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Derleme/Review

## Scabies in Terms of The One Health Concept

### Tek Sağlık Kavramı Açısından Scabies

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#### ABSTRACT

According to the World Health Organization, "One Health" is an approach of designing and implementing programs, policies, legislation, and research where multiple sectors communicate and work together to achieve better public health outcomes. One Health is an approach that focuses on emerging infectious diseases in the context of human, animal, and environmental interactions, as well as being a concept that supports multidisciplinary or interdisciplinary approaches to zoonotic diseases. In this study, the disease Scabies is examined within the framework of the "One Health" concept, focusing particularly on its effects on human health and the management of this disease in terms of public health. The definition of Scabies in the global health system, its symptoms, prevention methods, and situations arising during this process are explained. The effectiveness of the "One Health" approach in creating a process to control and prevent the spread of the disease is emphasized. This approach, while focusing on human health in the management of the disease, also highlights the importance of considering environmental and socio-economic factors. The importance of public health policies, education programs, and community-based interventions in the control of scabies, and the effectiveness of these strategies are discussed.

**Keywords:** One health, scabies, mange, public health, health promotion.

#### ÖZ

Dünya Sağlık Örgütü'ne göre "Tek Sağlık", halk sağlığı için daha iyi sonuçlar elde etme üzere birden fazla sektörün iletişim kurarak ve birlikte çalışarak programları, politikaları, yasal düzenlemeleri ve araştırmaları tasarlama ve uygulama yaklaşımıdır. Tek Sağlık, ortaya çıkan bulaşıcı hastalıklara odaklanan, insan, hayvan ve çevre ilişkileri bağlamında toplum sağlığına bakan bir yaklaşım olmasının yanı sıra, zoonotik hastalıklara yönelik multidisipliner veya disiplinler arası yaklaşımları destekleyen bir kavramdır. Bu çalışmada Scabies (uyuz) hastalığı "Tek Sağlık" kavramı çerçevesinde ele alınarak, özellikle insan sağlığı üzerindeki etkileri ve bu hastalığın toplum sağlığı açısından yönetimi ele alınarak incelenmiştir. Scabies'in global sağlık sistemindeki tanımı, belirtileri ve korunma yöntemleri ile bu süreçte meydana gelen durumlar açıklanmıştır. "Tek Sağlık" yaklaşımıyla, hastalığın yayılmasını kontrol altına almak ve önlemek için nasıl etkili bir süreç oluşturulabileceği üzerinde durulmuştur. Bu yaklaşım, hastalığın yönetiminde insan sağlığına odaklanırken, aynı zamanda çevresel ve sosyoekonomik faktörlerin de göz önünde bulundurulması vurgulanmış olup scabies kontrolünde kamu sağlığı politikaları, eğitim programları ve toplum bazlı müdahalelerin önemi ve bu stratejilerin etkinliği üzerinde durulmuştur.

**Anahtar Kelimeler:** Tek sağlık, scabies, uyuz, halk sağlığı, sağlığın geliştirilmesi.

## Giriş

According to the definition by the World Health Organization (WHO), "One Health" is an approach that aims for better outcomes in public health by the collaboration of multiple sectors in designing and implementing programs, policies, legal regulations, and research.<sup>1</sup> Key focus areas of the One Health approach include zoonotic diseases, antimicrobial resistance, food safety, loss of biodiversity, and environmental challenges such as climate change. The WHO and the World Organisation for Animal Health (OIE) report that 61% of infectious diseases in humans are zoonotic, and the One Health Platform highlights that 75% of emerging pathogens are of zoonotic nature.<sup>2</sup> Considering this, and the prevalence of resistant microorganisms in the environment, it becomes evident that a holistic and integrative approach, as specified in the One Health concept, is necessary to address these issues. Local, public, and transnational coordination and policies based on this approach, which aims to optimize the health of humans, animals, and ecosystems, are seen as crucial for ensuring the sustainability and minimizing the spread of capacity development.<sup>3</sup>

### What is the one health approach?

The origin of the concept of one health dates back to Hippocrates' notes, which explain the mutual dependency between public health and a clean environment. Italian doctor Giovanni Maria Lancisi wrote about the significance of environmental factors in the spread of diseases and highlighted the importance of reducing animal populations and quarantine methods in controlling malaria. The term 'zoonosis' was first used by Prof. Dr. Rudolf L.K. Virchow in 1855. During his research on 'Trichinella,' he encountered a pathogen significantly different from those he had previously seen. He coined the term zoonosis to establish a connection between human and animal infections, emphasizing the lack of distinction between human and veterinary medicine. He asserted that findings in one field should aid the development of the other.<sup>4</sup> Prof. Dr. Calvin W. Schwabe, known as the father of epidemiology, suggested that the collaboration of two different disciplines, human and veterinary medicine, is essential in combating zoonoses, one of the significant challenges of the 21st century. He advocated for a unified approach termed 'One Medicine, One Health'.<sup>5</sup> The concept of one health has evolved from being called 'One Medicine' until the 2000s, to 'One World – One Health' between 2000 and 2008, and has been known as 'One Health' in the international literature since 2008.<sup>6</sup>



**Figure 1.** Health Day Logo

([Http://www.veterinary.ankara.edu.tr/2021/11/03/3-kasim-tek-saglik-gunu/](http://www.veterinary.ankara.edu.tr/2021/11/03/3-kasim-tek-saglik-gunu/))

Interdisciplinary collaboration is at the heart of the One Health concept. Indeed, the design of the 'One Health Day' logo is significant in this respect. The logo features intertwined white and blue rings, which are recognized as symbols of health. On the logo, eight different circles represent eight distinct yet interconnected subjects, each symbolizing an important discipline under the One Health Umbrella.

These include:

- Human medicine,
- Veterinary medicine,
- Environmental health,
- Ecology,
- Public health,
- Molecular and microbiology,
- Health economics,
- Translational medicine.

The concept of One Health is an approach that can only be achieved through a consensus that considers the health of humans, animals, and wildlife together with a more general perspective on health and disease. Therefore, such a health perspective is crucial for establishing the main connection between the health and diseases of humans, animals, and wildlife, and the threats posed to food origins, finance, and biological diversity. It is of great importance in preserving healthy environmental settings and stable ecosystems, which we all need.<sup>1</sup>



**Figure 2.** One Health involves everyone.

(<https://www.cdc.gov/onehealth/images/social-media/one-health-involves-everyone-fb-tw.jpg>)

### Why one health?

1. The addition of new zoonotic diseases to the existing spectrum of zoonoses, and the re-emergence of certain zoonotic diseases.
2. The need for educated staff about the complexity of numerous diseases originating from the environment, humans, and animals.
3. Increasing issues related to food security, nutrition, foodborne diseases, and the provision of protein sources.
4. The necessity of an integrated surveillance system for the early detection of zoonotic diseases and the need for time efficiency.
5. The need for collaboration among public health professionals, veterinarians, and human physicians in the field of public health.
6. The emergence and increase of new diseases.
7. Bio-agricultural issues.
8. Responding to emergency aid requests.
9. Conducting multidisciplinary biomedical research.
10. Prevention of injuries and assistance to people with disabilities.
11. Antibiotic resistance.
12. Environmental health.

13. Mental health.
14. Prevention and emergency response to different animal-related injuries and accidents.
15. Occupational health.
16. Health education.
17. The imperative of the One Health, One Medicine concept for the prevention of obesity and the necessity and importance of physical exercise for bodily health.<sup>7,8,9</sup>



**Figure 3.** Dimensions of the One Health Concept

(<https://www.cdc.gov/onehealth/images/multimedia/one-health-def.jpg>)

The American Veterinary Medical Association (AVMA), in 2006, initiated necessary efforts to bring together human and veterinary medicine for the improvement of public health. They rapidly began work by assembling a twelve-member working group to foster collaboration between veterinarians and their colleagues in human medicine. Additionally, the American Medical Association (AMA) expressed its support for strengthening ties with the AVMA, enhancing the connection between medical schools and veterinary science, and supporting joint efforts in the observation phase. This collaboration also aimed to improve diagnostics, medications, and vaccines. This proposal, named the "One Health Initiative," was presented by the veterinary association, indicating their commitment to the project. The proposal was approved by a majority vote at the AVMA's meeting in Washington DC in June 2007. The concept was revised as the "One Health Concept" and was decided to be continued globally. Developments and updates regarding One Health practices are provided by the central "One Health Initiative One Health Initiative".<sup>10</sup>

In Turkey, the concept of One Health was first addressed by Arzu Temizyürek, a member of the Veterinary Public Health Working Group of the İzmir Veterinary Surgeons Chamber, following developments in the USA. Her article titled "Veterinarians and Human Physicians are Returning to the One Health Concept" was published in the fourth issue of the 2007 Veterinarian Journal.<sup>10</sup> In line with these developments, the Turkish Veterinary Medical Association and the Turkish Medical Association signed the "One World- One Health" declaration on May 25, 2009.<sup>10</sup>

### One health initiatives?

On November 20, 2020, the leaders of the World Organisation for Animal Health (OIE), the World Health Organization (WHO), and the Food and Agriculture Organization (FAO) launched a new "One Health Global Leadership Group" on Antimicrobial Resistance (AMR).<sup>11</sup> The Centers for Disease Control and Prevention (CDC) in the United States organized the "One Health Zoonotic Disease Prioritization Workshop" with the aim of helping nations allocate their limited resources to their most significant zoonotic diseases.<sup>12</sup> In the U.S., the CDC's One Health Office established The Zoonoses Education Coalition (ZEC), a partnership formed by different sectors, providing information about the

safe care of reptiles, amphibians, domestic rodents, and the safe use of live and frozen feeder rodents.<sup>13</sup> Similarly, the CDC's One Health Office in the U.S. collaborates with various partners to educate the young population residing in rural areas outside urban settings, aiming to prevent the spread of zoonotic diseases and influenza.<sup>13</sup>

In Turkey, the primary focus for the implementation of One Health practices is on the Directorate of Zoonotic and Vectorial Diseases of the General Directorate of Public Health, under the Ministry of Health of the Republic of Turkey.<sup>14</sup> The Ministry of Health, with a One Health approach, has collaborated with the Ministry of Agriculture and Forestry to create the "National Committee Protocol on Zoonotic Diseases of Turkey," aiming for a multidisciplinary collaboration. The National Committee on Zoonotic Diseases and its Subcommittees have been established. The Turkey Zoonotic Diseases Action Plan for 2019-2023 has been prepared, intending to bring together the strengths of different sectors around the One Health approach and to improve public health quality in Turkey by reducing the spread of zoonotic diseases.<sup>15</sup> All institutions and organizations have embraced a "multi-faceted approach to health," aiming to "place health at the center of all policies." The "Multistakeholder Health Responsibility Development Program (2013-2023)" has been established and came into effect generally in 2014. As a result, the "High Council of Multistakeholder Health Policies" has been formed.<sup>16</sup>

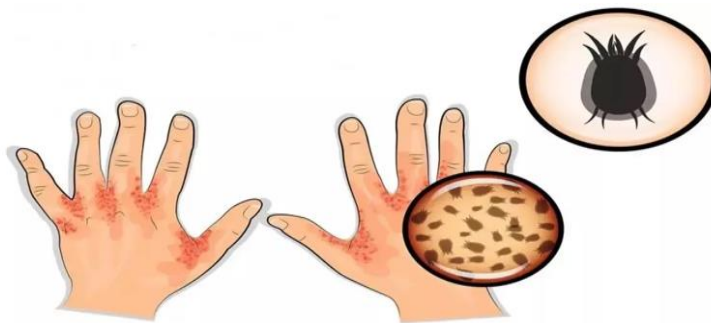
### From the perspective of the one health concept: Scabies

#### What is scabies?

Scabies, also commonly known as itch, is a contagious skin disease characterized by intense itching and hair loss, caused by an ectoparasite. It is an infection that can occur in anyone, both globally and in our country.<sup>17</sup> The parasite that causes the disease in humans is *Sarcoptes scabiei var hominis*.<sup>18</sup> To sustain its life, the causative agent evolves in the stratum corneum layer of the human epidermis and utilizes tissues and lymph fluid to survive.<sup>19</sup>

#### How does transmission occur?

Transmission occurs both directly through close physical contact or prolonged contact among individuals and indirectly through contact with objects such as clothing or sheets.<sup>17</sup>



**Figure 4:** Image showing the Symptoms of Scabies

(<https://bilimgenc.tubitak.gov.tr/makale/uyuz-hastaligi-nedir-belirtileri-nelerdir>)

### What are the symptoms?

Symptoms occur as allergic reactions in response to the residues left by the parasite in the body.<sup>20</sup> It is a disease characterized by keratosis and itching, with the itching intensifying at night.<sup>18</sup> The most common lesions are observed on the hands, especially around the wrists and between the fingers. Generalized itching is usually due to a sensitivity that develops over time in response to the causative agent and often occurs about 1-1.5 months after the primary infection. In scabies, the burrow lesion is a pathognomonic finding. This lesion resembles the appearance of the tunnel created by the parasite under the skin, and pearl-like vesicles are observed at the end of the tunnel.<sup>21</sup>

### How many days does it take for symptoms to appear?

In a person who is experiencing scabies for the first time, symptoms typically begin to appear within two to six weeks. However, in individuals who have had the disease before, symptoms may start to appear earlier.<sup>22</sup>



**Figure 5:** Image showing the wounds caused by scabies on the skin

(<https://bilimgenc.tubitak.gov.tr/makale/uyuz-hastaligi-nedir-belirtileri-nelerdir>)

### How can it be prevented?

Due to scabies' high contagiousness and its potential to affect everyone, early diagnosis and control measures are crucial. Individual treatments alone are insufficient, and measures should be taken at the community level. Cleaning clothes, sheets, and towels, airing out bedding, and disinfecting sources of contamination such as household items are necessary.<sup>21</sup> Scabies is a widespread skin disease worldwide, but it is more commonly encountered in particularly warm climates, in areas with low socioeconomic levels, where personal hygiene is poor, and in densely populated regions. Additionally, it is more prevalent in disaster situations where housing is limited, and communal living is necessary. The increasing cases of scabies in Turkey in recent years, especially after the earthquake disaster in 2023, indicate that society needs more information and awareness on this issue. This situation emphasizes the increasing importance of awareness in both public education and healthcare worker training in the fight against scabies. It also highlights the necessity for effective intervention programs that include psychosocial support elements.<sup>19</sup>

Delayed diagnosis of scabies and inadequate treatment practices contribute to an increased disease burden, leading to serious health problems such as bacterial skin infections, kidney diseases, sepsis, and rheumatic fever. Therefore, many countries aim to address scabies as a public health issue and control it effectively. Additionally, the World Health Organization's inclusion of scabies in the "Neglected Tropical Diseases and Other Neglected Official Diseases" list in 2013 aims to increase global awareness of scabies, highlighting its significance.<sup>20</sup>

## Frequency of scabies cases in Türkiye

According to the World Health Organization, globally, at least 200 million people are affected by scabies. Scabies cases are increasing not only globally but also in Turkey. Since 2018, the scabies rate has been steadily increasing. Although scabies, a rapidly contagious disease, can be cured with regular treatment, if they surpass a certain level in society, they involve the entire community using medication. Experts at the 31st National Dermatology Congress held in Antalya have drawn attention to the increase in scabies cases. Turkish Dermatology Association board member Prof. Dr. Murat Durdu, who stated that scabies cases have increased by 30% compared to the previous year, emphasized that they now see at least 4-5 scabies patients per day.<sup>23</sup>

Health Minister Fahrettin Koca has made a statement on the subject. Koca, stating that the increase in scabies cases does not pose a cause for concern, mentioned, "We have identified a partial increase, and the prevalence of scabies cases in Turkey has gone from 2.03 last year to 2.17 in the first 9 months of this year. There has been an increase of approximately 7% compared to the previous year, and in the earthquake zone, this increase is approximately 13%, which is below the expected rate for the earthquake zone. Therefore, there is no mention of a serious increase, and it is not considered a pandemic situation. On the other hand, Dr. Sercan Ahmet Uluç, the General Secretary of the Istanbul Family Medicine Association, has stated that they have started to see 9 scabies cases in the last 10 days, whereas they used to see 1-2 cases per month during the summer. He mentioned, "Scabies cases tend to fluctuate. This year, when schools opened, there was a peak in these numbers. He attributed the increase to the fact that many schools in Istanbul, which are not earthquake-resistant, have collapsed, and two schools have been merged, leading to overcrowded classrooms and increased contact among children, which in turn has contributed to the spread of scabies."<sup>23</sup>

The President of the Turkish Dermatology Association, Ertan Yılmaz, also stated that scabies cases follow a "rising trend every 20-30 years. In the recent increase, three main factors have been influential. He mentioned that the recent increase in scabies cases can be attributed to three main factors: the pandemic, earthquakes, and uncontrolled population mobility. During the pandemic, patients couldn't reach healthcare providers and ended up transmitting the disease to family members in the same household, leading to the disease's growth. After the earthquake, communal living in container cities and the use of shared items were expected to contribute to an increase in scabies cases. Additionally, the influx of migrants and uncontrolled population growth in the country has also contributed to the spread of scabies through contact between affected individuals and an increase in cases."<sup>23</sup>

Dr. Özcan Uçar, the President of the Elâzığ-Bingöl-Tunceli Chamber of Physicians, mentioned that there hasn't been a noticeable, critical increase recently, but he noted that scabies cases have become more widespread in Turkey over the past 3-4 years. He explained, "Scabies doesn't transmit from animals to humans, but it easily spreads from person to person through contact. In the city I live in Elâzığ, we particularly see this problem more among Syrian migrants. The underlying reasons for this include differences in hygiene habits and communal living culture."<sup>23</sup>

## Conclusion

"**One Health Day**" is officially celebrated worldwide on November 3rd, a global initiative launched in 2016 by the International One Health Commission, One Health Platform, and One Health Initiative Team. Global health security is the responsibility of all nations sharing the planet. Achieving optimal public health can only be possible through regular, controlled, and strong collaboration between humans and animals. Therefore, what we need to strive for is the "One Health" approach to strengthen the relationship between not only wild and domestic animals but also between humans and nature. The possibility of new zoonotic disease pandemics emerging, such as the COVID-19 pandemic, and the potential for these pandemics to rapidly spread globally and lead to crises, pose a threat to humanity. It jeopardizes our ability to treat infections, combat antimicrobial resistance, address climate change, and

maintain our environmental health. These issues are interconnected, and the importance of the One Health approach becomes evident in addressing them. To address and control these problems, it is crucial for sectors to communicate and collaborate more effectively with each other.

With all these thoughts, the applications and approaches that can be implemented within the One Health concept can be expressed as follows;

- Establishment of a system in line with the One Health approach among relevant Ministries and ensuring collaboration.
- Particularly, the creation of a robust "Veterinary Public Health" unit within the Ministry of Health and the Ministry of Agriculture and Forestry. Making the Turkish National Zoonotic Diseases Committee more effective in increasing epidemiological studies related to zoonotic diseases and establishing an integrated database.
- Establishing national-level monitoring systems for antimicrobial resistance.
- Enhancing collaboration on the One Health approach between medical and veterinary faculties and research institutes.
- Infection prevention and control measures should have effective policies, programs, and implementation. The proper use and regulation of quality drugs should be encouraged, and informative campaigns in this regard should be conducted.
- Dissemination of information activities related to the subject (congresses, symposiums, workshops, etc.) should be aligned with the One Health concept and widespread.

***Remember;***

***Only one world ... Only one understanding of health...***

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