Clinical Evaluation of Unani Formulations *Sharbat Khaksi* and *Khamira Marwareed Khas* in the Treatment of Typhoid Fever in Rural Slums of Burhanpur

Abstract

Background: Enteric fever, commonly known as typhoid fever, is a serious communicable systemic illness that primarily affects the gastrointestinal tract and typically persists for 21 days or more. This study aimed to evaluate the clinical effectiveness and community-level awareness of the Unani formulations *Sharbat Khaksi* and *Khamira Marwareed Khas* in the management of typhoid fever in the rural slums of Burhanpur.

Methods: This was a community-based clinical trial conducted in five rural areas of Burhanpur district. The study was conducted through an OPD-based approach in five rural areas of Burhanpur district under the Tribal Sub Plan (TSP) program, implemented by the Clinical Research Unit (CRU), Burhanpur. A total of 129 patients, clinically diagnosed with typhoid fever at the time of recruitment, were enrolled. Data were collected using a structured questionnaire, and all patients were treated with the Unani formulations *Sharbat Khaksi* and *Khamira Marwareed Khas*.

Results: Among the 129 participants, 67 (51.9%) were male and 62 (48.1%) were female, reflecting a nearly equal gender distribution. The majority (28.7%) belonged to the 16–30 year age group. The administration of the Unani formulations resulted in statistically significant improvement in clinical symptoms of typhoid fever, supporting their therapeutic efficacy.

Conclusion: The study indicates that the Unani formulations *Sharbat Khaksi* and *Khamira Marwareed Khas* have significant therapeutic potential in managing typhoid fever. These findings support the integration of validated Unani treatments into public health strategies for the control of enteric infections. Nonetheless, larger, controlled clinical trials are necessary to confirm these results and facilitate their broader clinical application.

Keywords: Typhoid Fever, *Sharbat Khaksi*, *Khamira Marwareed Khas,* Mobile Health care program, Unani Medicine

INTRODUCTION

Enteric fever, commonly known as typhoid fever, is a serious and communicable systemic illness primarily affecting the gastrointestinal tract. It generally persists for 21 days or longer and is clinically characterized by prolonged fever, malaise, abdominal discomfort (constipation or diarrhoea), and distinctive skin manifestations, such as fine, white or pink rashes over the trunk and abdomen.[1]Typhoid fever is caused by *Salmonella enterica* serotype Typhi, a Gram-negative bacterium that invades the intestinal mucosa, particularly the terminal ileum, and spreads systemically via the bloodstream. The pathogen localizes in organs such as the liver, spleen, gallbladder, bone marrow, and sometimes the brain.[2] Transmission occurs through the fecal-oral route, facilitated by the excretion of bacteria in the stool and urine of infected individuals. Inadequate sanitation, contaminated drinking water, and poor hygiene are major contributors to its spread, especially in low- and middle-income countries. [3] despite advances in diagnostics and public health, typhoid fever continues to pose a major health burden in many developing nations, particularly across South and Southeast Asia. The disease affects only humans and can lead to serious complications,

including intestinal haemorrhage, perforation, hypotension, leucopoenia, splenomegaly, and hepatomegaly.[4] The Global Burden of Disease (GBD) 2017 study estimated 14.3 million cases and 135,900 deaths globally due to typhoid and paratyphoid fevers, representing a case fatality rate of 0.95%. This was a notable decline from 25.9 million cases in 1990, reflecting a 44.6% reduction over the period.[5] However, other models provide varying figures; one 2019 modelling study estimated 9.2 million cases and 110,000 deaths, while another analysis adjusted for blood culture sensitivity estimated up to 26.9 million episodes in 2010.[6] These discrepancies underscore the need for robust surveillance systems and improved diagnostic methodologies to obtain more accurate estimates of typhoid's global burden. From a traditional medicine perspective, particularly in the *Unani system*, compound formulations such as ***Khamira Marwareed*** and ***Sharbat Khaksi*** have been used for their therapeutic efficacy in systemic fevers including typhoid. *Khamira Marwareed* is a semi-solid, fermented confection (*Majoon*-like preparation) introduced by *Unani physicians* during the *Mughal* era. It is known for its cardio tonic and neuro tonic properties, reputed to strengthen the heart and brain, regulate blood pressure, and possess antiviral effects.[7] *Sharbat Khaksi*, which contains Sisymbrium irio L., is traditionally administered during febrile illnesses. Preclinical studies have validated its antipyretic effect against yeast-induced fever in animal models. Similarly, *Khamira Marwareed* has shown significant immunomodulatory effects in mice, including enhanced haemoglobin, white blood cell, and immunoglobulin G levels.[8] these pharmacological activities support their traditional use in the treatment of typhoid fever. In the present study, the aim was to assess the clinical use and community-level awareness of these Unani formulations in the management of typhoid fever in the rural areas of Burhanpur, with the broader goal of controlling waterborne diseases through integrative and culturally accepted interventions.

METHODOLOGY

Study design

This was a community-based clinical trial conducted in five rural areas of Burhanpur district—Bijori, Badnapur, Khamla, Dawali Kalan, and Dhaba. The study followed an OPD-based (Outpatient Department) approach and was implemented under the Tribal Sub Plan (TSP) program. It was carried out by the Clinical Research Unit (CRU), Burhanpur, which operates under the Central Council for Research in Unani Medicine (CCRUM), Ministry of AYUSH, Government of India, New Delhi.

Study period

This study was conducted from April 2024 to January 2025.

Data collection

Data were collected through the Outpatient Department (OPD), with a total sample size of 129 participants. A structured and previously validated questionnaire, developed by the Central Council for Research in Unani Medicine (CCRUM), New Delhi, was employed for data collection. The questionnaire comprised three main sections:

1. Demographic details of the participants,
2. Knowledge of water, sanitation, and hygiene (WASH), and
3. Practices related to sanitation and hygiene, including questions on treatment preferences.

The third section specifically assessed the usage of Unani formulations *Sharbat Khaksi* and *Khamira Marwareed Khas* in the treatment of typhoid fever. The primary objective of this data collection was to understand the existing conditions of water and food sanitation, waste

disposal, and treatment-seeking behaviors in the urban and rural slum areas of Burhanpur. The questionnaire also aimed to assess the level of awareness regarding WASH practices and the traditional use of Unani medicines for managing typhoid fever. Administrative permission and informed consent were obtained from all participants before data collection. Anonymity and confidentiality of the respondents were strictly maintained. The questionnaire was filled out daily by attending doctors based on patient responses, and the data were systematically recorded for further analysis.

STUDY DRUG MANAGEMENT

The following Unani pharmacopeial formulation used in this study:

Table 1: Unani Pharmacopeial Formulations Used in the Study

S.NO.	Study Drug	Dosage Form	Dose	Frequency	Route of Administration	Method of Administration
1.	*Sharbat khaksi*	Liquid	10 ml	Twice daily	oral	To be taken after meal
2.	*Khamira marwareed khas*	Semiliquid	5 gm	Twice a daily	Oral	To be taken after meal with milk

Table 2: Composition of *Sharbat Khaksi*. [9]

S.NO	Ingredients	Botanical name	Quantity
1.	Badiyan (Neem Kofta)	Foeniculum vulgare Mill	100 g.
2.	Barg-e-Gaozuban	Borage officinalis	60 g.
3.	Khaksi	Sismbrium irio	100 g.
4.	Unnab (Neem Kofta)	Zizyphus sativa	100 g.
5.	Shakar Safaid	Sugar	1.5 Kg.
6.	Sat Leemu	Citrus lemon	4g
7.	Natroon Banjawi	Bole-armeniae	2g.

Table 3: Composition of *Khamira Marwareed*. [9]

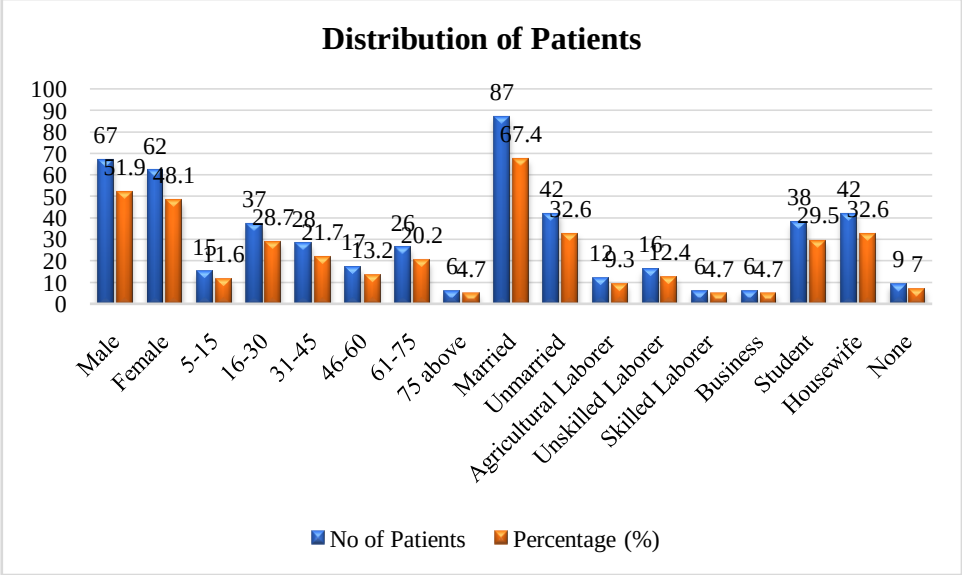
S.NO.	Ingredients	Botanical Name	Quantity
1.	Burada Sandal Sfaid	Santalam album	90 gm
2.	Arq keora	Pandanus tectorium	337 ml
3.	Rubb-e-Seb Shireen	Pyrus malus	1 Kg
4.	Sat Leemu	Citrus lemon	15 gm
5.	Natroon Banjawi	Bole-armeniae	15 gm
6.	Warq Nuqra	Silver	45 gm
7.	Marwareed Saeeda	Pearl, Margrat	52.5 gm
8.	YashabSabz Saeeda	Jade,Egat	52.5 gm
9.	Kahruba Shamaee Saeeda	Amber	52.5 gm
10.	Zahar Mohra Saeeda	Serpentin	35 g.

Results

This study enrolled 129 patients who had been clinically diagnosed with typhoid fever at the time of recruitment. Among them, 67 (51.9%) were male and 62 (48.1%) were female, indicating a nearly equal gender distribution. The majority of participants (28.7%) belonged to the 16–30 year age group, followed by those aged 31–45 years (21.7%) and 61–75 years (20.2%). The least represented age group was those above 75 years (4.7%). In terms of marital status, 87 individuals (67.4%) were married, while 42 (32.6%) were unmarried. Occupationally, the most common categories were housewives (32.6%) and students (29.5%). Unskilled labourers made up 12.4% of the sample, followed by agricultural labourers (9.3%), skilled labourers (4.7%), and business professionals (4.7%). A small proportion (7.0%) reported having no occupation. A notable number of cases were associated with behavioural habits such as the consumption of unsafe drinking water and junk food—factors known to contribute to the faecal-oral transmission of *Salmonella typhi*. Therapeutically, the administration of the Unani compound formulations ***Sharbat Khaksi*** and ***Khamira Marwareed Khas*** resulted in a statistically significant improvement in clinical symptoms, demonstrating their potential effectiveness in the management of typhoid fever.

Variable	**No of Patients, N = 129**	**Percentage (%)**
Gender		
Male	67	51.9
Female	62	48.1
Age (in year)		
5-15	15	11.6
16-30	37	28.7
31-45	28	21.7
46-60	17	13.2
61-75	26	20.2
75 above	6	4.7
Marital Status		
Married	87	67.4
Unmarried	42	32.6
Occupations		
Agricultural Laborer	12	9.3
Unskilled Laborer	16	12.4
Skilled Laborer	6	4.7
Business	6	4.7
Student	38	29.5
Housewife	42	32.6
None	9	7

Table 4: Socio-demographic Characteristics of the Study Participants (N = 129)



Graph 1: Socio-demographic Characteristics of the Study Participants (N = 129)

Discussion

The present study provides valuable insights into the demographic, behavioural, and therapeutic aspects of typhoid fever in a clinical population. The nearly equal gender distribution suggests that typhoid fever affects males and females at similar rates, aligning with previous studies that show no significant sex-based predisposition to *Salmonella typhi* infection. The age distribution, with the highest prevalence in the 16–30 year age group, reflects a common trend observed in developing countries, where young adults are often more exposed to contaminated food and water due to increased outdoor activity and risk-taking behaviours.

The predominance of married individuals (67.4%) could reflect a demographic pattern of adult patient recruitment, though this finding may warrant further exploration in terms of family-related hygiene practices and household sanitation. Occupationally, housewives and students formed the largest groups, indicating potential exposure within domestic and educational settings—areas where water quality and food hygiene may not always meet safety standards.

Behavioural risk factors, particularly the consumption of unsafe drinking water and junk food, were commonly associated with the cases. These habits are consistent with established routes of faeco-oral transmission and underscore the importance of public health interventions focused on water sanitation, hygiene education, and safe food practices. [10]

Therapeutically, the study demonstrated a statistically significant improvement in clinical symptoms of typhoid fever following the administration of the Unani formulations *Sharbat Khaksi* and *Khamira Marwareed Khas*. Some studies shows that *Khamira Marwareed* has various Pharmacological actions e.g.it used as an immunity booster apart from the treatment of disease such as *Duf al Qalb, Duf al Asab, Khafqan, Duf al Dimagh*, Measles, Typhoid fever and Smallpox. *Khamira Marwareed* was used to boost up immunity during pandemic period of Covid-19, as Prophylactic treatment. [7] In our study *Sharbat khaksi* reduces fever clinically due to its antipyretic activity. A preclinical study is found. [11] This outcome highlights the potential role of traditional medicine in managing typhoid fever, especially in settings where conventional antibiotics may be limited or where resistance is emerging. The observed clinical improvement supports the incorporation of these formulations as

complementary therapies, though further randomized controlled trials are necessary to establish efficacy and safety conclusively. Overall, the findings reinforce the multifactorial nature of typhoid fever transmission and the need for a comprehensive approach that includes behavioural change, improved sanitation, and integration of effective alternative therapeutic options.

Conclusion

The present study demonstrates that the Unani compound formulations *Sharbat Khaksi* and *Khamira Marwareed Khas* exhibit significant therapeutic potential in the management of typhoid fever, particularly in low-resource settings such as rural slums of Burhanpur. Clinical observations indicated a notable improvement in fever reduction, appetite restoration, and general well-being of patients, with minimal adverse effects. The effectiveness of these traditional formulations not only aligns with Unani pharmacotherapeutic principles but also offers an accessible and culturally acceptable alternative to conventional treatment, especially in areas where healthcare access is limited. These findings support the integration of validated Unani interventions in public health frameworks for managing enteric infections. However, further large-scale, controlled trials are warranted to substantiate these outcomes and ensure broader clinical applicability.

Conflict of interest: None declared

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