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Prevalence, Contributing Factors, and Impact of Acne Vulgaris in Adult Women within Ishaka Bushenyi District

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ABSTRACT

Acne, a common skin disease, is often associated with adolescence but has been found to be prevalent in adult populations. This study aimed to determine the prevalence and factors associated with acne vulgaris among adult women in Ishaka-Bushenyi district. A cross-sectional study was conducted using quantitative data collection methods, with structured questionnaires administered to selected adult women. The data was edited for consistency and completed using Kobo Collect software. The study found that 42.2% of the participants were aged 25-29 years, 47.6% had secondary education, and 50.7% were single. 22 respondents were diagnosed with acne vulgaris, resulting in a prevalence of 5.2%. The study found an association between age, stress, family history, and contraceptive use with acne vulgaris among women. The most common effects were low self-worth (59.7%), social avoidance (24.9%), and others 15.4%. Acne vulgaris is prevalent among adult women, with factors such as age, stress, family history, and use of steroidal contraceptives.
Keywords: Acne vulgaris, Adult women, Age, family history, Contraceptive use.

INTRODUCTION

Acne, one of the most common skin diseases, though often considered as a disorder of adolescence. findings, in recent decades, findings from research and clinical practice have found that acne frequently occurs in the adult population [1]. Globally, information available on the prevalence and incidence of common skin diseases including acne is limited [2]. This is even more so in Sub-Saharan Africa (SSA). Also, the incidence of acne varies among countries and between ethnic groups. Epidemiological studies worldwide have demonstrated a higher incidence of acne vulgaris in different ethnicities of color in samples collected from the population aged 10–70 years [3], [4]. Moreover, the global Burden of Disease Study 2010 established that acne is the eight most common skin disease, with an estimated global prevalence (for all ages) of 9.4% [5]. Indeed, acne is an externally visible disease, and the symptomatology and psychosocial impacts affect adolescent and adult females alike. Clinical features include inflammatory lesions, papules, and pustules with the presence of a few closed comedones or microcysts [6]. Remarkably, adult acne is defined as late-onset acne or acne that persists beyond age 25 years [1]. Literature shows that among adult cases of acne, women are affected more frequently than men; approximately 12 to 22 percent of United States women suffer from adult acne [7], [8] compared to three percent of men [9]. Subsequently, the risk factors for adult acne are history of acne in parents or siblings, history of acne during adolescence, having no previous pregnancies, having hirsutism, being an office worker versus being unemployed or being a housewife, having a high level of reported psychological stress and diet [10], [7], [11]. The clinical characterization of adult female acne has not yet been well delineated, and it is currently unknown

whether adult females require tailored acne treatments or attention to specific aspects of acne clearing compared to standard care for adolescents [8]. Besides, literature suggests that the symptom burden of adult female acne may be exacerbated by chronicity and physical disfigurement, such as scarring [12]. For instance, several studies worldwide have also reported that patients with acne, besides anxiety and depression, are prone to low self-esteem, depression, low self-confidence, low self-assertiveness, embarrassment, social inhibition, affectation, shame, altered body image, psychosomatic symptoms (e.g., pain and discomfort), obsessive-compulsiveness, and suicidal ideation [13]-[15].

Acne is often mistakenly thought to affect exclusively the teenaged group a significant number of patients either continue to experience acne or develop new-onset acne after the teenaged years [16]. It occurs when the hair follicles under the skin become clogged and not only manifests in the face but also the back, chest and shoulders [17]. Moreover, for most people, acne tends to go away by the time they reach their thirties, but some people in their forties and fifties continue to have this skin problem [17]. This could be attributed to endogenous and exogenous factors, such as smoking and psychological stress, can combine and contribute to its clinical expression [18], [19].

In terms of epidemiologic data, reports on adult female acne prevalence range from 5.5% to 61.5% worldwide [20], [21]. Adult female acne has a negative impact on quality of life, not always correlated to the severity of acne [22], [23]. This condition is mainly mild to moderate in severity, may be refractory to treatment, and requires maintenance therapy [22]. More so, adult women with acne describe significant impacts on their lived experience of acne, including concerns about appearance, mental and emotional health consequences, and disruption to their personal and professional lives [24].

It should be noted that there is no definitive cure for acne at the moment however treatment can be given to prevent scarring and occurrence of new spots [3], [25]. According to the latest WHO data published in 2018, Uganda is ranked 28th in the world with skin disease deaths of 1,050 or 0.40% of total deaths and age adjusted death rate of 5.18 per 100,000 of population [26]. Although acne is not life-threatening or physically disabling, the negative impact of acne on health-related quality of life has been demonstrated in many studies of adults and adolescents with acne [27], [28]. Therefore, in 2016, the American Academy of Dermatology (AAD) issued new evidence-based guidelines for management and treatment of acne in both adolescents and adults [29]. Subsequently Ministry of Health (MOH) Uganda also adopted these guidelines in 2016 in order to manage acne [30]. These treatment guidelines outline recommendations for the diagnosis, grading, and treatment of children, adolescents, and adults with acne of varying severity, and include advice pertaining to the use of cosmetic and management of scars. Despite the higher prevalence of acne in adult women in other regions, no studies have labored to assess the prevalence and associated factors of acne in adult women in Uganda. Therefore, this study aims at assessing the prevalence and associated factors associated of acne among adult women in Ishaka, Bushenyi district, Uganda. This study will generate baseline acne information in Uganda, which will facilitate further studies on disease prevalence and risk factors. This also study will highlight the need for treatment of acne and also pave way for appropriate interventions.

METHODOLOGY

Area of Study

Ishaka is a town in Igara County,Bushenyi District. Together with the neighboring town of Bushenyi, it forms the Bushenyi-Ishaka Metropolitan Area. It is the largest metropolis in the district. The district headquarters are located in Bushenyi [31]. Ishaka is located in Igara County, in Bushenyi District, approximately 62 kilometres (39 mi), by road, west

of Mbarara, the largest city in the sub-region. This is about 6 kilometres (4 mi), west of Bushenyi, the location of the district headquarters. The coordinates of Ishaka are 0°32'42.0"S, 30°08'18.0"E (Latitude:-0.545006;
Longitude:30.138343) [31]. In 2014, the national population census put the population of Bushenyi, including Ishaka, at 41,063 [32]. Most of the households are engaged in Agriculture that is crop growing and livestock farming and only 5.4% households are 5 km or more to the nearest health facility, whether public or private. This municipality has 12 Health Units of different categories. Some of them are Government hospitals while others are owned by Non -Government Organizations. The distribution is fair, but some of them lack the basic equipment to offer reasonable services. Many rural units require rehabilitation and equipping. Besides diseases, poor nutrition has contributed to worrying situation. Because of cross cutting nature of health issues, there is need for an integrated approach to health.

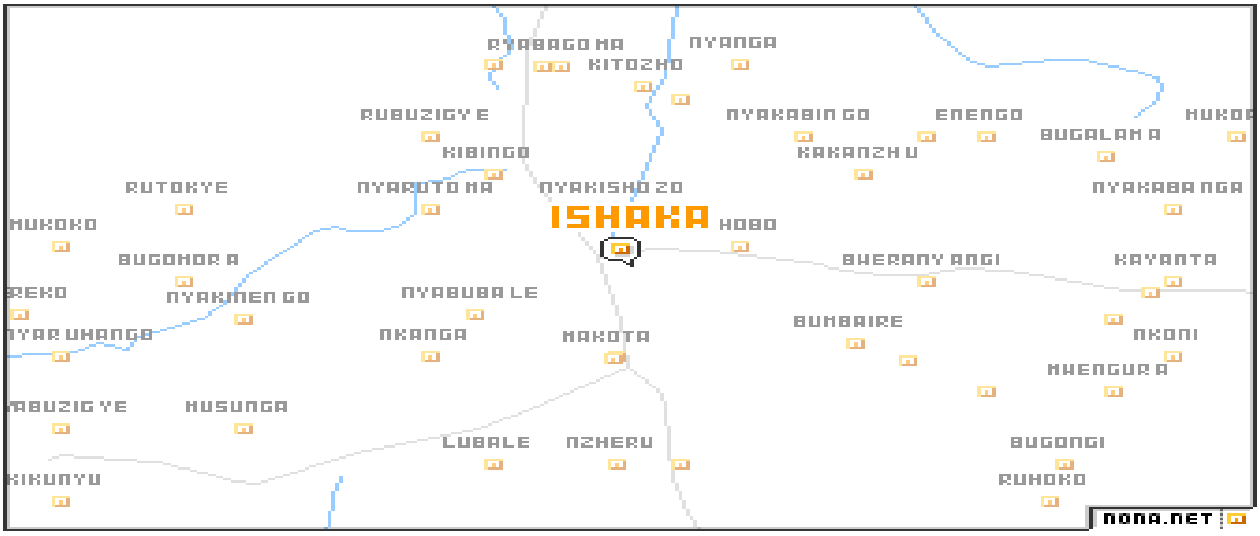

Figure 1: an overview map of the region around Ishaka town

Study population

The study was conducted among adult women aged 18 years and above in Ishaka town, Bushenyi district.

Study design

A cross-sectional study employing quantitative data collection methods was conducted. Structured questionnaires were administered to the selected adult women aged 18 years and above to collect quantitative data.

Sample size

The Kish Leslie (1965) formula was used to determine the sample size [33]. Considering the conservative prevalence of 55% acne among adult women (Perkins et al., 2012). A sampling error of 5% and non-response rate of 10% will be considered giving a sample size of 422 participants as shown below;

$$n = \frac{Z^2 \mathrm{P}(1-\mathrm{P})}{\mathrm{d}^2}$$

Where;
n is the sample size
Z is the confidence interval. The 95% confidence interval is 1.96 and
d is the precision, d=5%
P Is the conservative prevalence of family planning utilization among adolescents below 18 years (Kalyesubula et al., 2021)

$$n = \frac{1.96^2 0.55(1-0.55)}{0.05^2}$$

$$\boldsymbol{n} = 380$$

Considering a non-response (nr) rate of 10%

$$\mathrm{N} = \frac{\mathrm{n}}{1-nr}$$

$$N = \frac{380}{1-0.1} = \boldsymbol{422 respondents}$$

Data collection procedures

Data was collected by the researcher through face to face interviews with the guidance of a questionnaire. The data collection process took place as follows:

i. At each household, consent was sought from the household head.
ii. A brief interview was conducted to identify an eligible adult woman to include in the study.
iii. If no eligible adult woman present at the time of the study, an appointment was made at a convenient time.
iv. If an eligible adult woman was present, informed consent was sought.
v. The questionnaires were administered at a place of convenience and privacy to the participant. This lasted about 20 minutes per participant.

For the observations, the researcher carefully observed and took note of presence of acne on the respondent.

Data collection tools

Quantitative methods of data collection were employed in the conduct of this study. Using a structured questionnaire, 422 interviews with the selected adult women were conducted using questionnaires pre-loaded on tablets. The questionnaire obtained participant data on the respondent's demographic characteristics, information on family history, and life style practices. Kobo collect software program was used to aid electronic data capture. The questionnaire incorporated automated skip commands and constraints to keep logical flow of questions in the survey tool. Kobo was used in order to minimize human error and non-entry of responses that are associated with manual entry. Further, the technique reduced time wastage on data entry with all the associated data entry clerk errors.

Sampling procedure

Multistage sampling technique was used; the participants were obtained as follows;

i. Ishaka Town Council was clustered into parishes/clusters and listed down on papers; it has 4 parishes including ward I, ward II, ward III and ward IV.
ii. With the guidance of a Local council or VHT member, simple random sampling was used to select 2 parishes/clusters out of the all the zones.
iii. A list of adult women above 18 years was generated from the town council.
iv. The number of participants was determined proportionate to the size of the cluster. The proportionate sample of was obtained by;

$$N = \frac{\text{Number of adult women in a given cluster}}{\text{total number of adult women in the 2 clusters}} \times \textit{calculated sample size}.$$

From each cluster, households with women above 18 years were selected by simple random sampling. The lottery method was used. It involved assigning a random number to each member of the population. Next, numbers were drawn at random to comprise the sample group of 422 participants.

Inclusion criteria

Adult women aged 18years and above in Ishaka town, Bushenyi district was included in the study.

Exclusion criteria

- All women below18 years of age.
- All women who meet the inclusion criteria but did not consent to participate in the study.

Dependent variable

Prevalence of acne among adult women.

Independent variable

- Social demographic factors such as age, marital status, education, employment status, income level
- Life style factors such as diet, alcohol use, smoking, contraceptive use, physical activity
- Family history such as history of acne
- Knowledge on acne

Quality control and assurance

Data quality assurance in this evaluation involved two components:

Training of research teams and piloting of tools

The Principal Investigator worked with Research Assistants experienced quantitative data collection, fluent in

English and local dialects spoken by the target respondents. They were subjected to a minimum of 2 days training and one day of piloting the tools for reliability and coherence test. As part of the quality assurance strategy, and to ensure that RAs are capturing data of high quality, the consultant closely supervised all these activities and activity review sessions were conducted at the end of each day. Re-trainings on key issues were done regularly throughout the data collection period based on need.

Pretesting of the Tools

The tools were pretested in the 2 Ishaka parishes that were not sampled where errors in the tools were identified and corrected. Furthermore, the internal validity and reliability of the questionnaires were assessed by the study supervisor.

Data management and analysis

Quantitative data was edited for consistence and completion. Quantitative data collection and entry was done using a mobile data collection software, Kobo collect and then transferred to STATA 13 for data cleaning and statistical analysis. Univariate analysis was done to determine means and frequencies. Bivariate analysis was done to determine associations between the predictor and outcome variables. Modified Poisson was used to assess the strength of the association between the independent/ predictor variables and the outcome variables. A p-value of 0.05 was considered statistically significant. All results were summarized into tables and graphs.

Ethical consideration

Approval to carry out the study was obtained from Kampala International University. Permission to conduct the study was also sought from the Bushenyi-Ishaka Municipal Council and the Local council 1 offices, using a written letter from the school. In addition, informed written consent was obtained from all the study participants. Consent form entailing the rationale and benefits of the study, and the rights of the participants was prepared and disseminated to all participants. Only those willing to participate in the study were interviewed. All information provided by the participants was confidential. Furthermore, the data collected was used only for the purpose of this study.

RESULTS

Socio-demographic characteristics of the Respondents

Out of the 422 participants in the study, majority (42.2%) were aged 25-29years, attained secondary education (47.6%) and were single (50.7%).40.0% of the respondents were catholics,34.1% were peasants and majority were rural dwellers(71.3%) as shown in the table below.

Table 1: Socio-demographic characteristics of the respondents

Variable	Frequency(N=422)	Percentage (%)
Age(Years)		
18-24	135	32.0
25-29	179	42.4
≥30	108	25.6
Level of education		
No formal education	41	9.7
Primary	121	28.7
Secondary	201	47.6
Tertiary	59	14.0
Marital status		
Married	188	44.5
Single	214	50.7
Divorced/Separated	20	4.7
Religion		
Catholic	169	40.0
Anglican	136	32.2
Muslim	77	18.2
Others	40	9.5
Occupation		
Formally employed	51	12.1
Peasant	144	34.1
Student	109	25.8
Others	118	28.0
Residence		
Urban	121	28.7
Rural	301	71.3

Prevalence of Acne vulgaris among adult women

Out of the 422 participants in the current study, 22 were diagnosed with acne vulgaris giving a prevalence of 5.2% as shown in the figure below.

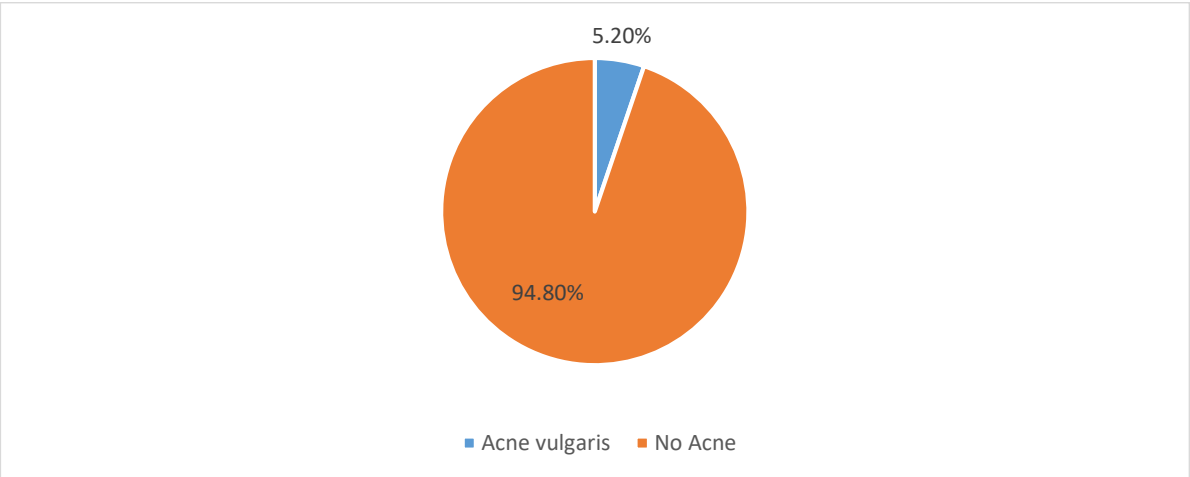

Figure 2: Prevalence of acne vulgaris among adult women

Bivariate analysis of factors associated with Acne vulgaris

From table 2 below, age, marital status, residence, stress, income level, family history, alcohol use, physical activity and steroidal contraceptive use had p-values less than 0.2 and were therefore considered for multivariate analysis.

Table 2: Bivariate analysis of factors associated with acne vulgaris

Variable	N=422	Acne vulgaris n(%)	COR(95% CI)	P-Value
Age(Years)				
18-24	135	13(9.6)	1.50(0.67-3.20)	0.041
25-29	179	06(3.4)	0.91(0.05-2.66)	0.126
≥30	108	03(2.8)	Reference	
Level of education				
No formal education	41	05(12.2)	3.34(1.84-6.50)	0.310
Primary	121	09(7.4)	1.42(0.83-3.81)	0.463
Secondary	201	07(3.5)	1.10(0.74-4.62)	0.254
Tertiary	59	01(1.7)	Reference	
Marital status				
Married	188	07(3.7)	Reference	
Single	214	13(6.1)	1.86(0.09-4.91)	0.136
Divorced/Separated	20	02(10.0)	2.03(1.20-5.68)	0.419
Religion				
Catholic	169	09(5.3)	Reference	
Anglican	136	05(3.7)	5.00(1.34-10.70)	0.320
Muslim	77	07(9.1)	2.64(1.01-6.14)	0.261
Others	40	01(2.5)	2.35(0.95-5.30)	0.782
Occupation				
Formally employed	51	02(3.9)	Reference	
Peasant	144	08(5.6)	1.36(0.80-3.21)	0.300
Student	109	09(8.3)	1.71(0.71-5.44)	1.250
Others	118	03(2.5)	1.90(1.12-3.56)	0.604
Residence				
Urban	121	10(8.3)	1.14(0.87-3.08)	0.021
Rural	301	12(4.0)	Reference	
Stress				
Yes	55	06(10.9)	3.05(1.41-6.79)	0.001
No	367	16(4.4)	Reference	
Income level				
<100,000/=	122	11(9.0)	3.21(0.62-5.54)	0.085
100,000-200,000/=	212	09(4.2)	2.78(1.00-4.90)	0.019
≥200,000/=	88	02(2.3)	Reference	
Family history				
Yes	98	15(15.3)	4.55(2.03-8.24)	0.003
No	324	07(2.2)	Reference	
Smoking				
Yes	15	04(2.7)	1.17(0.50-3.48)	0.297
No	407	18(4.4)	Reference	
Alcohol use				
Yes	53	07(13.2)	1.22(0.07-3.00)	0.032
No	369	15(4.1)	Reference	
Steroidal Contraceptive use				
Yes	125	14(11.2)	5.63(1.80-8.81)	0.002
No	297	08(2.7)	Reference	
Physical activity				
Yes	197	09(4.6)	Reference	
No	225	13(5.8)	1.24(0.66-2.74)	0.162

Multivariate analysis of factors associated with Acne vulgaris

According to the study, there was an observed association between age, stress, family history and contraceptive use with acne vulgaris among women as shown in table 3 below.

Table 3: Multivariate analysis of factors associated with acne vulgaris.

Variable	N=422	Acne vulgaris n(%)	AOR(95% CI)	P-Value
Age(Years)				
18-24	135	13(9.6)	0.81(0.41-2.80)	0.001
25-29	179	06(3.4)	0.61(0.02-1.96)	0.031
≥30	108	03(2.8)	Reference	
Marital status				
Married	188	07(3.7)	Reference	
Single	214	13(6.1)	1.50(0.07-3.49)	0.062
Divorced/Separated	20	02(10.0)	1.82(1.02-4.78)	0.058
Occupation				
Formally employed	51	02(3.9)	Reference	
Peasant	144	08(5.6)	0.75(0.51-2.93)	0.190
Student	109	09(8.3)	1.21(0.44-4.15)	0.241
Others	118	03(2.5)	1.67(0.94-3.16)	0.086
Residence				
Urban	121	10(8.3)	0.72(0.54-2.40)	0.053
Rural	301	12(4.0)	Reference	
Stress				
Yes	55	06(10.9)	2.01(1.22-5.59)	0.014
No	367	16(4.4)	Reference	
Income level				
<100,000/=	122	11(9.0)	2.56(0.32-5.00)	0.058
100,000-200,000/=	212	09(4.2)	2.10(0.75-3.77)	0.090
≥200,000/=	88	02(2.3)	Reference	
Family history				
Yes	98	15(15.3)	3.12(1.50-7.34)	0.001
No	324	07(2.2)	Reference	
Alcohol use				
Yes	53	07(13.2)	0.73(0.05-2.07)	0.065
No	369	15(4.1)	Reference	
Steroidal Contraceptive use				
Yes	125	14(11.2)	3.19(1.27-6.17)	0.012
No	297	08(2.7)	Reference	
Physical activity				
Yes	197	09(4.6)	Reference	
No	225	13(5.8)	0.64(0.30-2.28)	0.096

Effects of Acne vulgaris

The most common effects cited were low self-worth (59.7%), social avoidance (24.9%) and others 15.4% as shown in the figure below.

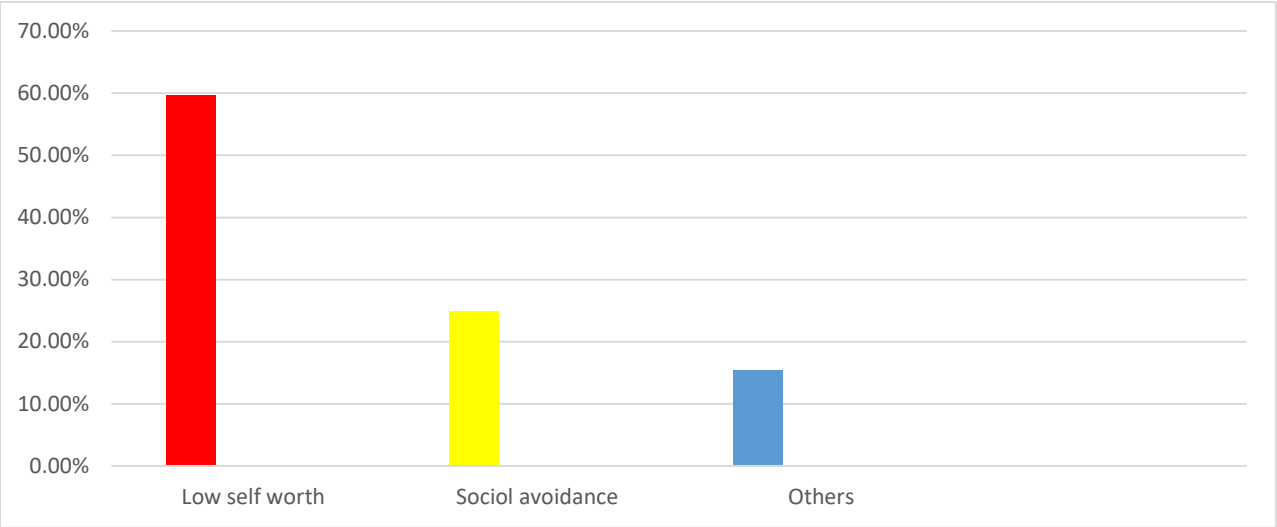

Figure 3: Effects of acne vulgaris

DISCUSSION

Prevalence of acne vulgaris

Out of the 422 participants in the current study, 22 were diagnosed with acne vulgaris giving a prevalence of 5.2%. The figure is lower compared to a study which revealed that 55% of the study participants had some form of acne [7]. The difference is attributed to methodology where this study estimated prevalence using clinical acne only. This study finding is comparable to a prevalence of 2.14 per 1000 population in Colombia [6]. It is higher compared to 0.74% reported by another study [34]. Further, the study finding is higher compared to 3.3% reported by a study in Germany [35]. The variation is due to difference in patient characteristics.

Factors associated with acne vulgaris

According to the study, there was an observed association between age, stress, family history and contraceptive use with acne vulgaris among women. In the present study, higher odds of occurrence of acne were observed among those aged 18-24years compared to older women. This is incongruent with the findings of a study in Colombia which found the peak age of development of acne vulgaris to be 25-29years [6]. Previous studies indicate that acne often appears at the same time as puberty, when sebum production rises. As a result, the prevalence of acne rises with age, peaking in adolescence and being very rare in prepubescent children. When a person reaches late adolescence or early adulthood, the prevalence of acne declines with age [17]. This study indicated that women who reported some form of stress had a higher likelihood of developing acne vulgaris compared to those without stress. Accordingly, Shah and colleagues (2021) found an association between chronic stress and acne vulgaris. A review indicated that mental stress was significantly associated with acne vulgaris [36]. Chronic stress stimulates the release of adrenal androgens and causes sebum hyperplasia in adult women with acne [37]. Positive family history of acne significantly increased the chance of developing acne in relation to those with a negative family history. This is in line with a study which reported an association between acne and family history [34]. This is also supported by Anaba and colleagues (2020) where family history was significantly associated with acne. It has been noted that despite not being a heritable condition, acne is polygenic and frequently affects families [38]. Additionally, use of steroidal contraceptives was significantly associated with acne vulgaris in the current study. To the best of my knowledge, no published study has measured the influence of steroidal contraceptives on occurrence of acne.

Effects of acne vulgaris

The most common effects cited were low self-worth (59.7%), social avoidance (24.9%) and others 15.4%. According to a study in Saudi Arabia, the prevalence of psychological impact affecting acne patients was 85.5% [39]. Psychological impact may be attributed to physical disfigurement caused by acne.

CONCLUSION

Acne vulgaris is prevalent among adult women. Factors associated include; age, stress, family history and use of steroidal contraceptives. The most common effects are low self-worth and social avoidance.

Recommendation

Researchers and clinicians can better understand the epidemiology of acne with the aid of the predisposing risk factors identified in this study and educate the community about use of steroidal contraceptives as it was significantly associated with acne vulgaris in this study. As a result, they can create effective interventions that focus on modifiable factors.

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