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RADIATION SAFETY IN PUBLIC HEALTH RADIOLOGY INTERVENTIONS AMONG CHILDREN AND ADOLESCENTS IN ARMED CONFLICT SETTINGS AND THE NEED FOR IMPLEMENTATION RESEARCH: A PROPOSED STRATEGY

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ABSTRACT

Background: Several radiation safety guidelines, standards, and checklists have been developed by relevant agencies such as the World Health Organization, the International Atomic Energy Agency, the International Commission on Radiological Protection, the International Radiation Protection Association, the Nigerian Nuclear Regulatory Authority for the use of radiation in public health intervention and also for public engagement including children and adolescents. However, their uptake has been limited despite the growing importance of radiation in public health. Hence, the need for this study.

Materials and Methods: an implementation research approach is proposed in this study to unravel the reason why existing, proven effective, and result-oriented radiation safety guidelines are not effectively utilized to enhance the radiation safety of children and adolescents in armed conflict settings. An implementation problem was identified, and implementation approaches and sustainability plans were advanced. This work is extracted from a proposal developed and submitted to the WHO/TDR as part of the requirements for certification in Implementation Research for Infectious Diseases of Poverty by the TDR/WHO Massive Open Online Course (MOOC) in March, 2020.

Results: shreds of evidence from literature and anecdotal evidence show that despite the availability of radiation safety guides, their uptake and use for radiation safety of children and adolescents in armed conflict settings remain limited due to poor awareness. Hence, there is a need for implementation research. A multifaceted implementation research approach is proposed; combining, several strategies such as training, consultation, audit, and feedback with components of the Information Education Communication (IEC) approach.

Conclusion: A multifaceted implementation strategy alongside a sustainability plan has been proposed in this study. This approach will enhance the radiation safety of public health interventions among children and adolescents in armed conflict settings.

Introduction

A recent report which also draws from the 2022 report of the United Nations Secretary-General on children and armed conflict states that approximately 449 million children, more than one-sixth of children globally lived in areas affected by conflict in 2021 [1]. Africa accounts for 180 million children affected by conflict. The report also highlighted the failure to prevent grave violations committed against children and protect the rights of children (which also include the right to health) as one of the defining issues of our time. Radiation safety is an important component of patient safety, a global concern [2,3]. Through the lens of radiation safety, an estimated 4 billion X-ray examinations are performed worldwide, 3-10 % of which are on children [4]. We are currently in the decade of action of the global patient safety action plan with the international public health holiday celebrated annually to commemorate World Patient Safety Day (WPSD) [2]. Ionizing radiation is used in a range of public health interventions from preventive medicine to palliative medicine for purposes of screening, triaging, diagnosis, and treatment of diseases and even vector control [2,5]. Children affected by armed conflicts may be refugees outside their homelands or internally displaced persons and live in overcrowded camps and poorly ventilated housing making them vulnerable to infectious diseases among others thus, requiring quality radiological health care [6].

The implementation problem

Proven and effective tools (e.g referral guidelines and radiation safety checklist) for the safe use of radiology services in children abound [7,8]. These tools have been reported to reduce the wasteful use of radiology in children to > 50 % of X-ray referrals [9]. Despite the availability of radiation safety guidelines, awareness and compliance among referring physicians and frontline radiation workers in conflict settings have been poor [10]. Hence, the growing trend of unsafe use of ionizing radiation among children in conflict settings predisposes them to possible cancer risk in the future [6]. Therefore, implementation research into why these proven interventions is not yielding the desired results taking into cognizance the context and settings of conflict is required.

The proposed implementation approaches

A multifaceted implementation strategy encompassing a combination of several strategies such as training, consultation, audit, and feedback [11] with components of the Information Education Communication (IEC) approach is proposed. First, there should be a consultation with relevant stakeholders in the state such as the ministry of health (State and Federal where applicable), members of the healthcare community and the academic institutions that train healthcare professionals in the state, the regulatory body or agency, the end users of ionizing radiation and related services particularly radiation health workers and referring physicians. Stakeholder consultation will involve in-depth interviews; focused group discussion, extensive literature search, and consultation of relevant documents and empirical pieces of evidence to identify existing knowledge and implementation gaps. The implementation approach should target special health-related days and activities such as the international public health holiday celebrated annually as World Patient Safety Day celebration, September 17th of every year to embark on a one-day training workshop on radiation safety in paediatric radiology which would cover the following contents; Radiation effects on children and safety measures, use of referral guidelines and radiation safety checklist. A pre-and post-workshop assessment should be conducted to establish the knowledge gained. An activity of this nature is important for health workers in armed conflict settings due to the peculiarity of their work settings, most of them do

not have the opportunity to attend in-person conferences, and online meetings are hampered by poor interrupted internet connectivity.

A sustainability plan should be to engage critical stakeholders from the onset of such a programme; a roll-out plan is to engage health professional associations to incorporate radiation safety as part of their patient safety plan in line with the global patient safety action plan of the WHO. A feedback survey could be conducted and compliance monitored quarterly or annually as appropriate. Training institutions should be encouraged to incorporate radiation safety into their training curriculum. A participatory approach involving major stakeholders such as policymakers, and potential/active service users at all levels of the research will maximize the relevance and impact of the findings. This will enhance acceptability and adoption, and also ensure the appropriateness and sustainability of the project.

Conclusion

A multifaceted implementation strategy alongside a sustainability plan has been proposed in this study. This approach if adopted will enhanced radiation safety of children and adolescents in armed conflict settings taking into consideration their peculiar context and settings.

Conflict of interest:

The authors have no financial conflict of interest to declare. However, this manuscript is extracted from a proposal that was developed and submitted by the corresponding author to the WHO/TDR as part of the requirements for certification in Implementation research for infectious diseases of poverty by the TDR/WHO MOOC Online course.

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