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A Comparative Investigation of Efficacy and Complications in Light and Deep Chemical Peels

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By

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No part of this thesis has been submitted anywhere else for any other degree. This thesis is submitted to the Faculty of Allied Health Sciences, The Superior University, Lahore in partial fulfillment of the requirements for the degree of Master of Science in the field of "**Aesthetics"** in Faculty of Allied Health Sciences at The Superior University, Lahore.

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DEDICATION

I dedicate this thesis to those who have supported me throughout my academic journey. I express my deepest gratitude to my supervisor, Dr Muhammad Adnan Hafeez, for their expert guidance and valuable feedback. I also thank my loving parents, for their support, encouragement, and love. And also, I appreciate my Superior University for providing a conducive learning environment and necessary resources. Thank you.

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Muhammad Tayyab Siddiqui

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LIST OF ABBREVIATIONS

Abbreviation	Full Term
AHA	Alpha Hydroxy Acid
BHA	Beta Hydroxy Acid
TCA	Trichloroacetic Acid
PH	Potential of Hydrogen (pH level)
pH	pH Level (Acidity/Alkalinity)
LA	Lactic Acid
SA	Salicylic Acid
Glycolic Acid	GA
LCA	Lactic Chemical Peel
PCA	Pyruvic Chemical Peel
CO2	Carbon Dioxide (used in some peels)
KOH	Potassium Hydroxide
Retinoic Acid	RA
Jessner's Peel	JP
BHA	Beta Hydroxy Acid Peel
Benzoyl Peroxide	BP
DP	Deep Peel
LP	Light Peel

ABSTRACT

Chemical peels are used in dermatological practices to enhance skin texture, tone, and color. They are classified as Light, Intermediate, and Deep BURNS depending on the ward they cause, their consequences on the skin, and different complication rates. This paper looks at the essential factors concerning chemical peels and the difference in the response the treatment receives from men and women. The objective is to evaluate the efficacy and side effects ratio of deep and light chemical peeling and investigate gender differences in results. This was a comparative cross-sectional study of 68 patients undergoing light or deep chemical peeling. The patients were earmarked into two groups depending on the type of peel done equally. The effectiveness of the treatments was determined concerning the extent to which marks on texture and skin tone altered while complications were noted. Self-administered questionnaires were also completed to assess the patient's satisfaction and perceived improvement in skin quality. Efficacy and complications were also compared between genders to see if there was a gender preference in the results. It was observed that deep chemical peels found a positive change in skin texture and skin tone compared with light chemical peels. Nonetheless, the patients who underwent deep peeling reported more side effects. The analyses of female and male skin after treatments showed that all the surveyed females reported a higher perceived improvement of skin quality and a higher efficacy of both light and deep peels than males; however, females had a statistically significantly higher rate of complications than males. There was evidence of greater effectiveness of the deep chemical peels compared to the light chemical peels, although a higher risk of side effects accompanied this. Sex-specific responses to treatment imply that dermatological treatment should be individualized according to skin pathology and the sex of the patient.

Chemical Peels, Skin Texture, Skin Tone, Gender Differences, Complications, Treatment Efficacy

CHAPTER 1

INTRODUCTION

Chemical peels have been used in dermatology and aesthetic medicine to enhance skin texture (1). Following the same line, these treatments imply the use of chemical agents that remove the dead layers of the epidermis and promote its rejuvenation (2). Historically, even in ancient Egypt, natural acids were used to enhance the skin (3). Chemical peels are now accepted for treating various skin problems, including acne, hyperpigmentation, wrinkles, and scars. The selection of candidates for this procedure can make or mar the chemical peel process because different individuals respond to it differently. The perfect candidate for the study should have reasonable expectations, good health, and appropriate skin pathologies, such as acne, hyperpigmentation, or mild lineation's. Certain elements must be factored into the equation before GOMA recommends a client undergo a chemical peel. These include the client's skin type and age and the prevalence of skin conditions such as eczema and psoriasis. Dark-skin-toned people may require extra care as they likely experience post-inflammatory hyperpigmentation. A patient should not present with any active skin infections or recent facial surgery at the time of therapy. Consultation should include exploring the patient's medical history, drug and food allergies, and tolerance to aftercare. Expectant mothers or those nursing their babies often need to avoid some types of peels because they are dangerous. Explicit assessment of the patient leads to determining the proper method of chemical peeling and the depth of penetration is light or deep depending on the level of skin disorder to be treated. Thirdly, consent should be sought from the patient, patient expectations should be analyzed, and treatment goals should be set to improve outcomes (2, 3).

Such are the conditions under which many clinical trials have endorsed them, and that is why many patients and clinicians alike prefer to use them (4). This treatment can be surface (Category I, light peeling) to mid dermis (Category II, deep peeling) depending on the patient's status. Also, while light peels only work on the epidermis, deep peels work on the dermis, making them more effective. As the popularity of cosmetic procedures grows and patients seek less invasive methods for skin renewal and improvement, chemical peels remain a helpful adjunct to clinical practices for treating several skin conditions. Chemical peels can give excellent results in different skin types, but several rules must be respected to avoid complications. In particular, salicylic or glycolic chemical peels are suggested for those who

suffer from oily or acne skin because these components scrape face skin and untangle pores. Lactic acid is the best for delicate or dry skin as it's a mild peel that doesn't lead to severe shedding. Post-inflammatory hyperpigmentation is more common in individuals with dark skin tones. Hence, people with dark skin should be given extra care. Patients with darker skin, especially those with skin of color, may benefit from lighter peels like those done with alpha hydroxy acids (AHAs) or ferulic acid, minimizing discoloration issues. Rosacea or skin conditions such as eczema means one should be cautious when considering chemical peels as they can lead to redness or worsening of the skin condition in question. However, the type of peel should depend on the patient's problems, like acne, dark skin, or fine lines. This is why chemical peels are safe and effective when administered to the patient under a dermatologist's prescription (5, 6).

Chemical peels have also gained significant interest in aesthetic medicine, mainly because of the preferences people have developed for other modalities of skin-making procedures. The American Society for Aesthetic Plastic Surgery has included chemical peeling among the top five minimally invasive procedures worldwide, and millions of procedures are conducted annually. The everyday use of these procedures is attributed to their efficiency in treating skin ailments such as sun harm, individual acne scars, and lines (6). As they only have light redness and mild peeling characteristics, the light chemical peels are most frequently chosen; however, deep chemical peels are preferable for patients wanting a dramatic change for the better of the skin. Most patients prefer to wear these light peels regularly to enhance the healthy look of their skin. The increasing knowledge about skincare and the need for youthful skin has increased the demand for chemical peeling in different ages, mainly middle-aged people. This is because they can be used to treat several skin diseases, thus their widespread use (7).

Chemical peels are applied to a wide variety of dermatological and cosmetic problems. Superficial peels can be performed using agents for skin disorders that affect the skin layer, such as acne, uneven skin tone, and fine wrinkles. These procedures function on the partitional removal of the outermost layer of the skin, stimulating the growth of new cells and improving skin brightness with little time of healing. On the other hand, they penetrate deeper into the skin layers and use phenol or trichloroacetic acid (TCA). These are used for comparatively serious dermatological problems, including deep folds, sun-induced damage, and keloid scars. However, deep peels are more effective in improving the skin condition, as the treatment has the longest healing time and carries more risks of side effects such as pigmentation and infection. Light and deep chemical peels are adequate, and the kind of peel to be used is

determined by the nature of the skin condition, the type of skin, and the patient's endurance to the post-treatment peel healing time (8).

As with most dermatological processes, chemical peels have possible adverse effects and risks. The side effects of mild skin reactions usually are redness, swelling, and mild uncomfortable feeling, which disappear within two to three days. Patients using topical steroids may notice their skin becomes slightly dry or may peel a little while the skin is regenerating. However, these side effects are usually only temporary and form part of the process of the body beginning to heal itself. However, other adverse effects of fractional resurfacing occur, although, in a few patients, they include scarring, pigmentation changes that may be hyperpigmentation or hypopigmentation, and infection. Some of these risks are likely to ensue where deep peeling has been done or where the patient has a skin of color. If the 'peel' is too intense, it invades more profound layers of the skin, resulting in cosmetic issues that may take ages to resolve. This leaves a possibility of getting infected since most post-care instructions recommend that individuals avoid exposing the treated area to direct sunlight or ensure the skin is cleaned gently. One type of inconvenience is the formation of keloids or excessive scar tissue, which may be pretty common to those patients who are likely to scar more than average. Hence, patient selection, proper chemical combination, and proper after-treatment planning are relevant to minimize these threats and maximize the treatment's likelihood (9).

A chemical peel is effective depending on the type of chemical and the depth to which the skin has been peeled. Light peels, in most cases, enhance the skin texture and tone and remove slight imperfections after several treatments, while deep peels provide advanced and long-lasting outcomes after one procedure is done. However, safety is paramount as deep peeling of the skin attracts complications easily due to the level of skin layer peeled off. Since they do not go deep into the skin, light peels are not hazardous, and side effects come in slight skin reddening and mild skin flaking. The advantage of the deep peels is that they have more penetration into the dermis layer and hence are suited for severe cases of this skin condition, but their side effects are a higher risk of scarring, pigmentation changes, or even getting infected; therefore, their use requires a doctor's attention and the patients must be selected carefully as to the appropriate after and follow-up treatment to give to them to recover soothing. Each form of peeling cannot dispense with protective measures such as preparation for pre-peel and care for the skin after the peel. The safety and effectiveness of chemical peels are delicate factors, and the clinician has to consider them, starting with skin type, the goals of the patient, and risk tolerance before suggesting chemical peel services (10).

After peel treatment, following proper procedures that will allow for reduced side effects is crucial. Furthermore, a chemical peel makes the skin sensitive, so it is easily damaged by light factors such as sun rays and extreme weather conditions. Perhaps one of the most essential parts of the recovery process is skin protection from the sun; patients are encouraged to use sunscreen with at least the description of broad-spectrum sunblock 30, even on days when the sun may seem partially hidden. This measure assists in quickly healing the skin and reduces excessive dryness or irritation all around the skin. This is very important if patients avoid picking or scrubbing the skin since this can result in a scar or contracting an infection. Mild soap should only be used when washing the conjunctiva; makeup should be refrained for several days if possible. Patients should also avoid situations that cause sweating or overheating of the skin when having irritated skin, such as exercising a lot or taking hot showers. For some patients, it is usual to get peeling or flaking skin after the treatment, which is simply a sign of healing. These recommendations for aftercare will significantly minimize the chances of chalking and other adverse effects and improve the peel results (11).

Chemical peels have the potential to enhance your skin, but they also present definite dangers. The comparatively mild complications of light chemical peels include erythema, flaking, and increased sensitivity to sunlight. These side effects are generally mild and last only a few days. In patients with black skin, there are potential side effects such as post-inflammatory hyperpigmentation, which is precipitated by failure to adhere to measures of sun protection (12). The result is that deep chemical peels are more effective for severe skin conditions, though they’re also more likely to have adverse effects. These may include prolonged erythema, scarring, infection, and altered skin color, which may occur permanently, such as hypopigmentation. As much as patients who undergo deep peels face underlying layers of skin destruction, they get an extensive healing period of Notable skin peeling (13). To avoid such complications, patient selection, proper skin preparation, and post-procedural care must be considered and practiced. Awareness of the adverse effects of each depth of the peel is beneficial and enables the clinician to prevent probable mishaps and provide patients with safer treatments.(14)

Chemical peeling has had its place among aesthetically growing medical procedures, even with other developments such as laser therapies and microneedling. That’s why facial peels help create various effects, from improving skin tone and texture to the more significant deep skin reconstruction. Chemical peels are especially appreciated for the versatile effect the procedure can have on the client’s skin, targeting problems like acne, discoloration, and wrinkles all at

once without surgery. There are similar novel technologies that provide different strategies. Still, chemical peeling is a treatment for patients who prefer value for their money over 'hi-tech, hi-price procedures'(15). Their repeated application in aesthetic procedures proves the effectiveness and versatility of injectable fillers for patients who want moderate changes or have contraindications to laser procedures. With emerging advancements in the field of skincare today, chemical peels remain core in maximizing the health of the skin; this thus paints much of the pattern on the impact of chemical peels in aesthetically related practices internationally (16).

Chemical peel solutions have changed over the years, offering better chemicals and technology to treat more skin problems with less nasty side effects. The more recent peeling agents incorporate multiple types of acids, and the single acids work collectively to intensify skin exfoliation and encourage skin renewal. For instance, while glycolic acid is suitable for peeling the skin's outer layer, salicylic acid significantly eliminates pore buildup, making it ideal for acne and hyperpigmented skin. Other innovations include using antioxidants when the cocktail comprises vitamin C or ferulic acid to help fight oxidative stress and minimize the formation of wrinkles. These associations present softer agents that accomplish a comparable volume of operations and yield more moderate impacts for vulnerable skin types. Another advance is the use of nanotechnology in chemical peels, as it allows the active ingredients to penetrate deep down the skin for better and longer results. As a result of such practices, chemical peels are a versatile and individualized procedure for treating patients wanting skin improvement or correction (17).

Hence, this research aimed to assess the risks, advantages, and adverse effects of light and deep chemical peels for aesthetic practitioners of significantly different genders. This research was relevant since earlier literature only provided a few comparisons between these two treatments. It aims to provide practical information on their results and challenges to assist aesthetic practitioners in becoming more proficient and providing safer patient aesthetic procedures. Therefore, patient satisfaction and treatment outcomes improve in aesthetic dermatology.

AIM AND OBJECTIVES

The primary objective was to compare light and deep chemical peels to determine their safety, efficacy, and complications in gender.

The primary aim is to investigate the adverse effects of chemical peels, emphasizing the impact of inexperienced practitioners on these outcomes.

CHAPTER 2

LITERATURE REVIEW

A cross-sectional study was performed by Almeman (2024) to assess the effectiveness and safety of using AHAs in dermatological practice, particularly in cosmetic products such as chemexfol agents. The review has reviewed the global market for AHA and concluded that it has expanded enormously recently due to growing consumer awareness about skin aging and damage. Most of the skin benefits, such as encouraging skin cell turnover and regeneration through apoptosis and improving skin texture and luminosity, were noted to be based on glycolic and lactic acid. It also portrayed the overall applicability of AHAs in diseases like acne, hyperpigmentation, and photoaging diseases. However, it was noted that the proper concentrations regarding the therapeutic objectives with less side effect impact have not yet been defined and require further study. Regulatory compliance was underlined as a basic standard; the guidelines of international health organizations characterize definite concentrations and pH levels for the AHAs to provide secure results. In conclusion, the study highlighted that AHAs are helpful in cosmetic dermatology. However, more research and strict compliance with regulations on AHA utilization should be encouraged to cover the scope of their safety and effectiveness worldwide (18).

A review of the effectiveness and safety of fire needle therapy augmented with chemical peeling for acne vulgaris was done by Zhang and colleagues in 2023. With fire needle treatment, needles heated to a high temperature are quickly punctured into skin lesions, and the study sought to establish if combining it with chemical peels has an additional result than a single chemical peel. Two authors specializing in musculoskeletal disorders searched eight databases, including PubMed, EMBASE, and the Cochrane Library, for 18 RCTs of 1213 patients. Meta-analysis and numerical data synthesis were done with Review Manager software 5.3 and Statistical Analysis software 14.0. The study of outcomes has also revealed fire needle adjuvant chemical peels providing a better total effective rate (RR=1.37, 95%CI [1.26, 1.48], p-value < 0.00001) and alleviating skin lesion grade (MD = −2.11, 95% CI [−2.74, −1.47], p-value < 0.00001). Furthermore, the combination therapy significantly lowered the occurrence rate (RR= 0.50, 95%; CI [0.33-0.76], p = 0.0009) with reversible mild side effects. However, the authors stressed that more comprehensive, large-sample size, well-controlled clinical trials are required to add definitive support behind such effectiveness (19).

Calvisi (2021) examined the effectiveness of a chemical peel with a topical gel containing salicylic acid in patients with mild-to-moderate acne vulgaris. Facial skin disease acne vulgaris that targets pilosebaceous unite can provoke violent negative emotions and even cause severe damage that is scarcely treated and has a scarred character. This study evaluated how effectively applying a chemical peel solution incorporating salicylic acid, pyruvic acid, and retinoic acid solves the problem area together with utilizing an at-home two-time-a-day exfoliating and purifying product formula. The clinical trial involved 45 patients who received four chemical peel sessions after three weeks. Michaelson's acne severity score, the Subject Global Aesthetic Improvement Scale, and Face Skin Q were used to measure patients' skin improvement and satisfaction with the severity of acne lesions. In the cases evaluated, all patients experienced an improvement in acne lesion severity, and an improvement in their quality of life was observed according to Face Skin Q. Joint application of the chemical peel and home care treatment was proved to be efficient and complied, which makes the offered method ideal for coping with mild to moderate acne (20).

Mona A. Atwa et al. (2022) assessed the effectiveness, heritability, and safety of combined chemical peeling compared to TCA peel in hoc for melasma using the split face technique. During the research, the subject underwent only one session of combined chemical peels on one side of the face and six sessions of 15% TCA peel on the other side done every 10 days. The primary outcome was measured using the Modified Melasma Area and Severity Index (MASI) at three different points: Timepoints for the ratings were at baseline, one month (after the fourth TCA session), and three months (one month after the last TCA session). The data analysis revealed decreased modified MASI scores for both face sides, demonstrating further melasma improvements. At the end of the study, the mean modified MASI scores of the TCA-treated side were lower than those of the combined chemical peel side. Still, these two groups' differences were insignificant ($p = .405$). The research compared the effects of a single session of combined chemical peels on one side of the face with six sessions of 15% TCA peel on the other, conducted every 10 days. The primary outcome was measured using the Modified Melasma Area and Severity Index (MASI) at three different points: baseline, one month (fourth TCA session), and three months (one month after the final TCA session). The results showed a gradual reduction in the modified MASI score for both sides of the face, indicating improvements in melasma. Although the TCA-treated side exhibited a slightly lower mean modified MASI score by the end of the study, the difference between the TCA and combined chemical peel sides was not

statistically significant (p = .405). The authors established that a single session of combined chemical peel is at par with 6-session TCA peeling in melasma management. This study shows that patient profile and a combination of chemical peels is an acceptable, office-friendly, safe therapy for melasma (21).

The study by Bhardwaj et al. (2021) aims to determine a professional TCA-lactic acid chemical peel for photoaging and hyperpigmentation. Chemical peels are used by dermatologists, plastic surgeons, and aesthetic specialists for the treatment of dyspigmented and acne-prone skin, as well as pre-cancerous lesions. The researchers also found through the in-vitro experiments that the presence of active ingredients causes the peel to act on enzymes involved in the breakdown of collagen and elastin and the formation of melanin. Notably, TCA, which exhibits a cauterant activity, co-operatively potentiated the inhibitory effects of lactic acid; this was probably by structural alteration in TCA, as predicted by the Rosetta software. These results were confirmed by gene profile analysis in 3D human skin models, in which genes such as COL1A, COL3B, fibronectin, and elastin were shown to be upregulated, and in ex-vivo human skin biopsies experiments. The peel significantly inhibited melanin synthesis and restored rising photodamage due to the effects of UV light. Such findings have specific implications for enhancing the safety and effectiveness of chemical peel procedures in clinical practice (22).

Pathak et al. (2020) designed their study to assess chemical peel treatment for facial enhancement. The researchers paid particular attention to the employment of chemical peels, projecting that these would be reduced and replaced by laser solutions. They spelled out numerous modifications of chemical peel that have developed in the past twenty years of medical practice concerning the security and effectiveness of the method, which W.L. Obagi, P. Hetter, and J.S. Stone investigate. The research concluded that chemical peels were still an indispensable instrument in the hands of aesthetic surgeons, especially for handling rhytides and dyschromias. Chemical peel authors also highlighted the general purpose and varied clinical endpoint-directed predictability and the risk profile as the reason why chemical peels are still highly sought after. In conclusion, the given work confirmed the critically significant role of this modality in the contemporary treatment paradigms of skin rejuvenation. It highlighted its longevity in the field of aesthetic surgery (23).

Sidiropoulou et al. (2020) intended to assess the impact of chemical peeling in ultraviolet

skin carcinogenesis, especially actinic keratosis and cutaneous field cancerization. The researchers analyzed 42 articles, investigating in-vitro and in-vivo in most cases using laboratory animals. They concluded that chemical peels could effectively remove visible actinic keratoses and have preventive potential for skin cancer. The study also mentioned the systemic and cutaneous toxicity of the peeling agents, and the authors pointed out that no systematic toxic manifestations could be observed after the dermal application of chemical peels in man. The review called for urgent clinical utility of chemical peels in the prevention of skin cancer whose toxicity, though perceived, cannot be ascertained (24).

According to the study conducted by Chilicka et al. (2020), the research was carried out to evaluate the efficiency of azelaic acid (AA) and pyruvic acid (PA) peels for the treatment of female adult acne. The randomized controlled trial involved 120 18-25-year-old women with mild to moderate PD who undertook six peeling sessions at two weekly intervals. The study subjects were grouped into two groups: the first group was administered either AA, and the second was administered PA. The quantity of the impact of the given methods was analyzed by the patients based on the Scale of Hellegren–Vincent Severity Symptoms and the Nati Analyzer, as well as by the evaluation of skin characteristics, such as oiliness, desquamation, porosity, and moisture. Both treatment and control groups showed improved acne parameters and confirmed a reduction in acne severity. Moreover, both peels signaled reduced skin desquamation and oiliness; however, PA elicited a considerably more significant decrease in oily skin than AA. The authors of this study pointed out that both AA and PA peels provided mild acne treatment and that safety profile, physiochemical properties of the skin, and patient preference constituted essential parameters that may influence the selection of the two treatments (25).

Sahu and Dayal (2020) conducted a cross-sectional study of the therapeutic benefits of GA, LA, and TCA peeling in cases of epidermal melasma based on therapeutic efficiency, safety and tolerability, and QOL enhancement. Ninety patients were divided into three groups of 30 each: The first group was treated with a 30 % GA peel, the second group with a 92% LA peel, and the third one with a 15% TCA peel only. The peels were given at two-week intervals for 12 weeks. Clinical improvement was evaluated using the MASI and QOL indices (Melasma Quality of Life and Health-related Quality of Life Index). The findings revealed that self-assessment suggested the participants with the GA and TCA peels had a mean MASI score less than those with the LA peels. However, statistically, no difference in the MASI scores of the GA and TCA peel groups was seen after twelve weeks.

Patients who received GA peels had a significantly more significant increase in their QOL; the TCA peels and LA peels came second. As for the side effects, the TCA peel group has the highest level of adverse reaction, and the GA and LA groups are second. The results showed that LA peels had fewer side effects and were well tolerated. Consequently, GA and TCA peels are superior to LA peels, even if the latter has higher safety and tolerability (26).

Kubiak et al. (2020) conducted comparative research to assess the effectiveness and safety of two formulations of chemical peeling for photodamaged facial skin of postmenopausal women. This cross-sectional study recruited forty postmenopausal women with Glogau type II-III photoaging, split into the GG and control groups, utilizing a loaner GG. One group received 70% GA and 15% TCA peels, while the other received only 35% TCA peels. The participants received five peeling sessions at intervals of two weeks. In pre-and post-treatment evaluations, these skin aging parameters included skin hydration and elasticity, melanin and erythema indices, and wrinkle depth and volume. Both peeling methods appeared to enhance all skin parameters in the examined patients. However, the sequence GA/TCA peel was significantly superior to the 35% TCA peel in the parameters analyzed, including hydration and melanin index. The GA/TCA peel was also less irritating, and the side effects, such as dryness and erythema, were fewer than those produced by the TCA peel alone. Still, the 35 % TCA peel was more helpful in minimizing wrinkles, although it had low tolerance among the patients. Neither group of patients reported any side effects that warranted termination of treatment. In conclusion, both peels were helpful in modifying photoaging signs. At the same time, GA/TCA had better results on hydration and pigmentation; the 35% TCA peel seemed to have a better result on the wrinkle parameter (27).

Dayal et al. (2020) superimposed randomized double-blinded placebo-controlled trial to ascertain the clinical efficacy, safety, and tolerability of 20% glycolic acid, 15% lactic acid, and 12% ferulic acid chemical peels in patients with Constitutional periorbital hyperpigmentation from India. Ninety peeling patients were selected and divided equally into three groups; each group was treated with the mentioned peels every 3 weeks up to 12 weeks. The patients' clinical improvement was assessed by photographic assessment, POH grading, and the physicians' and the patient's overall assessment. Each peel significantly improved POH, and the improvement in the second and third peels was more significant than in the first peel. In comparing the results from clinical improvement, glycolic acid

peel had the highest improvements, and ferulic acid peel had better results but with fewer side effects like erythema and itching. This study shows that out of all the analyzed peeling agents, glycolic acid peel had the highest incidence of side effects during treatment compared to other peeling agents, such as lactic and ferulic acids, that had no cases whereby treatment had to be stopped. Subsequently, based on the improvements in POH, only glycolic acid peel proved statistically significant, while ferulic acid peel was deemed a safer option for patients concerned about side effects (28).

A recent study by Ellabban et al. (2019) was established to compare the effectiveness and safety of autologous PRP with chemical peeling in POH. In this case, a sample of 42 patients was used, and division into two groups was conducted randomly. Group A had four SBS chemical peels with TCA and Lactic Acid, while Group B had four sessions of PRP injections at 2-week intervals. The overall evaluation of Group A was more significant in favor of chemical peeling, with 47/6% of patients having a good improvement compared to 4/8% of patients in Group B and $P < 0.001$. In other words, 38% of the chemical peeling group had excellent results, and none of the patients in the PRP group had. The results on the degree of Satisfaction show that 75% of patients in Group A were delighted to excellent, while in the case of Group B, 52.5 % were only pleased ($P < 0.001$). Group A participants complained of itching and redness, while Group B complained of pain and swelling. However, the difference between the two groups was insignificant [$P = 0.07$]. The current study established the effectiveness of both PRP and chemical peeling for the treatment of POH, although chemical peeling was better tolerable and satisfying compared to PRP (29).

Artzi et al. (2019) conducted a trial to assess the combined process of using nano-fractional radiofrequency combined with TCA20% to establish the most effective skin rejuvenation treatment method. The prospective clinical trial compared four treatment protocols: TCA20% alone, TCA20% first and then FRF (TCA→FRF), and FRF first and then TCA20% (FRF→TCA). The patients received 3.8 ± 1.2 treatments at 4–6-week intervals, and then the patient's skin condition (pigmentation, erythema, skin laxity, wrinkling, and skin imperfection) was evaluated by using both the global aesthetic improvement scale (GAIS) and 1-5 scoring scale. Skin impedance and histological changes were also measured in three volunteers. Sixty-seven patients aged 22 to 80 years took part in the study. The results revealed that when TCA20% was used to cross the skin before FRF (TCA→FRF), the barrier's impedance rose, making the FRF penetration less effective. Thus, when FRF was introduced before TCA20%, scoring FRF→TCA, overall facial

appearance, and all skin parameters demonstrated better improvement. Patients tolerated the different protocols with similar side effects and satisfaction, while the best-combined outcomes for photorejuvenation were achieved in the FRF to TCA group. Therefore, the overall results of the experiment have shown that the most profound and most valuable improvement of the skin was achieved after applying the FRF→TCA regime (30).

Vemula et al. (2018) undertook a study to evaluate the safety of superficial chemical peels in dark skin-toned patients, especially those with skin type Fitzpatrick III-VI. The researchers conducted the study for 5 years, from 2006 to 2011, in a single center using a retrospective study design. The rationale for the study was to establish how often side effects and complications occurred in these skin types after superficial chemical peels in a field that had been sparse for research. A total of 473 chemical peels were performed during the study, and the authors found that only 18 (3.8%) of such treatments led to the development of short-term (less than or equal to 2 weeks) or long-term complications (greater than 2 weeks). Crusting, as a post-treatment complaint, was the most common complication that was reported in 2.3% of the patients, followed by post-inflammatory hyperpigmentation and erythema in 1.9% of the patients. Significantly, all the side effects were managed within eight months of treatment and only affected the face. Also, the researchers could establish that side effects were rare during winter than in any other season. When adjusted for the above variables, the only significant predictor of constructing adverse events was the Fitzpatrick skin kind (OR 5.14, 95% CI 1.21-21.8; P = .0118) in the sixth group. Although this study was conducted with a single-center and retrospective design, the conclusion suggested that the complications of superficial chemical peels in patients with skin types III-VI were low, and the complication rate was higher in type VI skin (31).

A review by Castillo and Keri (2018) examined chemical peel treatment among individuals suffering from acne vulgaris, a skin condition that affects most adolescents and young adults. Acne vulgaris not only has cutaneous effects but also causes a significant psychological and economic burden. Chemical peels are as old as 40 and treat acne and other skin diseases. Chemical peeling, according to the authors, is the use of exfoliative agents to replicate normal skin regeneration. Peeling agents are of different works inside the dermis and can be used to classify as superficial peel, medium-depth peel, and deep peel. This review also highlighted patient selection because dermatologists have to tailor treatments to patient’s medical history and medications, psychological status, immune

status, and physical examination. People with skin of color, that is, skin types IV-VI, according to Fitzpatrick, described as African Americans, Asians, and Hispanics, were found to be at a higher risk for developing PIH after deeper chemical peels. Thus, for these populations, only superficial to medium-depth peels are recommended, and it is crucial to pay great attention to the preoperative preparation. The article also pointed out that according to many studies, superficial to medium-depth peels are justified in complex with acne vulgaris as second-line therapy and regarding the patient's safety and effectiveness of the selected chemical agent (19).

After reviewing the literature, it was noted that even though chemical peels have been ranked very effective in treating acne, photoaging, and other skin-related conditions, there was little literature on light chemical peels versus deep chemical peels for safety, efficacy, and complications in both male and female clients. Furthermore, the studies did not differentiate many treatments by depth or review the comparative effectiveness and safety by gender of the various peeling depths.

CHAPTER 3

METHODOLOGY

It was a cross-sectional study.

3.2 Clinical Settings

The study was conducted in aesthetic clinics in Lahore.

3.3 Sample Size

The study included 68 patients. Specifically, there were 34 patients undergoing a light chemical peel, 17 males and 17 females, and another 34 patients undergoing a deep chemical peel, 17 males and 17 females. Sample Size Formula = [z2 * p(1-p)] / e2 / 1+ [z2 * p(1-p)] / e2 * N] N=33.6≈34

3.4 Sampling Technique

Participants were selected by non-probability using a convenient sampling technique.

3.5 Duration of Study

The study was completed within 6 months after the approval of the synopsis

3.6 Selection Criteria

3.6.1 Inclusion Criteria (32)

- Both men and women
- Aged 18-35 years
- No previous chemical peel treatments within the last 6 months.
- Willing to participate and have given their consent.

3.6.2 Exclusion Criteria (32)

- Active infection
- History of allergic reaction

- Open laceration
- Any surgery and wound
- Pregnancy or breastfeeding.
- Use of oral retinoids within the past 3 months.

3.7 Data Collection Tools

This cross-sectional survey employed an anonymous self-completed questionnaire comprising 20 questions to evaluate and find out the efficacy of the chemical peeling procedures and their complications.

3.8 Ethical Consideration

The Institutional Review Board (IRB) reviewed and approved the study protocol. Informed consent was obtained from all participants. Confidentiality and anonymity of participant data were maintained throughout the study.

3.9 Data Collection Procedure

After a chemical peeling procedure, observing the negative and positive effects takes at least 48 hours. The duration can vary based on the patient's skin type. We will schedule two follow-up appointments tailored to the treated areas to discuss the effects of the chemical peel with the patient.

3.10. Data Analysis

Data was analyzed using the version of SPSS software 27. Demographic data was divided into Descriptive statistics with histograms and categorical data into frequency and percentages with bar charts. The chi-square test was used to associate the variables.

CHAPTER 4

RESULTS

Table 1 summarizes the demographic characteristics of participants who underwent light and deep chemical peels. Most participants receiving light chemical peels were female (82.4%), whereas deep chemical peels had a higher percentage of males (82.4%). The average age for both groups was similar, with light chemical peel recipients having a mean age of 26.15 (SD = 5.022) and deep chemical peel recipients having a mean age of 25.03 (SD = 5.072). Regarding education, most participants had a bachelor's degree, with 38.2% for light chemical peels and 70.6% for deep chemical peels. The most common reasons for the procedure included improving skin texture and tone and minimizing age spots, sun damage, and hyperpigmentation. Most participants in both groups received one chemical peel session, with 50% for light and 79.4% for deep chemical peels.

The table compares the efficacy of light and deep chemical peels. Light chemical peels were more effective in improving collagen production, with 94.1% of participants experiencing benefits, compared to 55.9% for deep peels. Both peels showed similar results in minimizing scar appearance, with 70.6% (light) and 73.5% (profound) reporting improvement. For overall skin brightness, 94.1% of participants using light peels noticed an improvement, while only 55.9% of those using deep peels saw a change. Improvement in acne was seen by 61.8% of light peel users, compared to 44.1% of deep peel users. Finally, light chemical peels were more effective in reducing hyperpigmentation, with 94.1% reporting improvement, compared to 29.4% for deep peels.

The frequency of complications for light and deep chemical peels. Redness was more common with deep peels, with 82.4% experiencing it, compared to 61.8% for light peels. Infections were significantly more frequent with deep peels, affecting 70.6% of users, while only 8.8% of light peel users reported infections. A burning sensation occurred in 76.5% of deep peel users and 32.4% of light peel users. Notably, 100% of deep peel participants reported blisters, while only 20.6% of light peel users experienced this complication. (Table-3)

Table 4 summarizes the overall efficacy and complications of chemical peels. For efficacy, 91.2% of participants using light peels reported high improvement, while only 17.6% of those

using deep peels experienced the same improvement. Regarding complications, 91.2% of light peel users had mild complications, whereas 61.8% of deep peel users experienced severe complications. Table 5 examined the relationship between gender and the efficacy and complications of chemical peels. Regarding efficacy, 82.4% of females reported high improvement, while males showed a higher rate of moderate improvement at 61.8%. For complications, 79.4% of females experienced mild complications, while 50% of males reported severe complications. Both efficacy and complication rates showed a significant association with gender ($p < 0.001$).

Table 4.1: Demographic Data

Variable	Category	Light Chemical Peels		Deep Chemical Peels	
		Frequency/Mean	%/SD	Frequency/Mean	%/SD
Gender	Female	17	50.0	17	50.0
	Male	17	50.0	17	50.0
Age		26.15	5.022	25.03	5.072
Educational Level	Primary	3	8.8%	2	5.9%
	Matric	11	32.4%	-	-
	Bachelors	13	38.2%	24	70.6%
	Masters	7	20.6%	8	23.5%
Reason for Chemical Peel	To Improve Skin Texture and Tone	6	17.6%	10	29.4%
	To Reduce Fine Lines and Wrinkles	5	14.7%	7	20.6%
	To Treat Acne and Acne Scars	3	8.8%	-	-
	To Minimize Age Spots, Sun Damage, and Hyperpigmentation	6	17.6%	11	32.4%
	To Shrink Enlarged Pores	9	26.5%	1	2.9%
	To Refresh and Rejuvenate the Skin	5	14.7%	5	14.7%
Number of Chemical Peel Sessions	1	17	50.0%	27	79.4%
	2	9	26.5%	5	14.7%
	3	8	23.5%	2	5.9%

This table summarized the demographic characteristics of participants who underwent light and deep chemical peels. Most participants receiving light chemical peels were female (82.4%), whereas deep chemical peels had a higher percentage of males (82.4%). The average age for both groups was similar, with light chemical peel recipients having a mean age of 26.15 (SD = 5.022) and deep chemical peel recipients having a mean age of 25.03 (SD = 5.072). Regarding education, most participants had a bachelor's degree, with 38.2% for light chemical peels and 70.6% for deep chemical peels. The most common reasons for the procedure included improving skin texture and tone and minimizing age spots, sun damage, and hyperpigmentation. Most participants in both groups received one chemical peel session, with 50% for light and 79.4% for deep chemical peels.

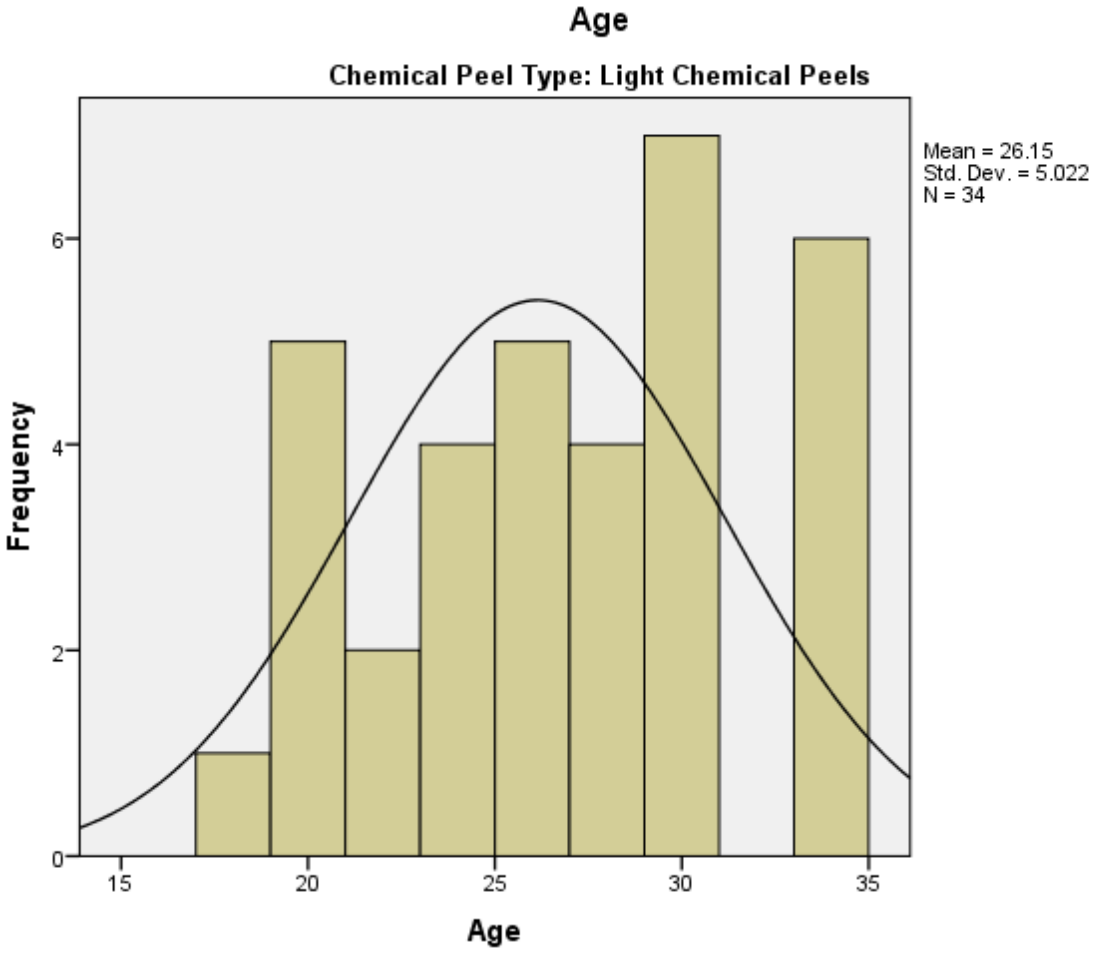

Figure 4.1: Age of Light Chemical Peels

The average age with light chemical peel recipients was a mean age of 26.15±5.02.

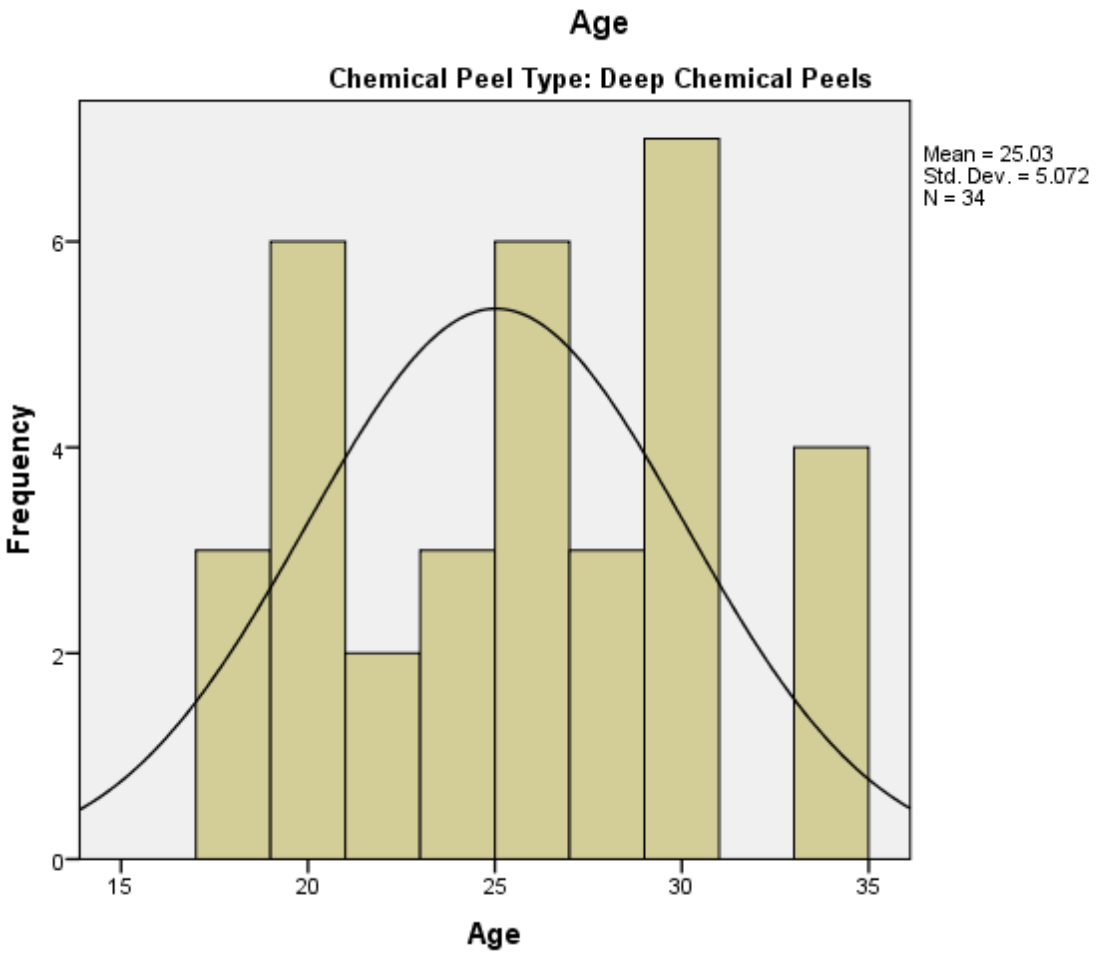

Figure 4.2: Age of Deep Chemical Peels

The average age for deep chemical peel recipients had a mean age of 25.03±5.07.

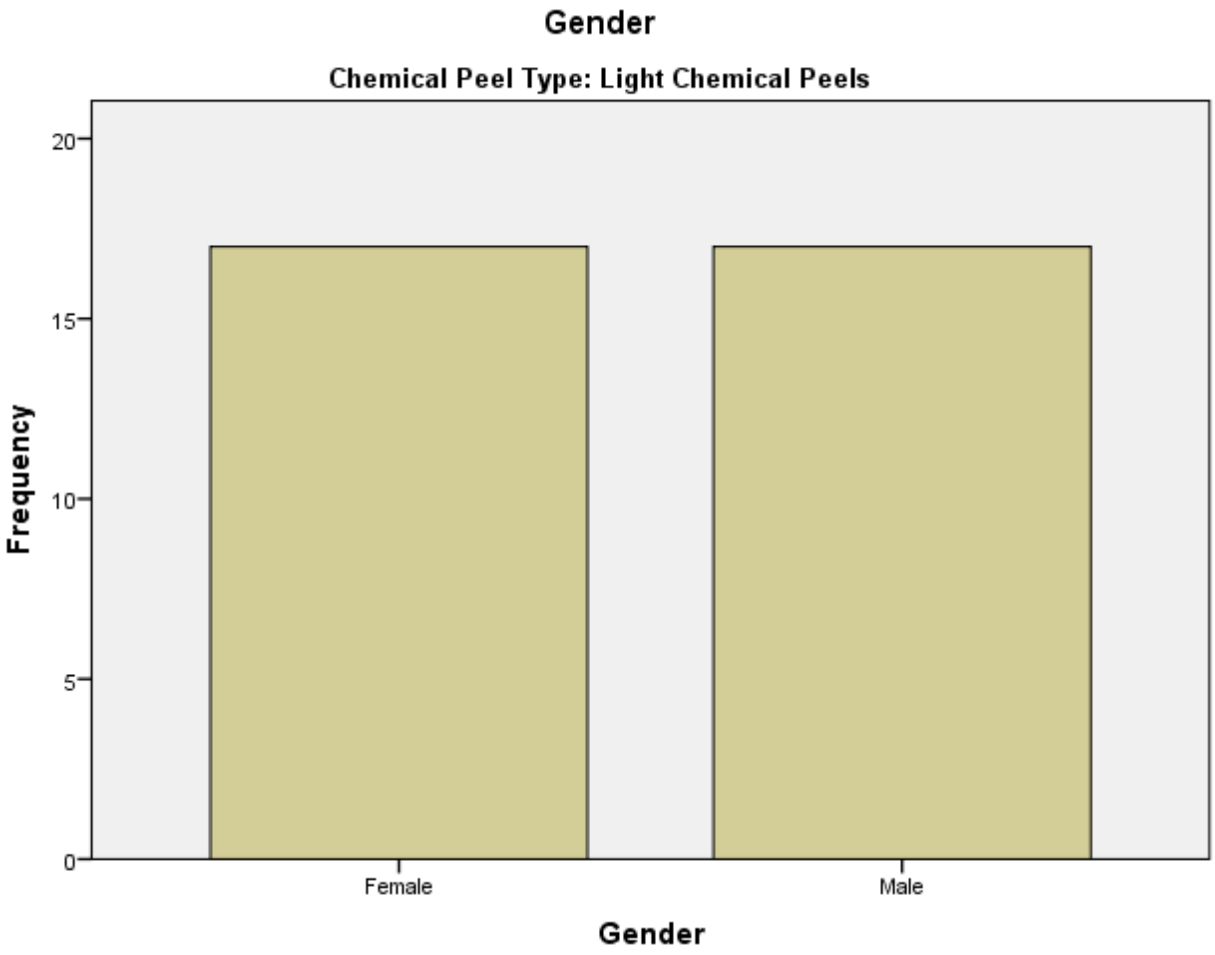

Figure 4.3 Gender of Light Chemical Peel

Both participants receiving light chemical peels were equal (50%).

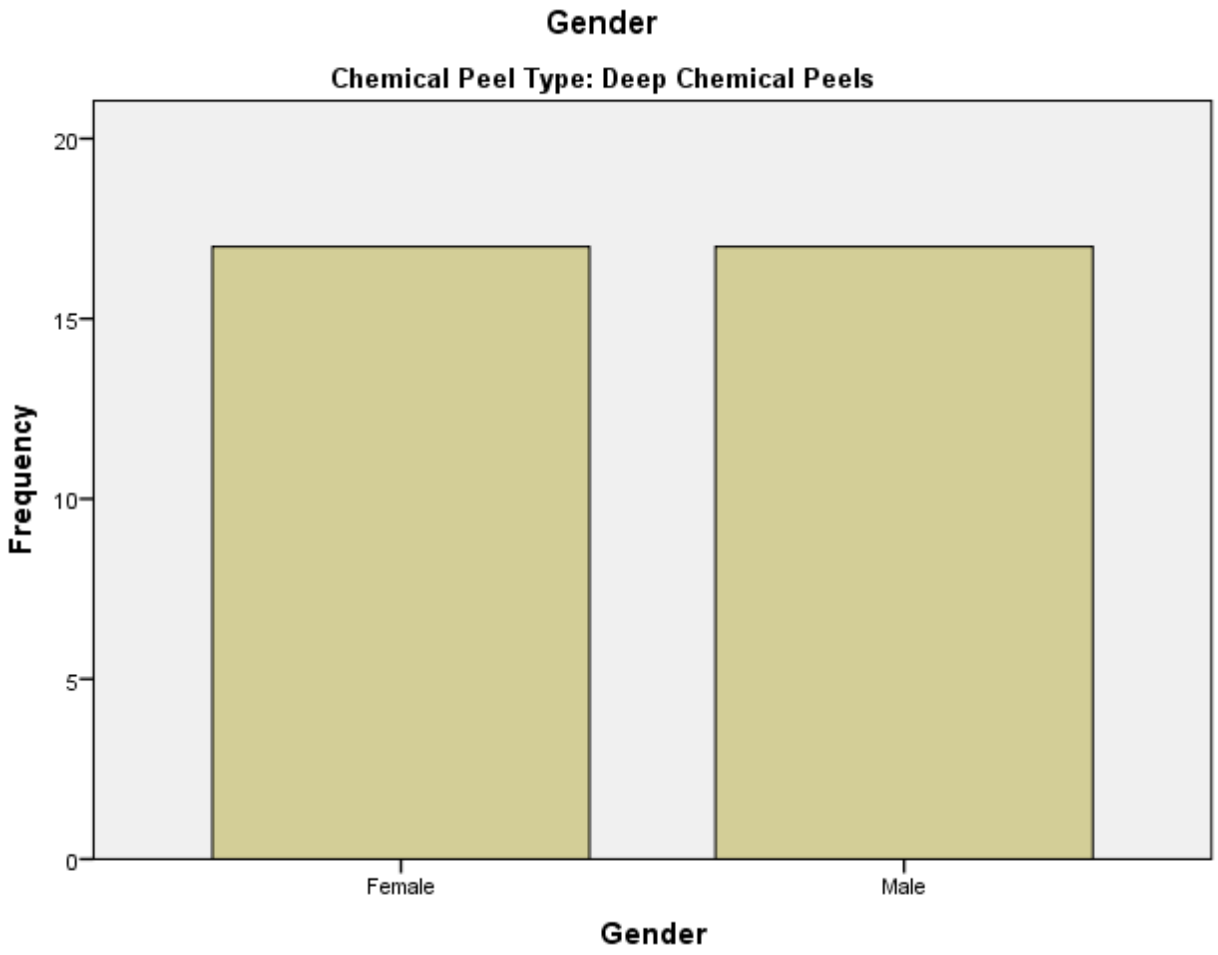

Figure 4.4 Gender of Deep Chemical Peel

Both participants receiving deep chemical peels were equally distributed (50%).

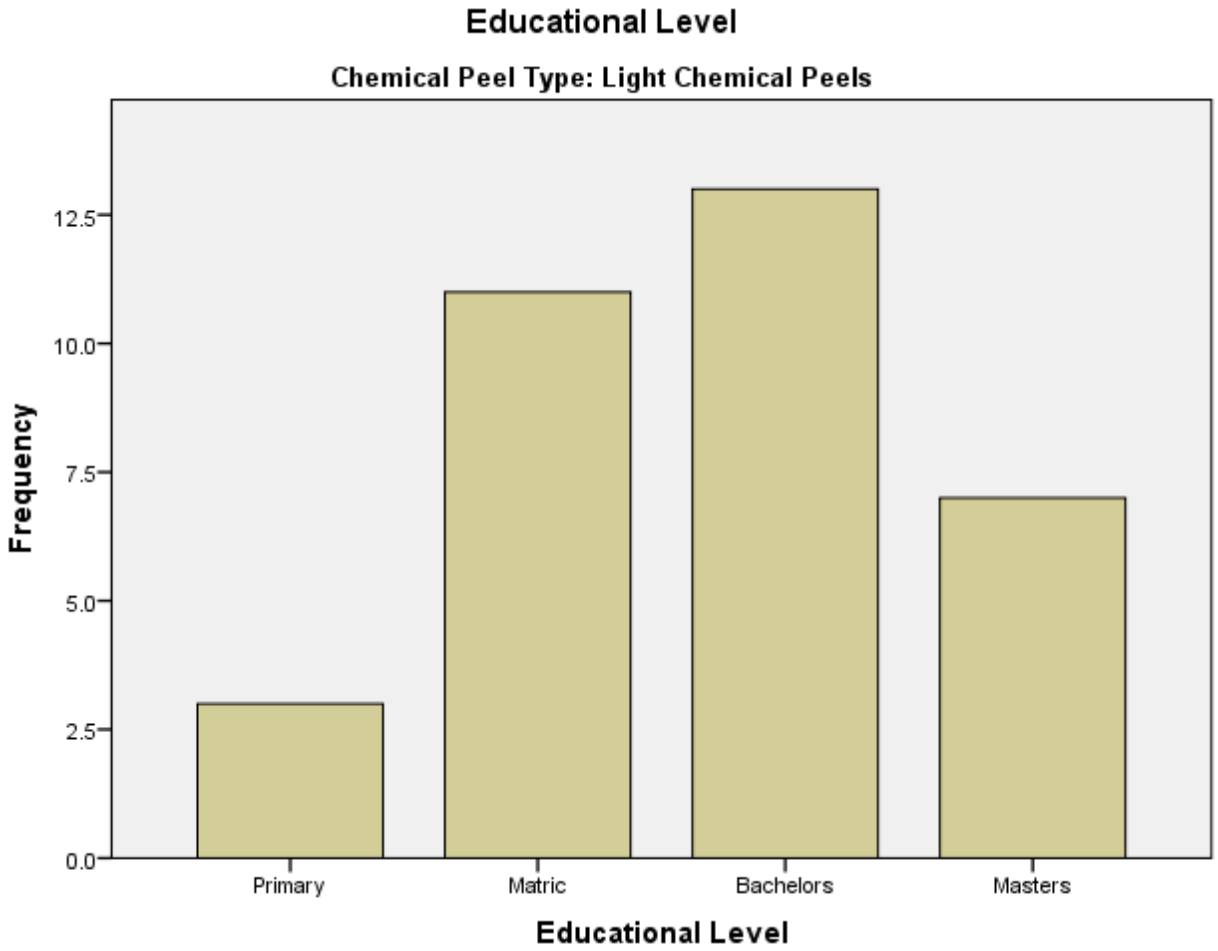

Figure 4.5 Educational of Light Chemical Peel

Regarding education, most participants had a bachelor's degree, with 38.2% for light chemical peels.

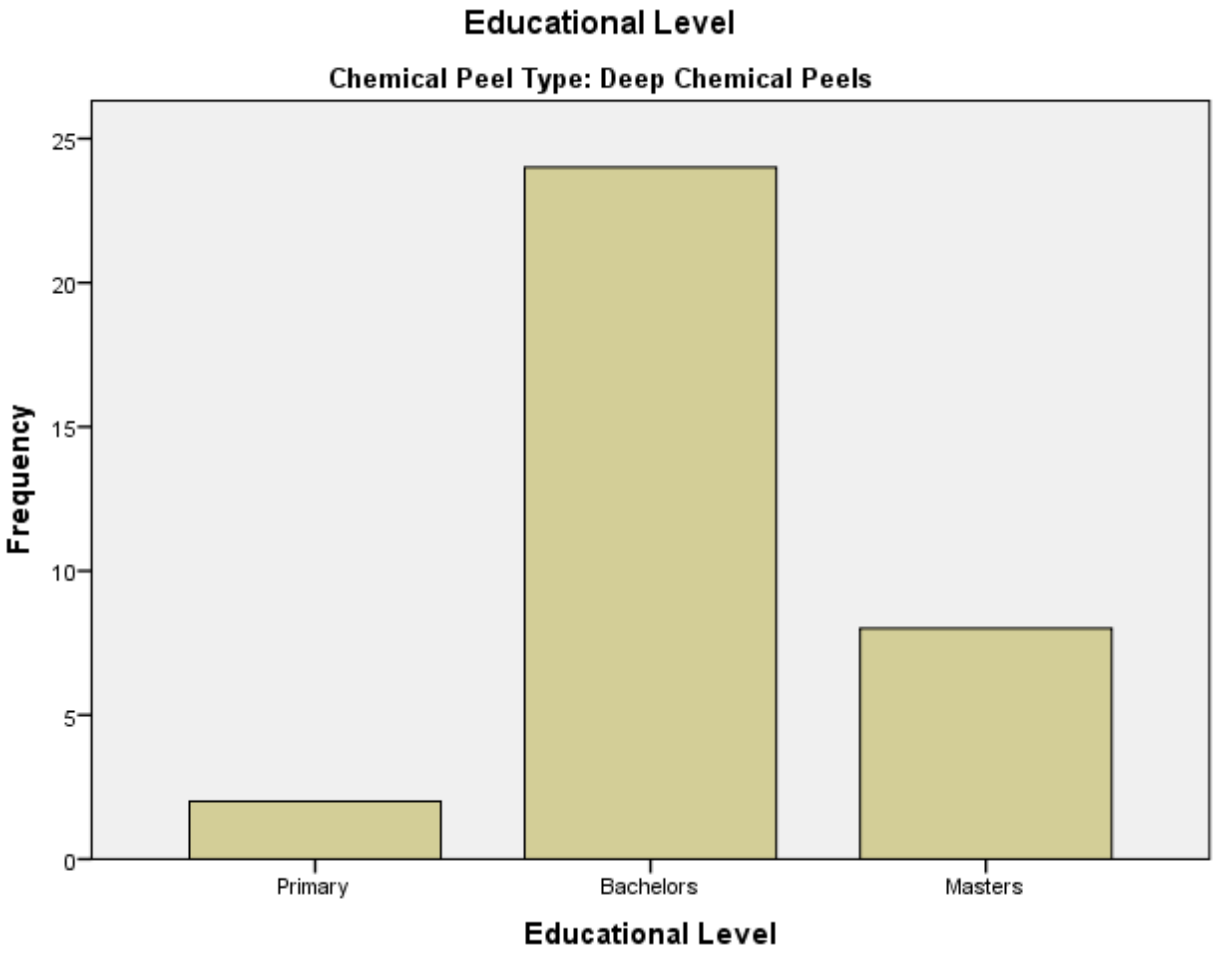

Figure 4.6 Educational of Deep Chemical Peel

Regarding education, most participants had a bachelor's degree, 70.6% for deep chemical peels.

Table 4.2: Frequency/Percentages of Efficacy of Chemical Peels

Variable	Category	Light Chemical Peels		Deep Chemical Peels	
		Frequency	Percent	Frequency	Percent
Experienced Collagen Production	No	2	5.9%	15	44.1%
	Yes	32	94.1%	19	55.9%
Minimizing the Appearance of Scars	No	10	29.4%	9	26.5%
	Yes	24	70.6%	25	73.5%
Overall Experience of Skin Quality	No	11	32.4%	16	47.1%
	Yes	23	67.6%	18	52.9%
Feel Brightness in Your Skin	No	2	5.9%	15	44.1%
	Yes	32	94.1%	19	55.9%
Improvement in Acne	No	13	38.2%	19	55.9%
	Yes	21	61.8%	15	44.1%
Improvement in Skin Texture and Tone	No	10	29.4%	17	50.0%
	Yes	24	70.6%	17	50.0%
Improvement in Melasma	No	6	17.6%	20	58.8%
	Yes	28	82.4%	14	41.2%
Improvement in Hyperpigmentation	No	2	5.9%	24	70.6%
	Yes	32	94.1%	10	29.4%
Minimizing Appearance of Pores	No	6	17.6%	21	61.8%
	Yes	28	82.4%	13	38.2%
Improvement in Brown/Liver Spots	No	5	14.7%	18	52.9%
	Yes	29	85.3%	16	47.1%

Table 2 compares the efficacy of light and deep chemical peels. Light chemical peels were more effective in improving collagen production, with 94.1% of participants experiencing benefits, compared to 55.9% for deep peels. Both peels showed similar results in minimizing scar appearance, with 70.6% (light) and 73.5% (profound) reporting improvement. For overall skin brightness, 94.1% of participants using light peels noticed an improvement, while only 55.9% of those using deep peels saw a change. Improvement in acne was seen by 61.8% of light peel users, compared to 44.1% of deep peel users. Finally, light chemical peels were more effective in reducing hyperpigmentation, with 94.1% reporting improvement, compared to 29.4% for deep peels.

Table 4.3: Frequency and Percentages of Complications of Chemical Peels

Variable	Category	Light Chemical Peels		Deep Chemical Peels	
		Frequency	Percent	Frequency	Percent
Redness after chemical peel	No	13	38.2%	6	17.6%
	Yes	21	61.8%	28	82.4%
Infection (viral, fungal, bacterial)	No	31	91.2%	10	29.4%
	Yes	3	8.8%	24	70.6%
Burning sensation after chemical peel	No	23	67.6%	8	23.5%
	Yes	11	32.4%	26	76.5%
Laceration after a chemical peel	No	29	85.3%	15	44.1%
	Yes	5	14.7%	19	55.9%
Swelling after a chemical peel	No	28	82.4%	16	47.1%
	Yes	6	17.6%	18	52.9%
Allergic reaction after chemical peel	No	31	91.2%	18	52.9%
	Yes	3	8.8%	16	47.1%
Acne after chemical peel	No	28	82.4%	10	29.4%
	Yes	6	17.6%	24	70.6%
Blisters after a chemical peel	No	27	79.4%	0	0%
	Yes	7	20.6%	34	100.0%
Sensitivity to light	No	30	88.2%	16	47.1%
	Yes	4	11.8%	18	52.9%
Hyperpigmentation after chemical peel	No	25	73.5%	13	38.2%
	Yes	9	26.5%	21	61.8%

Table 3 highlights the frequency of complications for light and deep chemical peels. Redness was more familiar with deep peels, with 82.4% experiencing it, compared to 61.8% for light peels. Infections were significantly more frequent with deep peels, affecting 70.6% of users, while only 8.8% of light peel users reported infections. A burning sensation occurred in 76.5% of deep peel users and 32.4% of light peel users. Notably, 100% of deep peel participants reported blisters, while only 20.6% of light peel users experienced this complication.

Table 4.4: Total Scores of Efficacies and Complications of Chemical Peel

Variable	Category	Light Chemical Peels		Deep Chemical Peels	
		Frequency	Percent	Frequency	Percent
Efficacy	Moderate Improvement	3	8.8%	22	64.7%
	High Improvement	31	91.2%	6	17.6%
	Low Improvement	0	0%	6	17.6%
Complication	Mild Complication	31	91.2%	1	2.9%
	Moderate Improvement	3	8.8%	12	35.3%
	Severe Complication	0	0%	21	61.8%

Table 4 summarizes the overall efficacy and complications of chemical peels. For efficacy, 91.2% of participants using light peels reported high improvement, while only 17.6% of those using deep peels experienced the same improvement. Regarding complications, 91.2% of light peel users had mild complications, whereas 61.8% of deep peel users experienced severe complications.

Table 4.5: Crosstabulation of Gender with Total Efficacy and Complications

Efficacy	**Gender**	**Low Improvement**	**Moderate Improvement**	**High Improvement**	**Total**	**p-value**
	Female	2	4	28	34	$p < 0.001$
	Male	4	21	9	34	
	Total	**6**	**25**	**37**	**68**	
Complication	**Gender**	**Mild Complication**	**Moderate Complication**	**Severe Complication**	**Total**	**p-value**
	Female	27	3	4	34	$p < 0.001$
	Male	5	12	17	34	
	Total	**32**	**15**	**21**	**68**	

Table 5 examined the relationship between gender and the efficacy and complications of chemical peels. Regarding efficacy, 82.4% of females reported high improvement, while males showed a higher rate of moderate improvement at 61.8%. For complications, 79.4% of females experienced mild complications, while 50% of males reported severe complications. Both efficacy and complication rates showed a significant association with gender ($p < 0.001$).

CHAPTER 5
DISCUSSION

In this study, for light chemical peeling, 50% were females, while for deep chemical peeling, 50% were males. This contradicts other studies like Gerasymch et al. (2023), who found that women stood at 70-90% of the population in light and deep peel products. Such a change may point to an increasing male propensity for more aggressive forms of beautification, such as deep facial peel.(33) The present study found that participants were about 25 years old, younger than in Calvisi et al. (2021), 60-75% of those who needed chemical peels, and were 31 or older. This indicates that young people are increasingly adopting such treatments, which might be because of awareness and social media usage (20).

Responding to the educational level, 70.6% of deep peel recipients in this study had a bachelor's degree, which is in correlation with the study done by Glaser et al. (2020), where the educational level of 65-85% of the participants who had received cosmetic treatments was high. Nevertheless, one difference is in the purpose of performing the chemical peels (34). In the present study, the desire for better skin texture and to treat hyperpigmentation was seen in both light peel and deep peel groups (light peels: 17.6%, deep peels: 32.4%). Compared to this study, Gorby et al. (2019) reported that 60-80% of participants mainly intended to undertake chemical peels for rejuvenation purposes, including fine-line erasure, which was secondary in this study (35). The current study found that most participants (50% of the light peels and 79.4% of the deep peels) only attended the peel session once. Yet, prior research, like Trujillo et al. (2021), noted that 55-70 % of the participants attended multiple sessions for improved outcomes. These findings indicate the shift in consumer stereotypes and beauty procedures in aesthetics (36).

In the light chemical peels, 94.1% of the participants who reported a positive change in the actualization of collagen production was also consistent with arguments made by Torbeck et al., 2023 that light chemical peels prompt a considerable degree of collagen synthesis and skin renewal. This also agrees with a high percentage of participants who confirmed enhanced skin brightness (94.1%) and reduced hyperpigmentation (94.1%), suggesting that light peels are more effective in improving skin texture and tone quality, which aligns with other findings (37). Despite that, deep chemical peels were depicted to be slightly effective in minimizing the scar appearance, with only 73.5% of the participants having improvements. This corresponds with the idea that deep peels are more effective because they are more invasive than other peeling

types. Therefore, they are better for addressing several skin problems, such as scars (Miao et al., 2024) (38).

However, the light peel group had a relatively improved acne by 61.8% compared to the deep peel group, which, in contrast to Conforti et al. (2020), the deep chemical peels produced a more significant improvement in acne skin conditions. This suggests that the lighter peel could be used more effectively in clients with mild to moderate acne, while deep peels should be used in severe acne or those with scarring (39). Furthermore, the light peel group needed fewer treatments to achieve better outcomes in pore size (82.4%) and brown/liver spots (85.3%) compared with deep peel users (38.2% and 47.1%), respectively. Thus, it can be concluded that light chemical peels are preferable for skin surface problems, while deep peels are more effective for deep skin layers.

In this study, the complications of chemical peels were established to show the different effects of both light and deep chemical peels. More patients suffered redness after treatment in the deep chemical peel group (82.4%) than in the light peel group (61.8%). The result served the fact in the literature that deep peels induce longer and more obvious erythema because of the toughness of the procedure (Goodarzian et al., 2023). This increased redness could be due to the exfoliation of deeper layers in the skin, reaching the dermis layers (1). Similarly to the above observations, burning sensations after the procedure were higher in deep peel cases, 76.5%, compared to light peel cases, 32.4% for the same time frame post-peel (Kubiak et al., 2020). In addition, the report of lacerations was higher in patients with deep peels (55.9%) than in patients with light peels (14.7%). This was similar to the understanding that deep chemical peels were more risky as they act deeper on the skin due to enhanced physical damage to the skin (Jiang et al., 2024).

Regarding infection, there was a clear difference between the two groups; deep peel patients experienced a higher average infection rate (70.6%) in contrast with the light (8.8%). In previous works, this fact reveals the probability of infection as a side effect of more intensive therapy (Lee et al., 2019). However, issues like the formation of blisters and acne were only present in deep chemical peels, with the two complications being 100% and 70.6%, which supports the fact that deep chemical peels are more risky (40). Nonetheless, light chemical peels had fewer side effects, with fewer patients complaining of swelling at 17.6%, allergic reactions at 8.8%, and sensitivity to light at 11.8%. Based on these findings, light chemical peels can be claimed to be safer with fewer side effects, as has been pointed out in the literature, which often argues

for lighter peels for sensitive skin types or complicated skin structures (10).

CONCLUSIONS

Light Chemical peels are ideal and safe for even acne and Hyper pigmentation as they have less side effects. Deep Chemical peels do more work on Deep scars but have many side effects like Redness, burning and infection. Light Peels are recommended for mild skin conditions and deep peels are recommended for severe skin issues.

LIMITATION

- Small sample size restrains the generalization of the results of the study.
- Short-term follow-up; more extended intervention implementation studies necessary for long-term impact.
- Sex-related differences were noted and should be investigated further concerning demographics.
- Selection of participants with different skin types may influence the results achieved.
- The study was confined to only two types of chemical peels, which might have reduced its range.
- A sample restricted to a particular geographical area may reduce generalization.

RECOMMENDATIONS

- Increase sample size and ensure the sample diversity to increase the study's external validity.
- Make sure that objective measurements form part of the evaluation alongside self-reports.
- Determine the impact of the different types of chemical peel on the skin.
- In-depth analysis of the effects on post-treatment skin conditions.
- Compare the current findings with other treatment procedures for skin ailments for better results and knowledge.
- Perform the same investigations in other regions to improve external validity.

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APPENDICES

ENGLISH CONSENT FORM

The study you are about to participate in is a randomized control trial survey titled;

"A COMPARATIVE INVESTIGATION OF EFFICACY AND COMPLICATIONS IN LIGHT AND DEEP CHEMICAL PEELS"

The study has no potential harm to participants. All data collected from you will be coded to protect your identity and should not be disclosed to anyone. Following the study, there will be no way to connect your name with your data. Your answers to the questions will not affect the quality of education given to you. Any additional information about the study results will be provided at its conclusion upon your request.

You are free to withdraw from the study at any time. You agree to participate, indicating that you have read and understood the nature of the research and that all your inquiries concerning the activities have been answered satisfactorily.

NAME _____ **SIGNATURE**_____

DATE_____

URDU CONSENT FORM

میں_____ تصدیق کرتا/ کرتی ہوں کہ **محترم محمد طیّب صدیقی** نے اپنی اس تحقیق

"A COMPARATIVE INVESTIGATION OF EFFICACY AND COMPLICATIONS IN LIGHT AND DEEP CHEMICAL PEELS"

.زیرنگرانی **ڈاکٹر محمد عدنان حفیظ** کے متعلق بتا دیا ہے۔ مجھے اس تحقیق کی نوعیت، مقاصد، احداف، توقعات، فوائد اور خطرات کے متعلق ، ۔ساری معلومات فراہم کر دی گئی ہیں

اس تحقیق کے دوران ساری معلومات صیغۃ راز میں رہیں گی اور مریض کا نام اور دیگر معلومات صرف تحقیق کے لیے استعمال ہوں گی۔مجھے یہ بھی بتا دیا گیا ہے کہ میں اس تحقیق سے متعلقہ ہر قسم کے سوال پوچھنے کا مجاز ہوں اور یہ تحقیق صرف ایک شخص ک مفاد میں نہیں ہے بلکہ بحسثیت مجموعی انسانیت کا مفاد اس سے وابسطہ ہے۔ تمام تفصیلات جاننے کے بعد یس تحقیق میں شامل ہونے یا نہ ہونے پر کسی کا قائل نہیں ہوں۔ اس تحقیق سے کسی بھی وقت علیحدہ ہونے پر مجھ پر کوئی پابندی نہیں ہو گی۔ میں بذاتِ خود بقائمی حوش و حواس

۔اور رضا مندی سے اس تحقیقاتی عمل میں شامل ہوتی/ ہوتا ہوں

---------- دستخط محقق

---------- دستخط شرکت کار

---------- تاریخ

Demographics Form & Questionnaires

- ✦ Gender: _____
- ✦ Age: _____
- ✦ Educational Level: _____
- ✦ Location: _____
- ✦ Reason for Chemical Peel:

1. To Improve Skin Texture and Tone
2. To Reduce Fine Lines and Wrinkles
3. To Treat Acne and Acne Scars
4. To Minimize Age Spots, Sun Damage, and Hyperpigmentation
5. To Shrink Enlarged Pores
6. To Refresh and Rejuvenate the Skin

- ✦ How many sessions you had of chemical peels:

A)1st B)2nd C)3rd

Efficacy:

1. Have you experienced collagen production?
    a) Yes
    b) No
2. Is there any minimizing appearance of scars ?
    a) Yes
    b) No
3. overall experience of skin quality result.
    a) Yes
    b) No
4. Do you feel any brightness in your skin?
    a) Yes
    b) No`
5. Is there any improvement of acne ?
    a) Yes
    b) No
6. Is there any improvement in skin texture and skin tone?
    a) Yes
    b) No
7. Is there any improvement in the Melasma ?
    a) Yes
    b) No
8. Is there any improvement in the hyperpigmentation?
    a) Yes
    b) No
9. Is there any minimizing appearance of pores?
    a) Yes
    b) No

10. Is there any improvement in brown and liver spots?

Complications:

1. Had you face any redness after chemical peeling.

    a) Yes

    b) No

2. Is there any infection (viral, fungal, bacterial)?

    a) Yes

    b) No

3. Do you feel any burning sensation after the chemical peeling?

    a) Yes

    b) No

4. Is there any Laceration after chemical peeling?

    a) Yes

    b) No

5. Is there any swelling after the procedure of chemical peels?

    a) Yes

    b) No

    a) Yes

    b) No

6. Is there any Allergic Reaction after the chemical peels?

    a) Yes

    b) No

7. Have you face any type of acne after the procedure?

    a) Yes

    b) No

8. Had you notice any sign of Blisters?

    a) Yes

    b) No

9. Any sensitivity of light?

    a) Yes

    b) No

10. Any Hyperpigmentation?

    a) Yes

    b) No

Research Data Completion Certificate

Professor M. Rashid Siraj
M.B.B.S., F.A.C.S. (USA)
M.R.C.S (EDINBURGH), M.R.C.S (IRELAND)
M.C.P.S., F.C.P.S., M.I.S. (FRANCE)
General Laproscopic & Bariatric Surgeon
PROFESSOR OF SURGERY
Akhtar Saeed Medical & Dental College Lahore
MEMBER:
SAGES - Society of American Gastrointestinal Surgeons
AUGIS - Association of Upper Gastrointestinal Surgeons Ireland
IFSO - International Federation for the Surgery of Obesity
BOMSS - British Obesity and Metabolic Surgery Society
ESPEN - The European Society for Clinical Nutrition & Metabolism

Research Data Completion Certificate

TITLE OF PROJECT: **"A COMPARATIVE INVESTIGATION OF EFFICACY AND COMPLICATION IN LIGHT AND DEEP CHEMICAL PEELS."**

I certify that **Muhammad Tayyab Siddiqui**, Registration No.**SU91-MSAHW-S23-213** has completed his data from **Contours Aesthetic Clinic Lahore.** I certify that the protocol is complete and the research data was conducted in accordance with the Policy for Conducting Ethical Research and in an ethical manner.

I covenant that I will cooperate with the Superior University Lahore Research Ethics Committee on all reasonable requests and furthermore that I will contribute meaningfully to any conflict resolution that may be required in the event research resulting from this data.

The data was collected under our supervision and has been verified as accurate and authentic. The research adheres to the ethical standards and guidelines set forth by the institution.

21.1.2021

Professor M. Rashid Siraj
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Ethics Committee Letter

OFFICE OF THE DEAN-FAHS

SUPERIOR UNIVERSITY

Ref.: IRB /FAHS/Allied-HS/10/24/MS/RS-3538

Date: 29th October 2024

Name: Muhammad Tayyab Siddiqui (MS Allied Health Sciences)

Registration: SU91-MSAHW-S23-213

Subject: Ethical Approval Letter

The Research Ethical Committee convened on Dated: **17th October, 2024** to discuss your protocol titled "**A comparative investigation of efficacy and complications in light and deep chemical peels.**"

No further corrections and recommendations were suggested. The above-mentioned protocol has been approved after considering various research issues including ethical concerns with condition that the researcher will submit completion report at the end of his/her research.

Prof. Dr. Muhammad Naveed Babur
Dean/Convener REC
Faculty of Allied Health Sciences
Superior University, Lahore

Plagiarism Report