Review Article

Policy and Executive Barriers in Preventing and Eradicating Neglected Tropical Diseases: A Systematic Review

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Abstract

Background: Tropical diseases inflict many of those living in tropical and subtropical areas each year. These populations because of these diseases suffer considerable financial and human losses. Some of these diseases are known as Neglected Tropical Diseases (NTDs) and they can be highly dangerous. Still, they have not received the attention they need. Given the necessity of eliminating these diseases, the present study is an attempt to examine the reasons for unsuccessful attempts to eliminate diseases like NTDs. **Methods:** The current study was a systematic analysis of literature on neglected tropical diseases that were found in the databases of the Web of Science, PubMed, Scopus, Science Direct, Pro Quest, Cochrane, and Embase before April 2023. The Critical Appraisal Skills Program (CASP) for articles and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) criteria were used to conduct the study. **Results:** Based on the systematic search, 3193 papers were found and after the elimination of duplicates and irrelevant ones, a total of 28 articles remained to examine the challenges to eradicate neglected tropical diseases. Four themes were found for the challenges of controlling and eliminating neglected tropic diseases including drawbacks of programs for disease management policies, environmental challenges, executive challenges, and research field challenges. Thirty-six subthemes were obtained in this study, which showed cases such as the presence of immigrants and refugees, weaknesses in public health infrastructure and programs, dynamic epidemiological settings, lack of executive prioritization appropriate to endemic countries, and highly customized research infrastructures. Ending neglected tropical diseases requires an innovative roadmap and global cooperation. **Conclusions:** To achieve important eradication goals, measures such as acceleration in practice are needed to plan, intensify executive and operational approaches, change application models, innovate processes, and promote culture are needed. In addition, to make possible the elimination of neglected tropical diseases, there is an undeniable need for providing financial, human, and research resources. In addition, there is a need for efficient health infrastructure management, paying attention to migrants and refugees, setting explicit targets, prioritizing based on local conditions, and paying more attention to political and social developments.

Keywords: *Eradicate, neglected diseases, neglected tropical disease, NTD, prevent, rare diseases*

Introduction

Every year, a large number of individuals in tropical and subtropical regions are inflicted with tropical diseases. This leads to heavy financial and human damage. Among these diseases are Neglected Tropical Diseases (NTDs), which can be highly dangerous. Still, not enough attention has been paid to these diseases. Neglected tropical diseases are native to 149 countries.[1,2]

The NTDs include a wide set of bacterial, viral, parasitic, fungal, and noncommunicable diseases (NCD) as well as diseases that negatively affect the livelihood of populations mostly in tropical and subtropical regions.[3,4] Currently, there are 20 NTDs known in these regions. In terms of hematology, NTDs are operationally defined as any major medical complication characterized by[5] mostly affecting the poor and disadvantaged populations[6]; global distribution so that millions are typically affected[7]; notably high morbidity, decreasing the quality of life, and even mortality[8]; comorbidity for other life-threatening diseases[9]; easy to test and diagnose relatively; and[10]inexpensive treatment options.[11,12] Some of the diseases are as follows:

1) Buruli ulcer, caused by a bacterium (*Mycobacterium ulcerans*) and from a clinical viewpoint it is recognized by big ulcers that may cause disfiguration and loss of limbs in some cases[9]; 2) Chagas disease caused by

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a protozoon (*Trypanosoma cruzi*). It can be transmitted by different species of "kissing bugs" (Triatominae) that can be found in houses or forests. Blood transfusion is another transmission way.[13] 4) Cholera is caused by a variety of Vibrio bacteria. The main sources of infection are water and food contaminated with human feces [8,14]; 5) Dengue fever is caused by an arbovirus and it can be transmitted by mosquitoes (Aedes aegypti)[15]; 6) Dracunculiasis (guinea-worm disease) for which a worm (Dracunculus medinensis) is the main cause. The larvae of the worm enter the body by water that contains small crustaceans with the larvae[16]; 7) Human African trypanosomiasis (sleeping sickness) for which different Trypanosoma spp are responsible. The transmission is through tsetse flies (Glossina spp.), and different types of animals (pigs, cattle, and antelopes) that function as reservoirs[8,17]; 8) Leishmaniasis caused by various protozoa (Leishmania spp.) and it is transmitted by female sandflies (Phlebotomus and Lutzomyia spp.)[10]; 9) Leprosy caused by a bacterium (Mycobacterium leprae) and affects the skin and nerves. The development of the disease is slow and it may result in severe dysfunction and disfiguration[18]; 10) Lymphatic filariasis caused by worms (*Wuchereria bancrofti*, Brugia spp.). Mosquitoes are the vectors.[19] 11) Onchocerciasis (river blindness) for which a worm is responsible (*Onchocerca volvulus*). Transmission is by blackflies (*Simulium spp.*), breeding near running streams[20];

12) Schistosomiasis for which diverse types of Schistosoma worms are responsible. Spread of the eggs is through urine and feces. Snail species are the intermediate hosts for the larvae that can penetrate human skin when exposed to infected water[20]; 13) Soil-transmitted helminths, which mostly have four types of worms: Ascaris lumbricoides, *Trichuris trichiura* and the hookworms *Ancylostoma duodenale* and *Necator americanus*[6]; 14) Trachoma caused by an intracellular, bacterium-like organism (*Chlamydia trachomatis*). Mostly the eyes are infected, and it is the main reason for preventable blindness.

These diseases still are considered a public health problem and mostly affect underdeveloped populations in vulnerable communities. They create a great deal of problems for man and cause human, social and economic burdens on around one billion people worldwide.[21-23]

Estimates say that about 1.5 billion individuals need interventions for NTDs annually.[18] Every year, 200000 individuals die, at least, due to snake poison, rabies, and dengue. Poor access to timely treatment and care for NTDs creates hundreds of millions of badly disabled, debilitated, or disfigured. In developing economies, these diseases cause billions of US Dollars annually as direct health costs, lower productivity, decreased socioeconomic status, and less access to education.[24,25]

In the 68th WHO assembly in 2015, the participants received a report about progress in eliminating targeted diseases. While the reports contained promising facts about the successful process of eliminating some diseases, they also indicated a modest decrease in the burden of other targeted diseases.[26] This disease had continued its spread and delayed realizing the targets for the year 2020 at least.[27,28] Afterwards, in the same year, the heads of state and government introduced the 2030 Agenda for Sustainable Development that contained target 3.3 of Sustainable Development Goal 3 (to ensure of healthy life for all and improve well-being for all regardless of age). The year 2030 is selected as the year that the epidemics of neglected tropical diseases shall be over. Indicator 3.3.5 (number of individuals who need interventions against neglected tropical diseases) is designed to determine the progress towards realization of the target 3.3.[5]

The UN Assembly in 2019 announced in the political declaration about universal health coverage that "strengthen efforts to address … neglected tropical diseases is part of the universal health coverage". It is accepted that the interventions against NTD are the key factors in realizing universal health coverage. The point is that the mission control and elimination of NTDs is constituted of three dimensions of universal health coverage including population (who is covered); services that must be covered; and direct expenses (to what extent the expenses are covered). Universal health coverage is among the three strategic priorities of the WHO's Thirteenth General Program of Work, 2019-2023.[25] Considering the very high importance of universal health coverage in the world and the lack of realization of this issue due to the existence of these diseases in the world, and on the other hand, the high costs of these diseases; Management and eradication of these diseases is vital. According to the mentioned statements, it seems necessary to determine the reasons for not achieving the goals of reducing neglected tropical diseases.

Methods

Searching for related studies

The current study involved a systematic review of publications on neglected tropical illnesses. While eschewing systematic reviews, systematized reviews aim to include components of that procedure.[29] The Preferred Reporting Items for Systematic Reviews and Meta-

Analyses (PRISMA) and Critical Appraisal Skills Program (CASP) for Articles criteria were used to conduct the study. This study was carried out before April 2023 by reviewing materials published in English and Persian in the area of neglected tropical illnesses. The keywords were all looked for utilizing MESH techniques. Table 1 contains the final search plan.

Inclusion and exclusion criteria

Papers of any review format, dissertations in English and Persian, original articles, access to the entire text, and highlighting the challenges of preventing NTDs were the inclusion criteria. Studies whose full text was not available, papers written in languages other than English and Persian, book reviews, opinion pieces, and commentaries lacking a framework for analyzing the aspects addressed by this study were also excluded from consideration.

Table 1: The search strategy of the study

Databases: Cochrane, Scopus, Web Of Science, PubMed, ProQuest, Embase, Science Direct,	
#1	NTD OR neglected tropical disease
#2	prevent* OR control OR manage
#3	health system OR healthcare system OR health services
Search strategy	#1
	(#1 AND #2)
	(#1 AND #3)
	(#1 AND #2 AND #3)
Example	PubMed :
	((NTD [Title/Abstract] OR neglected tropical disease [Title/Abstract] OR Neglected Diseases [Title/Abstract] OR Rare Diseases [Title/Abstract] AND (prevent* [Title/Abstract] OR control [Title/Abstract] OR manage [Title/Abstract] AND (health system [Title/Abstract] OR healthcare system [Title/Abstract] OR health service* [Title/Abstract]))
	scopus:
	TITLE-ABS-KEY (NTD OR neglected tropical disease OR Neglected Diseases OR Rare Diseases AND TITLE-ABS-KEY (health system OR healthcare system OR health service* AND TITLE-ABS-KEY (control OR manage OR prevent*)
	ProQuest:
	ab (NTD OR neglected tropical disease OR Neglected Diseases OR Rare Diseases) AND ab (health system OR healthcare system OR health service* AND ab (prevent* OR control OR manage)
	ISI Web of Science:
	You searched for TOPIC: (NTD OR neglected tropical disease OR Neglected Diseases OR Rare Diseases AND TOPIC: (health system OR health care system OR health service* AND TOPIC: (prevent* OR control OR manage)

Selection of articles and document

Independent reviewers (MH and EM) screened abstracts and titles for eligibility. When the reviewers felt that the abstract or title was potentially useful, full copies of the article were retrieved and considered for eligibility. If discrepancies occurred between reviewers, the reasons were identified, and a final decision was made based on the third reviewer (AJ) agreement. Two authors (MH and EM) assessed the methodological quality and grade of evidence of included studies with the CASP tools. The CASP tools use a systematic approach to appraise different study designs from the following domains: study validity, methodology quality, presentation of results, and external validity, and all the items from the checklists were judged with yes (low risk of bias, score 1), no (high risk of bias), or cannot tell (unclear or unknown risk of bias, score 0). Total scores were used to grade the methodological quality of each study assessed.

Database search

The number of articles dropped to 1176 when the early database search results were filtered for duplicates and eliminated. A total of 438 articles made it through this step after the titles were thoroughly screened for studies relevant to the difficulties posed by NTDs. After the abstracts were reviewed, 43 papers were removed from the list. The chosen documents were examined after that, and after applying the inclusion criteria, 28 publications were kept in the study. Figure 1 shows the searching and selecting strategy.

Results

Database search

The results of the early database search were screened to fund duplicates and remove them so that the number of articles decreased to 1176. Through systematic screening, the titles were checked for papers pertinent to the challenges of NTDs so 438 articles passed this stage. Afterward, the abstracts were checked so that the number of papers decreased to 43 papers. Then, the selected documents were scrutinized, and given the inclusion criteria, 28 papers remained in the study. The searching and selecting strategy is illustrated in Figure 1.

Main finding

The majority of the papers(13 (46.42%)) were carried out between 2010 and 2015, and 15 (53.58%) of the paper were carried out between 2016 and 2021. As to the study design, 19 (67.85) were qualitative, 2 (7.1) were quantitative, and 7[24] were review articles. According to Table 2, the challenges in controlling and eradicating the NTDs in four major themes included shortcomings of the policies or programs for disease management, environmental challenges, executive challenges in policy, and research field challenges. In addition, 36 sub-themes were identified.

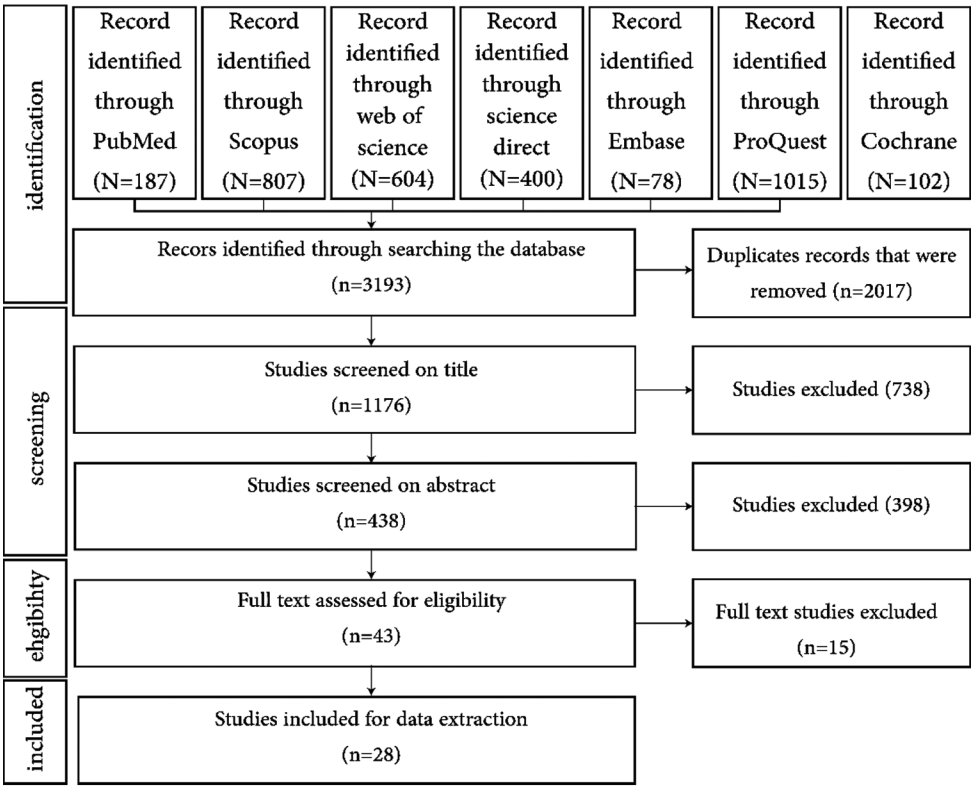

Figure 1: Article selection flowchart

Coding was done by 3 researchers (M.H, E.M, A, J). Finally, a meeting was held to finalize the codes and their consensus.

Deficiencies in disease management policies and programs

Success in eradicating the disease rides on thorough planning. The majority of goals are to remove the transmission and infection cycle. However, many NTDs give rise to severe illnesses, such as disabling lymphedema, massive hydrocele, blindness, and disfigurement.[8] Despite the enormous burden of disease, a clear goal to eradicate it is absent. Except for trachoma, there is no mortality rate to determine the rate of success of the eradication program. Elimination goals should include morbidity indicators. Indicators like this must go beyond measuring access to care and should take into account success rates to reduce complications.[8] On the other hand, NTD programs are disproportionately dependent on community volunteers and development assistance. The amount of domestic investment, especially in middle-income countries, is still insufficient. More importantly; about two-thirds of individuals who need these interventions have not yet received any services.[30]

Environmental challenges

Assessing the burden of disease in the migrant and displaced populations and understanding the barriers to implementing interventions seems crucial. Despite several logistical, political, and ethical barriers to the way of NTD programs, surveillance, and research in conflict regions, or in countries that host unwanted refugees, there is an urgent need.[31] The available data indicates a significant increase in the disease burden in refugee and migrant populations. For those who work in such communities, the largely inadvertent removal of this population is a serious concern. In effect, refugee and migrant populations are a threat to successful disease control and eradication of NTDs in host populations.[32] As a documented example, malaria eradication programs are successful due to a lack of attention to migrant populations. It is also noteworthy that this struggle also exists in the treatment of neglected tropical diseases.[33] Climate change is also affecting the incidence of infectious diseases, which are expected to exacerbate diseases that are highly sensitive to the weather, like dengue fever, malaria, West Nile virus, cholera, and Lyme disease. As the temperature goes up, the Plasmodium parasite in the mosquito, which gives rise to malaria, reproduces faster, and the vector (the disease-carrying organism), the mosquito, consumes a great proportion of the food. Besides, the distribution and incidence of at least several neglected tropical diseases increases with long-term environmental changes, such as unplanned urbanization and increasing international mobility. This is especially true for rapid testing for Dengue and Chikungunya. Capacity building and migration criteria need to be developed in the vulnerable areas.[7]

Executive challenges

Sometimes policies and programs are well developed;

Table 2: Barriers to eradicating neglected tropical diseases

Theme	Subthemes
Drawbacks of programs for disease management policies	1. Lack of attention to morbidity management aspects[1]; 2. Lack of clear goals to eliminate the disease[1,8,12]; 3. Ignored by governments[11,12,38]; 4. Lack of necessary managerial support[17,38]; 5. Gaps in budget scale[7,41]; 6. Weaknesses in public health infrastructure and programs[38]; 7. Lack of attention to improving individuals' quality of life[1,37]; 8. Inequality between countries[30,38]
Environmental Challenges	1. Immigrants and refugees[12,38] 2. Deep socio-political developments[42] 3. Geographical changes[32] 4. Dynamic epidemiological settings (climate change, environmental degradation, urbanization[30])
Executive Challenges	1. Insufficiency of medicine[41,43] 2. Disproportionate focus on mass drug administration[30,41,44] 3. Lack of accurate diagnosis for some diseases[11] 4. Misdiagnosis of mortality among patients[11,32,33] 5. Insufficient attention to surgical services in NTDs management programs[35] 6. Lack of Inter-sectoral actions[16,27,38] 7. Lack of human resources[1,19] 8. Lack of equipment and supplies[45] 9. Lack of facilities (service providers)[12,45] 10. Lack of executive prioritization appropriate to endemic countries[38] 11. Lack of supervision and monitoring[17] 12. Little support from pharmaceutical companies[41] 13. Inadequate pay and administrative support[1,41] 14. Lack of attention to financial support regarding the major causes of the disease[7] 15. Limited access to some urban areas such as suburbs[12,46] 16. Lack of laboratory equipment in some areas.[38,45]
Research field challenges	1. Lack of research funding[1,40,45] 2. Insufficient intra-sectoral partnership and collaboration[7,36] 3. Nonparticipation of patients[6,7] 4. Lack of facilities (e.g., research and development centers, etc.) 5. Human resources Insufficiency[6,40] 6. Inadequacy of the aspects of research (e.g., risk analysis of morbidity due to diseases, economic impact, lack of data)[1,47] 7. Inappropriate need analysis in endemic countries[45] 8. Highly customized research infrastructure[17,38] 9. Research centers are often focused on developed countries' diseases and noncommunicable diseases, rather than addressing indigenous priorities.[45]

however, there is no executive infrastructure for it. Resources need to be specifically dedicated to the management of morbidity of these NTDs.[24] On the other hand, while the prevention of new infections receives more funds, the improvement of the quality of life of those suffering these diseases should receive adequate funds as well. Taking into account the extent of the disease, there is a need for more resources to deal with the challenges of the disease.[34]

The drugs needed to help newborns and adolescents, immunocompromised patients and patients with Chagas is the equivalent of the drugs needed by about 25% of all infectious patients. Drug shortages can be a public health problem. In addition, projects to screen a frequently silent or misdiagnosed disease can be halted unless the condition is improved as soon as possible. Another infrastructure is to provide surgical services, which is generally not a priority in tropical medicine.

However, mostly surgery is a major measure to help NTD patients.[30]

In the case of Buruli ulcers, wound care is a priority.[9] Tendon and Wound care transfers return lost functions in leprosy patients.[18] Through eyelid surgery, it is possible to prevent blindness in trachoma patients. It is possible to restore scrotal lymphedema from lymphatic filariasis using hydrocele surgery.[20] In addition, successful obstetric fistula repair is transformative: as the treatment can salve teenage girls from the abyss of despair and return them to life.[35] On the other hand, in the year 2006, the WHO published a report and introduced SCA as a common medical condition with severe clinical symptoms involving children under five years of age. The report identified the urgent need to develop appropriate care models for disease management. In many countries, the death rate due to this disease is above 15%. The reason for this important event is the lack of accurate and correct diagnosis of the disease. On the other hand, the reasons for child mortality are mostly pneumonia or malaria; while the exact cause of this disease can be a key factor in other life-threatening diseases such as malaria and pneumococcus. As a result, not diagnosing correctly has bad side effects.[25]

Research field challenges

Lack of support for the program, lack of sufficient equipment, and lack of patients to participate in the research process make such research not well-organized. It also makes them more non-competitive and challenging than other designs that use newer experimental methods. In some diseases, such as malaria, researches are funded for only a limited number of years. Research projects focus only on the distribution of the disease and its threats, and do not consider factors such as the analysis of morbidity, the economic effects of the disease, the implementation of research interventions, or research priorities. A frequent issue in research is the lack of data, which can lead to the failure of evidence-based strategies.[1] There are major challenges in the way of increasing the clinical trial facilities in developing countries, such as highly customized research infrastructures.[26,36] Many research sites for a particular test or disease are often equipped with a specific sponsor and pay little attention to the diversity and subsequent stability. Besides, diseases in developing countries are seven to eight times more common than the developed countries. However, research sites are often only for research on the diseases most closely associated with developed countries; For example, non-communicable diseases are equipped instead of addressing local priorities. Only 1% of global costs go to NTDs.[37]

Discussion

This study was the first in the field of managing the challenges of eradicating NTDs. The findings were categorized into four major areas deficiencies of programs and policies to manage diseases and handle environmental challenges of NTDS control programs, executive challenges in policies and disease control programs, and deficiencies in policies.

Challenges in the area of deficiencies in disease management policies and programs include lack of attention to morbidity management aspects, lack of clear goals to eliminate the disease, being ignored by governments, lack of necessary management support, budget gap, weakness in infrastructure and public health programs, lack of attention to improving the quality of life, and inequality among countries. Nowadays, about three-quarters of the poor live in middle-income countries. Besides, about two-thirds of the individuals in need have not yet received any intervention; This is a sign of inequality among countries.[30] In a study by Thomas Kariuki entitled "Research and Capacity Building for the Control of Neglected Tropical Diseases: The Need for a Different Approach", the findings showed that debilitating and sometimes fatal infectious diseases were of relatively little interest to donors and policymakers. While NTD control can be an opportunity to lower misery and poverty among the poor populations in the world. Therefore, it can directly help with achieving the Millennium Development Goals.[1]

In another study by Deribe, the author showed that most of the objectives of disease elimination are concentrated on stopping transmission and the infection cycle. Still, several NTDs cause high morbidity such as massive hydrocele, disabled lymphedema, disfigurement, and blindness. Despite the immense burden of morbidity, we do not have a clear target as to their eradication, and except for trachoma, there is no indicator of morbidity to enable us to measure the success of elimination. Given the importance of eradicating these diseases, it seems necessary to pay attention to some of the points that have been forgotten. Eradication goals should clearly define mortality indicators. Such indicators can be more extensive than measuring access to care. Second, to meet the eradication challenge, morbidity management is a necessity rather than a choice. Serious support and awareness raising by donors is crucial.[26]

In Ayode's study, the findings revealed that the use of protective equipment helps prevent the spread of a wide range of neglected tropical diseases. This study examined the factors influencing the use of footwear among people living in a rural community in Ethiopia. In this society, a significant number of people are at risk for podoconiosis, which is a debilitating condition of the leg that can be prevented by wearing shoes. The results of a study conducted on 242 people showed that the use of health and safety equipment not only controls the disease but also promotes development.[32]

In the field of environmental challenges in the success of NTD control programs, challenges include the presence

of migrants and refugees, socio-political developments, geographical changes, and dynamic epidemiological settings (environmental degradation, climate change, and urbanization). The distribution and incidence of at least some of the neglected tropical diseases are expected to increase along with climate change and long-term environmental changes such as unplanned urban planning and population mobility. Refugee and migrant populations may also jeopardize the success of disease control and eradication of NTDs in local populations.

A study by Alayne M. Adams found that, since 1950, the population of global cities has grown from 746 million to approximately 4 billion individuals and it is projected to increase to 6.4 billion by the middle of the century. Approximately 90% of this growth occurs in Asia and Africa mainly in urban slums. Immigrant populations have been unable to control NTDs. On the other hand, the lack of public health infrastructure and programs, the challenges of involving refugee migrant populations, and limited access to some urban areas (e.g., slums) have led to an inability to eradicate neglected tropical diseases.[38]

Kaylee Myhre Errecaborde's showed in his study that the inclusion of these populations will reduce health disputes, realize human rights as to health, and ultimately benefit the local community from continued control and eradication of these vermin. While there is a need for equipment, there is also a need to increase awareness of the exclusion of these populations along with collaborative partnerships and political will.[12]

In the area of executive challenges in NTDs control policies and programs, challenges include shortage or lack of medication, the disproportionate focus on medication, inadequate coverage, absence of a proper diagnosis, misdiagnosis of mortality among patients, inadequate attention to surgical services in tropical disease management programs, lack of inter-sectoral measures, lack of human resources, lack of equipment and supplies, lack of facilities (service centers), lack of executive prioritization appropriate to local conditions, lack of supervision and monitoring, insufficient company supports Drugs, insufficient salary and office support, lack of financial support for the root causes of the disease, limited access to some urban areas such as slums, lack of laboratory equipment in some areas.

Coverage of early diagnosis and treatment, as well as proper and timely implementation of disease transmission management and health interventions, are essential. The hard and expensive part of preventive chemotherapy coverage is its "end stage". When prophylactic chemotherapy is stopped, other challenges- confirming transmission interruption and maintaining monitoring by provinf recurrence- begin.[6]

Lewis showed in his study that among other NTDs, obstetric fistula is unique as it needs surgery for prevention and treatment. Obstetrics is a surgical specialty and it may involve instrumental vaginal delivery, cesarean section, or traumatic birth injury treatment. This explains in part why the fistula is neglected because it is beyond the familiar paradigm known to public health and infectious disease control. Providing surgical services is not considered a priority in tropical medicine, still, in several cases, surgery is important for treating patients with traditional NTDs. Wound care is critical for Buruli ulcer so that along with tendon transfers it can recover lost function in leprosy patients. Scrotal lymphedema in lymphatic filariasis patients can be recovered through hydrocele surgery. In addition, if successful, obstetric fistula repair is transformative and it can bring young girls back to their normal lives.[39]

In her study, Jane showed that Plasmodium vivax malaria is a debilitating disease that can be even a threat to life with heavy financial burden. It is estimated that the cost of the global burden of vivax malaria is US$1,400,000,000–$4,000,000,000 every year,[25] and more individuals throughout the world live at the risk from *Plasmodium vivax* than *Plasmodium falciparum*. This disease, like other neglected diseases, mainly affects the poor who have no access to affordable healthcare. Prevention and control tools are sometimes difficult to find in these countries. On the other hand, the lack of proper laboratory equipment has led to a lack of disease control, which imposes a great deal of disease and financial burden.[7]

In terms of research policy and success of NTD control programs, challenges include lack of research funding, little cross-sectoral participation, patient non-participation, lack of facilities (such as research and development centers and researchers, etc.), inadequacy of some aspects of research (risk analysis of disability due to illness, economic impact, lack of data), lack of local needs assessment, highly customized research infrastructure, attention and equipping of research sites often on researching the most relevant diseases. In developed countries, for example, non-communicable diseases were achieved instead of addressing indigenous priorities. In research policy, lack of success of NTD control programs, challenges include lack of research funding, little cross-sectoral participation, patient non-participation, lack of facilities (such as research and development centers and researchers, etc.), Insufficiency of some dimensions of research (risk analysis of disability due to illness, economic impact, lack of data), lack of indigenous needs assessment, research infrastructure was highly customized. On the other hand, the attention and equipping of research sites was often focused on conducting research on diseases that are most associated with developed countries, such as non-communicable diseases, instead of addressing local priorities.

Chaoqun Chen's study showed that surveys based on population cluster random sampling are a way to provide the evidence needed to determine goals and determine

when eradication targets for different NTDs are realized (e.g. trachoma). Epidemiologically rigorous prevalence surveys are an indispensable part of any implementation or evaluation program.[40]

Pamela J Hooper showed in her study that when the U.S. Agency for International Development (USAID) started a national program to target NTD program activities, there was no clear picture of the effect of the program on individual disease-specific programs. This was more evident concerning program financing and coverage. To examine this effect, NTD program managers started to collect data with the help of their NGO partners in Burkian Faso, Mali, and Uganda from two years before to two years after initiating their program. The results indicated that the countries under consideration had a general increase in financial resources available for integrated NTD programs, a growth in the geographical presence of the program and the number of patients covered, and new diseases added to the target diseases list. What we do not know is if these successes can be preserved with a decrease in foreign support in the future. Therefore, it is important to increase government commitment or reliable external funding.[36]

Conclusions

The goal of the SDG is to end the epidemic of neglected tropical diseases. The NTDs are closely related to the goal of universal health coverage as a measure of success in providing health care to the poor population. The goal is to cover 80% of basic health services in universal health coverage to prevent NTDs by 2030. To realize the objectives of neglected tropical diseases, it is important to provide extra financial, human, and research resources, good health infrastructure management, pay more attention to migrants, set specific targets, prioritize goals depending on local conditions, and pay special attention to political and social developments. By lowering the number of patient cases, it is possible to dedicate more resources to managing NTDs with a high risk of epidemics like dengue, chikungunya, and leishmaniasis. For global support purposes, targeting must be accurate. For example, a 90% decrease in the number of individuals in need of intervention against NTDs. This means a 90% decrease in the number of patients in need of preventive chemotherapy and the number of new cases requiring innovative and rapid disease management. These include among many, the eradication of yaws, global eradication of Leprosy, lymphatic filariasis, trachoma, onchocerciasis, and regional eradication of schistosomiasis, rabies, and visceral leishmaniasis. These are the remaining milestones on the way to the end of the NTD epidemic by the year 2030.

Limitations of the study

One of the main limitations of the study is the lack of investigation and neglect of the management of neglected tropical diseases. As a result, there were very few articles that had a management review in this field.

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Conflicts of interest

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