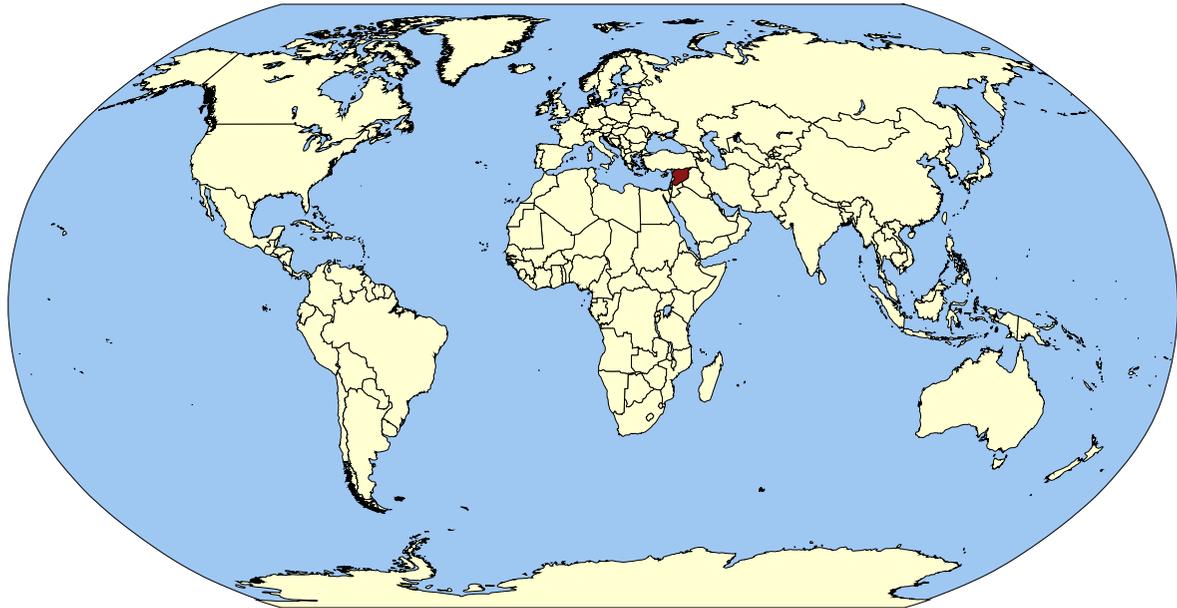


Syria



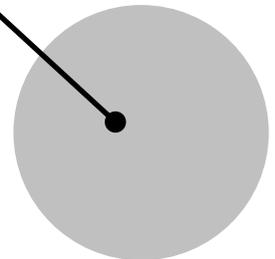
Early Traces of Schistosomiasis in Syria

Schistosomiasis was first introduced to Syria during WWII when soldiers from African regions with endemic schistosomiasis were stationed in the Al Jazirah region. It is speculated that a military camp along a tributary of the Khabur River was the specific transmission site within the region of Qubur el Bid.^{1,2} Surveys conducted in the early 1950s revealed human cases of *S. haematobium* in northern Syria, especially in two foci: Tell Abiad, a region associated with the Belikh River and its tributaries along the Turkish border, and Qubur el Bid in north-eastern Syria near the Iraq border. Prevalence in some villages was found to be greater than 60%.¹

The World Health Organization (WHO) assisted the Syrian government in implementing a control project from 1953 to 1957 based in Qubur el Bid. The project focused on mollusciciding, first with copper sulfate and later with sodium pentachlorophenate

Schistosomiasis in Syria

Schistosomiasis prevalence rates **unknown** due to ongoing conflict and unreliable data

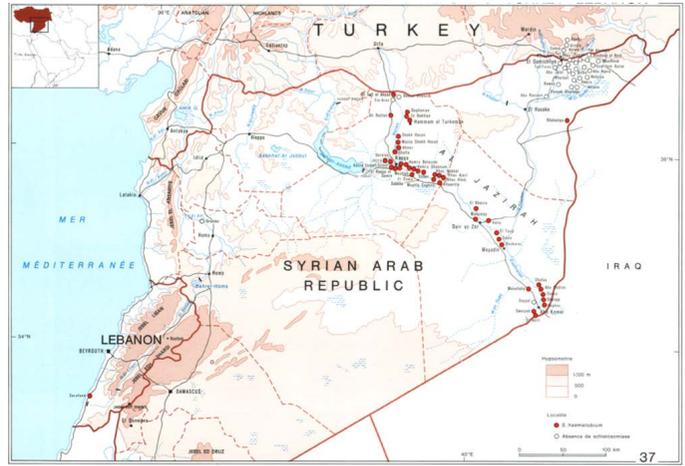


Overview of Syria [7]

- » Population in 2015: 17,064,854
- » Official Language: Arabic
- » Capital: Damascus
- » Republic under authoritarian regime
- » Percentage of Population with Access to Improved Drinking Water in 2015: 90.1%
- » Percentage of Population with Access to Improved Sanitation in 2015: 95.7%

Schistosomiasis Spreads

Meanwhile, by 1958 irrigated land in Syria increased by 45% compared with a 1945 estimate, expanding the range of suitable habitat for snail species.¹ In 1964, treatment campaigns were implemented in Qubur el Bid with notable drops in prevalence.¹ However, *S. haematobium* continued to spread in the Tell Abiad area. By 1968, transmission was expanding south to the Raqqa region from the Wadi Belikh River in that region.¹ By 1970, it was officially declared that the entire Euphrates valley was now considered endemic, no longer just the Turkish border.¹ Even so, the total number of infected people country-wide was only 3300 individuals in 1968, or 0.06% of the total population.³



Schistosomiasis Distribution in Syria

Red dots indicate *S. haematobium* hotspots. The disease is primarily found in the northeast part of the country, along the Euphrates River.

Intensified Control Efforts

Following surveys conducted in the early 1970s, a second WHO-assisted project was officially put in place and included a much more detailed strategy and documented data than that of the 1950s campaign. The three endemic regions prioritized included El Haseke, Deir ez Zor and Raqqa, and a network of eight schistosomiasis centers was created within these regions.⁴ The four main aims of the control program included: mollusciciding, treatment of infected individuals with Ambilhar at a dosage of 25 mgm/km/day, identification of actual and potential transmission sites where snail control could be implemented via engineering methods (cement-lining of canals & clearing of weeds), and health education for the community.⁴ This control program aimed to both decrease prevalence and prevent the spread of infection during the Euphrates Dam Project. Construction of the Euphrates Dam began in 1968 and was finished in 1973. By April 1978, the lake that formed behind it, Lake Assad, was fully filled.¹ The dam was built for hydroelectric power and to utilize the water of the Euphrates to irrigate a vast area of the Al Jazirah region. During dam construction the major and minor canals were all lined with cement.⁴ However the low-velocity watercourses and drains could not be lined.⁴ Within the Al Jazirah region, specifically, it was noted that the soil had a very high salinity. The high salinity excluded *Bulinus* snail populations from the salty surface pools that the irrigation canals created.⁴ Thus snail control unintentionally occurred in the Al Jazirah region. Areas of risk in Al Jazirah were still present in areas where fresh water was pumped directly from the Euphrates and before it was redistributed.¹

The Current Predicament

National control ceased when the WHO-backed intervention ended.⁴ In the 1990s, there is evidence of some control efforts, including increased safe water supply and land reclamation associated with filling in of marshes, though the extent is unknown. Reported cases of *S. haematobium* dropped from 344 cases in 1993 to 1 case in 2004.² WHO reports claim that no cases were found from 2005-2007, though officially published data at the national level or within any affected province is sparse.² The current status of schistosomiasis in Syria is unknown. According to a 2012 schistosomiasis risk assessment, despite the lack of any reported cases to the WHO in recent years, there may still be a risk of contracting schistosomiasis in some regions in Syria.^{2,5} Endemic foci still exist in the same three endemic regions noted prior to the second WHO-assisted interventions started in the 1970s.^{4,5} For this reason, a 2013 WHO report declared the current need for re-surveillance and continued vigilance.⁶ However, civil war in Syria and a critical international eye on purported mal-governance has consumed the focus of Syrian government.

References

1. WHO. *Atlas of the global distribution of schistosomiasis - Syrian Arab Republic, Turkey, Lebanon*. (1987).
2. WHO. Inter-country Meeting on Strategies to Eliminate Schistosomiasis from the Eastern Mediterranean Region. *World Heal. Organ. EMR* (2007). at <http://www.who.int/schistosomiasis/resources/EMRO_report_Schistosomiasis.pdf>
3. Wright, W. H. Schistosomiasis as a World Problem. *Symp. Schistosomiasis, Trop. Dis. Center, St. Clare's Hosp. NY, NY Merck Co. Found.* 44, (1968).
4. Lyons, G. R. L. *Assignment Report: The Schistosomiasis Control Project at Raqqa, Syrian Arab Republic*. (1978).
5. *IAMAT World Schistosomiasis Risk Chart*. 1-5 (2012).
6. *WHO Schistosomiasis Progress report 2001-2011 and strategic plan 2012-2020*. (2010).
7. Central Intelligence Agency. (2015). Syria. In *The World Factbook*. at <<https://www.cia.gov/library/publications/the-world-factbook/geos/sy.html>>

The ongoing civil war in Syria creates obstacles around understanding current schistosomiasis prevalence, and blocks any control efforts.