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PARASITIC DERMATOSES: EPIDEMIOLOGICAL CHARACTERISTICS OF SCABIES AND PEDICULOSIS AND FAMILY PROPHYLAXIS

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ABSTRACTS: Background: Parasitic dermatoses, particularly scabies (*Sarcoptes scabiei*) and pediculosis (*Pediculus humanus capitis*), remain significant public health concerns in Central Asia. These infestations are characterized by high contagiousness and are often associated with overcrowding and delayed diagnosis in family clusters. Objective: This study aims to analyze the epidemiological features of scabies and pediculosis in the Fergana Valley region and to evaluate the efficacy of simultaneous family-based prophylactic treatment compared to individual therapy. Methods: A retrospective epidemiological analysis of 2,450 cases registered at the Regional Dermatovenereology Dispensary (2022–2024) was conducted. Additionally, a prospective observation of 150 families (n=680 individuals) with index cases was performed to assess recurrence rates following synchronous versus asynchronous treatment protocols. Results: The incidence of scabies was highest among school-aged children (7-14 years), accounting for 45% of cases, while pediculosis was predominantly observed in females (78%). Seasonal analysis showed a peak in scabies cases during autumn-winter months. In the prospective arm, families treated simultaneously (synchronous prophylaxis) had a significantly lower recurrence rate (4.2%) compared to those treated individually or sequentially (28.5%, $p<0.001$). Conclusion: Scabies and pediculosis exhibit distinct epidemiological patterns but share a common transmission route within households. Implementing mandatory "synchronous family prophylaxis," treating all contacts regardless of symptoms, is the most effective strategy to interrupt the chain of transmission.
Keywords: Scabies, pediculosis, epidemiology, family prophylaxis, synchronous treatment, Andijan.

INTRODUCTION

Parasitic dermatoses represent a group of infectious skin diseases caused by ectoparasites that have co-evolved with humans for millennia. Among these, Scabies (caused by the burrowing mite Sarcoptes scabiei var. hominis) and Pediculosis (caused by lice species such as Pediculus humanus capitis) are the most prevalent, classified by the World Health Organization (WHO) as Neglected Tropical Diseases (NTDs) with a substantial global burden.

Despite advancements in hygiene and living standards, these infestations remain endemic in many parts of the world, including Central Asia. In Uzbekistan, and particularly in the densely populated Fergana Valley, parasitic dermatoses constitute a significant portion of outpatient dermatological visits. The persistence of these diseases is not merely a medical issue but a complex socio-epidemiological problem driven by factors such as high population density, active internal migration, and specific social habits involving close communal living.

A critical challenge in managing these conditions is the phenomenon of "diagnostic delay". Scabies, for instance, has an incubation period of 2 to 6 weeks in primary infestations, during which the host is asymptomatic but highly contagious. This "silent" window allows the infestation to spread unchecked within family units, schools, and kindergartens. Furthermore, social stigma often leads to concealment

of the disease and self-medication, resulting in the spread of resistant or complicated forms (e.g., impetiginized scabies).
Current clinical guidelines emphasize the treatment of the index patient. However, adherence to recommendations regarding the treatment of contacts is often poor. This study aims to provide a comprehensive epidemiological analysis of parasitic dermatoses in the Andijan region and to scientifically validate the necessity of "Synchronous Family Prophylaxis"—a strategy that shifts the focus from treating the individual to treating the entire epidemiological unit (the household).

MATERIALS AND METHODS

Study design - The study was conducted in two phases at the Andijan State Medical Institute and Regional dermatovenereology dispensary. Phase 1 (Retrospective): Analysis of 2,450 medical records of patients diagnosed with scabies (ICD-10: B86) and pediculosis (ICD-10: B85) between January 2021 and January 2024. Phase 2 (Prospective): A controlled intervention study involving 150 families (680 individuals) identified through an index case (a child with confirmed infestation).
Intervention protocols - Families in Phase 2 were randomized into two groups: Group A (Standard Care): Only the symptomatic patient (index case) was treated with Benzyl benzoate 20% (adults) or 10% (children). Family members were advised to treat only if symptoms appeared. Group B (Synchronous Prophylaxis): The index case and *all* household members were treated simultaneously on Day 1 and Day 4, regardless of symptoms. Bedding and clothing were washed at 60°C or sealed in bags for 72 hours.
Statistical analysis - Data were analyzed using SPSS v.26. Incidence rates were stratified by age, gender, and season. The recurrence rate was compared using the Chi-square test ($p < 0.05$ considered significant).

RESULTS

Age Distribution - The highest prevalence was observed in the 7–14 age group (45%), followed by adolescents 15–18 years (20%). Infants (<1 year) accounted for only 2% of cases. Seasonality - A distinct seasonal peak was observed in late autumn and winter (November–February), likely due to crowding and sharing of warm clothing/bedding. Gender - Incidence was roughly equal (Males 52%, Females 48%). Gender Bias - Females were disproportionately affected (78%), likely due to longer hair and social behaviors facilitating head-to-head contact. Age - The peak incidence was in primary school children (6–10 years).
Transmission Dynamics - In 85% of scabies cases, a clear contact history within the family or dormitory was established. "Cluster" outbreaks (3 or more members affected) were found in 60% of rural households compared to 35% of urban households.
Efficacy of family prophylaxis (Table 1) The prospective study revealed a dramatic difference in outcomes based on the prophylactic strategy.

Table 1: Recurrence rates at 4 weeks post-treatment

Parameter	**Group A (Individual Tx)**	**Group B (Synchronous Family Tx)**	**P-value**
Number of Families	75	75	-
Re-infestation (Recurrence)	21 families (28.0%)	3 families (4.0%)	**< 0.001**
Spread to Contacts	34 new cases	4 new cases	**< 0.001**

DISCUSSION

The findings of this study shed light on the specific epidemiological patterns of parasitic dermatoses in the Fergana Valley and highlight critical gaps in current management strategies.

The "Ping-Pong" Effect and Asymptomatic Carriers The significantly high recurrence rate in Group A (28%) provides strong evidence for the "Ping-Pong effect," where the parasite bounces back and forth between family members. Scabies mites (*Sarcoptes scabiei*) can survive off the host for 24-36 hours, but the primary driver of recurrence is the asymptomatic carrier [4]. In a typical household scenario, when the "Index Patient" (usually a child with sensitive skin) develops itching, other family members may already be infected but remain in the incubation phase (which lasts up to 6 weeks). If only the index patient is treated, the asymptomatic members develop active disease weeks later, by which time the index patient's prophylactic protection has waned, leading to re-infestation [5]. Our data confirms that treating only the symptomatic individual is a futile strategy in large households.

Epidemiological Nuances: Scabies vs. Pediculosis Our results show a clear divergence in risk groups.

Scabies is a disease of *intimacy and crowding*. The peak in winter months correlates with behavioral changes: people stay indoors, sleep closer together to conserve heat, and share heavy blankets that are washed infrequently. The equal gender distribution suggests that transmission is driven by shared environment rather than specific gender-based behaviors.

Pediculosis, conversely, is strongly gender-biased towards females (78%). This is attributed to longer hair providing a better habitat for lice and nits, as well as social behaviors among young girls (head-to-head contact during play) [6]. This suggests that school-based screening programs should prioritize females in the 6-12 age group.

Mechanism of synchronous prophylaxis - The success of Group B (4% recurrence) validates the biological rationale of Synchronous Prophylaxis. By treating everyone on the *same day*, the intervention effectively eliminates the reservoir of mites across all hosts simultaneously.

Breaking the Cycle: Simultaneous treatment acts as a "firebreak," preventing the mite from finding a safe host.

Fomite Control: The study also noted that families who strictly adhered to the "bagging method" (sealing non-washable items for 72 hours) had better outcomes. Since mites die of dehydration without a host within 3 days, this simple, zero-cost intervention is crucial in resource-limited rural settings where hot water washing may not always be feasible.

Barriers to implementation - Despite its efficacy, synchronous prophylaxis faces barriers. Cost - Treating a family of 6-8 people requires significantly more medication (e.g., 4-5 bottles of lotion) than treating one person. Compliance - Asymptomatic family members are often reluctant to apply malodorous or irritating chemicals (like Sulfur or Benzyl benzoate). Education is vital to explain that "no itching does not mean no mites."

CONCLUSION

Based on the epidemiological analysis and clinical trial results obtained at Andijan State Medical Institute, we draw the following conclusions:

Epidemiological trends - Parasitic dermatoses in Uzbekistan exhibit distinct demographic patterns. Scabies is a seasonal, overcrowding-related disease affecting school-aged children of both genders, while pediculosis is a year-round condition predominantly affecting young females.

Transmission driver - The primary cause of therapeutic failure and disease persistence is not drug resistance, but asynchronous treatment of household contacts. The incubation period of scabies masks the true extent of infestation within a family.

Gold standard strategy - Mandatory synchronous family prophylaxis—defined as the simultaneous treatment of all household members and close contacts within a 24-hour window, regardless of

symptoms—is the only effective method to interrupt the chain of transmission. This strategy reduced recurrence rates by 7-fold in our study.

Clinical Recommendations:

Physicians must prescribe sufficient medication volume to cover the *entire* household.

Written instructions on fomite decontamination (washing at >60°C or bagging for 72 hours) must be provided to every patient.

School-based screening programs should be intensified in autumn/winter for scabies and focused on female students for pediculosis.

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