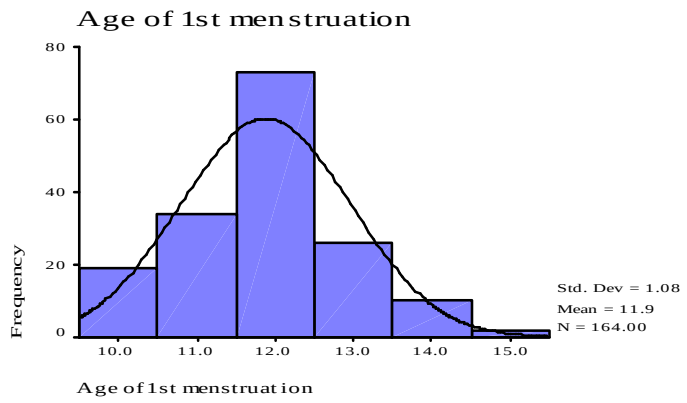
Socioeconomic condition	Frequency	Percent
Lower class	2	1.2
Middle class	84	51.2
Upper class	78	47.6
Total	**164**	**100.0**

The distribution of parents of adolescent school girl by socioeconomic condition. In the present study 84 (51.2%) parents were from middle class followed by 78 (47.6%) who were from upper class and 2 (1.2%) were from lower class.

Socio-economic condition is defined according to this study:

Lower class: Those families in which total income 0-10,000TK per month.
Middle class: Those families in which total income 10,001-20,000TK per month.
Upper class: Those families in which total income >20,001TK per month

Distribution of the students by age of 1st menstruation (menarche):



Mean ± SD = 11.9 ±1.08 years; Range = 10 to 15 years

The mean age of menstruation were 11.9 ±1.08 years ranging from 10 to 15 years. More than two fifth 44.5% were in the age of 12 years followed by 20.7% were in the age of 11 years, 15.9% were in the age of 13 years and 11.6% were in the age of 10 years and 7.3% were in the age of 14 years and above.

Presence of having respondent's acne:

This pie chart shows that Out of the 164 students (age10 to 19) among 103 (62.8%) students have acne and 61 have no acne (37.2%),It was determined by using check list.

Distribution of respondent's age group by presence of acne

Age group	Have acne		Total	χ^2 value	*P value
	Yes	No			
10-14	50 (48.5%)	40(65.6%)	90(54.8%)	4.48	0.034
15-19	53(51.5%)	21(34.4%)	74(45.1%)		
Total	**103(100.0%)**	**61(100.0%)**	**164(100.0%)**		

*Chi-square test was done to find out presence of acne in age group and it was found significant.
$\chi^2 = 4.48$, df=1, p =0.034

Out of the 164 students, 103 students have acne and 61 have no acne. In the respondent's age group by present of acne. In the present study 53 (51.5%) were acne in 15 to19 years of age group and 21 (34.4%) have no acne, followed by 50 (48.5%) have acne in 10-14 years of age group and 40 (65.5%) have no acne.

Distribution of menstrual flow according to the severity of acne vulgaris:

Menstrual flow	**Severity of acne vulgaris during menstrual phase**		**Total**
	Normal	Not normal	
Below normal	2(16.7%)	10(83.3%)	12(100.0%)
Normal	2(4.1%)	47(95.9%)	49(100.0%)
Heavy	3(7.1%)	39(92.9%)	42(100.0%)
Total	**7(6.8%)**	**96(93.2%)**	**103(100.0%)**

*Chi-square test was done which was statistically non-significant. $\chi^{2} = 2.42$, df =2, p =0.298

Of the 103 students among them 7 students were normal and 96 students having acne during menstrual phase, in menstrual flow those who have normal bleeding having sever of acne were 47(95.9%) and 2(4.1%) were normal, followed by heavy bleeding during menstruation 39(92.9%) having sever of acne, and 3(7.1%) were normal and 10(83.3%) were sever of acne followed by 2(16.7%) who were normal during menstruation flow.

Distribution of the duration of menstruation according to the severity of acne vulgaris:

Duration of menstruation	**Severity of acne vulgaris during menstrual phase**		**Total**
	Normal	Not normal	
3-5 days	4(5.6%)	67(94.8%)	71(100.0%)
Up to 7 days	3(9.4%)	29(90.6%)	32(100.0%)
Total	**7(6.8%)**	**96(93.2%)**	**103(100.0%)**

*Chi-square test was done which was statistically non-significant. $\chi^{2} = .487$, df =1, p =0.485

Duration of menstruation was categorized as 3-5 days and up to 7 days. In the students with 3-5 days 67(94.8%) had sever acne followed by 4(5.6%) who were normal and up to 7 days of menstruation 29(90.6%) had severe of acne and 3(9.4%) were normal out of 103 students.

Distribution of respondents by types of food increase acne:

Age group	**Types of food increase acne**		**Total**
	Fast -food	**Others(Tea, coffee, spicy food)**	
10-14	25(50.0%)	25(50.0%)	50(100.0%)
15-19	19(35.8%)	34(64.2%)	53(100.0%)
Total	**44(42.7%)**	**59(57.3%)**	**103(100.0%)**

*Chi-square test was done that it was found statistically non-significant. $\chi^{2} = 2.10$, df =1, p =0.147

Out of 103 students among 59, more than half 25(50.0%) and 34(64.2%) in the 10-14 years and 15-19 years age group respectively seems that increases in acne was caused by taking other food

like tea, coffee and spicy foods and 44 students 25(50.0%) and 19 (35.8%) following age group seems that increase acne was caused by taking fast-food.

Distribution of severity of acne vulgaris during premenstrual phase by treatment with acne:

Out of 103 respondents in premenstrual phase 25(100.0%) were treated for acne, among them 1(4.0%) were normal and 24(96.0%) were having severe acne. However 78(100.0%) did not taken treatment for acne, among them 16(20.5%) were normal followed by 62(79.5%) who were severe acne during premenstrual phase.

Treated for acne	**Severity of acne vulgaris during premenstrual phase**		**Total**
	Normal	Not normal	
Yes	1(4.0%)	24(96.0%)	25(100.0%)
No	16(20.5%)	62(79.5%)	78(100.0%)
Total	**17(16.5%)**	**86(83.5%)**	**103(100.0%)**

*****Chi-square test was done which was statistically significant $\chi^{2} = 3.74$ df=1, p=0.053

Distribution of severity of acne vulgaris during postmenstrual phase by treatment with acne

Treated for acne	**Severity of acne vulgaris during postmenstrual phase**		**Total**
	Normal	Not normal	
Yes	16(57.2%)	9(15.0%)	25(24.3%)
No	27(62.8%)	51(85.0%)	78(75.7%)
Total	**43(100.0%)**	**60(100.0%)**	**103(100.0%)**

*Chi-square test was done which was statistically significant $\chi^{2} = 6.70$, df =1, p =0.010

Out of 103 respondents in postmenstrual phase 25(24.3%) were treated for acne, among them 16(57.2%) were normal and 9(15.0%) were severe acne. However 78(75.7%) did not take treatment for acne, than 27(62.8%) were normal followed by 51(85.0%) who had severe acne during menstrual phase.

Discussion & Conclusion

Acne vulgaris which is a chronic condition with menstrual cycle is virtually universal in adolescents. Adolescence is in all respects, a period of physical growth and sexual development. Adolescents belonging the age group 10-19 year constitute almost one-fifth of the world's total population[3]. One of the most important parts of the study dealt with assessing the severity of acne vulgaris among adolescent school girls where changes in the skin of face observed before, during and after menstruation. It is surely an easy method but at the same time the most important drawback of it is that respondents may not be available in further follow up.

[3] World Health Organization (WHO), 2009, '*Bangladesh, Health topics, Corporate links, Mental health'*, WHO 2009

This school based cross sectional study conducted in selected schools in Dhaka city have shown that a total of 164 adolescence school girls where mean age of the students was 14.3 ± 1.2 years ranging from 11 to 19 years. More than two fifths 49.4% were age in group13-14 years followed by 40.2% in the age group 15-16 years and 5.5% were in the age group 11-12 years and 4.9% were in the age group up to 19 years.(Table-1) Similar to this study carried out by USA, acne vulgaris is the fourth most common in the group aged 15-19 years.

Acne is a common skin disease which was associated with puberty and usually has an earlier onset in females. This study confirms that acne is a common problem for adolescents. Most important changes take place during adolescence. The parameters evaluated include age, gender, onset of menstruation, duration of menstruation, relation to menstrual cycle. This cross sectional study was done to assess the relationship between acne vulgaris and different phases of menstrual cycle. In conclusion, acne can be considered the result of the action of several different factors. Adolescence is a period that signals individuals into the world of adult. In addition, Future research could evaluate the effect that increased knowledge about acne might have on adolescents.

Recommendation

This is a major problem of adolescent girls; detail scientific study should be done with large sample size.

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