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Nurses' Roles and Challenges to Providing Care for Tropical Diseases: A Scoping Review

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Abstract: *Tropical diseases are associated with tropical regions, but global access travel, climate change, and environmental factors affecting disease vectors may spread to non-endemic countries. This review reinforces the view of nurses' roles and challenges to providing care for tropical diseases. This scoping review search included: SCOPUS, PubMed, EBSCO Medline, Science Direct, and citation search: Google Scholar. Studies included if the population was nurses or part of a multidisciplinary or provider intervention on tropical diseases and original English articles between 2011 and 2021 with various methods. From 773 studies identified, 23 met the inclusion criteria. Three themes emerged: 1) nurses role as health providers, educators, motivators, leaders, collaboration, and coordination; 2) providing safe working and job satisfaction; and 3) The role of organizations, health systems, and policymakers. There were also three challenges: 1) lack of skills, knowledge, and training for nurses, 2) the stigma of tropical diseases, 3) sociocultural approach. The role and practice of nursing in tropical diseases vary across healthcare settings, influenced by nurses' stigma, knowledge, training, job safety, and satisfaction. Nurse lack knowledge and training compared to other health workers. Potential to increase nurse participation with a sociocultural approach and involving nurse's leadership roles require further research*

Keywords: *Disease Vectors, Nurse's Role, Tropical disease*

INTRODUCTION

Tropical diseases are classified as communicable and non-communicable diseases and occur mainly in the tropics, Africa, Asia, and South and Central America(Rupali, 2019; Veit, 2015). Tropical diseases can spread globally due to increased travel accessibility, climate change, and environmental factors affecting disease vectors(Alonso et al., 2017; Hotez & Gurwith, 2011). Tropical diseases' high prevalence of morbidity and mortality causes a significant economic burden on developing countries, most notably through malaria, dengue fever, and *Human African Trypanosomiasis* (sleeping sickness) (Bärnighausen et al., 2013). While tropical diseases have a low mortality prevalence in affluent countries, their high morbidity can negatively impact life and productivity (Hunter, 2014). Social factors, health care, and disease treatment or management can increase mortality or morbidity (Rupali, 2019).

Government policies and various health sectors manage tropical diseases by implementing prevention, control, and treatment strategies (Hunter, 2014; Oulton, 2006). Healthcare workers (HCWs) are at the front line of dealing with tropical diseases to identify, intervene, and refer patients(World Health Organization, 2018). Nurses are the most significant HCWs worldwide, with responsibilities directly impacting population health and resolving tropical diseases(Oulton, 2006; Slattery et al., 2016).

In countries with endemic tropical diseases, nurses are more familiar with identifying, treatment, intervention, control, and disease management in services and communities (Hay & Asiedu, 2019). In contrast to non-endemic countries such as the United States and Europe, nurses must be particularly vigilant in identifying, diagnosing, and treating conditions they may not have

encountered before. Although cases are rare, nurses need to be aware of the risk patterns, for example, through evaluations of tourists and other at-risk populations (Hunter, 2014).

Nurses play a critical role in most tropical disease interventions (Blood-Siegfried et al., 2015). However, the research exploring their current roles is limited. Nurses often encounter barriers in showing their roles, positions, ideas, strategies, and successes (Yancey, 2016). One review article(Corley et al., 2016) revealed a lack of literature on the role of nurses in all types of Neglected Tropical Diseases (NTDs). Nurses and HCWs roles from 52 articles included all three phases of integrated interventions: primary, secondary, and tertiary prevention. This current review focuses on diseases classified as NTDs rather than tropical diseases.

The clinical article concepts(Blood-Siegfried et al., 2015) discuss nurses' roles in providing integrated interventions for NTDs, including their distribution, pathophysiology, symptoms, and management. The article described a case study and summarizes nurses' role in the strategy for NTD prevention, including preventive chemotherapy, clean water, sanitation programs, vector control, case detection and management, and vaccines. However, the nurses' role is frequently overlooked. At the same time, critical lessons from previous outbreaks or pandemics can help nurses improve their readiness and response to emerging infectious diseases (Dran, 2018). Accordingly, there is a need to examine the broader literature to understand better nurses' roles in the care of tropical diseases. This review aimed to synthesize current information on nurses' role in tropical diseases by identifying implications for service strategies and informing future research. This review aimed to synthesize current information on nurses' role in tropical diseases by identifying implications for service strategies and informing future research. The scoping review method in this study{Formatting Citation} collects comprehensive literature (Sucharew & Macaluso, 2019).

METHODS

This study conducted a scoping review using Arksey and O'Malley's (2005) framework and following the PRISMA for Scoping Reviews (PRISMA-ScR)(22).

Stage 1: formulation of research questions: We developed the research question based on the population, concept, and context (PCC) model (Table 1)(23). "What is the role of nurses and challenges providing care to tropical disease patients?".

Table 1. The population, concept and context (PCC)

Population	Concept	Context
Nurses	Content of the roles and implications for nurses.	The context in tropical diseases

Stage 2: Identifying relevant studies: The database used to search articles; Scopus, PubMed, ScienceDirect, and Ebscohost/Medline. The keywords used in this review were "Nurses'" OR "Nurse's Role" OR "The scope of nursing practice" and "Tropical disease" OR "Tropical nursing" OR "Tropical Medicine." Keywords used Boolean operators (AND/OR) and asterisks to broaden and narrow the search. The search strings were created by combining MeSH and Thesaurus subject headings with free-text keywords (Supplementary appendix 1).

Stage 3: study selection: Articles were included if the population was a nurse as single participants or part of a multidisciplinary team or provider intervention focused on tropical diseases. The study included original articles with various methods, mixed methods, qualitative or quantitative. All articles in full-text English were published between January 2011 to December 2021. The exclusion criteria were: research focused on developing a questionnaire, incomplete data, and no implication in nursing.

Seven hundred seventy articles obtained from four databases and three citation searches (Google Scholar) were exported from Mendeley and Zotero to an Excel spreadsheet. Authors independently screened, eliminated duplication, tracked, and selected studies from all articles. A total of 749 articles

were compiled after duplicates were removed using Excel tools and manually checked by all authors. After screening titles and abstracts, the authors eliminated 700 articles that did not meet the inclusion criteria. The remaining 49 articles and five articles were excluded because they were not available in full text. All authors read 44 full-text articles, and 23 were excluded: a population not nurses (n=5 the content not a contribution to nursing (n=4), non-tropical disease (n=10), and did not match the design study (n=4), the remaining 21 articles from the journal's electronic database. We added 3 articles from the search for citations from Google Scholar, remaining 2 articles because 1 were excluded because the content was not focused on the nursing contribution. Finally, the synthesis included twenty-three articles (Figure 1).

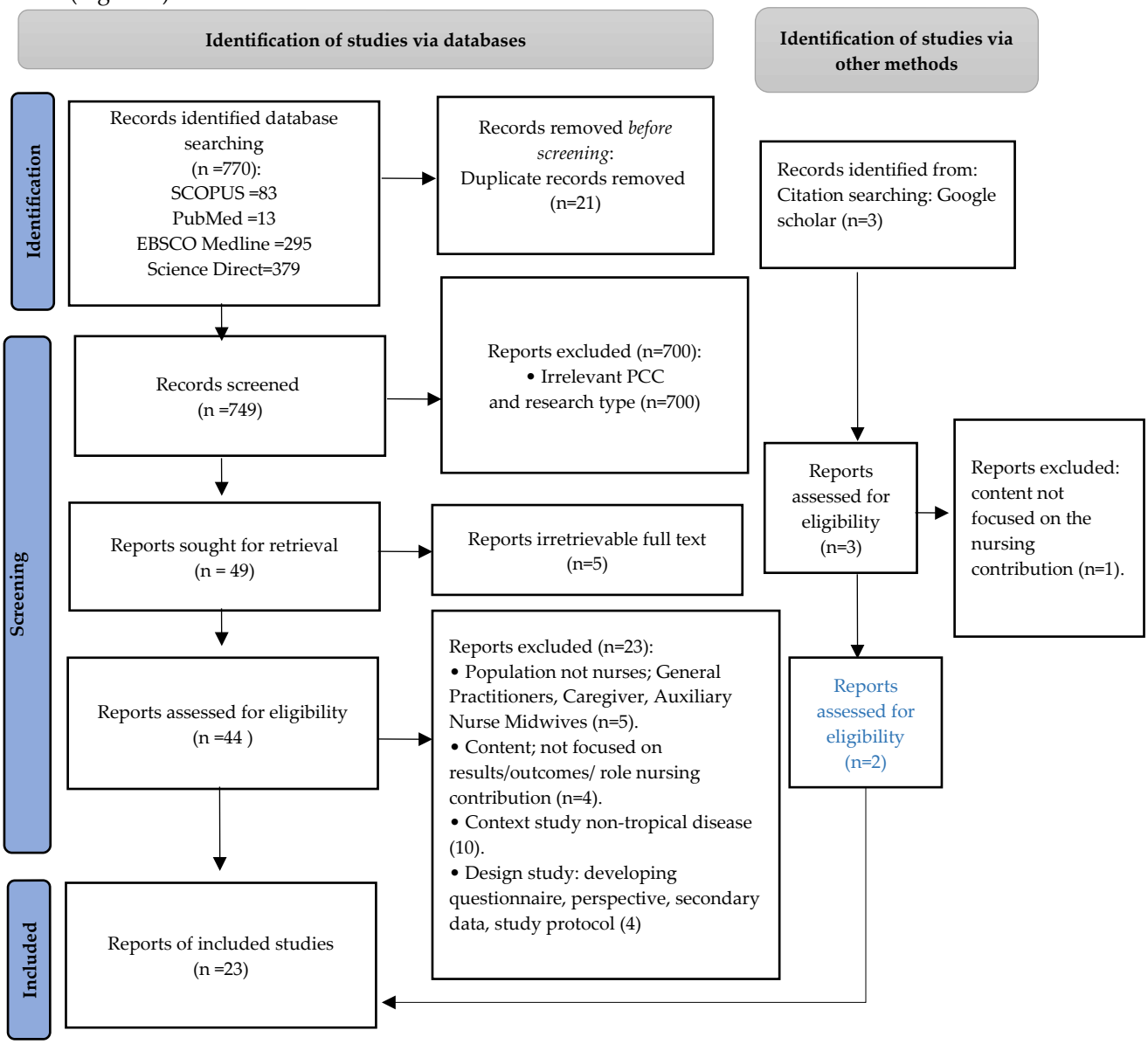

Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow diagram (PRISMA, 2020)

Stages 4 and 5: data charting process, collation, summary, and reporting of findings: Eligible studies were extracted in excel by determining the scope of the role of nurses in tropical diseases and the characteristics identified (Table 2). Relevant findings are charted deductively, using directed content analysis (24). Authors will make a consensus involving a third person according to expertise if there is a disagreement.

RESULTS

Characteristics Of The Included Studies

Twenty-three articles were included in the review (Figure 2). Most of the study participants involved nurses and other health workers (n=12) (Abeje et al., 2016; Acup et al., 2017; Ahmed et al., 2021; Alotaibi et al., 2019; Bayisenge et al., 2020; Delamou et al., 2017; Handel et al., 2015; Mears et al., 2014; Mosites et al., 2013; Owusu-Ofori et al., 2016; Peck et al., 2014; Weng et al., 2016). The publication period ranged from 2013 to 2021. The cross-sectional studies (n=11) explored healthcare workers' knowledge, attitudes, and practices concerning tropical diseases. Healthcare settings were level 1 or primary/public care (n=12). Seven studies were conducted in both hospitals and primary healthcare, and only four studies were in hospitals; most of the studies were in Africa (n=12), followed by America, Asia, and Europe. Most diseases studied were related to Arbovirus (n=7), and five studies related to NTDs.

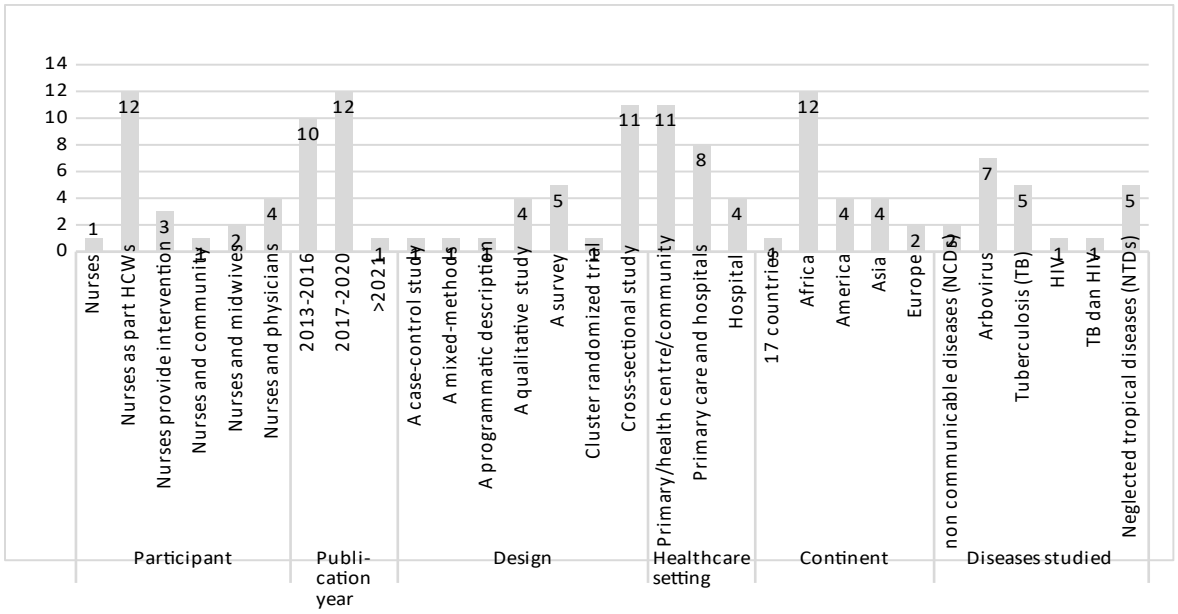

Figure 2. Characteristics of the included studies (n=23)

Three themes and challenges emerged from the article (Table 2): 1) nurses have a role as health providers, educators, motivators, leaders, collaboration, and coordination; 2) providing safe working and job satisfaction; and 3) The role of organizations, health systems, and policymakers. There were also three challenges: 1) lack of skills, knowledge, and training for nurses, 2) the stigma of tropical diseases, 3) sociocultural approach. The summary of the Included studies was present in (Supplementary appendix 2).

Nurses Have A Role As Health Providers, Educators, Motivators, Leaders, Collaboration, And Coordination

Twenty-two studies involved nurses as part of health workers whose role provide health services to communicable and non-communicable tropical diseases by identifying and responding to cases, diagnosis, treatment, care, prevention of transmission, screening, and facilitating laboratory testing (Abeje et al., 2016; Acup et al., 2017; Adongo et al., 2016; Ahmed et al., 2021; Alotaibi et al., 2019; Bayisenge et al., 2020; Brattström-Stolt et al., 2019; Delamou et al., 2017; Frieden et al., 2020; Handel et

al., 2015; Iglesias-Rus et al., 2019; Kufa et al., 2018; Machini et al., 2020; Mears et al., 2014; Mosites et al., 2013; Ong et al., 2019; Owusu-Ofori et al., 2016; Peck et al., 2014; Romero & Reyes, 2020; Shaffner et al., 2016; Tupasi et al., 2016; Weng et al., 2016).

A qualitative study explored concepts of the roles of the nurse. The results identified that most nurses' roles were educators and motivators in increasing patient knowledge about TB prevention and treatment plans (Byberg et al., 2019). A similar study (Adongo et al., 2016) in Ghana, Africa, identified sociocultural factors that affect the prevention of Ebola virus disease (EVD). A case-control study in the Philippines (Tupasi et al., 2016) showed nurses' role in providing support, relationships, and trust was significantly higher for patients than the patients lost to follow-up (23.8 ± 2.4 vs 21.8 ± 3.7; p <0.001).

Table 2. List of themes and subthemes of the selected studies

No	Content	Studies																							
		1 (Abeje et al., 2016)	2 (Acup et al., 2017)	3 (Adongo et al., 2016)	4 (Ahmed et al., 2021)	5 (Alotaibi et al., 2019)	6 (Bayisenge et al., 2020)	7 (Byberg et al., 2019)	8 (Delamou et al., 2017)	9 (Frieden et al., 2020)	10 (Handel et al., 2015)	11 (Kufa et al., 2018)	12 (Iglesias-Rus et al.,	13 (Machini et al., 2020)	14 (Mears et al., 2014)	15 (Mosites et al., 2013)	16 (Ong et al., 2019)	17 (Owusu-Ofori et al.,	18 (Peck et al., 2014)	19 (Romero & Reyes,	20 (Shaffner et al., 2016)	21 (Brattström-Stolt et al.,	22 (Tupasi et al., 2016)	23 (Weng et al., 2016)
A	**Themes:**																								
1	Nurses are health providers, educators, motivators, leaders, collaboration, and coordination.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	Providing safe working and job satisfaction				✓	✓		✓				✓													✓
3	The role of organizations, health systems, and policymakers	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
B	**Challenges:**																								
1	Lack of skills, knowledge, and training for nurses	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	The stigma of tropical diseases			✓	✓		✓	✓									✓			✓					
3	Sociocultural approach			✓	✓															✓	✓				

Providing Safe Working And Job Satisfaction

Five studies revealed that nurses' knowledge, health system, and facility resources influenced workplace safety in endemic tropical diseases (Ahmed et al., 2021; Alotaibi et al., 2019; Byberg et al., 2019; Kufa et al., 2018; Weng et al., 2016). Workplace safety practices can affect the quality of patient care and job satisfaction of health workers (Ahmed et al., 2021; Alotaibi et al., 2019). Byberg et al. (2019) showed that nurses must understand the concepts of disease, precaution, and protection to reduce transmission (Byberg et al., 2019). Workplace safety practices are the responsibility of all

professionals, including policymakers, organizations, health systems, and health workers, by providing isolation places, specimen collection points, use of personal protective equipment (Byberg et al., 2019; Weng et al., 2016). Job satisfaction also needs to be considered; in endemic countries, health workers experience the burden of caring for tropical disease patients (Kufa et al., 2018).

The Role Of Organizations, Health Systems, And Policymakers

A total of 22 of the 23 included studies frequently made recommendations regarding the importance of involving organizations, health systems, and policymakers in developing tropical disease management systems (Abeje et al., 2016; Acup et al., 2017; Adongo et al., 2016; Ahmed et al., 2021; Alotaibi et al., 2019; Bayisenge et al., 2020; Brattström-Stolt et al., 2019; Delamou et al., 2017; Frieden et al., 2020; Handel et al., 2015; Iglesias-Rus et al., 2019; Kufa et al., 2018; Machini et al., 2020; Mears et al., 2014; Mosites et al., 2013; Ong et al., 2019; Owusu-Ofori et al., 2016; Peck et al., 2014; Romero & Reyes, 2020; Shaffner et al., 2016; Tupasi et al., 2016; Weng et al., 2016). The recommendations highlighted health policymakers and government roles through leadership, collaboration, preparedness activities, response plans, disease control, and protocols involving input and output health workers' assessments of their performance quality and patient evaluation (Acup et al., 2017; Adongo et al., 2016). Nurses should take the initiative and actively contribute to policy and protocol development, especially procedural practice and knowledge in their fields. This strategy is expected to narrow gaps in knowledge, resource, and cultural organization (Kufa et al., 2018).

The Challenges Of Tropical Nursing Disease: Lack Of Competence, Skills, Knowledge, And Training For Nurses

Nineteen studies explored healthcare workers' knowledge, skills, and attitudes, including nurses relating to tropical diseases. Most quantitative studies described knowledge about preventing transmission, identifying high-risk cases and populations, diagnosis, treatment, management, and policy of tropical diseases (Abeje et al., 2016; Acup et al., 2017; Adongo et al., 2016; Ahmed et al., 2021; Alotaibi et al., 2019; Bayisenge et al., 2020; Brattström-Stolt et al., 2019; Delamou et al., 2017; Frieden et al., 2020; Handel et al., 2015; Machini et al., 2020; Mears et al., 2014; Mosites et al., 2013; Owusu-Ofori et al., 2016; Peck et al., 2014; Shaffner et al., 2016; Weng et al., 2016) . Several studies reported that undergraduate and diploma nurses have lower knowledge, competence, and practice levels than physicians. Poor identified nurses' knowledge was regarding transmission, management, and recognition of clinical signs, disease response, screening or diagnostic tools, treatment, dosage, and regulatory policies (Abeje et al., 2016; Ahmed et al., 2021; Alotaibi et al., 2019; Iglesias-Rus et al., 2019; Machini et al., 2020; Magdi et al., 2018; Mosites et al., 2013; Owusu-Ofori et al., 2016; Romero & Reyes, 2020; Shaffner et al., 2016). The knowledge status was not significantly different between urban and rural areas (p = 0.005) (Ahmed et al., 2021). Specialist nurses show better knowledge and practice among nurses (Brattström-Stolt et al., 2019).

Nurses Perceived The Stigma Of Tropical Diseases Patients

The stigmatizing attitude of nurses is mainly related to the health of themselves and their families because they are in the same environment and sociocultural (Adongo et al., 2016; Bayisenge et al., 2020; Byberg et al., 2019; Iglesias-Rus et al., 2019; Ong et al., 2019; Romero & Reyes, 2020). In a qualitative study in Italy (Iglesias-Rus et al., 2019), several nurses explained that the stigma associated with Chagas disease is a taboo disease. A cross-sectional study in East Africa (Bayisenge et al., 2020) found that 76% of respondents expressed a negative attitude towards patients' *podoconiosis* disease, the attitude scores: discipline (p<0.001), educational level (p<0.001), and work experience (p<0.001). Their knowledge gaps among healthcare professionals also influence nurses' attitudes and perspectives. Nevertheless, nurses remain involved in effective tropical disease treatment strategies (Iglesias-Rus et al., 2019; Ong et al., 2019; Romero & Reyes, 2020).

Sociocultural Approach

The implementation and management of tropical diseases are often hampered by myths, beliefs, and high-risk practices in community and society (Adongo et al., 2016; Ahmed et al., 2021; Romero & Reyes, 2020; Shaffner et al., 2016). Therefore a sociocultural approach was needed to make health programs successful with community involvement to facilitate monitoring and awareness of reporting cases (Adongo et al., 2016; Ahmed et al., 2021; Romero & Reyes, 2020; Shaffner et al., 2016). Sociocultural approaches, for example, involving community leaders in health education, will be more accepted by the community (Ahmed et al., 2021). In addition, health policymakers and stakeholders should collaborate with local or regional health workers to develop culturally appropriate interventions (Romero & Reyes, 2020; Shaffner et al., 2016).

DISCUSSION

In this review, the highlight nurses' roles were care providers, educators, motivators for patients, their families, communities, program leaders (Byberg et al., 2019; Kufa et al., 2018), coordinator, and collaborators (Adongo et al., 2016; Ahmed et al., 2021; Bayisenge et al., 2020; Iglesias-Rus et al., 2019; Kufa et al., 2018). This review revealed a significant study gap focusing on nurses' roles, most studies in Africa. Outline nurses' public health-related contributions include primary, secondary, and tertiary prevention. The expansion of nurses' roles was needed to achieve programs in the communities that are cost and time-efficient in controlling diseases (Corley et al., 2016). The World Health Organization (WHO) recommended increasing nurses' ability to coordinate support policies and strategies to improve global access to interventions to prevent, control, eliminate, and eradicate NTDs (World Health Organization (WHO), 2020).

The findings of this review regarding job safety and satisfaction within the area of tropical disease (Ahmed et al., 2021; Alotaibi et al., 2019; Byberg et al., 2019; Kufa et al., 2018; Weng et al., 2016). Nurses are the only primary care professionals in several countries to provide tropical disease interventions in hard-to-reach locations (Blood-Siegfried et al., 2015; Corley et al., 2016). The presence of workplace hazards can interfere with health if not addressed effectively (Trinkoff et al., 2008). A study revealed that nurses with a high-risk disease transmission environment would be psychologically and physically threatened. An integral part of infection control and preventive measures that protect workers from other potentially infectious hazardous, one of the safety measures is personal protective equipment (PPE) (Services, 2020). According to Varbeek's study, health workers also need to know how to utilize PPE correctly (Verbeek et al., 2019). Job satisfaction for nurses in this review was necessary. A study indicated that job satisfaction reflects feelings and enjoys work, becoming productive. Meanwhile, individuals unsatisfied with their job will experience stress, fatigue, and psychological health issues(Ofili et al., 2004). Therefore, health care management and policy-making determine safety and job satisfaction issues that can enhance the effectiveness of health care, psychological health, and social systems (Akinwale & George, 2020).

Despite being the most significant health workers, nurses are not fully aware of their health policy and advocacy involvement potential. Nurses have a moral and professional obligation to participate in family and patient communities (Turale & Kunaviktikul, 2019). Therefore, their support and awareness are critical for nurses to be actively involved in the planning and implementing these practices. Nurses must take a multisectoral approach to enforce health program policies at all healthcare systems levels and leverage widespread access to information technology and communication skills aligned with public health needs. Program leaders and policymakers should also seek to treat their HCWs as valuable human resources to support interventions (Corley et al., 2016; Ehrenberg et al., 2020).

The challenges for nurses were recognized as frontline health workers for tropical diseases, both infectious and non-communicable (Guilamo-Ramos et al., 2021; Romero & Reyes, 2020). The 23 studies included in this review have variations in types of diseases, interventions, differences in resources, facilities, research designs, and instruments used to assess nurses' knowledge, skills,

attitudes, and perceptions. However, the findings are consistent with nurses' less knowledge among health workers. Therefore, this review insufficiently defines and explores nurses' roles in tropical disease services due to the significant gaps in nurses' knowledge, skills, and perceptions. This gap factor could affect nurses' confidence in their roles. Clinical competence is bolstered by nurses' confidence in providing effective and quality care and patient response (Fry & MacGregor, 2014; Molina-mula & Gallo-estrada, 2020).

Another challenge for nurses is nurses' stigma or negative perceptions and attitudes toward tropical diseases. Stigma is a term that refers to stereotyping, prejudicing, or discrediting social characteristics that cause people with a disease to feel rejected and discriminated (Recto et al., 2020). The findings of this review showed that many HCWs, including nurses, had negative perceptions about contracting patients' illnesses by themselves, their families, or other patients (Adongo et al., 2016; Bayisenge et al., 2020; Byberg et al., 2019; Iglesias-Rus et al., 2019; Ong et al., 2019; Romero & Reyes, 2020). This stigma makes patients hesitant to report their disease to health facilities, prefer to visit holy baths, herbalists, traditional healers, or stay at home. At the same time, their illness gets worse (Nyblade et al., 2019).

This review proposed training and educating HCWs to reduce stigma among patients with tropical diseases by increasing their knowledge, skills, and perceptions about transmission prevention. The study focuses on the stigma of patients with NTDs through providing personal support, counselling, and advice support groups. HCWs enhance perceptual roles and attitudes when acquiring sufficient knowledge and develop a positive disease safety culture, enabling effective improvement of the quality of care (Ishimaru et al., 2017).

Another challenge according to local conditions, communities-related tropical disease problems need to be addressed, including patterns of morbidity, mobility, environmental and sociocultural factors (Aagaard-Hansen & Chaignat, 2016). A study in Uganda on the factors that determine the high morbidity and mortality associated with delayed treatment of children with malaria showed two significant themes: sociocultural factors associated with traditional medicine and structural factors of inadequate treatment and facilities (Sundararajan et al., 2015). So that the sociocultural approach, one of the drivers' program effectiveness and appropriate cross-sectoral cooperation at the local level, is carried out by understanding how people think and respond to tropical diseases (Tangwa, G.B., Abayomi, A., Ujewe, S.J., Munung, 2019). A limitation of this review is that the search terms for tropical diseases are broad, without specifying each type of tropical disease. However, this review highlighted the scope and challenges of tropical disease, which is still lacking with most African studies, so there are gaps in current research and biased reporting of program effectiveness. The role of nurses in leadership programs has only been explored on a limited basis, and there are no programs involving nursing students.

CONCLUSIONS

This review revealed that nurses lack knowledge and training compared to other health workers. Thus the role of nurses in providing care for tropical diseases needs to be expanded and clarified by increasing knowledge and training that can increase self-confidence, self-efficacy, practical skills, work safety, reduce stigma, morbidity, and mortality. A sociocultural approach strategy supported by multisectoral and policymakers was required to improve community involvement. Policymakers and management of health services need to support and provide a safe work environment and increase job satisfaction.

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