Protocol for a scoping review study to identify occupational health hazards among healthcare providers and ancillary staff in Ghana

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Method Article

Keywords: Ancillary staff, developing country, Ghana, health personnel, occupational exposure

Posted Date: October 5th, 2021

DOI: https://doi.org/10.21203/rs.3.rs-956533/v1

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Abstract

Introduction: The formation, modification and implementation of occupational health and safety policy for the Ghana health care industry hinges on data and reviews on occupational exposures. However, there is no synthesized review to speak to the issues of these occupational exposures. A scoping review on occupational exposures among the health workforce in Ghana will provide a broad overview of exposures, and can guide and assist in making decisions on occupational health issues relating healthcare workers.

Methods: The Arksey and O'Malley's scoping review methodology framework will guide the conduct of this scoping review. Primary research studies, government documents and other information on occupational exposures among healthcare workers published in English language will be retrieved from databases, including PubMed, CINAHL, Embase, Medline, Scopus, PsycINFO and Google scholar. Also, grey literature sources in Ghana including government and tertiary institutions websites will be searched. Reference list of key studies will also be screened to identify relevant studies for inclusion. The review will consider studies that address prevalence, knowledge and predisposing factors of occupational exposures along with utilization of occupational hazards preventive measures. After initial removal of duplicates, title and abstract screening, relevant articles will be subjected to full text analysis. The screening processes will be conducted independently by two reviewers. Data will then be extracted and presented in tabular form with a narrative to aid easy comprehension.

Ethics and dissemination: This scoping review sought to identify predominant occupational exposures among healthcare providers and ancillary workers as described in published and unpublished literature. In addressing the increase of occupational exposures among healthcare workforce in Ghana, this scoping review is intended to bring all the literature together and predict the areas of occupational exposures that needs attention and redress. The findings of the study will be disseminated through publications, conference presentations and stakeholder meetings.

Strengths And Limitations Of This Study

- This study will be the first scoping review to synthesize occupational exposures among the healthcare workforce in Ghana, which will provide a good basis for the modification of existing policy and guidelines.
- Also, this review mainly considers imperative areas such as prevalence, knowledge and predisposing factors of occupational exposures, which are directly linked to the reduction of occupational exposures.
- Apart from using a broad search strategy to search through seven electronic databases, an extensive range of grey literature including unpublished thesis and dissertations on the topic will be used for this study.
- Though the study is projected to provide a good overview of occupational exposures existing in the Ghana healthcare industry, the articles for inclusion will not be subjected to quality assessment.
Introduction

The health care industry is considered as one of the industries that presents the most unsafe occupational settings, placing healthcare providers and ancillary staff at risk of exposure to numerous forms of biological and non-biological hazards. (1–3). These hazards endanger the safety, wellbeing, and ultimately, the life of the healthcare professional. The recent ongoing COVID-19 pandemic reveals the vulnerability of health personnel and health care system (4).

Even though, the key attention of research and safety programmes among healthcare providers are infectious agents such as hepatitis B, Human Immunodeficiency Virus (HIV), influenza and tuberculosis (5), healthcare professionals are also prone to hazards arising from chemicals such as ethylene oxide, formaldehyde, antineoplastic drugs, latex, cleaning and disinfecting agents, which have been associated with cancers, adverse procreative outcomes and asthma (6–10). Also, musculoskeletal disorders and injuries, psychosocial hazards; burnout, stress and violence are experienced at the work environment (11–13).

Whereas these exposures have been recognized in both developed and developing countries, safety and precautionary measures and standards have been implemented in high-income countries to safeguard healthcare providers and mitigate the occurrence of these occupational exposures (14); however, in low-middle-income countries, including Ghana, occupational and safety issues are mostly neglected (15,16).

The shortfall of occupational health in these developing countries is often blamed on inadequate resources, poor data collection systems, weak enforcement of safety regulations, poor implementation of policies and political commitment (17). Yet, the rise of occupational health hazards among healthcare professionals can partly be attributed to their inconsistencies in practicing the universal safety precautions, comprising of handwashing, wearing of gloves and use of personal protective equipment (PPE) (18).

In Ghana, the subject of occupational health and safety among healthcare providers is not different from other developing countries. According to an occupational health and safely policy guidelines developed for the health sector in Ghana, as at 2010, the Ghana Health Service (GHS) was not in the position to describe the incidence of diseases and exposures among its staff due to the fact that there was no system to gather and compile information on hospital attendance, illness and occupational exposures suffered by its employees (16). Also, the policy echoes that healthcare providers are not only exposed to occupational exposures but are also not sensitized on occupational health and safety issues. Hence, the need of a scoping review to map out the situation of occupational health exposures among the Ghanaian health sector.

An initial search was conducted in MEDLINE, the Cochrane Database of Systematic Reviews and JBI Evidence Synthesis and found no underway scoping review on occupational exposures among healthcare providers and ancillary in Ghana. However, few scoping reviews have been conducted on the subject of occupational exposures in developed and developing countries, none has been conducted in
Ghana. A recent scoping review done by Rai et al., addressed exposures to both biological and non-biological occupational hazards among health workers in low-middle-income countries (19). Additionally, a systematic review conducted by Mossburg et al. and Auta et al. mainly looked at exposure to blood and blood borne pathogen among healthcare professionals in sub-Saharan Africa (20,21). All these review studies described above mostly considered primary studies on healthcare providers and not ancillary workers in the healthcare industry. Meanwhile, ancillary staff may be more exposed than healthcare providers.

This proposed scoping review to be done in Ghana will apart from healthcare providers (doctors, nurses, laboratory workers, midwives), will consider ancillary staff (waste handlers, laundry and kitchen staff), which have been missing in many scoping reviews. Also, this review will specifically consider issues of preventive measures to occupational exposures such as vaccination, compliance to infection prevention control, use of personal protective equipment among others. The knowledge level on occupational exposures will also be described in this review. Additionally, risk factors that are responsible for these exposures such lack working experience, working in multiple facilities and others will be explored.

Limiting this scoping review to Ghana is imperative because there is absolutely lack of data on occupational exposures among healthcare personnel (16) and the situation in other low-middle-income countries may be similar but not the same in the context of Ghana. Since scoping reviews consider unpublished studies, it will provide a good platform to synthesize all these studies and provide good evidence for the modification of the existing policy, which has been in implementation over a decade.

In the space of growing literature on the subject (19), and many of these studies remain unpublished. Therefore, it is imperative to develop country specific scoping reviews on occasional basis to measure strengths and limitations. Scoping reviews, as defined by Arksey and O’Malley are conducted to map out fundamental concepts underlining a research subject, it does so by identifying types, main sources of existing evidence. And can be conducted as a stand-alone research to synthesize evidence to inform policy on a research area (22).

This scoping review centred on Ghana will assess exposures to occupational health hazards among healthcare providers and ancillary staff. Again, it will address knowledge gaps, utilization of precautionary measures, and predisposing factors of occupational health hazards. The review is set to provide a comprehensive overview on occupational exposures in the Ghana health sector, and is aiming to inform and shape the existing occupational health and safety guidelines of the sector.

**Study rationale**

The menace of occupational exposure to healthcare providers and ancillary staff in developing countries is worst compared to its developed countries counterparts. In the request to reduce these exposures, Ghana, a developing country have developed a policy and guidelines of occupational health and safety for the healthcare industry workforce. However, the policy, in its introduction emphasis on the non-
existence of systems to collate data on occupational exposures in the healthcare sector. After more than a decade since the inception of the policy, a scoping review will be necessary to describe the prevalence, knowledge and predisposing factors as well as the preventive measures of occupational health hazards among healthcare personnel. Yet, there is no synthesis of evidence on the exposure to occupational health hazards among personnel of the healthcare sector. Hence, the conduct of this scoping review. The finding of this review will be very significant in projecting the way forward on the topic of occupational exposures, and also in terms of the modification of the existing policy.

**Study objectives**

The fundamental objective of this scoping review is to summarize the type and prevalence of exposure to occupational health hazards among healthcare providers and ancillary staff in Ghana. The study will also describe knowledge on occupational health hazards among healthcare providers and ancillary staff, predisposing factors responsible for the exposure to occupational health hazards and finally, utilization of occupational health hazards preventive measures among healthcare providers and ancillary staff. Finally, these pieces of information will be synthesized to identify areas that needs more consideration and focus on the front of working in the healthcare sector of Ghana.

**Methods And Analysis**

**Protocol design**

Arskey and O’Malley’s (22) methodology framework and Levac et al. (23) methodology enhancement formed the basis for the development for this study’s methods. Regarding this framework, six stages are involved in conducting a scoping review: 1) identifying the research question; 2) identifying relevant studies; 3) selecting studies; 4) charting the data; 5) collating, summarising and reporting of findings and 6) consulting with relevant stakeholders.

**Stage 1: Identifying the research question**

The main research question of this review is defined as: ‘What are types and prevalence of exposure to occupational health hazards among healthcare providers and ancillary staff in Ghana?’ This fundamental question was developed by the research team in consultation with the key stakeholders in the healthcare industry of Ghana. Through the consultations, some specific questions were developed in addition to the main research question: 1) What is the level of knowledge on occupational health hazards? 2) What are the predisposing factors responsible for the exposure to occupational health hazards? 3) What is the level of utilization of occupational health hazards preventive measures?

**Stage 2: Identifying relevant studies**

The search strategy will aim to locate both published and unpublished studies. An initial limited search of PUBMED AND MEDLINE was undertaken to identify articles on the topic. The text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles were used to
develop a full search strategy for Embase, CINAHL, PsycINFO, PUBMED, MEDLINE, Scopus and Google Scholar (The proposed search strategy is shown in online supplementary Appendix I). The reference list of all included sources of evidence will be hand screened for additional studies.

To guarantee that all relevant literature is included, sources of unpublished studies and other grey literature will be searched on the websites of health stakeholders and universities in Ghana. These will be done to identify theses/dissertations, reports, conference abstracts for this review.

The search terms for the search strategy will be developed with inputs from research teams, key stakeholders and knowledge users. An experienced librarian and co-author (PAT) will develop the search strategy; however, it will be subjected to revision pending inputs from other stakeholders. The final search strategy will be blinded to all stakeholders.

The final search terms will be utilized as keywords in the title, abstract and subject headings such as MeSH. The search strategy, including all identified keywords and index terms, will be adapted for each included database and other information source. No date limits will be applied to the results of our search; nonetheless, only studies conducted in English language will be considered. Potentially relevant sources will be retrieved in full and their citation details imported into the Rayyan QCRI for the Unified Management, Assessment and Review of Information (24), a web-based and mobile app application that is specifically created for systematic and scoping reviews of articles.

**Stage 3: Study selection**

Prior to study selection stage, Zotero reference management software (25) will be used to remove all duplicates of exported articles. The review procedure will involve two levels of screening: 1) a title and abstract and 2) full-text review processes. Two independent investigators will conduct the initial screening of title and abstract of all articles using a set of minimum inclusion and exclusion criteria. In order to ensure that our minimum inclusion and exclusion criteria are robust enough to capture any articles on occupational exposures among healthcare personnel in Ghana, they will be tested on a sample of abstract before the actual review of article abstracts. Any article that is judged as relevant by one or both reviewers will be selected and subjected to the full-text review. The next stage, review of the articles’ full-text will be done by the two investigators independently based on the inclusion and exclusion criteria. Also, Cohen’s $\kappa$ statistic will be computed at both the title and abstract as well as the full-text review stages to ascertain inter-rater agreement. In case full-text review results in any discordant articles, the article will be subjected to a second review and further discrepancies about its eligibility will be discussed with a third investigator until the investigators arrived at full consensus. Studies on healthcare providers, specifically, doctors, nurses, laboratory staff, midwives as well as health students among the stated category of workers. Also, it includes studies on ancillary staff such as waste handlers, laundry workers and kitchen staff. The review will consider occupational exposures to biological and non-biological hazards found in the health care environment. All studies on participants not working in a health care facility like hospital and clinics will be excluded. Again, studies on exposures to these pathogenic agents; hepatitis B virus, Human Immunodeficiency Virus (HIV), influenza, tuberculosis and novel coronavirus will
be considered. Exposures to other non-biological hazards including chemicals, musculoskeletal disorders and injuries, psychosocial hazards; burnout, stress and violence. The review will consider studies within the confines of Ghana, a developing country in Africa. Finally, this scoping review will consider analytical observational studies including prospective and retrospective cohort studies, case-control studies and analytical cross-sectional studies.

Stage 4: Data collection

A data collection tool will be created by the research group. This will be used to confirm appropriateness of study and serve as a guide to extract study characteristics. The data extracted will include, but not limited to specific details such as year of publication, study design, participants’ characteristics, concept of study, context or setting of the study, study methods and key findings relevant to the review question/s. A draft extraction form is provided (see Appendix II). The draft data extraction tool will be modified and revised as necessary during the process of extracting data from each included evidence source. Two reviewers will independently conduct the extraction of the data from all the included data. Afterwards, the extracted data from the two independent reviewers will be compared and any differences between them will be discussed further to ensure consistency and accuracy of the data. Data validation and coding will be ensured by compiling all extracted data in a single Microsoft excel spreadsheet.

Stage 5: Data summary and synthesis of results

One of the reasons for a scoping review is to map out the concept that underpins a particular research area including the types of evidence available and the main sources of the evidence. The collective findings of this scoping review are to provide an overview of occupational health hazards exposure among healthcare providers and ancillary staff in Ghana, rather than the assessment of the individual studies in the review. This overview will include the prevalence of these exposures, utilization of preventive measures and identified risk factors of exposure to occupational health hazards. The data tabular form; however, graphical or diagrammatic presentation may be used where appropriate. A narrative summary will accompany the tabulated and/or charted results and will describe how the results relate to the reviews objective and questions.

Stage 6: Consultation

According to Levac’s et al. (23), consultation provides the platform for stakeholders to be involved in the scoping review process, they specifically provides information and insights outside what is usually reported in the literature. To address the reality of these exposures in the healthcare facilities in Ghana, stakeholders such as the Ghana Health Service as well as some of its employees will be engaged throughout the conduct of this review, to serve as knowledge users and participants of these exposures. Also, in developing the search strategy and identification of grey literature, these stakeholders will be consulted.

Dissemination and Ethics
The study is geared towards providing an overview of occupational health hazards among healthcare provider and ancillary staff in Ghana. Again, it is aimed at providing relevant inputs in the modification of the existing occupational health and safety policy and guidelines for the health sector in Ghana. Therefore, the findings of the study will be shared among key stakeholders like the Ghana Health Service and Ministry of Health. It will also be made public to the Universities who are into the training of public health, occupational and environmental health specialists. The study will also be published in peer-reviewed journal, presented at conferences and stakeholders meetings. Due to the fact that the methodology of scoping reviews involving collection and reviewing of already available materials in the public space, the study does not require ethical approval. However, this study will involve a consultative approach of key stakeholders that will at the end guide the research objectives and facilitates the knowledge transition and translation process.

**Declarations**

**Contributors** PAT and EAB conceived of the idea, developed the research question and study methods and contributed meaningfully to the drafting and editing. They also approved the final manuscript. ABA and EAG aided in the developing the research question and study methods, contributed meaningfully to the drafting and editing, and approved the final manuscript.

**Funding** This work received no funding.

**Competing interest** None declared

**Provenance and peer review** Not commissioned, externally peer reviewed

**Data sharing statement** No additional data are available.

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Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- AppendixIISearchstrategy.docx
- AppendixIIIDataExtractionTool.docx