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Skin Tags (Acrochordons): Demographic Features and Their Correlation with Body Mass Index (BMI)

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: Skin tag is a benign tumor of the skin with a soft consistency which commonly occurs in the flexure area. Skin tag often found in individuals with middle and old age. Until now, there are many of theories have been proposed to explain the mechanism of the skin tag, one of the theory is obesity and association with metabolic syndrome.
Aim of the Study: The study aim was to know the frequency and demographic features of skin tag in Libyan patients and to evaluate the possible correlation with body mass index (BMI).
Patients and Methods: This study is an analytic study with cross-sectional designs involving 50 Libyan patients with skin tags and 50 controls. All participants were exposed to detailed disease history and complete dermatological examination. The height, weight, body mass index (BMI) of

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patients was calculated by dividing body weight to height square (kg/m2). Patients were considered according to their BMI:
• BMI ≤ 18 as thin.
• BMI between 19 and 25 as normal.
• BMI between 26 and 29 as overweight.
• BMI ≥30 as obese.
Where the height of Blood pressure was measured by sphygmomanometer.
Statistical analysis
Data were analyzed using SPSS statistical package version 28. Means and standard deviations (SD) were calculated.
Results: Among 50 participants diagnosed clinically as skin tags included in this study, the sociodemographic characteristics showed that mean age of the participants was 52.8 ± 11.8 years, ranging from (29- 78 years). Less than of the participants (46%) were females, and about one-third of the participants (32%) were smoking. 42% of the participants reported they had positive family history. The age group distribution showed that most of patients were age group >60 years and seen in 32% followed by age group 40-49 years and 50-59 years that seen in 28% and 243% respectively.
The average body mass index was 29.3±2.6, ranging from (24.9-36.3).
Fifty six percent of our participants were overweight and 42% were obese.
The common sites of lesions were neck and axilla. The number of lesions was 10 or less in 76%. The average duration of lesions was 4.4±1.9 years, ranging from (1-10 years). Our results showed there was no statistically significant correlation between gender, age, age groups and body mass index (BMI).
Conclusion: It can be concluded, individuals with overweight and obesity BMI have an increased risk or predisposition factor to the development of skin tags (Acrochordons).

Keywords: Demography; skin tags; acrochordons; body mass index.

1. INTRODUCTION

"Skin tag (ST)or Acrochordons are pedunculated papules or tumors that are most commonly located on the eyelids, neck, axillae, and groin" [1,2]. "The prevalence of skin tag in the general population varies depending on the population studied, e.g. 46 % in Germany or 0.7 % in India [3,4]. Both males and females are equally affected" [2,4]. "Skin tags are more commonly seen in middle-aged individuals and older ages" [3,5]. "Until now, the aetiology of skin tags is not yet well understood. Some theories have been proposed the friction processes, family history, pregnancy, impaired glucose metabolism and obesity as potential etiological or associated factors of skin tag" [3,6].

Body mass index (BMI) is a person's weight in kilograms divided by the square of height in meters. BMI is an inexpensive and easy screening method for weight category—underweight, healthy weight, overweight, and obesity.

"BMI does not measure body fat directly, but BMI is moderately correlated with more direct measures of body fat" [7,8,9]. "Furthermore, BMI appears to be as strongly correlated with various metabolic and disease outcome as are these more direct measures of body fatness" [9,10,11].

Aim of the study: The aim was to study the demographic features of acrochordones (skin tags) in Libyan patients and to evaluate their relationship between with body mass index (BMI).

2. PATIENTS AND METHODS

A total of 50 patients, and 50 controls matched in age and sex, were included in the study. Patients and controls were recruited from Dermatology Outpatient Clinic of Jumhoria teaching hospital, Benghazi, Libya. Skin tag was diagnosed clinically as a fleshy pedunculated soft protrusion skin colored or brownish, affecting the flexural areas or face. All patients were exposed to detailed disease history and complete dermatological examination that include onset of the disease, duration, drug history and family history of both disease and obesity.

Body mass index "BMI" was calculated by dividing body weight to height square (kg/m2). Patients were considered according to their BMI:

• BMI ≤ 18 as thin.
• BMI between 19 and 25 as normal.
• BMI between 26 and 29 as overweight.
• BMI ≥30 as obese.

Where the height of patients was measured by using a rubbery tape measure and approximated to nearest 0.5 cm and weight of patients was taken by weight measuring device. Waist circumference was measured (in inch) by a rubbery tape measure, by finding the top of hip bone and the bottom of the last rib, then ask the person to breathe out normally and place the tape measure midway between these points and wrap it around the waist.

Statistical analysis: Data were analyzed using SPSS statistical package version 28. Numerical data were summarized as means and standard deviations (SD) or medians and ranges. While qualitative data were described as Frequencies and percentages. A comparison of qualitative data was done using Chi-square or Fischer exact as appropriate. Spearman correlation was used to correlate continuous data. A (P ≤ 0.05) was considered significant.

3. RESULTS

Among 50 participants diagnosed clinically as skin tags included in this study, the sociodemographic characteristics showed that mean age of the participants was 52.8 ± 11.8 years, ranging from (29- 78 years). Less than half of the participants (46%) were females, and about one-third of the participants (32%) were smoking. 42% of the participants reported they had positive family history (Table 1). The age group distribution among the participants showed that 16% of the participants were below 40 years, 28% were between 40 to 49.9 years, 24% were between 50-59.9 years, and 32% were above 60 years (Fig. 1).

The average body mass index was 29.3±2.6, ranging from (24.9-36.3).

Fifty six percent of the participants were overweight and 42% were obese (Fig. 2).

Table 2 showed that common site of lesions was the neck and axilla. The number of lesions was less than or equal to 10 in about three fourth of the patients (76%). The average duration of lesions was 4.4±1.9 years, ranging from 1-10 years.

There was no statistically significant relationship between sex and body mass index, the mean body mass index in males was 29.9±2.7 versus 28.6±2.3 in females, p-value=.094.

Our results showed there was no statistically significant correlation between age and body mass index (r=.048, p-value=.739) (Fig. 3). Also there was no statistically significant relationship between age groups and body mass index, p-value=. 206 (Table 3).

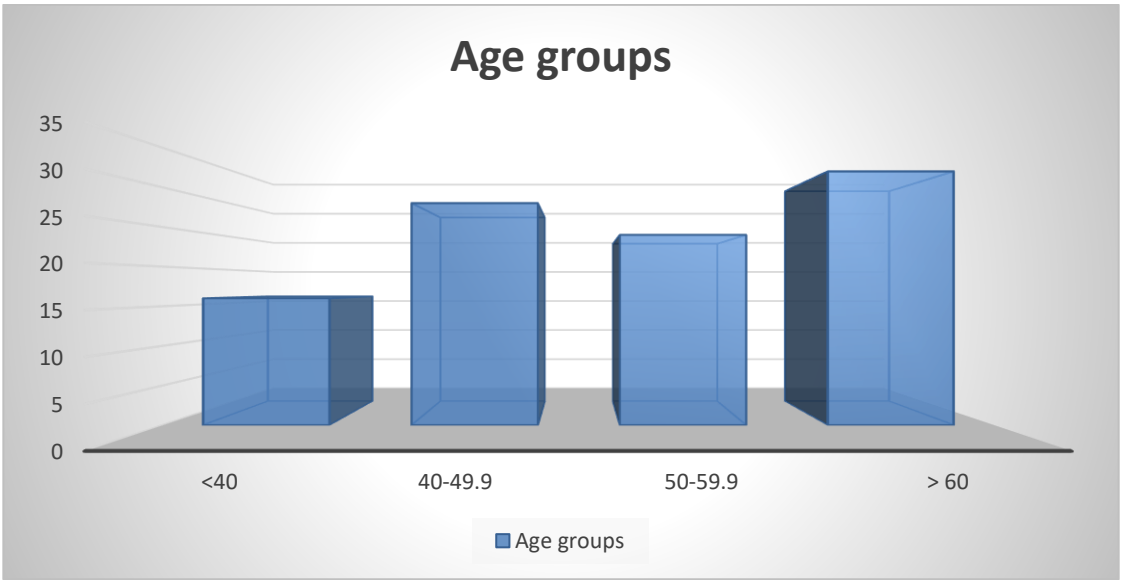

Fig. 1. Age group distribution among the participants

Table 1. Sociodemographic characteristics of the participants

Characteristics	Total (n=50)
Age (years)	
Mean ± SD*	52.8 ± 11.8
Median (range)	54 (29- 78)
Gender	
Female	23 (46%)
Male	27 (54%)
Family history	
No	29 (58%)
Yes	21 (42%)
Smoking	
No	34 (68%)
Yes	16 (32%)

*‘ *SD: standard deviation*

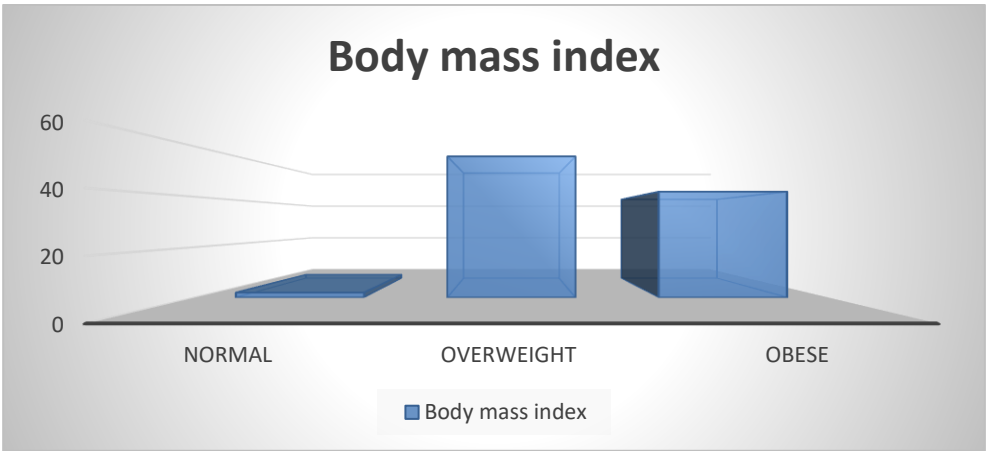

Fig. 2. Body mass index classifications among the participants

Table 2. Site, number, and duration of lesions

Characteristics	Total (n=50)
Site of lesions	
Axilla & breast	1 (2%)
Face & neck	1 (2%)
Neck & back & chest	1 (2%)
Neck & chest	1 (2%)
Neck & eye lid	1 (2%)
Neck &axilla	1 (2%)
Neck& back	1 (2%)
Neck & back	2 (4%)
Neck& axilla	5 (10%)
Axilla	14 (28%)
Neck	22 (44%)
Number of lesions	
≤10	38 (76%)
>10	12 (24%)
Duration (years)	
Mean ± SD*	4.4±1.9
Median (range)	4 (1-10)

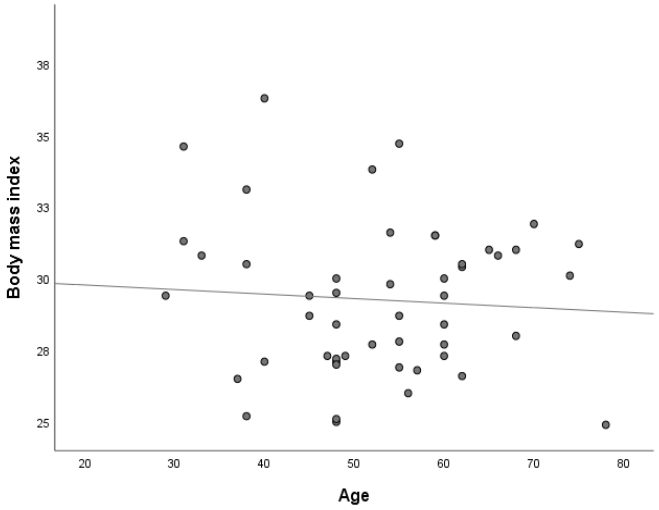

Fig. 3. Correlation between age and body mass index (BMI)

Table 3. Relation between age groups and Body mass index

	<40	40-49.9	50-59.9	>60	p-value
Body mass index					
Mean ±SD	30.2±3.1	28.2±2.7	29.7±2.9	29.3±1.7	**.206**

4. DISCUSSION

"Crochondrones (Skin tags) are common, benign skin lesions composed of loose fibrous tissue and occurring mainly on the neck and major flexures as small, soft, pedunculated protrusions" [1,2]. "Apart from their cosmetic impact, they have now been linked to various metabolic complications such as diabetes mellitus and may therefore serve as a marker of underlying systemic disorders" [12,13].

"Skin tags are common, but their exact prevalence difficult to determine in view of their asymptomatic nature. Skin tags have been reported to have an incidence of 46% in the general population. The prevalence of skin tag in the general population varies depending on the population studied (e.g. 46 % in Germany or 0.7 % in India)" [14,15]. "There is no difference incidence of skin tag between male and female" [12,15]. "We observed a slight male preponderance, in our study which is inconsistent with other studies" [13,16,17,18]. Contrary to previous reports which state that skin tags are common after the age of 40 years and that nearly 60% of individuals acquire skin tags by the age of 69 years [14,19], the average age in this study was 52 years and majority of the study patients (84%) were above the age of 40 years.

Jusuf NK, et al. [20] from Indonesia reported in his study that 16 (50%) subjects of skin tags had family history of the disease whereas in our participants family history was recorded in 42% of them. Maluki AH, et al. [21] from Iraq reported "a very high positive family history in 98% of his patients as compared to the controls (8%)" [21]. "Some theories have been proposed the friction processes, family history, pregnancy, impaired glucose metabolism and obesity as potential etiological or associated factors of skin tag" [3,6]. This study showed that 42% of the participants were diabetics.

The average body mass index (BMI) in this study was 29.3±2.6, ranging from (24.9-36.3), 56% of the participants were were overweight and 42% were obese which is consistent with the results of Jusuf NK et al., [20] on 32 subjects with skin tag and found only 8 (25%) subjects had a normal weight, while 24 (75%) subjects had an overweight and obesity condition [20]. Also he found that mean BMI was higher in the skin tag group (28.1 ± 3.97 kg/m2) compared with the control group (24.1 ± 2.29 kg/m2) with a significant correlation between increased BMI with the occurrence of the skin tags (p = 0.00) [20].

Furthermore our result in this study also in agreement with study by Tosson et al., [6] they

reported the BMI in skin tag group (32.8 ± 4.4 kg/m2) was higher than the control group (28.5 ± 2.9 kg/m2) [6]. The prevalence of skin tags was detected more often among obese participants 199/310 (64.2%) compared to nonobese participants 110/211 (52.1%). This was statistically significant (P = 0.006) [12]. The mean number of skin tags was significantly higher among obese participants (7.11 ± 14.998) in comparison to the nonobese (2.92 ± 4.957, P < 0.001). "Multiple skin tags are often linked with type 2 diabetes mellitus and with obesity, prompting a study of 58 people with skin tags. In the results of this, diabetes mellitus was reported in 42% of skin tag participants. An association with type 2 diabetes mellitus has been observed" [22,23,24]. Our study didn't show any statistically significant correlation between age, sex and body mass index, the mean body mass index (BMI).

In our study the number of lesions was less than or equal to 10 in about three fourth of the patients (76%) and the average duration of lesions was 4.4±1.9 years, ranging from (1-10 years). This indicate positive correlation between BMI and skin tags number in our participants which was consistent with Srivastava A, et al. who reported multiple site involvement and multiple lesions and were observed in 76 (67.86%) and 104 (92.86%) cases respectively [14,24].

Based on the characteristics of skin tag lesions of Jusuf NK, et al. study, the higher BMI value was found in the group of mixed type lesions (29.2 + 3.9 kg/m2), furthermore subject with multiple lesions group (28.7 + 3.9 kg/m2) had a higher BMI compare with the single lesion group (26 + 3.52 kg/m2) and the higher BMI values found in the flexure area (28.7 + 3.9 kg/m2) compare with the non-flexure area (26 + 3.52 kg/m2) [20,24]. Greene RK et al in a recent published study on 55 patients of acrochodons in relation to obesity and metabolic syndrome in pediatric populations found that mean BMI was 27.3, with 49.5% categorized as obese and 20% as overweight. The mean age of diagnosis was 10.1 years. Acrochordon predominantly appeared in the axilla [25]. Our data showed that common sites of lesions were the neck and axilla (Flexural areas),

5. CONCLUSION

Among 50 participants diagnosed clinically as skin tags included in this study, the mean age was 52.8 ± 11.8 years, 46% were females, 32% and 42% had positive family history. Majority of participants were either overweight or obese and There was no statistically significant relationship between sex, age, age groups and BMI.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

CONSENT AND ETHICAL APPROVAL

The study was approved by local ethical committee. Every participant informed and accepted participation in the study.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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