

The Impact of Stria Gravidarum On Quality-of-Life Issues

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ABSTRACT

Background: Striae gravidarum is a commonly occurred physiological change among women with pregnancy. Although these changes are accepted as physiological, the lack of therapeutica and preventive techniques led to impaired quality of life of women. **Objective:** To assess the quality-of-life affection as regards emotions, symptoms and functioning by presence of stria gravidarum in pregnant females. **Patients and Methods:** This cross sectional study was carried on three hundred twenty-three pregnant female patients with stria gravidarum over the age of eighteen years. They were enrolled in the study from the Obstetrics & Gynecology Department, Faculty of Medicine Menoufia University, Shebin El Kom University Hospital and Local Health Care Centers. This study was conducted between April 2020 and October 2020. **Results:** Severe striae gravidarum, score (3-8) was observed in 20.6% of primiparae cases and 54.9 % of multiparae cases. Mild striae gravidarum, score (1-2) was observed in 79.4 % of primiparae cases and 45.1 % of multiparae cases. There was significant difference in Dermatology life quality index (DLQI) mean value between different Davey's score scale as ($p < 0.001$), mild cases with SG had mean value 15.24 ± 1.42 and severe cases. There is significant difference regarding DLQI of pregnant women who did or did not take preventive steps ($p < 0.001$). There is significant difference regarding association between Parity and DLQI ($p=0.01$). **Conclusion:** Women suffer from striae should be examined in detail to prevent the development or progression of striae, particularly in women encountered for the first time or primiparae with severe striae those might be intensely affected.

Keywords: pregnant females, Quality of life, severity index, Stria Gravidarum, treatment.

INTRODUCTION

Stria gravidarum or what is known as stretch marks is considered a very common dermatological benign issue in pregnancy that predominantly occur on the skin of the anterior abdominal wall but could appear at other sites such as thighs and breasts⁽¹⁾. It influences the psychological wellbeing and consequently the quality of life^(2,3). Although the underlying cause for stretch marks is still not fully elucidated, it's a condition that reduces the quality of beauty in the back mind of many females^(4,5). As regards the quality of life after occurrence of stria gravidarum, that affects around 90 percent of pregnant females during pregnancy is considered a crucial issue to be investigated by researchers to aid in analysis of the best management protocols to enhance the psychological, social and self-esteem for many females after finishing their gestational period^(6,7,8). It is considered a physical modification of skin affecting females during pregnancy due to hormonal changes triggered by estrogen, progesterone and relaxin besides the mechanical challenges that lead to overstretch of the skin causing collagen breakdown of the dermal structure of the skin in a manner that leaves atrophic linear marks^(9,10).

Decreased elastin and fibril content of the skin are considered to be predisposing factors for those stretch marks to occur, that denotes that there is genetic predisposition for the condition as well as the age, race and birth weight⁽¹¹⁻¹⁵⁾. It could occur due to rapid weight gain during pregnancy, or during second or third trimester in different frequencies according to the clinical condition of the skin and genetic susceptibility

besides the changes that occur particularly in abdominal girth⁽¹⁶⁾. Various scoring tools were implemented to classify and categorize the severity of the condition as regards the physical appearance and the impact on psychological quality of life by various prior research groups to help to improve the quality and level of care giving to those cases⁽¹⁷⁾. Famous examples of those clinically implemented score in research were Davey's scoring tool implemented in a prior Japanese research study to assess the gravity of stria gravidarum and the Skindex 29 tool implemented to evaluate the dermatology specific quality of life⁽¹⁸⁾. Females during pregnancy usually were observed by different research groups to take preventive measures to avoid stria gravidarum whether or not they occurred denoting its emotional impact and its influence on self-esteem^(19,20). Therefore, this study aimed to assess the quality-of-life affection as regards emotions, symptoms and functioning by presence of stria gravidarum in pregnant females.

PATIENTS AND METHODS

This cross sectional study was carried on three hundred twenty-three pregnant female patients with stria gravidarum over the age of eighteen years. They were enrolled in the study from the Obstetrics & Gynecology Department, Faculty of Medicine Menoufia University, Shebin El Kom University Hospital and Local Health Care Centers. The 323 pregnant women have been counselled during antenatal care routine visits in third gestational trimester. This study was conducted between April 2020 and October 2020.



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Ethical consideration: The Ethical Committee of Faculty of Medicine, Department of Dermatology, Andrology and STDs, Menoufia University approved the study. Each subject received a complete explanation about the study and written consent was taken from each participant according to human rights and ethical committee.

Inclusion criteria: Age 25-40 years and parity. They undergone full dermatological clinical examination for presence and severity of abdominal stria gravidarum and categorized according to Davey’s scoring system.

Exclusion criteria: Pregnant women with no stria. Pregnant with systemic disease affecting quality of life e.g. hypertension, diabetes mellitus and liver diseases. Pregnant women taking drugs e.g., corticosteroids and Obesity.

Each woman was asked to fill the self-administered questionnaire including sociodemographic questions (age, residence, occupation, education, height and weight before and during pregnancy, weight change during pregnancy, income and dermatology life quality index (DLQI).

The DLQI is a dermatological specific instrument that measure how much your skin problem has affected your life over the last week. It consists of 10 items, each with 4 response categories ranging from 0 (not at all) to 3 (very much). The DLQI can be calculated as a total score but also includes 6 subscales: symptoms and feelings (possible score range 0–6), daily activities (possible score range 0–6), leisure (possible score range 0–6), work and school (possible score range 0–3),

personal relationship (possible score range 0–6), and treatment (possible score range 0–3). To facilitate the clinical interpretation of the DLQI scores, the grading according to can be used. The meanings of the DLQI total scores are: 0–1 = no effect; 2–5 = small effect; 6–10 = moderate effect; 11–20 = large effect; 21–30 = very large effect.

Scoring of SG: the SG was estimated according to visual methods by Davey’s score, the abdomen was divided into quadrants using the midline and horizontal line through the umbilicus. Each quadrant was scored 0 (=clear skin), 1 (=moderate number of striae) or 2 (=many striae). Total sum scores ranged from 0 to 8. The severity of striae gravidarum was divided into three categories, 0 (absent), 1 to 2 (mild), and 3 to 8 (severe).

Statistical Analysis: Results were tabulated and statistically analyzed using standard computer program using MICROSOFT EXCEL 2019 and SPSS V.25 program for MICROSOFT WINDOWS 10. Chi-Squared (χ^2), Fisher's exact test, Student t-test test and One-way analysis of Variance (ANOVA) test were used. P-value were considered statistically significant when it is equal or less than 0.05.

RESULTS

The socio-demographic characteristics of 323 pregnant women consisting of 141 primiparae (43.65%) and 182 multiparae (56.34%) participating in this study are summarized in **Table 1**.

Table (1): Socio-demographic characteristics (n=323)

Demographic Characteristics	Total N=323	Primiparae N=141	Multiparae N=182	Test of significance	P value
Age (years)- Mean ± SD	29.30±5.92	27.14±5.8	30.9±5.4	t=6.07	<0.001*
Residence					
• Urban	182	73(40.1%)	109(59.9%)	χ^2 test 2.13	0.15 ^{NS}
• Rural	141	68(48.2%)	73(51.8%)		
Education					
• Primary school	57	25(43.9%)	32(56.1%)	χ^2 test 42.25	<0.001*
• High school	154	40(26.0%)	114(74.0%)		
• University	112	76(67.95%)	36(32.1%)		
Occupation					
• Working	183	28(15.35%)	155(84.7%)	χ^2 test 137.98	<0.001*
• House wife	140	113(80.7%)	27(19.3%)		
Height- Mean ± SD	165.25±5.17	164.42±4.98	165.86±5.24	t=2.54	0.01*
Weight before pregnancy- Mean ± SD	68.66±9.70	67.8±9.15	69.2 ±10.09	t=1.28	0.21 ^{NS}
Weight during pregnancy- Mean ± SD	74.54±10.48	73.7±10.94	75.17±10.09	t=1.21	0.23 ^{NS}
Weight change- Mean ± SD	5.88±5.58	5.86±6.39	5.9±4.87	t=0.06	0.95 ^{NS}
BMI before pregnancy- Mean ± SD	25.17±3.60	25.11±3.28	25.22±3.84	t=0.26	0.79 ^{NS}
BMI during pregnancy- Mean ± SD	27.34±3.88	27.31±4.03	27.36±3.76	t=0.11	0.91 ^{NS}
BMI change- Mean ± SD	2.16±2.04	2.19±2.38	2.13±1.74	t=0.24	0.81 ^{NS}

BMI: body mass index t: student t test χ^2 : chi-square *significant NS: non-significant

Regarding the dermatology life quality index, 42.4% of the cases had a little pain in last week, 51.7 % had a lot of embarrassment and 27.6 % had many difficulties in usual activities. In addition, 51.7% had a lot of concern regarding choosing clothes, 52.3 % had many difficulties in social activities, 52.3 % of them had little effect in participating in sports training, 96.6% had no effect on studying or working and 51.7 % had many sexual difficulties (Table 2).

Table (2): Dermatology life quality index (DLQI) analysis

DLQI	Mean ± SD	Not at all N (%)	A little N (%)	A lot N (%)	Very much N (%)
1. Over the last week, how itchy, sore, painful or stinging has your stria gravidarum been?	0.83±.82	127 (39.3 %)	137 (42.4%)	45 (13.9%)	14 (4.3%)
2. Over the last week, how embarrassed or you been because of your stria gravidarum?	2.3±0.70	14 (4.3%)	2 (0.6%)	167 (51.7%)	140 (43.3%)
3. Over the last week, how much has your stria gravidarum interfered with you going shopping or looking after your home or garden?	1.08±0.84	89 (27.6%)	131 (40.6%)	89 (27.6%)	14 (4.3%)
4. Over the last week, how much has your stria gravidarum influenced the clothes you wear?	2.3±0.70	14 (4.3%)	2 (0.6%)	167 (51.7%)	140 (43.3%)
5. Over the last week, how much has your stria gravidarum affected any social or leisure activities?	2.34±0.69	14 (4.3%)	0 (0%)	169 (52.3%)	140 (43.3%)
6. Over the last week, how much has your stria gravidarum made it difficult for you to do any sport?	0.96±0.77	89 (27.6%)	169 (52.3%)	51 (15.8%)	14 (4.3%)
7. Over the last week, has your stria gravidarum prevented you from working or studying?	0.03±0.18	312 (96.6%)	11 (3.4%)	0 (0%)	0 (0%)
8. Over the last week, how much has your stria gravidarum created problems with your partner or any of your close friends or relatives?	2.3±0.70	14 (4.3%)	2 (0.6%)	167 (51.7%)	140 (43.3%)
9. Over the last week, how much has your stria gravidarum caused any sexual difficulties?	1.41±0.61	14 (4.3%)	167 (51.7%)	135 (41.8%)	7 (2.2%)
10. Over the last week, how much of a problem has the treatment for your stria gravidarum been, for example by making your home messy, or by taking up time?	2.38±0.58	0 (0%)	16 (5%)	167 (51.7%)	140 (43.3%)

DLQI: dermatology life quality index. The mean value of DLQI was 16.09 ± 2.91 (ranged 10-23). 79.3% of our cases had a very large effect on life quality as DLQI score was 11 – 20, 15.8 % had an extremely large effect as DLQI score was 21 – 30 and only 5.0% had a moderate effect as DLQI score was 6 – 10 (Table 3).

Table (3): Interpretation of dermatology life quality index (DLQI)

DLQI	N	%
No effect at all on patient's life (0-1)	0	0%
Small effect on patient's life (2-5)	0	0%
Moderate effect on patient's life (6-10)	16	5.0%
very large effect on patient's life (11-20)	256	79.3%
Extremely large effect on patient's life (21-30)	51	15.8%
Min.-Max.	10-23	
Mean ± SD	16.09±2.91	
Median (IQR)	16	

DLQI: dermatology life quality index

There is significant difference between severity of SG between primiparae and multiparae (p value < 0.001), severe striae gravidarum and score 3-8 was observed in 20.6% of primiparae cases and 54.9 % of multiparae cases. Mild stria gravidarum, score (1-2) was observed in 79.4 % of primiparae cases and 45.1 % of multiparae cases. Regarding the mean of DLQI scores of patients with respect to the severity of stria gravidarum by Davey's score, there was significant difference in DLQI mean value between different

Davey's score scale (p value < 0.001), mild cases with SG had mean value 15.24 ± 1.42 and severe cases. There was significant difference regarding DLQI of pregnant women who did or did not take preventive steps (p value < 0.001). The mean values were 18.92 ± 23 and 14.43 ± 1.69 respectively. There was significant difference regarding association between parity and dermatology life quality index (DLQI) as (p value= 0.01). the mean value in DLQI in primiparae was 15.62 ± 1.87 and in multiparae was 16.45 ± 3.47 (Table 4).

Table (4): Striae gravidarum assessed by Davey’s scoring and association between dermatology life quality index with parity, and preventive step.

Parity	Davey’s scores		χ^2 test	P value
	1-2 (mild) n=194	3-8 (severe) n=129		
Primiparae	112(79.4%)	29(20.6%)	39.14	<0.001*
Multiparae	82(45.1%)	100(54.9%)		
DLQI	15.24±1.42	17.37±3.94	6.88	<0.001
	Preventive step		t test	P value
DLQI	Absent n=204	Present n=119		
Mean ± SD	14.43±1.69	18.92±2.3	20.05	<0.001*
	Parity		t test	P value
DLQI	Primiparae N=141	Multiparae N=182		
Mean ± SD	15.62±1.87	16.45±3.47	2.57	0.01*

DLQI: dermatology life quality index *significant

DISCUSSION

In current study, (43.7%) of cases were primiparae and (56.3%) were multiparae, the mean age of total participants was 29.30 ± 5.92 , in primiparae mean age was 27.14 ± 5.8 , while in multiparae the mean age was 30.9 ± 5.4 . This is in line with Yamaguchi *et al.* (18) who showed that mean age of total participants was 30.8 ± 4.2 , in primiparae was 29.9 ± 4.0 and in multiparae was 31.8 ± 4.2 .

The mean BMI before pregnancy in our study in primiparae was 25.11 ± 3.28 kg/m² and during the pregnancy was 27.31 ± 4.03 kg/m² and the mean BMI change was 2.19 ± 2.38 kg /m². In multiparae, the mean BMI before pregnancy was 25.22 ± 3.84 kg /m², and during the pregnancy was 27.36 ± 3.76 kg /m². the mean BMI change was 2.13 ± 1.74 kg/m². This is consistent with Yamaguchi *et al.* (18) who showed that BMI before pregnancy in primiparae was 20.4 ± 2.6 kg/m² and during pregnancy was 24.5 ± 2.6 kg/m² and in multiparae was 21.7 ± 3.6 kg/m² and during pregnancy was 25.5 ± 3.5 kg/m². Our result is in harmony with Nusrat *et al.* (21) study that showed that the mean age was 27.94 ± 5.14 , and BMI was 26.59 ± 4.09 .

In current study, the percentage of striae gravidarum in primiparae was 43.7% (141) and in multiparae was 56.3 % (182). This is in line with Nusrat *et al.* (21) who reported that 71.4 % were multiparae and 28.6 % were primiparae. In addition, it is in harmony with Mosbeh (22) who showed that 41 cases were nulliparous representing 20.5% and 159 cases were parous representing 79.5%. In line with this observation a study by Ogrum and Dogru (23) who showed that the prevalence of striae gravidarum in total, primiparae and multiparae was 75.8%, 66.7%, and 82.7%, respectively. The DLQI evaluates the effects of skin diseases on the individual status of psychological, physical, and daily life. Despite non-life threatening characteristic of striae gravidarum, anxiety caused by inadequacy of the

preventive techniques and long-term persistence of the lesions may affect the quality of life.

In our study, the mean value of DLQI was 16.09 ± 2.91 , 5% of cases had moderate effect (6-10), 79.3% had very large effect (10-20) and 15.8 % had extremely large effect (21-30). Embarrassment, choosing of clothes, relations with friends or partner, social activities and concern of treatment had the highest mean followed by sexual difficulties and daily activities. Therefore, there were very large effect on quality of life. In agreement with our study, Nusrat *et al.* (21) who showed that itching received highest mean score of 41.20 ± 24.50 , appearance and worry had mean score of 54.24 ± 29.22 and 53.68 ± 28.57 respectively and interactions with others had mean of 35.12 ± 27.35 . This also is consistent with Ogrum and Dogru (23) who reported that the mean symptom and emotion scale scores in women with severe striae were significantly higher than women without striae.

In current study, severe SG score (3-8) was observed in 22.5 % of primiparae cases and 77.5 % of multiparae cases. Mild SG, score (1-2) was observed in 57.7 % of primiparae cases and 42.3% of multiparae cases. This is in agreement with Yamaguchi *et al.* (18) who showed that severe SG in multiparae was 25.9% of cases, while mild in multiparae was 25.9% and 23.4% in primiparae. Also, in consistence with our results, Ogrum and Dogru (23) found that severe SG, was observed in 48.5 % of primiparae cases and 65.5 % of multiparae cases, while mild SG, was observed in 18.2 % of primiparae cases and 17.2 % of multiparae cases. Our result also is in harmony with Nusrat *et al.* (21) who reported that severe SG in multiparae was 58.8% and in primiparae was 53.1 % and mild SG in primiparae was 46.9 % and in multiparae was 41.2%. In contrast, Mosbeh (22) found that there was no statistically significant correlation between parity and severity of SG according to Davey’s score as severe SG in nulliparous

was 24 (18.3 %) and in parous was 107 (81.7 %), while mild SG in nulliparous was 17 (24.6 %) and in parous was 52 (75.4 %). This can be explained as the majority of **Mosbeh** ⁽²²⁾ study participants were multiparae.

In current study, regarding the mean of DLQI scores of patients with respect to the severity of stria gravidarum by Davey's score, there was significant difference in DLQI value between different Davey's score, the mean value of mild cases with SG was 15.24 ± 1.42 and severe cases with SG was 17.37 ± 3.94 . This is in agreement with **Yamaguchi et al.** ⁽¹⁸⁾ who showed that pregnant women with severe striae gravidarum showed significantly higher scores in emotion and functioning compared to those without striae gravidarum and those with mild striae gravidarum. Also, in agree with our study, **Nusrat et al.** ⁽²¹⁾ found that the severity of striae gravidarum, as assessed through Davey's score, showed a significant difference between Davey's score of mild and severe striae gravidarum and domains of Skindex-16. **Ogrum and Dogru** ⁽²³⁾ study is consistent with our study as there was significant relation between Davey's score of mild and severe striae gravidarum and domains of Skindex-29.

The current study showed that 119 (36.8%) of cases use preventive steps and apply cream/lotion during pregnancy to prevent or reduce the striae while 204 (63.2%) of cases did not use any preventive steps. There is significant difference regarding DLQI of pregnant women who did and who did not take preventive steps as (p value <0.001), the mean value was 18.92 ± 23 and 14.43 ± 1.69 respectively. this is consistent with **Ogrum and Dogru** ⁽²³⁾ who showed that there was significant difference regarding symptoms and emotion in patients who did or who did not take preventive steps.

Our current study showed that there was significant difference between parity and dermatology life quality index (DLQI) where the mean value in DLQI in primiparae was 15.62 ± 1.87 and in multiparae was 16.45 ± 3.47 . This is consistent with **Mosbeh** ⁽²²⁾ who reported that QOL questionnaire was significantly higher among parous women when compared to nulliparous women. However, **Nusrat et al.** ⁽²¹⁾ showed that there was no significant difference between the Skindex-16 domains and parity. This could be explained by difference in sample size and in number of primiparae and multiparae in both studies.

CONCLUSION

Striae affect not only the emotional but also both of the physical and daily life of the individual. Therefore, women suffer from striae should be examined in detail to prevent the development or progression of striae, particularly in women encountered for the first time or primiparae with severe striae who might be intensely affected. Cream/lotion use is the most applied methods to prevent striae gravidarum. Despite the lack of strong evidence on the effect of cream/lotion use, some women

apply cream/lotion during or after pregnancy to prevent or reduce the striae. This finding pointed to the concerns of the women with pregnancy about the effectiveness of the methods they applied. Therefore, there is a need for alternative methods to prevent striae. Further studies on different regions of various populations are required to enhance the knowledge on the effects of striae gravidarum on quality of life.

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