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PREVALENCE OF SCABIES AMONG THE POPULATION OF THE REPUBLIC OF KARAKALPAKSTAN

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Abstract

Scabies remains a significant public health problem worldwide, particularly in regions with socio-economic challenges, overcrowding, and limited access to medical care. The Republic of Karakalpakstan, characterized by specific climatic, environmental, and demographic factors, represents a region where communicable skin diseases, including scabies, require continuous epidemiological monitoring. This article analyzes the prevalence of scabies among the population of Karakalpakstan based on officially published epidemiological data, reports of the Ministry of Health of the Republic of Uzbekistan, materials from the Sanitary-Epidemiological Service, and peer-reviewed scientific publications. The study evaluates incidence rates, age and gender distribution, seasonal patterns, and risk factors influencing the spread of scabies. The findings indicate that scabies remains endemic in certain districts, with higher rates among children and socially vulnerable groups. Preventive strategies and improvements in early diagnosis are essential to reduce morbidity.

Keywords

scabies, epidemiology, Karakalpakstan, prevalence, infectious dermatoses, public health, Sarcoptes scabiei, incidence rate.

Introduction

Scabies is a contagious parasitic skin disease caused by the mite *Sarcoptes scabiei var. hominis* and is transmitted primarily through prolonged skin-to-skin contact [1, p. 146]. According to the World Health Organization (WHO), scabies affects more than 200 million people globally at any time, particularly in tropical and subtropical regions [2, p. 3]. In 2017, scabies was officially recognized by WHO as a neglected tropical disease (NTD) due to its significant burden on vulnerable populations [2, p. 5].

In the Republic of Uzbekistan, scabies has historically remained among the most common parasitic dermatoses [3, p. 214]. The Republic of Karakalpakstan, located in the northwestern part of Uzbekistan, has unique ecological conditions associated with the Aral Sea crisis, migration processes, and socio-economic disparities that may influence the spread of communicable diseases [4, p. 78]. Overcrowding, seasonal labor migration, and limited access to dermatological care in rural areas contribute to sustained transmission [5, p. 112].

Official data from the Republican Center for Sanitary and Epidemiological Well-being indicate periodic increases in scabies incidence in certain regions of Karakalpakstan [6, p. 24]. Understanding epidemiological trends is essential for effective prevention and control measures.

The aim of this study is to analyze the prevalence of scabies among the population of the Republic of Karakalpakstan based on documented epidemiological evidence.

Methodology

This study is based on a retrospective analysis of epidemiological data published in official statistical reports of the Ministry of Health of the Republic of Uzbekistan and the Sanitary-Epidemiological Service between 2015 and 2023 [6, p. 22–27; 7, p. 15–19]. Peer-

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reviewed articles indexed in regional medical journals and WHO publications were also reviewed [2; 8; 9].

The following indicators were analyzed:

- Annual incidence rate per 100,000 population
- Age and gender distribution
- Urban–rural distribution
- Seasonal variation
- Identified risk factors

Comparative analysis methods and descriptive epidemiology approaches were applied in accordance with WHO recommendations for scabies surveillance [2, p. 9].

Results

According to official epidemiological data, scabies incidence in Uzbekistan fluctuated between 35.4 and 52.8 cases per 100,000 population during 2015–2020 [7, p. 17]. In Karakalpakstan, reported incidence rates were consistently higher than the national average in several years [6, p. 25].

Data from 2018 indicated that Karakalpakstan recorded 61.2 cases per 100,000 population, compared to the national average of 48.5 per 100,000 [6, p. 24]. In 2019, the regional incidence decreased slightly to 57.6 per 100,000 but remained above the national level [6, p. 26].

Age distribution analysis revealed that children under 14 years accounted for approximately 45–52% of registered cases [7, p. 18]. Adolescents and young adults (15–29 years) represented another significant group, particularly among students in boarding schools and dormitories [5, p. 113].

Urban–rural comparison showed higher incidence in rural districts, particularly in areas with dense household occupancy [6, p. 27]. Seasonal peaks were observed during autumn and winter months, corresponding with increased indoor contact and reduced ventilation [8, p. 62].

Gender distribution was relatively balanced, although slightly higher rates were observed among males in rural areas [7, p. 18].

Analysis and Discussion

The epidemiological findings presented in the Results section demonstrate that scabies continues to represent a stable endemic parasitic dermatosis in the Republic of Karakalpakstan. The consistently higher incidence rates compared to national averages during several reporting years suggest the presence of region-specific determinants that facilitate persistent transmission. According to official statistical bulletins, regional incidence exceeded the national average in multiple consecutive years [6, p. 24–26; 7, p. 17], indicating that general national control strategies may not fully address the particular epidemiological context of Karakalpakstan.

One of the principal determinants of scabies transmission identified by the World Health Organization is overcrowding [2, p. 6]. In Karakalpakstan, demographic patterns include large multi-generational households, especially in rural districts, where extended families often share limited living space. Such domestic structures create optimal conditions for prolonged skin-to-skin contact, which is the primary route of transmission of *Sarcoptes scabiei* [1, p. 146]. The epidemiological correlation between household density and scabies incidence has been documented in multiple studies across developing regions [8, p. 63]. In rural districts of Karakalpakstan, where housing infrastructure may be limited and ventilation conditions suboptimal, the probability of intra-household transmission increases significantly.

The role of socio-economic conditions must also be emphasized. Research analyzing the public health consequences of the Aral Sea crisis has demonstrated that environmental degradation, economic hardship, and migration processes have negatively affected population health indicators in the region [4, p. 78–83]. Poverty is recognized internationally as a significant determinant of neglected tropical diseases, including scabies [2, p. 4]. Limited financial resources reduce access to medical consultation, delay treatment initiation, and complicate the

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procurement of effective scabicidal medications. As a result, untreated index cases may continue to serve as reservoirs of infection within families and communities.

Age-specific distribution patterns further confirm known epidemiological regularities. Official data show that children under 14 years account for nearly half of all reported cases [7, p. 18]. This pattern corresponds with global observations reported in epidemiological studies [8, p. 62]. The high prevalence among children is explained by close interpersonal contact in schools, kindergartens, and boarding institutions. In addition, younger children may have difficulty adhering to hygiene recommendations or reporting early symptoms, leading to delayed diagnosis. Studies conducted in developing settings indicate that misinterpretation of early scabies lesions as allergic dermatitis or eczema frequently results in late treatment and further transmission [11, p. 270].

Adolescents and young adults represent another important epidemiological group in Karakalpakstan. Labor migration patterns documented in socio-medical analyses reveal that seasonal migration to other regions and neighboring countries increases temporary communal living arrangements [5, p. 113–114]. Dormitory-type housing, shared bedding, and overcrowded transportation create favorable circumstances for mite transmission. Upon returning to their home communities, infected individuals may contribute to secondary household outbreaks.

Seasonal variation observed in the region corresponds with internationally documented trends. Epidemiological literature indicates that scabies incidence tends to increase during colder months due to increased indoor crowding and reduced ventilation [8, p. 65]. Regional data from Karakalpakstan confirm higher registration rates in autumn and winter periods [6, p. 27]. Climatic conditions in northwestern Uzbekistan, characterized by cold winters and indoor heating practices, may further promote closer physical contact within households.

An important dimension of the regional epidemiology is healthcare accessibility. Remote rural settlements in Karakalpakstan may experience shortages of dermatologists and trained primary healthcare providers. According to regional public health assessments, healthcare infrastructure disparities persist between urban centers and peripheral districts [4, p. 81]. Limited diagnostic capacity may lead to underdiagnosis or misclassification of cases. Clinical recognition of scabies relies primarily on physical examination and patient history [11, p. 272]. In settings where laboratory confirmation through microscopy is not routinely available, diagnostic accuracy depends heavily on clinician experience.

Underreporting remains a potential concern. Although statistical bulletins indicate improvements in surveillance systems [6, p. 23], epidemiological literature consistently notes that scabies is frequently underreported due to stigma, self-treatment, and limited healthcare-seeking behavior [9, p. 92]. Cultural perceptions may influence reporting patterns, particularly in rural communities where mild cases may not prompt medical consultation. Therefore, official incidence rates likely represent conservative estimates of actual prevalence.

The ecological context of Karakalpakstan must also be considered. The Aral Sea environmental disaster has been associated with broader public health challenges, including increased vulnerability to infectious diseases [4, p. 83]. While scabies transmission is primarily driven by close contact rather than environmental contamination, socio-environmental stressors contribute indirectly by exacerbating poverty, weakening healthcare systems, and promoting migration. Thus, ecological degradation acts as a structural determinant rather than a direct etiological factor.

Comparative epidemiological data from other Central Asian regions reveal similar patterns of higher prevalence in rural and economically disadvantaged populations [9, p. 91]. This regional consistency suggests that structural socio-economic determinants outweigh purely climatic or biological factors. Integrated public health strategies are therefore essential.

From a clinical perspective, delayed diagnosis significantly increases secondary transmission. Studies indicate that the average time between symptom onset and treatment

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initiation may exceed several weeks in resource-limited settings [11, p. 271]. During this period, close contacts are likely to become infested. WHO emphasizes the importance of treating not only the index case but also all household members simultaneously to prevent reinfestation [2, p. 9]. Failure to implement contact treatment may explain recurrent outbreaks documented in certain districts.

Another relevant consideration is the potential occurrence of crusted scabies, particularly among immunocompromised individuals. Although relatively rare, crusted scabies is associated with extremely high mite burdens and increased transmission risk [12, p. 1769]. The presence of chronic diseases, malnutrition, or immunosuppression—conditions that may be more prevalent in socio-economically challenged regions—could increase the risk of such severe forms.

Mass drug administration (MDA) has been proposed as an effective control strategy in high-prevalence communities [10, p. 248]. Evidence from endemic settings demonstrates that community-wide ivermectin distribution significantly reduces prevalence rates in the short term [10, p. 249]. However, implementation requires strong logistical infrastructure, community engagement, and monitoring systems. In Karakalpakstan, adaptation of such strategies would need careful epidemiological justification based on sustained high prevalence in specific districts.

Health education remains a cornerstone of prevention. WHO guidelines emphasize the importance of community awareness campaigns focusing on early symptom recognition and prompt treatment [2, p. 10]. Educational interventions in schools may be particularly effective given the high proportion of pediatric cases. Training primary healthcare providers in early detection can also reduce diagnostic delays.

Conclusion

The prevalence of scabies in the Republic of Karakalpakstan remains higher than the national average in several reporting years. Children and rural populations are the most affected groups. Seasonal increases are observed during colder months. Socio-economic conditions, overcrowding, and limited access to healthcare services are significant contributing factors.

Strengthening early diagnosis, improving epidemiological surveillance, expanding health education programs, and implementing targeted preventive measures are essential to reduce the burden of scabies in the region.

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