



Article

Integrative Therapy for Smile Lines: An Experimental Study of the Combination of Acupuncture and Aloe Vera Gel

Hanum Syafira Mahrunnisa¹, Ros Endah Happy Patriyani², Joko Tri Haryanto³, Nurtama Aditya Nugraha⁴

¹⁻⁴Acupuncture Department, Health Polytechnic Ministry of Health Surakarta, Indonesia

SUBMISSION TRACK

Received: July 7, 2025

Final Revision: October 12, 2025

Available Online: October 18, 2025

KEYWORDS

Anti-aging, Wrinkle, Smile Line, Acupuncture, Aloe Vera

CORRESPONDENCE

Phone: 085860515918

E-mail: hanumsyafira29@gmail.com

ABSTRACT

The desire to look young is commonly felt by middle-aged women as wrinkles appear, including in the smile line area. The increasing number of elderly people in Sukoharjo has an impact on the prevalence of skin aging problems. Acupuncture and aloe vera gel are known to improve skin elasticity, but there has been no research that combines the two for smile line wrinkles. This study aims to determine the effectiveness of aloe vera gel combination acupuncture therapy on the scale of wrinkles in the smile line. This study used a quantitative research type with a quasy-experimental research design with a two-group pretest posttest design. The sample consisted of 42 research subjects, divided into two groups, namely the acupuncture therapy group combined with aloe vera gel, and the acupuncture therapy group with 21 research subjects each. The results of the Independent T-Test from the data on changes in the scale of wrinkles in the smile line area obtained a p value > 0.05. This means that there is no significant difference in acupuncture therapy combined with aloe vera gel. So it can be concluded that both groups showed changes in the scale of wrinkles in the smile line area. Both groups showed effective results in reducing the scale of wrinkles in the smile line area, but there was no significant difference.

I. INTRODUCTION

The desire to look young and beautiful is a common aspiration shared by many women around the world⁽¹⁾. Middle adulthood or middle age begins in the age range of 40 to 50 years, and often experiences anxiety about signs of aging on facial skin⁽²⁾. Women with wrinkles tend to look six years older than their actual

age⁽³⁾. The aging process causes physical changes in the skin, such as decreased elasticity and changes in structure, which affect a person's appearance. Skin problems such as wrinkles, rough and dry skin, and pigmentation often appear with age⁽⁴⁾. According to WHO data, the proportion of the population aged 60 years and over increased from 1 billion in 2020 to 1.4 billion in 2024⁽⁵⁾. The elderly

population in Asia amounted to 13.5% of the region's population in 2022; this figure is expected to almost double to 25.2% by 2050⁽⁶⁾. Data from the Central Statistics Agency (BPS) shows that the percentage of the elderly population in Indonesia in 2024 will reach 12.34%. This figure shows an increase compared to the previous year, where in 2023 the percentage was 12.00%⁽⁷⁾. Data from the Central Statistics Agency (BPS) shows that Central Java is heading towards the status of "old structured population". The percentage of the elderly population to the total population in Central Java Province continues to increase. In 2023, the percentage of the elderly population in Central Java will increase to 13.50 percent or 5.07 million people⁽⁸⁾. In 2023, the percentage of the elderly population in Sukoharjo will increase by 14.08 percent or 131.28 thousand people. This increase indicates a high probability that skin aging or wrinkle problems will also increase⁽⁹⁾.

Management of facial wrinkle cases is carried out pharmacologically and non-pharmacologically. Pharmacological management includes dermal fillers, botox, moisturizing creams, and platelet-rich plasma. Non-pharmacological treatments include microdermabrasion, thread lifts, and acupuncture therapy. These treatments usually require a fairly large cost, but acupuncture therapy is a more affordable. Acupuncture has been clinically proven to have beneficial effects compared to other therapies. Needles on the dermis layer stimulate cell regeneration, increase blood flow in the face, and increase collagen production in the skin⁽¹⁰⁾. One of the natural ingredients used for facial skin care is raw materials from the aloe vera plant (Aloe vera)⁽¹¹⁾. Acupuncture can relax the face by piercing acupuncture points, this will restore the balance of Yin bioenergy, which can trigger the release of neuroendocrine⁽¹²⁾. Several studies have shown that acupuncture at acupoints is effective in reducing nasolabial folds (NFs) and marionette

lines (MLs)⁽¹³⁾. Other studies have also found that the combination of rejuvenation acupuncture and gua sha is effective in reducing wrinkles on smile lines⁽¹⁴⁾. Aloe vera gel is used to soothe and moisturize the skin, and it also has a protective effect against skin damage due to radiation, showing anti-aging activity by inhibiting skin thinning and maintaining elastin fibers. Aloe vera gel can also increase the content of water-soluble dermis collagen⁽¹¹⁾.

Based on the above phenomenon, researchers are interested in researching the Effectiveness of Acupuncture Therapy Combined with Aloe Vera Gel (Aloe Vera) on the Scale of Facial Wrinkles in the Smile Line Area. Previous research has not been conducted to overcome facial wrinkles in the smile line area with these two combinations. Researchers are interested in conducting research in the village, because the knowledge of rural communities regarding treatments for wrinkles is still very limited. Based on the results of a preliminary study in the RW 09 Dukuh Ngenden area, Banaran Village, Grogol District, Sukoharjo Regency, Central Java, it was found that 58 of them had facial wrinkles in the smile line area. The people in the area are already familiar with acupuncture, but have never had therapy to overcome facial wrinkles. This encouraged researchers to conduct research in the area. This study aims to determine the effectiveness of aloe vera gel combination acupuncture therapy on the scale of wrinkles in the smile line.

II. METHODS

This study employed a quasi-experimental design with a two-group pretest-posttest approach. A purposive sampling technique was used to select a total of 42 participants, divided equally into two groups: 21 participants in group I and 21 participants in group II. The study aimed to determine the effectiveness of acupuncture combined with aloe vera gel on wrinkle scale reduction in the smile line area.

The independent variable was the combination therapy of acupuncture and aloe vera gel, while the dependent variable was the wrinkle scale in the smile line area. The control variable was acupuncture therapy alone. The study was conducted in RW 09, Banaran Grogol Village, Sukoharjo.

The instruments and materials used included 0.5–1 cun acupuncture needles, alcohol swabs, disposable gloves, used needle containers, stationery, surgical masks, aloe vera gel, and spatulas. Photographic documentation was performed using a natural iPhone 11 camera without effects or filters to ensure visual accuracy.

Participants in group I received acupuncture therapy combined with aloe vera gel, while participants in group II received acupuncture therapy only. The intervention was administered according to standardized acupuncture procedures. The pretest and posttest wrinkle scale assessments were performed to evaluate changes before and after the intervention.

Data were analyzed using SPSS software version XX. Descriptive statistics were applied to summarize the characteristics of research subjects. The Wilcoxon signed-rank test was used to assess differences in wrinkle scale within each group before and after the intervention, while the Mann–Whitney U test was used to determine differences between the two groups. A significance level of $p < 0.050$ was considered statistically significant.

III. RESULT

Research on aloe vera gel combination acupuncture therapy on the scale of wrinkles in the smile line area in RW 09 Banaran Grogol Village, Sukoharjo, which was carried out from February to March 2025, obtained data on the number of samples of 42 people who experienced facial wrinkles in the smile line area. Aloe vera gel combination acupuncture therapy in both groups was

carried out 10 times, with a schedule of once every 2 weeks.

Table 1 shows the frequency of research subjects in groups 1 and 2 based on the age of the most 36-45 years and based on skin type, the most is dry, and facial treatments to overcome wrinkles in groups 1 and 2 are all no

Table 1. Characteristics of Respondents

Characteristics	Group I		Group II	
	N	%	N	%
Gender				
36-45	13	61.9	12	57.1
46-55	9	38.1	9	42.9
Skin Type				
Dry	16	76.2	11	52.9
Slightly Dry	5	23.8	10	47.6
Facial Treatment				
Yes	0	0	0	0
No	21	100	21	100

Table 2 shows the mean, standard deviation, minimum, and maximum values of wrinkle scale scores before and after treatment in both groups. In Group 1, which received acupuncture combined with aloe vera gel, the mean wrinkle scale decreased from 2.05 before treatment to 1.29 after treatment. In Group 2, which received acupuncture therapy only, the mean wrinkle scale also decreased from 2.05 to 1.40 after treatment. These results indicate a reduction in wrinkle scale in both groups, with a greater improvement observed in Group 1

Table 2. The Wrinkle Scale Before and After Treatment (n= 42)

Group	Time	Mean	SD	Min	Max
Group 1	Pre	2.05	0.57	1.0	3.0
	Post	1.29	0.60	0.0	2.5
Group 2	Pre	2.05	0.69	0.5	3.0
	Post	1.40	0.72	0.0	2.5

Table 3 explains the results of the Paired T-Test test obtained results in the

pretest posttest group 1 with a significance value of $p < 0.001$, while in the pretest posttest group 2 with a significance value of $p < 0.001$, which means there is effectiveness of aloe vera gel combination acupuncture therapy on the smile line area wrinkle scale.

Table 3. The Result of the Wilcoxon Test

Group		N	p
I	Pretest	21	<0.001
	Posttest	21	
II	Pretest	21	<0.001
	Posttest	21	

The results of the Independent t-test show a change in the wrinkle scale $p = 0.192$ ($p > 0.050$), which means there is no significant difference between the two groups. Although aloe vera gel combination acupuncture therapy showed a slightly greater decrease in the wrinkle scale than acupuncture therapy alone, the difference was not statistically significant enough (Table 4).

Table 4. Independent Test

Group	N	Sig.
Acupuncture Therapy Combined with Aloe Vera Gel Acupuncture Therapy	42	0.192

IV. DISCUSSION

Manipulation of the acupuncture needles causes mechanical signal transduction and changes in connective tissue. This process triggers changes in the actin structure in fibroblast cells, causing the cells to contract and pull collagen fibers. This changes the composition of the extracellular matrix (ECM). This mechanical stimulus also increases the production of transforming growth factor beta (TGF- β), a cytokine that stimulates collagen formation. In addition, micro-trauma due to needling triggers the release of various

bioactive factors such as neurotransmitters, neuromodulators, hormones, cytokines, and inflammatory mediators, which then trigger post-inflammatory chemical reactions and increase collagen production⁽¹⁴⁾. Acupuncture therapy can be done in 10 sessions with a frequency of 1-3 times per week for optimal results, and is supported by self-care such as facial massage, a healthy diet, and the use of natural herbs⁽¹⁴⁾.

Aloe vera gel is widely used in cosmetics because it is easy to apply. Its contents include vitamins A, C, and E, amino acids, enzymes, and minerals that are antibacterial, antifungal, anti-inflammatory, and antioxidant⁽¹⁵⁾. Components such as lignin help absorption into the skin, while saponins function as antiseptics⁽¹¹⁾. Aloe vera maintains moisture, accelerates skin cell regeneration, and effectively inhibits signs of aging such as wrinkles when used regularly⁽¹⁶⁾. This study used the Soothing and Moisture Aloe Vera 98% product from Herborist because the packaging is practical, easy to use, contains 98% aloe vera to moisturize and provide a cool sensation, and vitamin E as a natural antioxidant that helps smooth the skin. This product has been registered with the POM NA18180102236 standard⁽¹⁷⁾.

V. CONCLUSION

Through research on 42 people in RW 09 Banaran Village, Grogol, Sukoharjo, it was found that a combination of acupuncture therapy and aloe vera gel can be an effective alternative in reducing wrinkles on smile lines. Subjects with an average age of 36-45 years, most of whom had a high school and bachelor's degree with jobs as cooks and housewives. The syndrome commonly found was blood stagnation in the liver. Before therapy, the average wrinkle scale in group 1 and group 2 was 2, while after therapy, group 1 had an average of 1.3 and group 2 had an average of 1.4. The results of the hypothesis test using the Independent t-

test Asymp.Sig (2-tailed) value of .192> 0.05. So it can be concluded that there is no difference between group 1 and group 2 in changes in the scale of wrinkles in the smile line area. In addition, the results of this study also provide suggestions for educational institutions, acupuncture practitioners, and the general public in the

development and application of aesthetic acupuncture therapy combined with aloe vera gel, and encourage further research with a larger sample size, longer therapy duration, variations in techniques, and the use of objective measuring instruments to improve the accuracy and validity of the results.

REFERENCES

1. Pebriani NI BS. Effectiveness of acupuncture therapy Li point 4 (Hegu), Lu 7 (Lieque) and facial massage in reducing scale wrinkles in Dangkrang, Purwantoro, Wonogiri environments. *Indones J Acupunct* [Internet]. 2024;2(1).
2. Ferdiansyah M, Masfufah U. Perkembangan Dewasa Madya Sebuah Studi Kasus. *Flourishing J* [Internet]. 2023;2(9):598–604.
3. Rizkyah A, Karimah SN. Penuaan Dini pada Kulit : Gejala, Faktor Penyebab dan Pencegahan. *JGK J Gizi dan Kesehat* [Internet]. 2023;3(2):107–16.
4. Susanti S, Isnawati I, Muhaimin FI. Pengurangan Konsumsi Daging Merah Berlebih untuk Menghambat Penuaan. *Muhammadiyah J Geriatr* [Internet]. 2022;3: Muhammadiyah Jurnal Getriatri (1):17.
5. World Health Organization. 2024. Ageing and Health.
6. Bank AD. Development Policies for Asia and the Pasific. 2024. Aging Well in Asia.
7. Direktorat Statistik Kesejahteraan Rakyat. Statistik Penduduk Usia Lanjut 2024. Badan Pus Stat [Internet]. 2024;6.
8. Badan Pusat Statistik provinsi JT. Profil Lansia Provinsi Jawa Tengah 2023. Badan Pusat Statistik [Internet]. 2024;11(1):1–14.
9. Pipit Muliya, Dyah Aminatun, Sukma Septian Nasution, Tommy Hastomo, Setiana Sri Wahyuni Sitepu T. Profil Kesehatan Kabupaten Sukoharjo Tahun 2023. *J GEEJ* [Internet]. 2024;7(2).
10. Jung HS, Kim TJ, Park JY. Acupuncture for Wrinkle Treatment. *Korean J Acupunct* [Internet]. 2021;38(2):62–74.
11. Mardiana Mulia Ningsih A, Ambarwati NSS. Pemanfaatan Lidah Buaya (Aloe vera) Sebagai Bahan Baku Perawatan Kecantikan Kulit. *J Tata Rias* [Internet]. 2021;11(1):91–100.
12. Soekanto A, Tania POA, Rianti EDD, Hardiyono H. Effectiveness of Facial Acupressure and Acupuncture on Musculus Facei. *J Ilm Kedokt Wijaya Kusuma* [Internet]. 2024;13(1):38.
13. Cheng H, Xie L, Wang T, Shi B. Effectiveness of acupuncture therapy on improvement of nasolabial folds and marionette lines: A retrospective study. *Heal Sci Reports* [Internet]. 2024;7(8).
14. Putri AA, Kusumawati HN PP. The Effect of Acupuncture Rejuvenation Combination of Gua Sha on The Smile Line Area in Mothers at RT 15 Rss. Sriwijaya Mothers South Sumatera. *Indones J Acupunct* [Internet]. 2024;(Vol. 2 No. 2 (2024)).
15. Rohiyati MY, Yohanes Juliantoni, Hakim A. Formulasi Dan Uji Aktivitas Antioksidan Sediaan Masker Peel Off Ekstrak Daun Lidah Buaya (Aloe vera Linn.). *Unram Med J* [Internet]. 2021;9(4):317–22.

16. Dewi P. Ampuhnya Tanaman Hias Bagi Kesehatan dan Kecantikan. Perpustakaan Nasional: Katalog Dalam Terbitan; 2019.
17. Iskandar B, Lukman A, Elfitri O, Safri S, Surboyo MDC. Formulasi Dan Uji Aktivitas Anti-Aging Gel Lendir Lidah Buaya (Aloe vera Linn.). Jurnal Ilmu Kefarmasian Indonesia [Internet]. 2021;19(2):154.