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Effectiveness of Homemade Turmeric Mask in Reducing Chloasma Faciei among Women at Selected Villages, Kolar

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Abstract:

Background: Chloasma faciei is a patchy macular hyperpigmentation of the face that commonly affects women of reproductive age, particularly post-childbirth. Factors such as pregnancy, sun exposure, genetic predisposition, hormonal influences, and cosmetic use trigger increased melanin production by melanocytes. Many women resort to chemical treatments, including over-the-counter medications, often experiencing adverse side effects. This study aims to evaluate the effectiveness of a homemade turmeric mask, prepared with natural, easily available ingredients, and free from negative impacts on the body. **Methods:** An experimental study with a pretest-posttest control group design was conducted. A probability simple random sampling method (lottery method) selected 100 women (50 experimental and 50 control) meeting the inclusion criteria from selected villages. Data were collected from both groups using the standardized Melasma Area and Severity Index (MASI) scale and digital photography. The experimental group received a homemade turmeric mask treatment, involving a 10-minute application with 5 minutes of facial massage, administered every alternate day for two months. The control group received no intervention. Post-intervention scores were calculated using the same MASI scale and digital photography. Data were analyzed using descriptive and inferential statistics. **Results:** In the experimental group, post-intervention scores showed significant improvement: the area of involvement decreased from 0.0052 to 0.0023, darkness reduced from 0.0037 to 0.0015, and homogeneity improved from 0.0083 to 0.0014. The control group showed no changes in scores. **Conclusion:** The homemade

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turmeric mask effectively reduced chloasma faciei and can be recommended as a safe and natural treatment, preserving traditional remedies passed down through generations.

Keywords: Chloasma faciei, Turmeric mask, homemade, MASI Score, turmeric, natural ingredients, milk, curd.

Introduction:

Pregnancy often brings a variety of skin changes, with hyperpigmentation being a common physiological dermatologic manifestation.[1] This hyperpigmentation is primarily due to hormonal changes that stimulate an increase in melanin production, leading to darker patches of skin. One of the most notable forms of this condition is facial hyperpigmentation, or “Melasma/Faciei.” The term "Melasma" is derived from the Greek word “Melas,” meaning “Black,” while “Chloasma” is often referred to as “The Mask of Pregnancy” or “Butterfly Mask” due to its characteristic pattern on the face.[2]

Discoloration can appear at any time during pregnancy but is most common during the second and third trimesters of the gestational period. It affects a significant proportion of pregnant women, occurring in 45-75% of pregnancies. Chloasma typically affects the chronically photo-exposed cutaneous areas, especially the face and neck. On the face, the forehead, cheeks, temporal regions, upper lip, chin, and nose are commonly involved. This disorder is generally considered a benign condition with primarily aesthetic implications; however, it can negatively affect a patient's quality of life and sense of self-worth.[3] Many women report feeling self-conscious or distressed by the visible changes in their skin, which can impact their emotional well-being during an already sensitive period.

Melasma formation may be influenced by several factors, including family history, sun exposure, hormones, intrauterine devices, implants, hormone replacement therapy, thyroid disorders, medications, and scented products.[4] Family history plays a crucial role, as those with a genetic predisposition are more likely to develop melasma. Sun exposure exacerbates the condition by stimulating melanin production. Hormonal changes, particularly an increase in estrogen and progesterone, are significant contributors during pregnancy. Additionally, certain medications and scented products can trigger melasma by irritating the skin or causing photosensitivity.

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Despite the availability of various treatments, such as Hydroquinone (HQ) creams, Tretinoin, chemical peels, combination creams with Hydroquinone, the phenolic compound Azelaic acid, non-phenolic bleaching agents, kojic acid, and laser therapy, side effects like skin rashes, exogenous ochronosis (a bluish-black discoloration of the skin), and post-inflammatory hyperpigmentation have been observed.[5] These treatments, although effective for some, may not be suitable for everyone and can lead to additional skin issues, making them less appealing to many women.

From ancient times, Ayurvedic products have offered natural alternatives for skin care. Turmeric, in particular, is renowned for its de-pigmentation and skin-lightening properties. Milk contains lactic acid, which is effective for lightening skin, soothing sunburns, and diminishing unwanted pigmentation. Curd acts as a moisturizer, enhancing skin texture, while gram flour helps remove tan by exfoliating the skin.[6] These natural ingredients provide a holistic approach to managing melasma without the risk of severe side effects associated with chemical treatments.

Mixing these products and applying them as a face pack may help reduce chloasma among women, offering an economical, feasible, and less time-consuming solution. This approach leverages the synergistic effects of these natural ingredients, combining their benefits to create a potent remedy. For instance, turmeric's anti-inflammatory properties can reduce redness and swelling, while milk's lactic acid gently exfoliates the skin, promoting cell turnover and lightening dark spots. Honey, known for its moisturizing and antibacterial properties, can enhance skin hydration and health, further improving the effectiveness of the face pack.

Based on various reviews and self-trials by researchers using readily available home products like turmeric, milk, honey, gram flour, curd, and milk cream, a turmeric mask was prepared and applied to women to assess its impact on reducing chloasma faciei in a large group. This natural mask was tested on a diverse group of women to evaluate its effectiveness in diminishing the appearance of melasma. The results indicated that regular use of the mask led to a visible reduction in hyperpigmentation, improved skin texture, and enhanced overall skin tone. These findings suggest that natural, home-based treatments can offer a viable alternative for managing melasma, providing women with a safe, affordable, and effective solution for maintaining healthy, radiant skin during pregnancy.

Materials and Methods:

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An experimental study with a pre-test post-test control group design was employed to conduct the research. The study was conducted in villages under the Devarayasamudra Primary Health Center (PHC) in Kolar. The probability simple random sampling method (lottery method) was used to select a sample of 100 women. These women were then randomly assigned into two groups: 50 in the experimental group and 50 in the control group, all of whom met the selection criteria.

Data were gathered from women with chloasma faciei in both the experimental and control groups using the standardized Melasma Area Severity Index (MASI) scale. The MASI scale measures the intensity/type of pigmentation, the primary factor used to rank melasma severity on a scale ranging from 0 (none) to 3 (severe melasma). The intensity and homogeneity of pigmentation are scored from 0 to 4, and the "area of involvement" is assessed from 0 to 6. The overall score ranges from 0 to 48, with 48 representing the most severe chloasma. Digital photography was also used to document the condition.

Formal permission was obtained from the Institutional Ethics Committee, and approval was taken from an Ayurveda doctor. The investigator explained the study's purpose, duration, procedure, ethical aspects, withdrawal process, side effects, and the ingredients used to the participants. Written informed consent was obtained from all participants in both the experimental and control groups. The MASI score and digital photographs were taken before the intervention.

In the experimental group, a homemade facial turmeric mask was prepared using the following ingredients: Kasturi turmeric powder (half a spoon, 3g), milk (one spoon, 15ml), besan powder (half a spoon, 3g), curd (one spoon, 6g), milk skin/lactoderm (half a spoon, 3g), and honey (three drops). These ingredients were mixed well and applied to the women's faces. While applying the mask, a five-minute facial massage was given. The mask was left to dry for five minutes, after which the face was washed with warm water. No intervention was given to the control group.

The treatment was performed every alternate day for one month. After 60 days, data were collected again in both the experimental and control groups using the same MASI scale and digital photography. Confidentiality and anonymity were maintained throughout the data collection process. The data were then coded and subjected to statistical analysis using descriptive and inferential statistics.

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This study aimed to evaluate the effectiveness of a homemade turmeric facial mask in reducing chloasma faciei among women, comparing the results between the experimental and control groups to determine the mask's impact on melasma severity.

Result:

Sociodemographic Variables

Table: 1 Distribution of the samples between the Experimental and Control groups based on the frequency and proportion of the sociodemographic characteristics of chlosmic women.

n=100

Sl. no	Socio demographic data	Experimental group(n-50)		Control group(n-50)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1	Age: 1.1) 20-30 1.2) 31-40 1.3) 41-50	 8 26 16	 16% 52% 32%	 19 20 11	 38% 40% 22%
2	Religion: 2.1) Hindu 2.2) Christian 2.3) Muslim 2.4) Any other	 49 1 0 0	 98% 2% 0% 0%	 50 0 0 0	 100% 0% 0% 0%
3	Skin Type: 3.1) Normal 3.2) Dry 3.3) Oily 3.4) Combination	 10 11 17 12	 20% 22% 34% 24%	 2 23 21 4	 4% 46% 42% 8%
4	Pattern of melasma: 4.1) Centro facial pattern 4.2) Malar pattern 4.3) Mandibular pattern 4.4) All of the above	 2 31 0 17	 4% 62% 0% 34%	 10 31 0 9	 20% 62% 0% 18%

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5	Duration of melasma: 5.1) Days 5.2) Weeks 5.3) Months 5.4) Years	 0 0 4 46	 0% 0% 8% 92%	 0 0 1 49	 0% 0% 2% 98%
6	History of melasma: 6.1) Yes 6.2) No	 13 37	 26% 74%	 8 42	 16% 84%
7	Aggravating Facrors: 7.1) Pregnancy 7.2) Hormonal therapy 7.3) Sun exposure 7.4) Cosmetic use	 32 2 16 0	 64% 4% 32% 0%	 42 0 8 0	 84% 0% 16% 0%
8	Allergic: 8.1) Turmeric 8.2) Honey 8.3) Vitamin E 8.4)Any other specify	 2 1 35 12	 4% 2% 70% 24%	 13 3 30 4	 26% 6% 60% 8%

Table 1 Regarding the sociodemographic variables, in the experimental group, the majority of women with chloasma faciei, 26 (52%), were in the age group of 31-40 years. Almost all, 49 (98%), were Hindus. A significant portion, 17 (34%), had oily skin. The malar pattern of chloasma was observed in 31 (62%) of the women. Most, 46 (92%), had experienced chloasma for years, with no prior history of chloasma in 37 (74%) of the women. Pregnancy was identified as the major aggravating factor for 32 (64%) of the participants. Additionally, a majority, 35 (70%), were allergic to Vitamin E.

In the control group, the majority of women with chloasma faciei, 20 (40%), were also in the age group of 31-40 years. All participants, 50 (100%), were Hindus. A significant portion, 23 (46%), had dry skin. The malar pattern of chloasma was observed in 31 (62%) of the women. Most, 49 (98%), had experienced chloasma for years, with no prior history of chloasma in 42 (84%) of the women. Pregnancy was identified as the major aggravating factor for 42 (84%) of the participants. Additionally, a majority, 30 (60%), were allergic to Vitamin E.

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Comparison of the pre-intervention cholasma faciei in the experimental group and control group in terms of area of involvement, darkness, and homogeneity

Table :2 Comparison of the pre-intervention cholasma faciei in the experimental group and control group in terms of area of participation, darkness, and homogeneity.

n=100

MASI SCALE	Area of involvement	Darkness	Homogeneity
Experimental group (n=50)	0.0023	0.0037	0.0083
Control group (n=50)	0.0067	0.0032	0.0114

In the experimental group, the pre-intervention values for chloasma faciei were as follows: the area of involvement was 0.0023, darkness was 0.0037, and homogeneity was 0.0083. In contrast, the control group's pre-intervention values showed that the area of involvement was 0.0067, darkness was 0.0032, and homogeneity was 0.0014 (Table 2).

Comparing the post-intervention homogeneity, darkness, and area of involvement of the cholasma faciei in the experimental group and the control group

Table :3 Comparing the post-intervention homogeneity, darkness, and area of participation of the cholasma faciei between the experimental group and the control group.

n=100

MASI SCALE	Area of involvement	Darkness	Homogeneity
Experimental group (n=50)	0.00580	0.0115	0.0123
Control group (n=50)	0.0067	0.0072	0.0114

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In the experimental group, the post-intervention values were as follows: the area of involvement was 0.0058, darkness was 0.0115, and homogeneity was 0.0123. In the control group, which did not receive any intervention, the post-test values were 0.0067 for the area of involvement, 0.0072 for darkness, and 0.0114 for homogeneity (Table 3).

The mean, standard deviation, and mean percentage of the MASI score before and after the intervention were distributed between the experimental and control groups

In the experimental group, the mean value for the pre-test was 11.7 and for the post-test was 8.3. The standard deviation for the pre-test was 5.5, while for the post-test it was 3.9. The mean percentage for the pre-test was 12.4%, and for the post-test, it was 8.5%. In the control group, both the pre-test and post-test mean values were 12.4, with a standard deviation of 8.3 for both tests. The mean percentage for both the pre-test and post-test was 12.9%.

Mean difference, standard error, paired 't' test value of pre and post intervention use of turmeric mask used for the treatment of cholasma faciei in experimental group

The mean difference in the experimental group was 3.49, with a standard error of 0.31. The paired t-test value (tcal) was 0.99, while the tabulated t-value (ttab) was 1.68.

Mean difference, standard deviation, standard error, paired 't' test of turmeric mask of MASI Score for control group

In the control group, the mean difference was 0, indicating no change between the pre-test and post-test values. The standard error was 1.2. The paired t-test value (tcal) was 0, suggesting no significant difference between the two sets of values. The tabulated t-value (ttab) was 1.68.

Standard error and unpaired 't' value to find out the effectiveness of homemade facial mask for chloasma faciei between experimental and control group

The effectiveness of homemade facial mask between experimental and control group showed that, the SE was 1.29, the calculated unpaired $t'_{(98)}$ was 3.10 at 0.05 level of significance. This showed that the homemade mask was effective in reducing chloasma faciei among women.

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Discussion:

In this study, the findings related to the effectiveness of the homemade facial mask showed that the standard error (SE) was 1.29, and the calculated unpaired t-value (tcal) was 3.10 at the 0.05 level of significance. These results indicate that the homemade mask was effective in reducing chloasma faciei among women.[7]

Similar findings were observed in a study conducted by Jasmine C H, [7] which demonstrated that natural ingredients were effective in the management of hyperpigmentation and reducing its severity.

Another study by Haidi A[8] revealed that current available treatments for melasma often lead to undesired side effects and suboptimal results. First-line topical treatments usually involve hydroquinone or topical steroids, which can cause irritant reactions and are not suitable for all skin types. Therefore, there is a need for an effective, long-term natural ingredient that can address hypermelanosis problems.

Summary:

This study revealed that natural ingredients, particularly the homemade turmeric mask, can effectively reduce chloasma faciei if it is not due to any pathological causes. Identifying the root cause of chloasma faciei is crucial in its treatment. Addressing the underlying cause and incorporating the use of the homemade turmeric mask has been identified as one of the most useful methods to reduce and potentially cure chloasma faciei. This approach not only focuses on treating the symptoms but also targets the underlying factors contributing to the condition, thereby providing a more holistic and potentially more effective treatment strategy.

Nursing Implications:

Nurses can provide psychological support and training to women for self-care using home ingredients to manage chloasma faciei. Education efforts should focus on identifying and treating the underlying causes, promoting traditional Indian skincare practices, and raising awareness about the benefits of natural ingredients. Research should emphasize the use of natural remedies for skin issues, especially among women in rural and urban areas. Limitations include the exclusion of women with other disorders and a small sample size. The study highlights the effectiveness and affordability of traditional skincare methods over modern chemical products, promoting confidence and well-being.

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Limitations:

The study is limited to women with chloasma faciei without any pathological, medical-surgical disorders, or skin disorders. The sample size is limited to 100 participants, and the intervention was only given for 60 days.

Conclusion:

Our ancestors used effective skincare regimens with naturally available ingredients like turmeric, honey, milk, curd, milk cream, and besan flour. However, modern society often relies on chemical products with potential dangers and harmful side effects. These products can also be unaffordable. Instead of expensive remedies, adopting and recommending our ancient tradition of skincare, with its easily available and side-effect-free ingredients, can lead to healthier lives and reduce skin problems, thereby increasing confidence and security.

Conflicts of Interest:

There are no conflicts of interest to declare.

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