

Quality of Life Evaluation in Iranian Postpartum Women With and Without Striae Gravidarum

Masoumeh Kordi,¹ Farzaneh Rashidi Fakari,^{2,*} Seyed Reza Mazloun,³ and Pouran Layegh⁴

¹Department of Midwifery, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, IR Iran

²Department of Midwifery, Students Research Committee, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, IR Iran

³Department of Nursing, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, IR Iran

⁴Department of Dermatology, School of Medicine, Mashhad University of Medical Sciences, Mashhad, IR Iran

*Corresponding author: Farzaneh Rashidi Fakari, Department of Midwifery, Students Research Committee, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, IR Iran. Tel: +98-09158897334, E-mail: rashidiff@yahoo.com

Received 2015 September 02; Revised 2015 November 17; Accepted 2016 March 03.

Abstract

Background: Striae are a common change during pregnancy, leaving striae in various body parts after delivery, which most women find unpleasant. They create a big aesthetic concern for most women. Although striae do not endanger the mother and the fetus, they may cause a desire to scratch the region leading to small wounds, induce stress over beauty, decrease self-confidence, and create psychological disorders. They may try various treatments and often refer to dermatology clinics and receive long-term treatments; these time-consuming and costly behaviors and may affect their quality of life.

Objectives: The aim of this study was to evaluate the quality of life in Iranian postpartum women with and without striae gravidarum.

Materials and Methods: This cross-sectional study was conducted on 145 women who had referred to health centers of Mashhad to receive post-delivery health care six weeks after delivery during year 2013. Multi-stage sampling was applied to select the participants. The tools used were demographic, SF-36 quality of life, Skindex29, Atwal and Fitzpatrick classification questionnaires. Data were analyzed using the SPSS V.11.5 software.

Results: The subjects' mean age was 26.3 ± 5.7 . Mann-Whitney test showed there was a significant difference between mean of Skindex29 and its dimensions ($P < 0.001$), general life quality ($P < 0.001$) in women with and without striae. Mann-Whitney test showed no significant difference between mean general quality of life dimension, except physical function in women with and without striae ($P > 0.05$).

Conclusions: The results showed that striae lead to reduced quality of general life and reduced skin quality index in women postpartum.

Keywords: Postpartum, Quality of Life, Striae Gravidarum

1. Background

Striae or pregnancy stretch marks are a form of linear scarring on the abdomen and breast, which usually appear in 50% - 90% of all pregnant women. The remaining marks are an aesthetic concern for most women (1, 2). Striae often appear as reddish or purplish streaks during the 24th week of pregnancy (1) and fade gradually after delivery and finally change into wrinkled silvery scars and remain forever (3). The main cause is unknown, but some causes have been suggested. These include genetic factors, family history, skin type, skin color, mother's young age, gestational age, the newborn's weight, malnutrition, body mass index, and gestational diabetes (4, 5). It seems that disorder in fibroblast synthesis and connective tissue is the main cause of the problem (5). Takimoto et al. (2011) showed that 73.8% of women are disgusted by striae during pregnancy (6). Although striae do not endanger the mother

and the fetus, they may cause a desire to scratch the region leading to small wounds, induce stress over beauty, decrease self-confidence, and create psychological disorders (7-9). These make primiparous women or those who decide to become pregnant inquire about striae and its prevention measures (1, 10). They may try various treatments and often refer to dermatology clinics and receive long-term treatments; these time-consuming and costly behaviors will affect their quality of life indirectly (1, 10-13). Therefore, striae make women both mentally and socially vulnerable. In other words, women's physical, mental, and social health or rather their quality of life is endangered (1, 3, 10-13). Thus, determining quality of life, concerning the skin, gains significance for skin changes, though not directly life-threatening, could affect people's life in various ways such as pain and itching, tension, social and family relation problems and health care problems (1).

Al-Himdani et al. (2013) suggested that striae leads to reduced quality of life and is a limiting factor in life (14). Yamaguchi et al. (2012) showed there was no significant association between striae and general life quality, the dimension of symptoms and functions of skin quality of life index (15). Yamaguchi et al. (2014) showed pregnant women with striae had a lower quality of life in the dimension of emotion; the preventive steps were associated with the level of quality of life in the dimension of emotion, in pregnant women with striae (16).

Therefore, investigating quality of life can play an important role in determining the severity of striae, offering appropriate health care, planning life quality improving programs, and providing health consultation to prevent further problems.

2. Objectives

The aim of this study was to evaluate the quality of life in Iranian postpartum women with and without striae gravidarum.

3. Materials and Methods

This cross-sectional study was conducted on 145 primiparous and multiparous women referring to health centers of Mashhad during year 2013. The sample size was calculated as 145 based on prevalence (confidence coefficient = 95%). Multi-stage random sampling was applied. From among five health centers in Khorasan Razavi province, one center (cluster) was randomly selected and based on the number of referrals, 10 affiliate centers were selected. In every center, using simple sampling, subjects were selected from women referring to receive health care during their sixth week after delivery. Inclusion criteria included provision of consent, Iranian nationality, lack of diagnosis of adrenal disease, lupus, connective tissue, Cushing syndrome as well as auditory, speech and mental disorders. Exclusion criteria included discard to continue filling out questionnaires for any reason.

The tools applied included a demographic questionnaire, Fitzpatrick classification scale, Atwal scale, Skindex29 scale and quality of life SF-36 questionnaire. Validity of the forms and questionnaires was confirmed through the content validity test.

To identify skin type, Fitzpatrick classification scale was used. This is a four-point Likert questionnaire in which six skin types are categorized. A score of 0 - 6 presents type one skin; a score of 7 - 13 indicates type 2 skin; 14 - 20 type 3; 21 - 27 type 4; 28 - 34 type 5; and $35 \geq$ type 6 (17). The reliability was confirmed by test-retest of 0.74. Severity of

striae was determined by the color and number of streaks on breast, abdomen, thighs, and hips measured by Atwal scale ranging from zero to 24. A score of zero indicated lack of striae; 4 - 9, mild; 10 - 15, average; and more than 15, severe striae. The reliability was confirmed by correlation coefficient of 0.86. To determine skin quality of life, skindex29 was used, which was composed of three dimensions: emotion (10 questions), symptoms (7 questions) and function (12 questions). One question, which is not considered in scoring, was asked using a five-point Likert scale. The minimum score was 29 and maximum 145. The reliability was demonstrated with Cronbach's alpha coefficient of 0.84 for emotion, 0.80 for symptoms, and 0.86 for functioning. To investigate quality of life and health, the SF-36 questionnaire of life quality was applied. This questionnaire includes 36 statements and eight domains. Pain and general health included physical functioning, role limitations due to physical health, role limitations due to emotional problems, energy/fatigue, emotional well-being, social functioning. Scores range from 0 - 100 and a higher score indicates higher quality of life.

The reliability was demonstrated with internal consistency coefficient for the eight subscales, which was 0.76 to 0.82. Upon approval of the university research ethics committee, and after briefing the subjects on the purpose of the study and acquiring their written consent and observing all ethical codes, sampling was performed. Firstly, the demographic information questionnaires, General quality of life questionnaire and skindex29 were completed, through an interview by the researcher assistant. Next to complete the Atwal scale, breasts, thighs, hips, and abdomens were observed in private, during the subject's sixth week of delivery by the research assistant. Data were analyzed using the SPSS v. 11.5 software with descriptive statistics, Mann-Whitney and Kruskal Wallis. In this analysis, normality of quantitative variables was determined by Kolmogorov-Smirnov test in which variables had a non-normal distribution. Confidence coefficient for all tests was 95%.

3.1. Ethical Considerations

In this study, the participants were provided with an informed consent form; the subjects were assured about the confidentiality of their personal information. Before sampling, permission to conduct the study was granted from the university ethics committee and also, a letter of recommendation from Mashhad University of Medical Sciences was provided for the healthcare centers.

4. Results

Subjects' mean age was 26.3 ± 5.7 years (women with striae 28.27 ± 5.37 years, women without striae 25.93 ± 5.73), body mass index (BMI) was 25.94 ± 5.69 kg/m² (women with striae 25.12 ± 1.62 kg/m², women without striae 25.48 ± 2.61 kg/m²), and pregnancy over weightiness was 12.32 ± 4.91 kg (women with striae 10.63 ± 5.78 kg, women without striae 12.54 ± 4.75 kg). There was no significant difference between mean age ($P = 0.057$), BMI ($P = 0.828$), pregnancy over weightiness ($P = 0.103$) in women with and without striae.

Striae were seen in 84.8% ($N = 123$) of the subjects. Around 72.2% had abdomen striae. Skin type in 40.0% ($N = 58$) was type 2. Mean and standard deviation (SD) for general quality of life and subscales: physical function, physical role, mental health, physical pain, social function, emotional role, vitality, general health were 49.43 ± 8.28 , 29.25 ± 34.23 , 68.13 ± 31.91 , 90.18 ± 26.87 , 33.42 ± 24.37 , 27.95 ± 23.57 , 63.88 ± 16.10 , 41.28 ± 15.17 and 42.47 ± 8.39 , respectively. Mann-Whitney test showed that there was a significant difference between means of skindex29 and its dimensions, general life quality in women with and without striae ($P < 0.05$). Also, Mann-Whitney test showed no significant difference between mean of general quality of life except for physical function in women with and without striae ($P > 0.05$) (Table 1). Mann-Whitney test showed a significant difference between means concerning mental dimension of general quality of life ($P = 0.025$) and emotional dimension of skindex29 ($P = 0.036$) in primiparous and multiparous pregnant women (Table 2). Kruskal Wallis test showed no significant difference between mean of general quality of life ($P = 0.717$) and Skindex29 ($P > 0.05$), according to striae severity (Table 3).

5. Discussion

The findings indicated that frequency distribution of striae gravidarum is 87.4% and the commonest striae site is the abdomen. Therefore, the findings of the present study suggested that general quality of life and skin quality of life are significantly better in women without striae than in women with it. The study of Yamaguchi et al. (2012) indicated that the score for dimension of emotion regarding skin quality of life in women without pregnant striae was significantly better than women with striae. However, there was no significant difference considering dimensions of function and symptoms and also general life quality between women with and without striae. This discrepancy between the findings might be due to striae prevalence (about 39.1%) (15). One's impression of skin status is a determining factor in quality of life. Though

Table 1. Skindex-29 and General Quality of Life Scores During the Postpartum Period in Women With and Without Striae Gravidarum

	Striae		P Value ^a
	Presence	Absence	
Skindex-29			
Emotion	20.58 ± 5.71	12.52 ± 4.15	0.0001
Symptoms	15.76 ± 4.20	10.21 ± 3.66	0.0001
Functioning	25.05 ± 6.86	15.57 ± 5.43	0.0001
Total	61.30 ± 16.52	42.00 ± 19.56	0.0001
General quality of life			
Physical function	22.28 ± 27.67	72.89 ± 39.60	0.0001
Physical role	67.97 ± 32.27	69.04 ± 30.52	0.950
Mental health	89.66 ± 28.15	93.33 ± 17.43	0.988
Physical pain	32.80 ± 24.41	36.81 ± 24.44	0.305
Social function	27.21 ± 23.25	32.04 ± 25.46	0.662
Emotional role	64.30 ± 16.02	61.57 ± 16.75	0.191
Vitality	41.29 ± 14.12	41.25 ± 20.70	0.662
General health	42.09 ± 8.08	44.80 ± 10.02	0.191
Total	48.49 ± 7.69	55.63 ± 9.54	0.001

^aMann-Whitney.

Table 2. Skindex-29 and General Quality of Life Scores During the Postpartum Period in Women With Primiparae and Multiparae Striae Gravidarum

	Parity		P Value ^a
	Primiparae	Multiparae	
Skindex-29			
Emotion	20.95 ± 6.28	19.51 ± 3.67	0.036
Symptoms	16.03 ± 4.59	14.96 ± 2.82	0.051
Functioning	25.34 ± 7.40	24.25 ± 5.18	0.258
Total	62.20 ± 18.08	58.74 ± 11.20	0.082
General quality of life			
Physical function	21.73 ± 28.51	23.87 ± 25.51	0.132
Physical role	70.50 ± 33.51	61.29 ± 28.20	0.206
Mental health	87.82 ± 30.64	94.62 ± 19.43	0.025
Physical pain	32.27 ± 23.27	61.29 ± 28.20	0.347
Social function	25.58 ± 23.85	31.85 ± 21.50	0.347
Emotional role	64.46 ± 16.67	64.66 ± 13.89	0.118
Vitality	41.17 ± 14.50	40.83 ± 12.73	0.240
General health	42.20 ± 7.69	42.32 ± 8.82	0.289
Total	48.28 ± 8.03	49.06 ± 6.77	0.302

^aMann-Whitney.

Table 3. Skindex-29 Scores and General Quality of Life of Women During the Postpartum Period With Striae Gravidarum By Atwal's Scoring

	Striae		P Value ^a
	Mild	Moderate	
Skindex-29			
Emotion	20.71 ± 5.75	18.00 ± 4.77	0.281
Symptoms	15.81 ± 4.26	14.83 ± 3.12	0.612
Functioning	25.13 ± 6.81	23.50 ± 8.26	0.975
General quality of life	48.42 ± 7.68	49.69 ± 8.41	0.717

^aKruskal-Wallis.

striae gravidarum does not impose any life-threatening risk, their ugly-looking appearance may cause stress, decrease self-confidence, create mental problems and make women worried about their husbands losing interest in them, which can lead to psychological problems after delivery (1, 3, 7-9). In the present study, there was not a significant relationship between striae severity and general life quality and skin life quality. Balkrishnan et al. (2006) studied quality of life in women with facial spots referring to Wake Forest University School of Medicine (WFUSM) in North California. The findings showed facial spots significantly decrease quality of life, self-image, and self-confidence, but there is no relationship between the type and severity of the spot and quality of life (18). Facial spots clearly affect people's look; patient's evaluation of his/her skin is not positive, which as a result generally lowers quality of life. Findings of Anvar et al. (2009) showed that skin diseases such as chronic dermatitis decrease skin quality of life (19). Iliev et al. showed that in patients with skin problems, severity alone is not the main concern and non-fatal skin diseases may lower life quality more than other diseases. Skin problems of head and face cause the most decrease in life quality dimensions of all other disorders, which is statistically significant regarding dimensions of mental health, social function, body pain, general health and vitality (20). This finding is similar to the findings of the present study. Moreover, according to the findings of this study, the mean score for mental dimension of general life quality and emotional dimension of skin quality of life in primiparous women is significantly lower than those of multiparous women. Salari et al. (2013) investigated stress factors after delivery in primiparous and multiparous women in Mashhad, Iran. Their findings indicated stress from striae and pregnancy chloasma in primiparous is significantly higher than that of multiparous women (21). The period after delivery is a potentially stressful time during which women should accept their mother-

hood role and the subsequent body changes. During this period, various anatomical, physiological and psychological changes occur in mothers, which are difficult to cope with. One stress-inducing factor after delivery is the concern over negative body changes. Skin changes and striae affect one's body image negatively (1-7, 21). Though striae rarely influence physical well-being, their psychological effects affect general health and skin dramatically.

The main limitation of this study was the small sample size. The strength of this study was the use of numerical scoring system for the severity of striae at account the number of striae present and the degree of erythematic, while other studies used the number of striae to measure severity. Further research aimed at striae preventive measures or their treatment is recommended; although they are not dangerous, they affect general life standard and skindex29 in many mothers after delivery. Therefore, the findings of the present study, general quality of life and the quality of skin, significantly worsen in women with striae.

Footnotes

Authors' Contribution: Masoumeh Kordi and Farzaneh Rashidi Fakari developed the original idea and the protocol, abstracted and analyzed the data, and wrote the manuscript. Pouran Layegh contributed to the development of the protocol, abstracted the data, and prepared the manuscript. Statistical analysis was done by Seyed Reza Mazloun and Farzaneh Rashidi Fakari.

Declaration of Interests: None declared.

Funding/Support: This study was supported in part by grant 920435 from Mashhad University of Medical Sciences.

References

- Osman H, Rubeiz N, Tamim H, Nassar AH. Risk factors for the development of striae gravidarum. *Am J Obstet Gynecol.* 2007;**196**(1):62 e1-5. doi: [10.1016/j.ajog.2006.08.044](https://doi.org/10.1016/j.ajog.2006.08.044). [PubMed: [17240237](https://pubmed.ncbi.nlm.nih.gov/17240237/)].
- Tyler KH. Physiological skin changes during pregnancy. *Clin Obstet Gynecol.* 2015;**58**(1):19-24. doi: [10.1097/GRF.0000000000000077](https://doi.org/10.1097/GRF.0000000000000077). [PubMed: [25517755](https://pubmed.ncbi.nlm.nih.gov/25517755/)].
- Salter SA, Kimball AB. Striae gravidarum. *Clin Dermatol.* 2006;**24**(2):97-100. doi: [10.1016/j.clindermatol.2005.10.008](https://doi.org/10.1016/j.clindermatol.2005.10.008). [PubMed: [16487881](https://pubmed.ncbi.nlm.nih.gov/16487881/)].
- Osman H, Usta IM, Rubeiz N, Abu-Rustum R, Charara I, Nassar AH. Cocoa butter lotion for prevention of striae gravidarum: a double-blind, randomised and placebo-controlled trial. *BJOG.* 2008;**115**(9):1138-42. doi: [10.1111/j.1471-0528.2008.01796.x](https://doi.org/10.1111/j.1471-0528.2008.01796.x). [PubMed: [18715434](https://pubmed.ncbi.nlm.nih.gov/18715434/)].
- Maija M, Marcon CR, Rodrigues SB, Aoki T. [Striae distensae in pregnancy: risk factors in primiparous women]. *An Bras Dermatol.* 2009;**84**(6):599-605. [PubMed: [20191171](https://pubmed.ncbi.nlm.nih.gov/20191171/)].
- Takimoto H, Tajirika R, Sarukura N, Yoshida H, Kato N. Optimal Weight Gain Recommendations For Non-Obese Japanese Pregnant Women. *J Womens Health.* 2015;**4**:2.

7. Lerdpienpitayakul R, Manusirivithaya S, Wiriyasirivaj B, Lortwathanasirikul J. Prevalence and risk factors of striae gravidarum in primiparae. *Thai J Obstet Gynaecol.* 2009;17:70-9.
8. Soltanipoor F, Delaram M, Taavoni S, Haghani H. The effect of olive oil on prevention of striae gravidarum: a randomized controlled clinical trial. *Complement Ther Med.* 2012;20(5):263-6. doi: [10.1016/j.ctim.2012.05.001](https://doi.org/10.1016/j.ctim.2012.05.001). [PubMed: 22863639].
9. Narin R, Nazik H, Narin MA, Nazik E, Ozdemir F, Karabulutlu O, et al. Can different geographic conditions affect the formation of striae gravidarum? A multicentric study. *J Obstet Gynaecol Res.* 2015;41(9):1377-83. doi: [10.1111/jog.12741](https://doi.org/10.1111/jog.12741). [PubMed: 26010400].
10. Nussbaum R, Benedetto AV. Cosmetic aspects of pregnancy. *Clin Dermatol.* 2006;24(2):133-41. doi: [10.1016/j.clindermatol.2005.10.007](https://doi.org/10.1016/j.clindermatol.2005.10.007). [PubMed: 16487888].
11. Kasielska-Trojan A, Sobczak M, Antoszewski B. Risk factors of striae gravidarum. *Int J Cosmet Sci.* 2015;37(2):236-40. doi: [10.1111/ics.12188](https://doi.org/10.1111/ics.12188). [PubMed: 25440082].
12. Picard D, Sellier S, Houivet E, Marpeau L, Fournet P, Thobois B, et al. Incidence and risk factors for striae gravidarum. *J Am Acad Dermatol.* 2015;73(4):699-700. doi: [10.1016/j.jaad.2015.06.037](https://doi.org/10.1016/j.jaad.2015.06.037). [PubMed: 26369842].
13. Tunzi M, Gray GR. Common skin conditions during pregnancy. *Am Fam Physician.* 2007;75(2):211-8. [PubMed: 17263216].
14. Al-Himdani S, Wilburn J, McKenna S, Bayat A. Striae distensae, also denominated cutaneous stretch marks, pose a significant overall burden on patients' quality of life: A study in 34 patients. *Wound Repair Regen.* 2014;22(2):28.
15. Yamaguchi K, Suganuma N, Ohashi K. Quality of life evaluation in Japanese pregnant women with striae gravidarum: a cross-sectional study. *BMC Res Notes.* 2012;5:450. doi: [10.1186/1756-0500-5-450](https://doi.org/10.1186/1756-0500-5-450). [PubMed: 22905939].
16. Yamaguchi K, Suganuma N, Ohashi K. Prevention of striae gravidarum and quality of life among pregnant Japanese women. *Midwifery.* 2014;30(6):595-9. doi: [10.1016/j.midw.2013.07.011](https://doi.org/10.1016/j.midw.2013.07.011). [PubMed: 23962637].
17. Sereshti M, Deris F. Severity of Striae Gravidarum and Its Relationship with Perineal Trauma and Vaginal Lacerations during Vaginal Delivery of Pregnant Women Referred to Hajar Hospital of Shahr-e-Kord in 2010-2011. *ZUMS.* 2013;21(89):107-16.
18. Balkrishnan R, McMichael AJ, Hu JY, Camacho FT, Shew KR, Boulloc A, et al. Correlates of health-related quality of life in women with severe facial blemishes. *Int J Dermatol.* 2006;45(2):111-5. doi: [10.1111/j.1365-4632.2004.02371.x](https://doi.org/10.1111/j.1365-4632.2004.02371.x). [PubMed: 16445498].
19. Anvar M, Lohrasb MH, Javadpour A. Effect of convenient dermatologic intervention on quality of life in patients with chronic eczematous dermatitis. *Iran J Psychiatr Behav Sci.* 2010;4(2):47-50.
20. Iliiev D, Furrer L, Elsner P. [Assessment of the quality of life of patients in dermatology]. *Hautarzt.* 1998;49(6):453-6. [PubMed: 9675571].
21. Salari P, Nazari S, Mazlum R, Ghanbari Hashem Abadi BA. Comparing postpartum stressors and social support level in primiparous and multiparous women. *J Midwifery Reproduct Health.* 2013;2(1):71-6.