

## Original Research Article

# An effect of herbal medicine in Busoore Labaniya (acne vulgaris) among MSME employees in Kottigepalya, Bangalore: an open intervention field trial study

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## ABSTRACT

**Background:** Acne vulgaris is a prevalent skin condition characterized by blocked hair follicles, leading to irritation and the formation of comedones (blackheads and whiteheads). Various factors, including hygiene, occupational environment, and stress, can modify acne development. Aggravating factors such as hot climates and stress contribute to worsening acne. The primary objective of the study was to assess the efficacy of herbal medicine using the Cook's grading scale for acne vulgaris.

**Methods:** A study titled "an effect of herbal medicine in Busoore Labaniya (acne vulgaris)" was conducted among MSME workers in Kottigepalya, Bangalore. This open intervention field trial study compared the effects of local herbal application with traditional treatments for acne vulgaris. A total of 63 patients participated, with 50 completing the 30-day protocol involving the local application of an herbal medicine paste, resulting in observable improvements based on the Cook's grading scale.

**Results:** The study included 50 patients aged 18-30 years, with most participants falling in the 18-20 age group. The average age of the participants was  $22.7 \pm 3.63$  years. The prevalence of acne in this age range was consistent with findings from the Global Burden of Disease study. The gender distribution was 52% male and 48% female, the study also highlighted the significance of hygienic practices, with a majority of patients being skilled workers.

**Conclusions:** The present study revealed that intervention of herbal drugs formulation was found safe and very much effective in the treatment of Busoore Labaniya.

**Keywords:** Acne vulgaris, Busoore Labaniya, Comedones, Unani medicine, Cook's grading scale, Herbal medicine

## INTRODUCTION

In acne vulgaris, hair follicles produce sticky plugs called comedones that block the follicles. This blockage leads to inflammation around the affected follicles, resulting in tissue damage and the formation of scars.<sup>1</sup> The primary objective of the study was to assess the efficacy of herbal medicine using the Cook's grading scale for acne vulgaris.

Acne vulgaris is characterized by comedones, which can be either closed (whiteheads) or open (blackheads).<sup>2</sup> This skin condition is one of the most common issues affecting adolescents.<sup>3</sup> This fairly common condition has the highest prevalence among teenagers. Clinically severe acne affects 70% of adults between puberty and the early years of adulthood. Dermatologists treat this condition the most frequently. Any stage of life can see the onset of this

pleomorphic skin disorder. Nonetheless, 85% of the population is thought to be between the ages of 12 and 24, which accounts for the majority of cases.<sup>4,5</sup> There are two categories for acne vulgaris: non-inflammatory and inflammatory.<sup>6,7</sup>

### ***Non inflammatory***

The primary lesion associated with acne is the comedone, a clog made of keratin scales, epithelial cells, and dried sebum. It occupies the pilosebaceous canals.<sup>8</sup> Ductal hyper cornification ultimately produces impacted, closely spaced, horny cells known as the comedone.<sup>9</sup> They might appear as closed follicles known as white heads or as open structures with a core black look caused by melanin oxidation.<sup>7</sup>

### ***Inflammatory***

A near comedone could get contaminated, resulting in pustular acne.<sup>10</sup> The shallow inflammatory lesions are called papules and pustules, whereas the deep lesions are occasionally formed by deep pustules, nodules, and papules.<sup>11,12</sup>

### ***Acne vulgaris grading system***

The majority of acne sufferers also have a variety of acne-related lesions. It might range from mild to severe.<sup>13</sup> Mild acne included scattered papules or comedones, with the majority of the papules being one or both; moderate acne: included are more papules and pustules; and severe acne included nodulocystic lesions usually predominate.

### ***Pathogenesis of acne vulgaris***

In the etiology of acne, four important elements have been found: increased production of sebum, abnormal developments of micro comedos in follicular keratinization, increase in *Propionibacterium acnes* population, and inflammatory response.<sup>14</sup>

### ***Acne vulgaris modifying factors***

The following elements are accountable for the development of acne.

#### ***Inadequate cleanliness***

There is a widespread belief that inadequate cleanliness contributes to the onset or worsening of acne vulgaris.<sup>15</sup>

#### ***Workplace atmosphere***

There are primarily three types of interactions that occur in a work setting: man, and agents that are physical, chemical, and biological, both humans and machines, and individuals and individuals.

*Man, and agents that are physical, chemical, and biological*

#### ***Physical entities***

The health of workers is impacted by heat, cold, humidity, air movement, heat radiation, light, noise, vibrations, and ionizing radiation.

#### ***Chemical-based substances***

Chemicals, poisonous dusts, and fumes that harm skin.

#### ***Biological warfare***

Workers who come into close contact with animals or their belongings, contaminated water, soil, or food may be exposed to infectious, bacterial, or parasitic organisms.

#### ***Both humans and machines***

Long hours spent in unnatural postures can lead to weariness, backaches, joint and muscle problems, as well as a decline in the worker's well-being and output.

#### ***Individuals and individuals***

Psychosocial considerations encompass several aspects such as work type and rhythm, job satisfaction, service conditions, stability in the workplace, and so on. Stress at work could keep him from sleeping.<sup>16</sup>

### ***Aggravating factors***

Basoor labania is known to be madda e sadidiya which produce as a result of fuzlaat in the form of bukharat (vapours) that move towards the skin and get stuck into the pores. Irregularities of diet, environmental factors, stress, and some specific drugs are the common factors that aggravate the skin related problems.<sup>17,18</sup>

#### ***Temperatures that are hot and humid***

We sweat more in hot and muggy weather. This may exacerbate acne.<sup>19</sup>

#### ***Anxiety***

There is a substantial correlation between elevated stress levels and modifications in acne severity. There is mounting evidence that several dermatological problems can be impacted by psychological stress, much like acne vulgaris. During assessment, patients with acne may notice a worsening of their condition. Additionally, there is a strong correlation between higher levels of stress and increased acne severity, suggesting that emotional stress from external factors might have a substantial impact on acne.<sup>20</sup> Patients typically report that anxiety exacerbates their acne, while the exact process is uncertain. One theory

is that stress increases levels of androgen and glucocorticoids through the hypothalamic-pituitary-adrenal axis, which can exacerbate acne.<sup>21</sup>

#### *Industry of chemicals*

Chemicals that can penetrate the skin and enter the human body.

#### *Timber sector*

Workers who are exposed to rubber tree wood dust are more likely to develop skin conditions.<sup>22</sup>

#### *Workplace health in the textile sector*

Severity of psychological disorders and dermatological conditions.<sup>23</sup>

#### *Workplace dangers*

Occupational dermatoses, another name for occupational skin disorders, are skin conditions brought on by exposure to dangers at work. The most significant chemical risks for skin are those that irritate, sensitize, and cause acne. Biological risks include bacteria, fungus, viruses, and skin parasites. Radiation, temperature, mechanical friction, and rubbing are examples of physical dangers.

Depending on their line of work, industrial workers may encounter five different kinds of risks.

#### *Physical risks*

Employee health is impacted by temperature, light, noise, vibrations, UV and ionizing radiation, and illumination.

#### *Chemical risks*

Certain chemicals induce dermatitis, eczema, ulcers, and even cancer through their primary irritating activity; other chemicals produce dermatitis through an allergic reaction.

#### *Risks related to biological agents*

Workers may be exposed to parasitic and pathogenic pathogens at work.

#### *Mechanical risks*

The majority of industry's mechanical risks are related to machinery, projecting and moving parts, and similar components.

#### *Psychosocial risks*

The workers' inability to adjust to a foreign psychosocial environment is the source of the psychosocial dangers.<sup>16</sup>

### **Clinical features**

Typically, men. The majority of lesions are comedones, while inflammatory lesions, or nodules, can occasionally be seen.<sup>8</sup> large comedones that erupt on the face and trunk can be induced by mineral oils, tar, contact, chlorinated naphthalene, and similar compounds.<sup>24</sup>

### **METHODS**

A study titled "an effect of herbal medicine in Busoore Labaniya (acne vulgaris)" was conducted among MSME workers in Kottigepalya, Bangalore. This open intervention field trial compared the effects of local herbal application with traditional treatments for acne vulgaris. The study was conducted over a period of one year, from March 2018 to March 2019. The study included individuals who met predefined inclusion criteria, as determined by a clinical examination and detailed medical history. A total of 63 participants were enrolled, with 50 completing the full 30-day treatment protocol. The sample size was calculated convenience estimation of 50 patients as recommended institutional ethical committee. Convenient sapling technique were used. Ethical approval was obtained from Institutional Ethical Committee (IEC) for Bio Medical Researches, NIUM, Bengaluru prior to starting the study vide IEC No -NIUM/IEC/2017-18/018/TST/04.

#### **Inclusion criteria**

Participants were selected based on the following criteria.

#### *Medical history and clinical assessment*

Individuals with a history of acne vulgaris, especially those exhibiting characteristic distributions of comedones, papules, pustules, nodules, and cysts, were considered eligible.

#### *Grade of acne*

Participants had to present with varying degrees of acne severity, suitable for treatment using the Cook's grading scale, which categorizes acne based on severity.

#### **Exclusion criteria**

Patients who did not co-operate, age <18 and >30 years, patients having local wound and infection on face, and patients who fail to give consent for the trial and follow up were excluded.

#### **Treatment protocol**

The treatment group received a local application of an herbal medicine paste, which was applied daily for 30 days. This protocol was followed closely, and participants were regularly monitored for improvements or adverse effects.

## Outcome measures

The primary measure of efficacy was based on changes observed in the Cook's grading scale; description is given below which evaluates the severity of acne vulgaris e.g. very mild (0) - about 3 small papules or comedones, spaced apart, mild (2) - 30 papules/comedones or a few pustules; from 2.5 meters, lesions are barely noticeable, moderate (4) - significant inflammation and red lesions that require treatment, severe (6) - many pustules and comedones; lesions are clearly noticeable from 2.5 meters, and very severe (8) - conglobate acne: cystic/sinus-type acne covering most of the face.<sup>25</sup>

## Information gathered

Of the 63 patients enrolled, 13 did not finish their prescribed course of treatment, and 13 withdrew for an unspecified reason. Fifty patients fulfilled the protocol and were therefore deemed appropriate for gathering data. Using water, a 10 gm herbal medicine paste was prepared, applied topically to the face at night, and washed off with lukewarm water the following morning (patients were told not to get any in their eyes).

Drug dosage was 10 grams per day

Drugs were taken for 30 days.

Cook's grading scale is the objective parameter.

## Statistical method

Descriptive and inferential statistical analysis has been carried out in the present study. Results on continuous measurements are presented on mean $\pm$ SD and results on categorical measurements are presented in frequencies and percentage. Proportion test has used to evaluate the efficacy of different parameters using percentages. Non-parametric tests have applied for discrete data analysis. Nonparametric methods are called as 'distribution-free tests' because generally they don't require any assumptions about underlying population distribution. Non-parametric methods may be applied when the data do not satisfy the distributional requirements of parametric methods. In nonparametric methods, score or ranks of observations and categorical observations are used instead of the measurements themselves. Wilcoxon signed-rank test is a standard nonparametric test which has used for comparing results for different variables and to compare intra levels (BT versus AT) of subjective and objective parameters of present study. Bar diagram has shown for all the variables.

## RESULTS

The study included 50 patients aged 18-30 years, with most participants falling in the 18-20 age group. The average age of the participants was 22.7 $\pm$ 3.63 years. The prevalence of acne in this age range was consistent with findings from the Global Burden of Disease study. The

gender distribution was 52% male and 48% female, consistent with acne being more common and severe in males due to androgen activity. Occupational associations revealed a higher prevalence in chemical and textile MSMEs, supporting the impact of occupational factors on acne development. The study also highlighted the significance of hygienic practices, with a majority of patients being skilled workers.

**Table 1: Distribution of the workers of MSME with Busoore labaniya according to different types of variables (mean $\pm$ SD=22.77 $\pm$ 3.63) (n=50).**

| Variables             | Number of patients | Percentage |
|-----------------------|--------------------|------------|
| <b>Age (years)</b>    |                    |            |
| 18-20                 | 17                 | 34         |
| 21-23                 | 14                 | 28         |
| 24-26                 | 6                  | 12         |
| 27-30                 | 13                 | 26         |
| <b>Gender</b>         |                    |            |
| Female                | 24                 | 48         |
| Male                  | 26                 | 52         |
| <b>Type of MSMEs</b>  |                    |            |
| Chemical              | 15                 | 30         |
| Electrical            | 3                  | 6          |
| Mechanical            | 6                  | 12         |
| Packaging             | 8                  | 16         |
| Textile               | 14                 | 28         |
| Wood                  | 4                  | 8          |
| <b>Occupation</b>     |                    |            |
| Assembles             | 3                  | 6          |
| Elementary occupation | 4                  | 8          |
| Machine operators     | 15                 | 30         |
| Market sales workers  | 1                  | 2          |
| Skilled workers       | 27                 | 54         |

## DISCUSSION

50 patients included in the present study belonged to the age group of 18-30 years; the mean ( $\pm$ SD) age was observed as 22.7 $\pm$ 3.63 years. The majority of patients belonged to the 18-20 years age group, with 17 (34.0%) patients, followed by 14 (28.0%) patients in the 21-23 years age group, 6 (12.0%) patients in the 24-26 years age group, and 13 (26.0%) patients in the 27-30 years age group. According to the Global Burden of Disease (GBD) study, acne vulgaris affects ~85% of young adults aged 12–25 years. The 70-80% of patients affected by this problem belong to the 11-25 years old group. This is in concordance with our study. In the present study, 26 (52%) patients were male and 24 (48%) patients were female. This is consistent with the fact that acne is more common and more severe in males than in females, attributed to androgen activity. In the present study, 15 (30.0%), 3 (6.0%), 6 (12.0%), 8 (16.0%), 14 (28.0%), and 4 (8.0%) patients were involved in chemical, electrical, mechanical, packaging, textile, and

wood industries, respectively. The highest number of patients, 15 (30.0%), were working in the chemical industry, and the second most, 14 (28.0%), were in textile MSMEs. It was observed that the clinical features of acne vulgaris may be induced or exacerbated by occupational exposure to cutting oils, chlorinated hydrocarbons, coal tars, and occlusive conditions such as heavy clothing and tropical climates. Our study also showed the highest prevalence of acne vulgaris among workers in the chemical and textile MSMEs, which is consistent with the aforementioned studies. There is a common perception that poor levels of hygienic practice among workers lead to the development or exacerbation of acne vulgaris. In our study, the majority of patients, 27 (54.0%), were skilled workers, and the second most, 15 (30.0%), were machine operators. It is a new study and naïve trial conducted on this herbal Unani formulation. So, comparison with other previous study is not possible.

### Limitations

This study was limited by the inability to determine the formulation's long-term effectiveness following acne vulgaris treatment. To fix this problem, more research would be beneficial.

### CONCLUSION

Acne vulgaris, characterized by obstructed hair follicles and inflammation, primarily affects teenagers, presenting as non-inflammatory or inflammatory types with severity ranging from mild to severe. The objective parameters—Cook's grading scale, showed a notable decline in values following a 30-day course of treatment. In conclusion, there are no negative side effects from the intervention herbal medication, which shows promise in lowering Busoore Labaniya. Therefore, it can be said that herbal medication is a less costly, safer, and more practical regimen for Busoore Labaniya patients. Potential characteristics of the medication include the ability to both control pathological alterations and restore them to their natural state.

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