ASSESSING THE CAPACITY OF THE HEALTH CARE SYSTEM TO HANDLE NEGLECTED TROPICAL DISEASES IN A REFUGEE SETTLEMENT IN UGANDA

PROJECT DESCRIPTION

Neglected tropical diseases (NTDs) currently affect over 1 billion people [1-8]. They strike the world's poorest people, lowering their quality of life. [9]. Over 40 million Ugandans are at risk of NTDs [13]. Despite efforts by the WHO for Universal Health Coverage, integration of NTDs into primary healthcare systems in refugee settings is unknown. This research project explores this phenomenon by assessing the capacity of facilities to diagnose and manage NTDs. We assess the health workers' knowledge of NTDs and, the availability of diagnostic tools and medication in Nakivale Settlement, Uganda. Results from this study will help inform policy and develop better interventions to curb NTDs.

BACKGROUND

Neglected tropical diseases (NTDs) are a group of 13 infections caused by parasitic worms, protozoa, or bacteria currently affecting over 1 billion people with another 1 billion at risk of infection [1-8]. NTDs. They strike the world's poorest people with adverse effects on the health, well-being, and socioeconomic facets of one's life [2, 9-11]. Africa is disproportionately affected, accounting for over 600 million of the global burden, and especially rural poor communities [1-2, 12]. Uganda is endemic for all five NTDs targeted by USAID's Act to End NTDs with more than 40 million people at risk for one or more NTDs [13].

NTDs are preventable and can be eliminated. In 2020, the World Health Organization (WHO) set a roadmap for eradication and elimination of the 20 NTDs by 2030 [14]. The WHO, policymakers, and academics have also suggested that endemic countries should integrate NTD management into well-established public health programmes which can help achieve several of the Sustainable Development Goals (SDGs) and vice versa [14-16]. Despite the burden of NTDs in Sub-Saharan Africa, NTDs have not been well integrated into the PHC of most countries. Studies in Nigeria, Tanzania, and Burundi reported that health workers had had low capacity and readiness to diagnose and manage NTDs [1, 17-18]. Refugee settlements despite standard minimum requirements lack NTD eradication programs within the early stage of resettlement which leads to ongoing NTD transmission within the community and even the introduction of new NTDS [19]. Nakivale Refugee Settlement is the 8th largest settlement in the world hosting ten different nationalities of refugees amounting to about 145,613. [19]. NTDs especially schistosomiasis and Soil Transmitted Helminths at 26.6% and 26.5% respectively are worsened by problems of rising numbers coupled with inadequate resources pausing a question of whether the available health system is capable of ably diagnosing, managing, and treating some of these NTDs [20]. There is also an inadequacy of data on NTDs and their prevalence in areas like South Western Uganda.

Currently, the country's approach to NTDs entails the use of integrated control programs [21]. The Ministry of Health has cited the lack of knowledge, skills, and equipment to diagnose and manage NTDs in health facilities as well as the poor reporting systems as hindrances to the elimination of the diseases by 2030 [20]. Exploring the readiness and capability of PHC facilities to diagnose and manage NTDs is important as it will provide a baseline on which progress can be tracked. This study will assess the readiness and capacity of PHC centers to diagnose and manage soil-transmitted helminths and schistosomiasis. Results will inform and guide policy enactment and health care service provision hence facilitating the integration of NTDs in PHC which will accelerate the realization of SDG 3.

MAIN OBJECTIVE

To assess the capacity of primary healthcare centers to timely diagnose and manage soil-transmitted helminths and schistosomiasis in Nakivale Refugee Settlement, South Western Uganda

SPECIFIC OBJECTIVES

To assess the knowledge of health workers on soil-transmitted helminths and schistosomiasis in Nakivale Refugee Settlement, South Western Uganda

To assess the availability of diagnostic tools, diagnostic equipment, and medications for soil-transmitted helminths and schistosomiasis in Nakivale Refugee Settlement, South Western Uganda

To analyze the facilitators and barriers to diagnosis and successful management of schistosomiasis and soil-transmitted helminths in refugee populations in Nakivale Settlement Uganda.

METHODOLOGY

Study design

This will be a cross-sectional mixed methods study employing both qualitative and quantitative methods. A survey tool will be administered in focused group discussions and key informant interviews amongst the different health care provider cadres in Nakivale Refugee settlement.

Study Setting

The study will be conducted in health facilities within the Nakivale Refugee settlement located 200 km from Kampala. The settlement is located in the Southwestern part of Uganda, Isingiro district

accommodating about 150,000 people being served by two Health Centre IV facilities and six Health Centre III facilities.

Study participants

Health workers including doctors, Clinical Officers, and Nurses involved in the diagnosis and management of refugees in Health Facilities in Nakivale Settlement.

Data collection

This study will be conducted amongst health workers in PHC facilities and obtained by random sampling. Participants will be contacted, consented, and enrolled in the study.

Participants for the in-depth interviews will be obtained using purposive sampling and contacted through a telephone call or email for the in-depth interviews to be informed of the purpose of the study, consent and their anonymity maintained as they schedule the best time for the in-depth interview. These interviews will be conducted over the Zoom Meeting platform lasting between 30 and 45 minutes. The meeting will be audio-recorded and moderated by two research assistants, one asking the guiding questions and the other taking notes. Research assistants will be trained graduates with medical doctor degrees who are waiting to join an internship and who will be trained and used to pretest the data collection tool.

Inclusion criteria

Consented Health workers in health centers III, IV, and district hospitals involved in the diagnosis and management of refugees

Exclusion criteria

Health workers who have not been engaging in the diagnosis or management of NTDs

Sample size estimation

The sample size of 128 participants was determined using a Select Statistical Services online tool (Select Statistical Services, 2022) that uses the formula $n = N*X / (X + N - 1)$, where, $X = Z_{\alpha/2}^2 * p*(1-p) / MOE^2$, and $Z_{\alpha/2}$ is the critical value of the Normal distribution at $\alpha/2$ (e.g. for a confidence level of 95%, α is 0.05 and the critical value is 1.96), MOE is the margin of error, p is the sample proportion, and N is the population size. Finite Population Correction was applied to the sample size formula. A 10% non-response rate was factored in to have a total sample size of 141 participants.

The sample size of in-depth interviews will be driven by thematic saturation rather than statistical power. Previously published empirical investigations suggest that we can expect to achieve thematic saturation with 12-16 in-depth interviews [22-23] although some guidelines suggest conducting no fewer than 30 in-depth interviews [24]. We hope to conduct between 12-25 in-depth interviews.

Data collection tools

A self-reported questionnaire developed and modified from the Open WHO platform dedicated to NTDs will be used to collect data. Information to be obtained will include:

· Social demographic characteristics such as sex, marital status, type of health facility, cadre of health personnel

· Knowledge of symptoms, Diagnosis, Treatment, and Complications of soil-transmitted helminths and schistosomiasis

· Case reports in the database

An interview guide will be developed to guide the in-depth interviews collecting information on the capacity building of health personnel, the availability of diagnostic tools and medicines used in the management of NTDs.

Data management and analysis

Questionnaires that have been fully completed will be extracted into a Microsoft Excel 2016 spreadsheet, cleaned, and coded. The data will then be exported to STATA 17.0 (Stata Corp, College Station, Texas, USA) for further analysis. All categorical variables will be summarized as frequency and percentage whereas numerical variables shall be summarized as mean or median for parametric and non-parametric conditions, respectively. To evaluate the association of independent variables, chi-square or Fisher's exact test shall be performed at bivariate analysis. All variables with a p-value <0.2 shall be fitted into the multivariable logistic regression to adjust for confounders. Associations with p-values less than 0.05 will be considered statistically significant. Results shall be presented in tables, charts, and graphs appropriately. Data will be analyzed at a 5% margin of error.

We shall transcribe and thematically analyze in-depth interviews using computer-aided qualitative analysis software, atlas.ti®. Collected data will be coded and arranged into main themes and thematic domains based on research questions and the perspective obtained from the literature review.

Ethical Consideration

The protocol will be reviewed by a research ethics committee for ethical approval and clearance to conduct the study will be sought from the Uganda National Council of Science and Technology (UNCST). Administrative clearance will be obtained from the district administration and the health facility in charge. All participants shall only be enrolled in the study after informed consent.

Approach to Maximize Research Outputs

The research study will involve engaging various health stakeholders from the start and will be carefully coordinated for accuracy. Once the results are obtained, all stakeholders including policy makers will be engaged in disseminating the findings and taking appropriate action based on the study's conclusions and recommendations for the benefit of the community.

Expected outcomes

Understanding the capacity of health workers to diagnose and treat NTDs.

Compiling a report to share with key stakeholders in NTD prevention and control in Uganda and UNHCR for achieving NTD elimination by 2030

Publishing study findings in a peer-reviewed journal for scientific knowledge sharing and replication

Using findings to benchmark for important developments such as capacity-building workshops for health workers on NTDs.

My Role

I am the principal investigator and team leader of the study. I will be responsible for coordinating research study activities right from the recruitment and training of aresearch assistants to the final analysis and dissemination of the study findings.

BUDGET(rate; 1 Euro = Ugx. 4642.44)

	ITEM	AMOUNT	RATIONALE

1	Research Study Approval	652.67	Approval fee for both Institutional Review Board and Uganda National Council of Science and Technology
2	Research Assistants	560.04	Training and allowances of research assistants (2 assistants earning 129.24 per month for 2 months of data collection), (Data for undertaking online courses and trainings 21.54 for each assistant)
3	Data collection tool	165	Printing data collection tool (questionnaire and consent forms) (150 copies of an 8 page Questionnaire with each page costing 0.11) and (150 copies of 2 page consent form each page costing 0.11)
	Laptop	861.61	Purchasing the research study laptop to safely store the collected data and analysis
5	Data for In Depth Interview	323.11	Data facilitation for the zoom sessions in depth interview(10.77 for each session)
6	In depth interview participants compensation	645.9	Compensation to key informants for the in depth interview(21.53 for each of the 30)
7	Questionnaire respondents compensation	1063.14	Compensation for the questionnaire respondents (141 respondents each getting 7.54)
8	Data analysis	301.57	For hiring a Biostatician to aid in analysis of collected data
9	Dissemination	426.96	Followup workshops to share the research findings with the facilities data was collected from and other stakeholders
	Total	5000	

WORK PLAN

	RESPONSIBILITY	DEC 2024	JAN 2025	FEB 2025	MAR 2025	APR 2025	MAY 2025	JUN 2025	JUL 2025	AUG 2025	SEPT 2025
MILESTONE 1											
PROPOSAL APPROVAL	SUPERVISOR										
IRB SUBMISSION AND APPROVAL	TEAM LEADER										
MILESTONE 2											
DATA COLLECTION	TEAM MEMBERS										
MILESTONE 3											
DATA ANALYSIS	SUPERVISOR+ TEAM MEMBERS										
MILESTONE 4											
REPORT WRITING	TEAM MEMBERS										
ACCOUNTING	TEAM MEMBERS										

MILESTONE 5											
PUBLISHING	TEAM MEMBERS										
DISSEMINATIO N											

REFERENCES

1. Emeto, D. C. et al. (2021) 'Recognition and reporting of neglected tropical diseases by primary health care workers in ibadan, nigeria', Pan African Medical Journal, 38. doi: 10.11604/pamj.2021.38.224.20576.
2. Molyneux DH, Savioli L, Engels D. Neglected tropical diseases: progress towards addressing the chronic pandemic. Lancet. 2017 Jan 21;389(10066):312-325. doi: 10.1016/S0140-6736(16)30171-4. Epub 2016 Sep 14. PMID: 27639954.
3. Ochola, E. A., Elliott, S. J. and Karanja, D. M. S. (2021) 'The Impact of Neglected Tropical Diseases (NTDs) on Women's Health and Wellbeing in Sub-Saharan Africa (SSA): A Case Study of Kenya', Public Health, 18, p. 2180. doi: 10.3390/ijerph18042180.
4. Ojja, S. et al. (2018) 'Prevalence, intensity and factors associated with soil-transmitted helminths infections among preschool-age children in Hoima district, rural western Uganda', BMC Infectious Diseases, 18(1), pp. 1–12. doi: 10.1186/S12879-018-3289-0/FIGURES/3.
5. World Health Organization (WHO). Integrating Neglected Tropical Diseases into Global Health and Development: Fourth WHO Report on Neglected Tropical Diseases., 2017.
6. World Health Organization (WHO) (2017) Integrating neglected tropical diseases into global health and development: fourth WHO report on neglected tropical diseases., World Health

Organization. Available at: https://unitingtocombatntds.org/wp-content/%0Auploads/2017/11/4th_who_ntd_report.pdf

7. WHO. Implementation tools Package of Essential Non-communicable disease interventions. Geneva World Health Organ 2013:210.

8. World Health Organization (WHO) (2015) 'Investing to overcome the global impact of neglected tropical diseases'.
9. Jan H. Kolaczinski, Ambrose W. Onapa, Narcis B. Kabaterein,e Richard Ndyomugyeny,i Abbas S. L. Kakembo Simon Brooker. NEGLECTED TROPICAL DISEASES AND THEIR CONTROL IN UGANDA SITUATION ANALYSIS AND NEEDS ASSESSMENT, 2006
10. Lenk, E. J. et al. (2016) 'Productivity Loss Related to Neglected Tropical Diseases Eligible for Preventive Chemotherapy: A Systematic Literature Review', PLOS Neglected Tropical Diseases, 10(2), p. e0004397. doi: 10.1371/JOURNAL.PNTD.0004397.
11. Ortu, G. and Williams, O. (2017) 'Neglected tropical diseases: Exploring long term practical approaches to achieve sustainable disease elimination and beyond', Infectious Diseases of Poverty, 6(1), pp. 1–12. doi: 10.1186/s40249-017-0361-8.
12. Stolk, W. A. et al. (2016) 'Between-Country Inequalities in the Neglected Tropical Disease Burden in 1990 and 2010, with Projections for 2020', PLOS Neglected Tropical Diseases, 10(5), p. e0004560. doi: 10.1371/JOURNAL.PNTD.0004560.
13. ACT TO END NTDS EAST (2022) *Uganda | Act to End NTDs*. Available at: https://www.acteast.org/where-we-work/uganda.(Accessed 3rd April, 2023)
14. World Health Organization (2021). Ending the neglect to attain the Sustainable Development Goals: a road map for neglected tropical diseases 2021–2030. Available from: https://www.who.int/publications/i/item/9789240010352.
15. Vega J. Universal health coverage: the post-2015 development agenda. Lancet. 2013;381:179–80. doi: 10.1016/S0140-6736(13)60062-8.
16. Bangert, M., Molyneux, D.H., Lindsay, S.W. et al. The cross-cutting contribution of the end of neglected tropical diseases to the sustainable development goals. Infect Dis Poverty 6, 73 (2017). https://doi.org/10.1186/s40249-017-0288-0
17. Bizimana, P. et al. (2018) 'Capacity gaps in health facilities for case management of intestinal schistosomiasis and soil-transmitted helminthiasis in Burundi', Infectious Diseases of Poverty, 7(1), pp. 1–9. doi: 10.1186/s40249-018-0447-y.

18. Mazigo, H. D. *et al.* (2021) 'Primary health care facilities capacity gaps regarding diagnosis, treatment and knowledge of schistosomiasis among healthcare workers in North-western Tanzania: a call to strengthen the horizontal system', *BMC Health Services Research*, 21(1), pp. 1–9. doi: 10.1186/s12913-021-06531-z.
19. UNHCR 2021 Report
20. Ministry of Health Uganda (2020) 'Sustainability Plan for Neglected Tropical Diseases Control Program'.
21. Marchal, B. et al. (2011) 'Neglected tropical disease (NTD) control in health systems: The interface between programmes and general health services', Acta Tropica, 120(SUPPL. 1). doi: 10.1016/j.actatropica.2011.02.017.
22. (Hagaman, A. K. and Wutich, A. (2016) 'How Many Interviews Are Enough to Identify Metathemes in Multisited and Cross-cultural Research? Another Perspective on Guest, Bunce, and Johnson's (2006) Landmark Study:', http://dx.doi.org/10.1177/1525822X16640447, 29(1), pp. 23–41. doi: 10.1177/1525822X16640447.
23. Hagaman, A. K. and Wutich, A. (2017) 'How Many Interviews Are Enough to Identify Metathemes in Multisited and Cross-cultural Research? Another Perspective on Guest, Bunce, and Johnson's (2006) Landmark Study', Field Methods, 29(1), pp. 23–41. doi: 10.1177/1525822X16640447.
24. 24Dworkin, S. L. (2012) 'Sample Size Policy for Qualitative Studies Using In-Depth Interviews', Archives of Sexual Behavior 2012 41:6, 41(6), pp. 1319–1320. doi: 10.1007/S10508-012-0016-6

HOW EARLY CAREER GRANT IMPACTS MY CAREER

The Early Career Grant will provide me with an opportunity to execute impactful research in my area of interest which will not only build my capacity as a growing researcher but also benefit my community. Executing the research will expose me to the wider community of researchers in the same field and upon publication, it could attract collaborative work. It will also provide an opportunity to learn grant management and open doors to more grant opportunities. Through this grant, I will become a member of RSTMH where I will meet like-minded researchers for more collaborative research studies.

DESCRIPTION OF AN EARLY CAREER RESEARCHER

I am an ambitious and passionate young researcher with a great interest in strengthening my country's health system to a level where preventable diseases such as NTDs are no longer of public health concern. I recently graduated from medical school this year. I started my research career in my final year of medical school by being a research assistant to my lecturers which

developed my writing, data collection, and analysis skills. I am very committed to building my research career under the guidance of my mentor. Despite holding many research ideas, I have struggled to secure funding which is why I am applying for this opportunity.

CURRENT JOB TITLE

I am an intern at SEED GLOBAL HEALTH Uganda, an organization that seeks to support health system strengthening through healthcare workers' capacity development in Uganda.