Case Reports

Photobiomodulation associated with cosmetics: perception of professionals on the improvement of flaccidity and genital hyperpigmentation

Fotobiomodulação associada a cosméticos: percepção de profissionais sobre melhora de flacidez e hiperpigmentação genital

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ABSTRACT | INTRODUCTION: Photobiomodulation associated with depigmenting and rejuvenating cosmetics has shown benefits in improving sagging and genital hyperpigmentation in women. **OBJECTIVE:** The aim of the study was to describe the perception of professionals about the improvement of sagging and genital hyperpigmentation treated by photobiomodulation associated with cosmetics. **METHOD:** The study showed a perception of improvement in the general appearance, sagging and genital pigmentation with the use of the proposed therapy. RESULTS: Sample composed of ten women submitted to four treatment sessions. The analysis of the professionals was by comparing the photographic records of before and after the treatment of the genital region. **CONCLUSION:** However, it is necessary that new evaluation models to evidence the therapeutic effectiveness for treatments of flaccidity and dyschromias in the genital region are developed, thus expanding the evaluation methods beyond the perception of improvement in the general aspect.

KEYWORDS: Female Genitalia Section. Cosmetics. Physiotherapy. Low power laser therapy.

RESUMO | INTRODUÇÃO: A fotobiomodulação associada a cosméticos despigmentantes e rejuvenescedores tem mostrado benefícios na melhora da flacidez e hiperpigmentação genital em mulheres. **OBJETIVO:** O objetivo do estudo foi descrever a percepção de profissionais acerca da melhora de flacidez e hiperpigmentação genital tratados por fotobiomodulação associada a cosméticos. **MÉTODO:** O estudo evidenciou percepção de melhora no aspecto geral, flacidez e pigmentação genital com uso da terapêutica proposta. **RESULTADOS:** Amostra composta por dez mulheres submetidas a quatro sessões de tratamento. A análise dos profissionais foi mediante a comparação dos registos fotográficos de antes e depois do tratamento da região genital. **CONCLUSÃO:** No entanto, é necessário que novos modelos de avaliação para evidenciar a efetividade terapêutica para tratamentos de flacidez e discromias na região genital sejam desenvolvidos ampliando assim os métodos de avaliação para além da percepção de melhora do aspecto geral.

PALAVRAS-CHAVE: Genitália Feminina. Cosméticos. Fisioterapia. Terapia a Laser de Baixa Potência.

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Introduction

Women with a negative genital self-image are more prone to sexual dissatisfaction. Self-criticism and concern about their appearance lead to amassment that tends to interfere with sexual performance.[1] The negative impact on the female genital image is caused by the presence of aesthetic dysfunctions such as hyperpigmentation, sagging of the labia major and minor of the pudendum, in addition to folliculitis and fat located in the venus mound. Among the most frequent complaints are hyperpigmentation and tissue sagging.[2]

Genital dyschromia is an aesthetic disorder that affects several body areas, including the female genital region, which can develop in the external genitalia or the perianal region. In the pudendal region, the labia majora and minora has impacted by collagen production changes and the consequent presence of genital sagging.[3] Genital hyperpigmentation can arise due to aging, hormonal changes, skin friction, obesity, inflammation, allergies, and sun exposure.[2] In the pudendal region, the labia majora and minora are impacted by changes in collagen production and the consequent presence of genital flaccidity.[3]

Among the approaches used in women's health, mention is made of photobiomodulation and the use of cosmetic active ingredients. , in addition to maintaining water balance.[4] On the other hand, photobiomodulation causes an improvement and speed in the cell protection process, accelerating tissue repair at the site where it is applied, it occurred in the physiological and biochemical events of this process, found inflammatory mediators, increased the collagen, and favoring the formation of granulation tissue and re-epithelization.[5,6]

The cosmetics' permeation can be enhanced with photobiomodulation and peeling, a cosmetic with a whitening action that promotes chemoexfoliation and lightening of hyperchromic spots.[4] Photobiomodulation therapy increases the synthesis of adenosine triphosphate, inhibits inflammatory mediators, and contributes to the increase in collagen fibers and the proliferation of epithelial cells.[6] Given the above, the objective of the present study was to describe the professionals' perception of the improvement of sagging and genital hyperpigmentation treated by photobiomodulation associated with cosmetics.

Methods

This study aimed to verify the perception of results by specialists of the association of photobiomodulation with cosmetics for skin sagging and hyperpigmentation in the genital region of women. It had carried out at the Clínica Escola de Fisioterapia da Universidade Paulista (UNIP), Santos, São Paulo, Brazil, from 10/03/2019 to 10/22/2019. This research had approved by the Ethics Committee and Research with Human Beings of UNIP, Nº 3,615,832. All participants signed the Free and Informed Consent Term (FICT), according to the National Health Council No. 466/12, and for the use of the image.

The sample consisted of women aged 18 years or older with complaints of sagging and hyperpigmentation in the genital region, invited by posters displayed at the school clinic. After telephone contact with the volunteers, the evaluation had scheduled. Women pregnant and women with allergies to active ingredients used in cosmetics, and those who had already undergone intimate aesthetic surgeries before the study, had been excluded. Participants completed a sociodemographic and clinical questionnaire and underwent a physical examination in stages, including the classification of Phototype[7], the Flaccidity Test[8], and photo documentation.[8]

The Fitzpatrick Phototype Scale[7] was used to classify the patient's skin phototype and determine the presence of hyperpigmentation in the genital region. This scale is classified from I to VI and the higher the score, the greater the pigmentation. The thigh phototype was used as a reference and tones above the phototype of this region were considered as hyperpigmentation. The Sagging Test evaluated the level of sagging of the pudendal labia major and minor and was performed through a pinching movement with the fingers in order to pull the tissue and observe its elasticity. The tissue return to the initial condition within 3 seconds was considered as absence of flaccidity, and the return above this time was classified as skin flaccidity.[8]

The photo documentation was carried out with the rear camera of an iPhone brand smartphone (United States) model 6s, 12-megapixel resolution. The participant was positioned in lithotomy, and the cell phone was supported on the stretcher in an upright position, 20 centimeters from the participant's intergluteal line.

This distance was measured using a millimeter ruler supported on the stretcher. To minimize changes in luminosity, the photograph was taken under the fluorescent light of the room. Photo documentation was performed before treatment and at the end of the last intervention.

One participant and a single physiotherapist from the team were allocated in a reserved room, using individual protection equipment. Cosmetics from the NAKED Kit by Ellementti (Santo André, Brazil) were used for the intervention, consisting of cleansing foam, renewing body fluid, Redensify body fluid, Lumin body fluid and Protect skin mask body mask. The photobiomodulation equipment was LASERPULSE 30W, IBRAMED (Amparo, Brazil). The participant was positioned on the stretcher in a lithotomy position and the protocol proposed by Chauvin, F.[4] was applied, consisting of seven steps as follows:

1) Hygienisation of the genital area with the cleansing foam;

2) Infrared photobiomodulation – 904nm (application in 5 points, 2 in each bigger lip (2cm between them) and 1 in the perineal center, fluence 2J/cm²);

3) Application of body renewing fluid (action for ten minutes)

4) Application of density body fluid (action for five minutes);

5) Photobiomodulation with 660nm pen (application in 5 points, 2 in each bigger lip (2cm between them) and 1 in the perineal center, fluence 2J/cm²

6) Application of Lumin body fluid (action for five minutes and removal with water);

7) Applying the body mask protects the skin mask (action for four hours and removal with water).

The treatment consisted of four sessions held twice a week.

Sociodemographic and clinical data were tabulated and analyzed using the Microsoft Excel program. Categorical variables were expressed as absolute values (n) and frequency (%), and numerical variables as mean and standard deviation. Three physiotherapists with at least ten years of experience in Dermatofunctional Physiotherapy performed the photo documentation analysis. In JPG format, the evaluators received the images by e-mail identified before and after the intervention. A document in .doc format was sent to fill in the following questions, dichotomized into yes and no: "Has sagging improved?", "Improved pigmentation?", "Is the general appearance improved?". Afterward, a score from 0 to 10 was assigned to the perception of improvement in each aspect, where 0 was no perception of improvement and 10 the perception of maximum improvement. The grades were tabulated and expressed as mean and standard deviation per graph using GraphPad Prism 9.4.0.

Results

The sample consisted of 10 women with a mean age of 44.1±14.46 years. Sociodemographic and clinical data show in table 1.

Table 1. Sociodemographic and clinical data of ten women with complaints of sagging and genital hyperpigmentation. Santos, Sao Paulo, Brazil. (to be continued)

Variables	n= 10 Average (DP)
AGE	44,10 ± 14,46
Marital status	**n (%)**
Single	2 (20)
Married	6 (60)
Widow	1 (10)
Divorced	1 (10)

Table 1. Sociodemographic and clinical data of ten women with complaints of sagging and genital hyperpigmentation. Santos, Sao Paulo, Brazil. (conclusion)

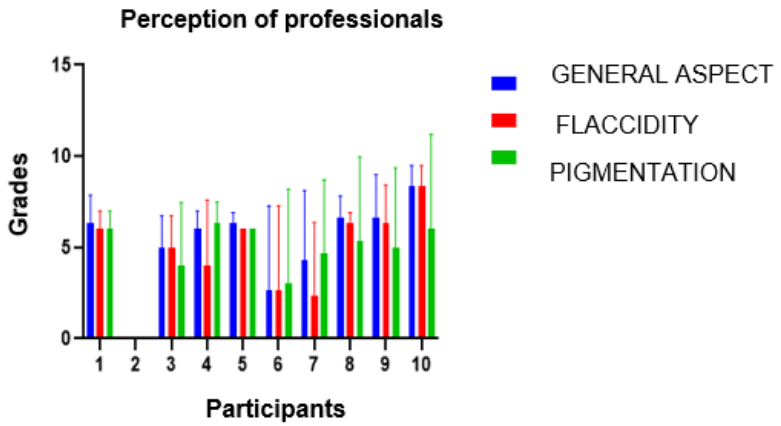
Variables	n= 10 Average (DP)
BMI*	
Eutrophic	3 (30)
Overweight/Obesity	7 (70)
Gestation	
Nulíparous	2 (20)
Primíparous	3 (30)
Multíparous	5 (50)
Types of childbirth	
Vaginal	1 (10)
Cesarean	7 (70)
Smoking	
Yes	7 (70)
No	3 (30)

Caption: BMI (body mass index). *Classification according to the World Health Organization.
Source: The authors (2022).

The analysis of images (Figure 1) by the physical therapists showed agreement for the improvement of the sagging aspect in 6 (60%) of the participants, hyperpigmentation in 2 (20%), and general appearance in 7 (70%).

Participant 2 did not perceive improvement in general appearance, sagging, and genital hyperchromic. Graph 1 demonstrates the results of the perceived improvement scores of the variables analyzed by photo documentation by the invited physiotherapists.

Graph 1. Perceived improvement score (mean ± SD) of general appearance, sagging, and pigmentation of the genital region of 10 women, evaluated by three professionals through photo documentation. Santos, Sao Paulo, Brazil.



Source: The authors (2022).

Figure 1. Photographic Genital record region before and after the intervention with photobiomodulation associated with cosmetics of the 10 participants included in the study. Santos, Sao Paulo, Brazil

Discussion

This study demonstrated a perception of improvement in the general appearance, sagging, and genital hyperchromasia, evaluated by photo documentation after associating photobiomodulation with cosmetics. No studies in the literature associate photobiomodulation with low-level laser associated with cosmetics for treating genital aesthetic disorders. With the same objective of improving the genital aspect, Lordêlo et al.[8] used radiofrequency associated with cosmetics and observed satisfactory results.

The perception of tissue quality improvement may be due to photobiomodulation that stimulates cell mitosis, regulates fibroblasts, and normalizes the production of elastic and collagen fibers, improving healing and contributing to the fight against tissue flaccidity.[9] In the study by Fortuna et al.[5], there was an increase in collagen fibers with the use of a low-power laser after four treatment sessions; the laser increased the collagen matrix, collaborating with tissue repair and improving skin sagging.

The 650nm pen has a shorter wavelength, with a power of 12mW, reaching more superficial tissues; the 904nm pen has a longer wavelength, with a power of 20mW, reaching deeper tissues; both stimulate the production of collagen and elastin, improving skin sagging[5], since they act to increase metabolism where it causes biochemical, bioelectrical and bioenergetic changes, affecting cell proliferation and maturation, reducing the inflammatory process, increasing collagen synthesis and consequently improving the appearance of sagging skin.[5]

Studies by Lordêlo et al.[8] and Samuels & Garcia[10] demonstrate satisfactory results in sagging and genital dyschromia through interventions such as the use of radiofrequency and the use of fractional CO^2 laser, causing a positive clinical response in terms of genital appearance. The use of the Element brand KIT NAKED product line advocates the firming function since it has lactobionic acid and mandelic acid, having antioxidant and anti-inflammatory action that accelerates cell renewal and increases the amount of collagen.[4] The whitening action of the kit is associated with the presence of tranexamic acid and magnolia extract, bringing a whitening action to the skin.[4]

Although this study did not show agreement in the perception of improvement in hyperchromic, the active principles present in the cosmetics used are indicated to treat this aesthetic dysfunction. Tranexamic acid reduces melanogenesis by inhibiting plasmin activity induced by ultraviolet (UV) light. Usually, UV light increases the interaction of plasmin with keratinocytes, resulting in the release of prostaglandin, which stimulates melanocyte tyrosinase activity, triggering an increase in pigmentation.[11]

Dissatisfaction with the appearance of the genital region harms women's social life. A study with 125 patients showed that the motivations for surgery were aesthetic (69.8%), physical (62.3%), emotional (54.7%), and intimate (49.1%): genital concerns adversely affected self-esteem (63.2%) and sexual attractiveness (57.9%)[2]. According to Kalaaji et al.[9], aesthetic reasons related to the appearance of the genitals were the main reason in women's decision-making to receive genital surgery, followed by physical and emotional concerns. In contrast, the improvement in the general appearance may be a positive factor in the decision-making for not performing invasive procedures and improving personal satisfaction.[12]

The field of aesthetics is scarce of validated evaluation instruments and the results of treatments are often evaluated through customer satisfaction and the perception of the customer and professional. Perception is the ability an individual has to process the information they receive, it is subjective and influenced by the individual scenario experienced at the time. The body's perception of beauty, influenced by the media and imposed by society, can also interfere with image perception.[13] The present study evaluated the improvement of a therapy based on the perception of professionals with different life histories, which may justify the grades divergences related to the perception of improvement in the general appearance of the genital region, hyperchromia and flaccidity.

The reduced number of evaluators is a limitation. Since the form of evaluation by perception is subjective and consequently evaluator-dependent. Despite the lag in the evaluation method, the form already mentioned in the study where three evaluators classified improvement through the photo-documented image's perception.[10] In addition, the more standardized photo documentation is subject to changes in capturing images. It has suggested the existence of new evaluative instruments that can quantitatively measure sagging and hyperchromasia of the genital region. Furthermore, a validated instrument used in the evaluation and the question directed to the evaluator may have induced a positive response from the protocol used. Despite the satisfactory result for the treatment of sagging and hyperpigmentation of the genital region, it is suggested to carry out a randomized clinical trial in order to have a better accuracy on the evolution of the protocol suggested here. it is suggested to carry out a randomized clinical trial in order to have a better accuracy on the evolution of the protocol suggested here.

Conclusion

After analysis of the photographic image, the professionals perceived improvement in the general appearance and genital flaccidity of women submitted to photobiomodulation treatment associated with cosmetics.

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Authors' contributions

Andrade LR participated in the design and planning of the study, collection, analysis, and interpretation of data, intellectual participation in propaedeutic and therapeutic conduct of case studies, and critical review of the literature. Santos CO participated in the approval of the final version of the manuscript, the preparation and writing of the manuscript, intellectual participation in the propaedeutic or therapeutic conduct of case studies, and the Critical review of the manuscript. Ribeiro RTSK participated in the approval of the final version of the manuscript, conception and planning of the study, intellectual participation in propaedeutic or therapeutic conduct of case studies, and critical review of the manuscript. Lemos GBF participated in the approval of the final version of the manuscript, conception and planning of the study, preparation and writing of the manuscript, Obtaining, analysis, and interpretation of data, effective participation in research guidance, intellectual participation in propaedeutic or therapeutic conduct of case studies, critical review of the literature. All authors have reviewed and approved the final version and agree with its publication.

Conflicts of interest

No financial, legal, or political conflicts involving third parties (government, companies, and private foundations, have been declared for any aspect of the submitted work (including, but not limited to, grants and funding, participation in an advisory board, study design, preparation manuscript, statistical analysis.

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