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Socialization of Malaria as Endemic in Iran (Communication Analysis)

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Malaria, Climate Change, Health Policy, Iran, WHO, Public Health

Abstract
This study explores the endemic nature of malaria in Iran, with a particular focus on the impact of climate change and government initiatives on malaria transmission. Malaria remains a significant public health challenge in many parts of Iran, with climate change exacerbating conditions favorable for the spread of the disease. Through a comprehensive literature review and analysis of current health policies, this research examines how factors such as flooding and the expansion of mosquito habitats contribute to the rise in malaria cases. The study also evaluates the roles of global and national health organizations, such as the World Health Organization (WHO) and the Iranian Ministry of Health, which have launched collaborative efforts to combat malaria. These initiatives include financial support, strategic health interventions, and public awareness programs aimed at controlling malaria transmission. The findings underscore the importance of continued investment in malaria prevention, the need for community-based interventions, and efficient resource allocation to reduce malaria transmission, particularly in vulnerable regions of Iran. The study advocates for enhanced policy measures and greater community engagement to ensure long-term success in malaria eradication, as well as further research on the intersection of climate change and infectious disease management.

INTRODUCTION

According to UNICEF, Iran's Primary Health Care (PHC) system is recognized as a model program for the health sector that can be adopted by other countries, both in terms of network expansion and outreach, as well as successful collaboration between the health sector and medical education institutions, such as medical universities (Mosadeghrad, Heydari, & Esfahani, 2022; Gholipour et al., 2023; Dehnavieh et al., 2025).

Other developments in this sector include the World Health Organization (WHO) launching a new project, with financial support from the Government of Japan, to revive malaria prevention and control in the southeastern province of Iran, where many elderly people, toddlers, and Afghan refugees reside. Iran is on the right track toward eradicating malaria; however, recent floods caused by climate change have impacted the country. These floods have expanded mosquito habitats and accelerated the transmission of malaria (WHO, 2024a; Tehrān Times, 2024; WHO EMRO, 2024).

The Reinforcing Malaria Elimination as Humanitarian Assistance in the Islamic Republic of Iran project, initiated by WHO, will run throughout 2024. WHO is implementing the project together with the Iranian Ministry of Health and Medical Education, according to the WHO website report on March 20, 2024 (WHO EMRO, 2024; The Iran Project, 2024; Saied, Salehi, & Shafaati, 2024).

The expansion of mosquito habitats in the country's southeastern provinces is a direct result of climate change-induced flooding in Pakistan in 2022 (Shafagh et al., 2025; Sharif et al., 2024). Following this, malaria incidence increased more than fivefold from 2022 to 2023 in another Iranian province, namely Sistan-Baluchestan (Shafagh et al., 2025). This finding is significant for countries that did not report any malaria cases in 2018 and 2019.

Sistan-Baluchestan was hit by heavy rains and floods in February 2024 (Bors et al., 2024). Continuous cross-border population movement in the southeastern provinces of the Islamic Republic of Iran could further encourage local transmission under these conditions. These border areas are vulnerable to malaria spread, making prevention and control efforts imperative (Li et al., 2023).

Jaffar Hussain, WHO Representative and Head of Mission to the Islamic Republic of Iran, emphasized the importance of collaborative action with the Government of Japan: "The financial support provided by the Japanese people comes at a critical time, following the recent heavy rains and flooding in the province of Sistan-Baluchestan by the end of February 2024. Through joint efforts and continued investment, WHO and its international and local partners remain steadfast in their commitment to fighting malaria and safeguarding public health in the Islamic Republic of Iran and beyond."

"The impact of climate change has caused frequent flooding in many parts of the world, including Iran," said His Excellency Tamaki Tsukada, Ambassador of Japan to the Islamic Republic of Iran. "Malaria, one of the three main infectious diseases in the world, spreads through mosquitoes after floods. To protect Iranians from malaria, it is important to eradicate mosquitoes, protect themselves from mosquito bites, and promptly diagnose and treat malaria cases in their early stages. We hope this project will strengthen Iran's crisis response capacity and prevent the spread of malaria and other infectious diseases." (www.tehrantimes.com, March 23, 2024)

Japanese funding aims to reduce the risk of malaria transmission in Sistan-Baluchestan province. WHO will support the Ministries of Health and Medical Education in enabling indoor residual spraying and mosquito eradication, as well as distributing long-lasting insecticidal nets containing pyrethroids (Githinji, 2021). The program will also strengthen surveillance by increasing laboratory diagnostic capacity to detect and diagnose malaria cases. Furthermore, WHO will help improve risk communication and community engagement to reach target populations with appropriate health messages on malaria prevention (www.tehrantimes.com, March 23, 2024).

Previous research on malaria control and its relationship with climate change has explored various aspects of the disease's spread and mitigation strategies. For instance, highlighted the direct link between climate-induced flooding and the resurgence of malaria in regions like South Asia, focusing on flooding's role in expanding mosquito habitats (Srivastava et al., 2024). Their research underscored the importance of timely interventions such as insecticide-treated nets and indoor spraying to combat malaria but did not delve deeply into the role of international collaborations or the implications of government support in such efforts. In another study, Kumar and Sharma (2021) examined the effectiveness of government health programs in combating malaria, specifically in areas with high refugee populations, concluding that cross-border collaboration was essential for sustained malaria elimination. However, they did not explore the unique challenges posed by localized floods or the impacts on border regions with fluid population movement—a factor that has become increasingly important in the wake of climate change (Tinazzi, 2024).

This study aims to analyze the relationship between climate change-induced flooding, the expansion of malaria transmission, and the effectiveness of international collaborations in controlling malaria in Iran. It seeks to provide insights into the role of targeted interventions,

such as mosquito control and health system strengthening, and the contribution of global partnerships in addressing public health crises. The findings of this study are expected to inform malaria eradication strategies not only in Iran but also in other malaria-endemic regions affected by climate change, thus contributing to global efforts for malaria elimination.

RESEARCH METHOD

This research employed a qualitative design with a literature review approach, focusing on existing scholarly works, government reports, and international health organization documents related to malaria endemicity in Iran. It examined the relationship between climate change-induced flooding, the expansion of mosquito habitats, and the strategies used by the Iranian government in collaboration with international partners, particularly the World Health Organization (WHO) and Japan, to address malaria transmission in the southeastern regions of Iran.

The data sources consisted of (1) secondary data from peer-reviewed journal articles, government health reports, and official documents on malaria control programs, especially in border areas with Pakistan and Afghanistan such as Sistan-Baluchestan province; and (2) reports from international organizations, including WHO progress updates and joint initiatives between WHO and Japan related to malaria control within the context of climate change.

Data analysis applied thematic analysis to identify key themes in the literature, including the influence of climate change, government interventions, and international collaboration. A comparative analysis was also conducted to evaluate how similar interventions in other malaria-endemic regions affected the reduction of malaria transmission.

The study focused on Sistan-Baluchestan in southeastern Iran, a region severely affected by climate-induced flooding and malaria resurgence. This focus enabled a detailed assessment of how local environmental conditions and global partnerships influenced the effectiveness of malaria control efforts.

RESULTS AND DISCUSSION

Literatures review about Socialisation of the Malaria Endemic

Research looks upon the relationship between the socialization of malaria in Southern Iran and the socialization carried out by the Iranian government

Also , research look at the Internet users which has become ubiquitous in the past two decades, but governments, lawmakers, and regulatory agencies have struggled to keep up with rapidly changing technology and Internet use. In this innovative collaboration, regulatory attorney Christopher Marsden and computer scientist Ian Brown analyze the formation of regulatory "codes" -- the technological environment of the Internet -- to achieve more economically efficient and socially just regulation. They examined five "hard cases" that illustrate this.

Although vigorous efforts have significantly reduced the burden of malaria over several decades, the disease still threatens the lives of millions of children. The development of an effective vaccine could provide an important approach in malaria control strategies. Unfortunately, the development of an effective vaccine for falciparum malaria is hampered by the extreme biological complexity of the malaria parasite, the complex and diverse parasite genome, and immune evasion by the parasite as well as the complex nature of the parasite's

infection cycle. The aim of this review is to discuss the various approaches to malaria vaccine development to date.

Methods: Scientific databases, including MEDLINE (via PubMed) and SCOPUS were reviewed up to 30 Jan 2017 and articles regarding malaria vaccine development were used as examination material.

Although malaria vaccine development over the past 70 years has continued, the discovery, development, and licensing of malaria vaccine formulations that meet safety, affordability, accessibility, applicability, and efficacy have not been achieved. (Malaria Vaccine Development: The Need for Novel Approaches: A Review Article Shima MAHMOUDI, Hossein KESHAVARZ, Review Article, Iranian Journal of Parasitology, Volume 13 No. 1, 2018)

Theory Uses in the research (include theory of Socialization)

Socialization theory is a theoretical framework that explains how individuals learn and acquire the norms, values, beliefs, and behaviours of their culture or society.

Socialization is a process by which a person learns the values, norms, and required behavious which permit that individual to participate as a member of the organization (Van Maanen, 1975)

Socialization essentially represents the whole process of learning throughout the life course and is a central influence on the behaviour, beliefs, and actions of adults as well as of children.

Perspective on Socialization Theory :

a. There are different perspectives on socialization theory, including the cognitive development approach, the social learning approach, and the symbolic interactionist approach.
b. The cognitive development approach emphasizes the role of cognitive processes in shaping socialization, while the social learning approach focuses on the role of reinforcement and punishment in shaping behavior.
c. The symbolic interactionist approach emphasizes the importance of the meanings and symbols that individuals attach to their experiences and interactions.

Definition use by World Health Organization

The vision of WHO and the global malaria community is a malaria-free world. This vision will be achieved progressively by eradicating malaria from their territories and implementing effective measures to prevent the recurrence of malaria transmission.

Fact finding of the literature research

According to figures provided by the World Health Organization, 36% of the global population live in areas where there is risk of malaria transmission, 7% reside in areas where malaria has never been under meaningful control, and 29% live in areas where malaria was once transmitted at low levels or not at all, but where significant transmission has been re-established.

In Iran itself, the total population at risk of malaria is 2,714,648 (4% of the total population) mainly living in southeastern provinces, namely Sistan and Baluchistan, Kerman and Hormozgan.

Iran the national strategy plan for malaria control, Strata/ level of classified of the disease is as follows:

1. Areas where local transmission of malaria occurs such as areas in Sistan and Baluchistan, Hormozgan and south parts of Kerman, and occasionally some-areas in Ardebil, Bushehr, Fars and Khorassan-e-Razavi Provinces.
2. Areas where the imported cases are found and the potential risk of malaria transmission exists such as areas in Guilan, Mazandaran, and Golestan Provinces.
3. Areas where the imported cases are found, but there is no risk of malaria transmission such as Yazd, Kurdestan, and Hamedan Provinces.
4. Areas where no malaria case was reported during the last three years. It seems there was no such area in Iran.

A successful planning for the County, needs to use of the information that is already available and analyzing in such a way as to understand the problems. On the other hand, the main point of the beginning of the situational analysis is to collect the data from respective references such as, health network office, hospital, health centers, communities, meteorology department and others. These items are covered by international diploma courses on malaria planning and management, as a joint training course by WHO and Tehran University of Medical Sciences (Yaghoobi-Ershadi et al., 2019). Journal of Rtropod-Borne Diseases-2014:8(1) : 82-90, published 18 December 2013, Malaria Situation in an Endemic Area, Southeastern Iran by Sajjad Fekri,1 Hassan Vatandoost,2 Ali Daryanavard,3 Mehran Shahi,1 Reza Safari,3 Ahmad Raeisi,4 Abdiqani Sheikh Omar,5 Mohammad Sharif,6 Abdollah Azizi,7 Aref Ahmad Ali,8 Aboud Nasser,9 Ibrahim Hasaballah,10 and Ahmad Ali Hanafi-Bojd2,*

According to the analysis from constructivism perspective, when ones believes that knowledge is not something that is discovered, but rather a joint construction between researchers and participants, we found out that the constructivist paradigm is very relevant because it recognizes that knowledge is built through interactive processes and experiences. The constructivist paradigm brings positive implications to research methodology qualitative approach adopted in this research. Through qualitative research methods, researchers attempt to understand and explore the construction of knowledge together by searching for data, both primary data and secondary data. (WHO data) that used by writers above. For this time being, all of the above data about malaria as endemic and its socialization for the people, already gain a success, It also helps by the using of social-media, mouth to mouth trainings, and other explanation from experts about the diseases in Iran.

The socialization and the arrangement to prevent malaria in Southern Iran and Southwest Iran, which are vulnerable from the spread from the neighbouring countries, has been in a successful result. It is proved by WHO that the number of people infected was declining, even in the pandemic COVID-19 era.

Table 1. Incident Malaria from 2011-2015 Number of incidents and percentage of endemic Malaria in Southern Iran since 2011 to 2015

Year	Total Iran Population	Outbreak	Percentage

2011	71,149,669	3271	0,04%
2012	76,124,600	1623	0,02%
2013	76,941,000	1388	0,02%
2014	77,837,000	1251	0,01%
2015	78,773,000	777	0,009%

Source: WHO Data from various articles

CONCLUSION

The findings of this research underscore the critical importance of addressing malaria as a persistent public health challenge in Iran. The successful implementation of prevention strategies, supported by both local and international efforts, has led to a decline in malaria cases despite recent environmental challenges. Continued collaboration between the Iranian government and organizations like the WHO is essential for maintaining momentum in malaria eradication efforts. Future research and policy initiatives should focus on enhancing community awareness, improving health infrastructure, and adapting strategies to mitigate the impacts of climate change on malaria transmission.

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