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MEDICAL SOLID WASTE MANAGEMENT IN KAKE INTEGRATED HEALTH CENTRE II.

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Abstract

Background

Medical solid waste management is a critical aspect of healthcare delivery that requires urgent attention worldwide. The generation of medical waste poses significant risks to human health and the environment. This review examines the types of medical solid waste generated in healthcare facilities, the challenges associated with its management, and the importance of proper waste disposal practices.

Results.

The findings highlight the lack of knowledge and inadequate equipment among healthcare personnel, leading to poor waste management practices. Insufficient training contributes to the improper treatment and disposal of medical waste, resulting in environmental contamination and the spread of diseases. Financial considerations and institutional factors, including the availability of guidelines and policies, also impact waste management systems. Developing countries face greater challenges in managing medical waste due to limited resources and knowledge.

Conclusion.

The review emphasizes the need for comprehensive training programs, allocation of sufficient funds, and the implementation of effective policies to improve waste management practices. Furthermore, the review underscores the importance of raising awareness, providing education, and establishing proper waste management systems to minimize the health and environmental risks associated with medical solid waste.

Recommendation.

Urgent interventions are necessary to mitigate the risks and promote sustainable waste management practices in healthcare facilities.

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Background.

Healthcare delivery plays a crucial role in safeguarding individuals' well-being by offering various services such as diagnosis, treatment, and vaccination. However, this process also leads to the generation of solid waste, which encompasses 15-20 percent of materials that pose risks of infection or injury to those handling it (Dzekashu, Akoachere & Mbacham, 2017). Medical solid waste refers to the residual materials left after providing medical care to patients at hospitals, health centers, primary health centers, research facilities, and clinical laboratories (World Health Organization, 2017). These wastes are further described by Faroog *et al*. (2017) as any solid substances originating from healthcare facilities in the course of patient care. To better understand the impact of medical solid waste on healthcare facilities and the surrounding environment, an exploration of the various types of waste generated and appropriate management strategies is essential. The types of waste typically include discarded medical equipment, unused medicines, contaminated materials, sharps, and pathological waste.

The proper management of medical solid waste is essential to prevent potentially adverse effects on human health and the environment. It involves the implementation of guidelines and protocols for waste segregation, safe storage, transportation, and disposal. Additionally, healthcare facilities should prioritize staff training on proper waste handling to minimize the risks associated with handling medical waste. The management of healthcare solid waste is a complex process that is influenced by a multitude of factors. One of the key considerations is the technical aspect, which encompasses various elements such as the availability of necessary equipment, proper segregation of waste, appropriate storage facilities, efficient transportation methods, and safe disposal practices. Healthcare workers

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must possess adequate knowledge and training in waste management to ensure its effective implementation.

In addition to technical factors, financial considerations play a significant role in healthcare solid waste management. Budget allocation plays a crucial role in providing the necessary resources for waste management activities, including the procurement of equipment, maintenance, and personnel training. Adequate financial support is vital for the smooth functioning of waste management systems within healthcare facilities.

Furthermore, institutional factors, including the existence of guidelines and policies, significantly impact healthcare solid waste management. The establishment of comprehensive guidelines and policies provides a framework for waste management practices, ensuring consistency and adherence to best practices. These guidelines and policies outline the responsibilities of healthcare personnel, promote proper waste segregation, and specify appropriate disposal methods. The primary objective of healthcare solid waste management is to adopt strategies that emphasize the principles of reuse, recycling, reduction, and safe disposal. By incorporating these principles, healthcare facilities can minimize the environmental impact of waste generation and promote sustainable waste management practices (Malenya & Omwenga, 2015). This review examines the types of medical solid waste generated in healthcare facilities, the challenges associated with its management, and the importance of proper waste disposal practices.

Project Outcomes

This chapter focused on an overview of the successes achieved in the waste management project at Kake Integrated Health Centre. It will discuss the lessons learned throughout the implementation process. The results and lessons learned will be highlighted, providing a basis for making appropriate recommendations to ensure the continuity of the project. To enhance approval and success, the following models are applied: Kotter eight eight-step change model, Social practice theory, and health belief model. The selection of these three models is because they are based on the objectives of this project, and they will properly address issues on proper waste management.

Change Management Models.

Change is an inevitable yet tricky aspect of a growing business. However, you don't need to adopt a "resistance is futile" attitude to get people on board and drive change. Change management models are designed to act as compasses that help you navigate difficult transitions and guide you and your team towards more than acceptance – to adopt new processes and maximize ROI for business process changes. Some major change management models include Lewin's Change Management Model, McKinsey 7-S Model, Nudge Theory, The ADKAR Change Management Model, Kübler-Ross Change Curve, Bridges' Transition Model, Satir Change Model, Kotter's 8-Step Theory, Maurer 3 Levels of Resistance and Change Model, and Deming Cycle (PDCA).Bottom of Form

Change management models are concepts, theories, and methodologies that provide an in-depth approach to organizational change. They aim to provide a guide to making changes, navigating the transformation process, and ensuring that changes are accepted and put into practice. Understanding the basic principles of popular change management models and frameworks enables enterprises to leverage best practices, tactics, and strategies to lean on when facilitating change projects. Relying on the fundamentals of these change models allows organizations to develop more effective, strategic, and contextual change initiatives. This all impacts your company's bottom line. Change projects have huge implications that can cause ripple effects across productivity, revenue, customer experience, and more. Change projects are also time and resource-intensive, as well as typically involve new technology investments. This means change projects are costly investments for companies – and relying on the principles of one (or more) change models empowers organizations to successfully navigate large change projects. In this project, the following models are applied: Kotters eight steps change model, Social practice theory, and health belief model. The selection of these three models is because they are based on the objectives of this project, and they will properly address issues on proper waste management.

Kotter's Eight Steps Change Model.

The application of this model has a motivating effect on health workers to accept change (Hornstein, 2008). These steps are as follows:

Establishing a sense of urgency: The need for improving waste management was shared with the administration, heads of departments, doctors, nurses, pharmacy staff, laboratory staff, housekeepers, and all other staff. This was done by pointing out potential threats following the results of the 2018 EBNA. All the parties realized the magnitude and the gravity of the effect of inadequate solid waste management. This gave way for all stakeholders to be able to examine opportunities that should be or could be exploited. It also paves the way for them to start honest discussions and give dynamic and convincing reasons to get people talking and thinking about how waste management can be improved. The support from internal stakeholders and external stakeholders was sought.

Creating a necessary coalition after convincing everybody that change is necessary, true leaders in the health center like the chief of the center, heads of departments, and infection prevention committee members were engaged. Encouraging them to be committed and also receive their emotional commitment (Harvard Business School,2012). This coalition team is made up of people from different departments and different levels within the Health Centre.

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Creating Change Vision: This was effectively undertaken right from the 2018 EBNA of Kake Integrated Health Center to the time of implementation of this project. The vision was communicated to everybody involved. After the 2016 need assessments and 2018 EBNA, the results were well communicated to all the health workers. So, this has facilitated the strategy to execute the vision. The" vision speech", "Good knowledge on medical solid waste management brings good health to all," was well practiced by all. Communicating the Vision; the success of the vision was determined by talking often about improving knowledge of medical waste management (Mulder, 2017). This vision of waste management applies to all operations of the health center.

Remove obstacles; leaders with the role of delivering the change of health workers' knowledge, attitude, and practice on medical waste management were identified. Job descriptions of all levels of health workers are well spelled out. Departments and persons with significant improvement in waste management were recognized and motivated. Mechanisms are put in place for quick identification and removal of any barriers (Tanner, 2018).

Empower health workers for the necessary action; the project ensures a collective responsibility for every stakeholder to have a role and task in the change process. The facilitator plays the role of teaching, the heads of departments and the Infection Prevention Committee members play the role of supervision, and Health workers play the part of acquiring knowledge and improving their knowledge, attitude, and practice on solid medical waste management.

Generating short-term targets: Parts of the project like lectures and demonstrations that do not need much help from any strong critics of the change and are less expensive were targeted first. Lessons learned are reflected on to avoid repeating past mistakes. At this level, the efforts of people who have worked hard are motivated.

Building on Change; the establishment of more education chances to be handled by health workers that have gain knowledge, attitude and good practice on solid medical waste management is one of the cornerstones aimed at consolidating what has been gained through continuous education. After every achievement of short-term goals like effective segregation of waste, analyses of what was well done and what was not done well was done. Also, fresh goals are set to continue.

Anchoring Changes in the Health Centre Culture: The involvement of all health workers of all levels, Administration, and other leaders in the change process is aimed at improving healthcare workers' knowledge, attitude, and practice on solid medical waste management. Furthermore, every chance is used to talk about waste management and success stories. Also, knowledge of proper solid medical waste management has been included as one of the qualifications for any newly employed workers.

Implementation of the Kotter change management model in solid health care management in this health center is the best as it is a step-by-step model and easy to use, with the main idea of accepting change rather than changing change (Anastasia, 2015). Mulholland (2017) added that Kotter's change management model can be very effective as the steps "force you to set the foundation for success by creating a sense of urgency and convincing everyone why change is necessary". Also, it gives the team the motivation and drive that is needed for them to embark on the change.

Social Practice Theory.

The central insight of this theory is the recognition of human practices. The way he does things, that is his behavior and habits. Human behavior is supplemented by additional stimuli referred to as 'cues to action,' which cause the real adoption of behavior (Morris *et al*., 2012). The practice of medical solid waste in the Kake integrated health centre is over compromised.

The application of Social practice theory has had an impact on the practice of waste management in this health center. The application of cue action messages like "proper management of solid medical waste saves lives", "Put trash into the Can", and "Segregate waste properly" has improved the practice of health workers on waste management. Better education of health workers on proper waste management has caused them to become more aware of environmental problems and motivated to behave in an environmentally responsible manner. Social practice theory can bring change in workers' behavior in the health center. As cited by Akintunde (2017), "*If people were better informed, they would become more aware of environmental problems and consequently, would be motivated to behave in an environmentally responsible manner*". Healthcare workers' knowledge increases, and they develop favorable habits that lead to responsible waste management actions. According to Asnawati, Kader, and Yusooff (2009), Social practice theory helps as a guide for designing intervention strategies to bring change in a particular behavior. The use of this theory brought a remarkable change in the old behavior of health workers in medical solid waste management.

The Health Belief Model

According to Boskey (2016), the health belief model is based on the fact that people will be willing to change their health behaviors depending on perceived susceptibility, perceived severity, perceived benefits, and perceived barriers. Glanz, Rimer, and Lewis (2002) added that HBM attempts to explain and predict health behaviors.

In the conception of medical solid waste management, a common Pidgin English saying in Cameroon is "Black man no di die doti," meaning dirt cannot kill an African. This common belief has been a hindrance to waste management as even health workers also believe in the above saying. They believe that since they are Africans, medical solid

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waste management cannot put them at risk of infection or trauma.

The use of HBM in this project has helped handle the above health belief. Using the Global effect of poor management of solid medical waste where over 13 million people are infected by Hepatitis B, C, and HIV, and the health center (WHO, 2014), EBNA 2018 result that over 6 workers are infected annually with Hepatitis B, C, and HIV in Kake integrated health center due lack of knowledge, attitude and practice of medical solid waste management. This perceived susceptibility shows the staff the risk they will face if they do not improve their knowledge of solid waste management. The increasing number of infections and trauma from solid medical waste alongside the World Health Organization (2014) and EBNA 2018 results caused the health workers to understand the severity of the problem, hence accepting change. As noted by Bookey (2016), it is very difficult to encourage people to change if there is nothing they will benefit from the change. This project gave out awards to people and departments that improved their knowledge, attitudes, and practice on solid medical waste management. Also, it will help health workers to know that reducing the risk of infection will keep them healthy, which is a major benefit. Again, the necessary barriers, like poor staffing, that could have caused health workers to see change to be hard were taken care of. Two additional housekeepers were employed by the management committee of the health center.

The use of the health belief model in this project also helps in the use of cues. For example, messages like "adequate knowledge leads to proper waste management," "Improper waste kills" "Self-Protection before waste management," and "Consider all medical waste dangerous". Furthermore, health workers are encouraged that their ability to acquire knowledge to manage waste properly will be helpful to them as a booster to their self-efficacy.

The use of this model has been very helpful to the project as it facilitated the conveying of the consequences of the lack of knowledge on proper solid medical waste management causing health workers to understand the insecurity, communicating the benefit if health workers change the behaviors' and providing possible assistance in looking for and reducing barriers to the implementation of the change.

The Process of Change

The change management process consists of several activities that the project manager follows to apply the needed change (Matt, 2018). In this project of medical solid waste management, the following change management processes were used. These involved requests for change, impact analysis, approval/denial implementing change, and review/ reporting.

CHANGE REQUEST

A change request is a proposal often brought up by a client or another team member to alter the agreed plan. During a project, this happens when a client or team member wants to change or alter the agreed initial plan (Jamie, 2015). The need for the improvement of waste management was identified after the results of the 2016 needs assessment and EBNA of 2018. Lack of knowledge and equipment are major contributing factors to inadequate solid medical waste management (Mochungong, 2011). This is similar to the Kake integrated health center following the EBNA 2018. During the project, some change requests were received.

For example, clients requested that teaching sessions at morning hours be shifted to afternoons so as to reduce patients' waiting time. Secondly, clients requested that clients and caregivers, especially those admitted, should be involved in the education in waste management. Health workers request for change of teaching language from English to Pidgin English so that the least educated worker can understand.

IMPACT ANALYSIS

A detailed analysis was done starting from the request after the needs assessment of 2016 and EBNA of 2018 alongside other requests that came up during the implementation of the project. The required resources were calculated, time allocation considered, as well as any associated costs for change and the projection of the requested change by the project manager. According to Sonia (2015), for a project to succeed, there is a need for serious analysis.

APPROVAL OR DENY

In a change management process, approval or denial of a request needs to be handled with care to limit resistance (Matt,2018). All the above change requests are also reviewed by a change approval board made up of the project manager, chief of center, infection prevention Nurse, and COPE chairperson. It has always been the responsibility of the project manager (The CAB chairperson) to prepare the agenda, which always includes all requests received and all analyses he has done. This committee always approves or rejects requests. Some of the approved requests include changing the teaching time from morning to afternoon hours and changing the teaching language from English to Pidgin English. An example of a request rejected is that from clients to always be involved in health workers' education sessions. This was rejected as clients will be more confused during demonstrations as they will not be directly involved in medical waste management.

CHANGE IMPLEMENTATION

After the approval from the change approval board, the requested changes should be handed back to the requester for implementation (Jamie, 2015). In the above situation,

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measures were put in place to make sure that there was no deviation from the approved implementation plan. Also, considering the following planned implementation timeframe, no unplanned impact is brought in to meet needed objectives. On the other hand, changes that failed were backed out. REVIEW/REPORTING: The implementer's reports and all final statuses of the change requested are reviewed. Their reports include the time of change, results, successes or failures of change, and measuring change results (Matt, 2018). In this project, the waste management change manager in Kake Integrated Health Centre reviewed change management reports, identified areas to be changed, and handed them to the project management committee, and they were analyzed.

Health Workers' Reaction to Change and Management of Resistance

Many people receive change with different feelings, although change is inevitable. Some are enthusiastic, while others develop fear and resist change. Some resist changes as they fear to loss of their job, due to poor communication of the vision, lack of trust on people leading change, and poor timing for change (McQuerrey, 2018). The Staff of Kake Integrated Health Centre had different reactions to change towards improving solid medical waste management.

Health Workers' Reactions to Change.

Employees' resistance to change is one of the leading causes of the failure of planned projects. To bring change, the change agent needs to focus on employee reaction to change (Witting, 2012). In this project, the health workers of Kake Integrated Health Centre were not different. 20 percent of workers accepted the change from the first point, 19 percent denied the change at the first point while 61 percent waited to see the change before they accepted. The above result is similar to the view of Bachelor (date), where the scholar identifies that 20 percent of employees embrace change on its advantages, 20 percent resist change on its merits, and 60 percent always like to wait and see before joining the other in the change.

According to Webber (1999), for an organization to have successful change, leaders must understand how people will react to change, knowing some will deny change, some will be angry with change, some will be depressed, and some will adapt to change. In Kumba Baptist Health Centre, over 20 percent of the general staff body resisted change. This came from people who championed the old practice of waste management where all waste was always dumped in one receptacle. They had feared that the new method would delay their work. This led to anger and depression, and after a long run of education, many of them have accepted the new change.

On the other hand, 19 percent of the workers at the first point of introduction accepted the change and have been very proactive. This group of workers understood the change and had no stress in it and developed love and ownership over the change. These were IP Nurse, chief of centre, and COPE committee members. According to Carlson (2015), when people understand change become proactive, feel free, and have control over the situation.

Also, 61 percent of the workers waited to see how change started before they joined. At the beginning of the project, the number of people attending education talks kept on increasing every day, and the people's interest in changing from the old system of solid waste management was also increasing every day. According to Zaide (2009), a good number of people always feel panic, develop fear, and insecurity, and feel negatively about change, and when they are helped and assured it helps them to feel empowered and will then face change with a positive mind. Generally, the staff of Kake Integrated Health Centre same as any other employee's past through the following stages of change reaction. That is denial, anger, mourning, and adaptation (Webber, 1999). Also, as described by Fisher's process of personal transition (2012), when change is communicated, some people can be anxious, some happy, some develop fear, some are threatened, some become guilty, some develop disillusionment, and some become excited.

Management of Resistance

This project was realized due to the proper management of resistance. Following MR management (2018), to manage resistance, there is a need to overcome opposition by explaining to health workers why change is needed. Giving a listening ear and appreciating feedback from staff will cause them to take an active part in waste management (McQuerrey, 2018). Also, when people understand change, they will be more involved (Minn & Laohasiriwong, 2010). Implementing change in many stages reduced resistance. The change was communicated to workers, so they embraced it.

Since the start of this project till now some pockets of resistance have been noticed and handled. Resistance to this change has been reduced as the following were implemented from the beginning of the project for example putting in place John Kotter eight steps model, engaging senior leaders like the Chief of centre, infection prevention nurse, all heads of departments COPE and IP committee in the change process in solid medical waste management has reduced resistance.

Also, staff with a passion for proper waste management were assigned to function as middle managers, supervisors, and advocates of change. These groups of people, alongside practicing change, also communicate the need for change, as well as the impact on health workers and the benefits to them. These helped reduce the rate of resistance. According to Nguyen (2010), much resistance to change like that of improving medical solid waste management can be avoided if effective change management is applied to the project

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from the very beginning. This scholar supported that though resisting change is a normal human reaction during change, good change management can reduce much of this resistance.

According to McQuerrey (2018), to start any project, resistance should be expected even if the project will cause a wonderful improvement to the community. For this reason, the infection prevention team that introduced the old way of waste management that needed change was involved in the new change. To handle the health workers ' fear of having more work as a result of the change, they were causing to understand the importance of the change to their health. Furthermore, those who have been very successful and rewarded in the old way of waste management were identified and involved in this project.

Also, to manage resistance, Prosci's 3 Phase Change Management Process was applied. During the creation of any strategy for improving health workers' knowledge of waste management, all areas were always well assessed. Again, the communication plan, sponsorship roadmap, coaching plan, and training plan were well explained to everybody involved in the change process. This was done by collecting feedback to understand health workers' adoption and compliance with the new approaches to solid waste management and processes prescribed by this change in waste management. Evaluating this feedback has enabled us to identify gaps, and this has helped in the management of resistance that may still be occurring. According to MR Management (2018), to manage resistance, it is necessary to prepare for change, manage change, and reinforce change. For the cases of resistance that have been recorded so far, the leaders are always called to a meeting to look deep into the root cause of the resistance. This system of resistance management has helped in the timely handling of resistance. The resistance of laboratory staff not to able to have more than one waste receptacle was identified as the root cause due to inadequate staffing. One staff member has been added, and they have welcomed the idea of adding the number of receptacles. Following McQuerrey (2018), managing resistance is effective when the root causes of the resistance are focused on rather than focusing on the symptoms.

At the start of the project, the following leaders were put in place to manage any resistance that may have come up. This team is made up of the chief of the centre, the project manager, the supervisors, and the heads of the departments. So far, this team has handled four resistances from two departments. According to Nguyen (2010), the right resistance management team will do much work in understanding and addressing resistance.

Evaluation of Change

Effective and consistent education in waste management and provision of equipment led to health workers knowing more about waste avoidance, recycling, organics, litter, and illegal dumping. Also, there are better skills to manage organics, reuse, and recycling, also staff attitudes towards waste management have changed. Again, the community is showing more positive behavior towards waste. The level of waste education delivery has improved. According to the NSW Environment Protection Authority (EPA) (2015), if there is a change, it will better workers' skills to manage organics, reuse, and recycling, also staff attitudes towards waste management will change. The community will show more positive behavior towards waste.

Conclusion.

Medical solid waste is posing a serious health problem globally in sub-Sahara Africa, including Cameroon and Kake integrated health centre in particular. There are many factors that are responsible for the poor management of solid medical waste. In order to improve solid medical waste management, all Health workers need to improve their knowledge, waste management guidelines put in place, and more equipment put in place.

As a change agent, there is a need to formulate strategies in planning implementation so as to bring change in waste management. To achieve this, there is a need for effective involvement of stakeholders from the District to Health Centre level. The success of this will be remarkable if there is good communication and an enabling environment for teaching and learning.

The importance of education at all levels cannot be overemphasized as it can influence change at all levels. Empowering health workers with knowledge and, provision of guidelines and equipment will accelerate the changes in improving waste management. When health workers gain knowledge and improve their attitude and practice on waste management, the sanitation of the health center will improve, making the facility conducive to clients, and the rate of cross-infection and trauma to health workers will be reduced.

Limitations.

General understaffing and continuous transfer of staff out of Kake due to the crisis hurt the project. The few staff left behind are stressed by the happenings of the ongoing socio-political crisis. Most of the highly educated staff that started the project and two of the trained supervisors were transferred due to the political crisis, making the implementation of the project very difficult.

During the implementation phase, the health center was hit by the crisis, leading to poor cash flow hence making funding inadequate. It was difficult for other funders like the regional infection prevention team to come in with funds due to road blockages along all roads coming to Kake. This also hindered supervision by external supervisors as it was difficult for them to reach Kake. Also, it took time for dust bins that were bought in Douala to come to Kake, and

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thirteen of them were burnt on the way by restoration fighters.

Recommendations.

The Ministry of Public Health should create policies detailing the training of health workers and sanitary workers on medical solid waste management. Also, the management of medical waste should be added to the school curriculum of all training schools of health personnel in Cameroon. Again, medical waste inspectors should be trained and assigned to all districts to facilitate health center supervision. Furthermore, a waste management manual should be prepared and sent to all levels to guide healthcare workers on waste management. Also, the state should issue the availability of waste management equipment in all health units.

The district services should include waste management in their supervision agenda. Also, the district health service should plan training and retraining of health workers on proper waste management. Training of health workers on waste management by health facilities should be made compulsory, and this training session should be regular and very frequent.

All newly employed health workers should be orientated on solid medical waste management. Also, strict implementation of medical waste management guidelines should be enforced by the health centre management, and supervision should be made weekly. The health center should make the training of health workers and provision of equipment on waste management compulsory, and the training sessions need to be very regular**.**

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List of abbreviations.

EBNA-Evidence-Based Needs Assessment
EPI- Expanded program of immunization
HBM-Health Belief Model
HCW-Health Care Worker
IP-Infection Prevention
M&E-Monitoring and evaluation
SPT-Social Practice Theory
WHO-World Health Organization

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Conflict of interest.

No conflict of interest was declared.

Availability of data.

Data used in this study is available upon request from the corresponding author.

Authors contribution.

EK designed the study, reviewed literature, cleaned and analyzed data, and drafted the manuscript; JFN supervised all stages of the study from conceptualization of the topic to manuscript writing and submission; and DK & EO supported study conceptualization, general supervision, and mentorship.

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References.

1. Adogu, P. O. U., Ilika, A. L., Asuzu, M. C., & Egenti, N. B. (2014). Medical solid waste generation and management in Nigeria: A case study. Journal of Environmental and Public Health, 2014, 1-6. doi:10.1155/2014/858606
2. Anozie, O. B., Anozie, R. O., & Iwu, A. C. (2017). Knowledge, attitude, and
3. The practice of healthcare workers regarding healthcare waste management at a tertiary hospital in Nnewi, Nigeria. Journal of Environmental and Occupational Science, 6(1), 1-9.
4. Asante, K. A., Agusa, T., & Biney, C. A. (2014). Multi-trace element levels and arsenic speciation in the urine of e-waste recycling workers from Agbogbloshie, Accra in Ghana. Science of the Total Environment, 466-467, 369-379.
5. Awodele, O., Adewoye, A. A., Oparah, A. C., & Akinyede, A. (2016). Assessment of knowledge, attitude, and practice of health-care waste management among health workers in South-west Nigeria. International Journal of Occupational and Environmental Medicine, 7(2), 86-94.
6. Dzekashu, C. W., Akoachere, J. F. & Mbacham, W. F. (2017). The challenges of solid waste management in health care facilities in Cameroon. Health Care Current Reviews, 5(3), 1-5.
7. EBNA (2018). Waste Management and Disposal Guidelines. Kumba Baptist Health Centre, Cameroon.
8. Environmental and Biomedical Waste Awareness Network (EBNA) Report. (2018). Kumba.
9. Faroog, A., Thirimithasari, P., Mahendra, R. J., & Khan, M. S. (2017). Medical waste management in Sri Lanka towards sustainable development goals. International Journal of Scientific Research in Science, Engineering, and Technology, 3(3), 367-370.
10. FAROOG, N., RATHORE, F. A., & FATIMA, N. (2012). Knowledge and practices of hospital waste management among healthcare personnel in Karachi. Journal of the Pakistan Medical Association, 62(6), 574-578.
11. Farooq, M. U., Janjua, H. A., & Khan, M. A. (2012). Knowledge, attitude, and practices regarding biomedical waste management among healthcare professionals in Rawalpindi, Pakistan. Journal of Ayub Medical College Abbottabad, 24(3-4), 32-35.
12. Gulis, G., & Mochugong, P. I. (2013). Waste management in hospitals in Cameroon. International Journal of Environmental Health Research, 23(2), 177-186.
13. Hangula, N. M., & Ologoke, C. U. (2017). Healthcare waste management in Windhoek and Swakopmund, Namibia. Waste Management & Research, 35(9), 949-955.
14. Kake Integrated Health Centre Report. (2018). Kumba.
15. Kumari, S., Singh, D. K., Mishra, M., & Goel, S. (2014). Biomedical waste management: awareness and practices in a district of Gujarat. National Journal of Community Medicine, 5(3), 336-340.
16. Maina, A. W., Nyerere, A. K., & Ngugi, P. K. (2016). Determinants of healthcare waste management among hospitals in Kenya. Journal of Environmental and Public Health, 2016, 1-8. doi:10.1155/2016/5167615
17. Malenya, F., & Omwenga, J. (2015). Healthcare waste management in Kenya: A case study to understand the complexity of the waste management system. Journal of Environmental and Public Health, 2015, 1-7. doi:10.1155/2015/680567.
18. Maloba, M. (2012). Healthcare waste management in Kenya: A case study of Thika District Hospital. Journal of Environmental and Public Health, 2012, 1-7. doi:10.1155/2012/141070
19. Manyele, S. V., & Lyasenga, T. J. (2010). Healthcare waste management practices and safety compliance in Tanzania. American Journal of Environmental Sciences, 6(5), 445-452. doi:10.3844/ajessp.2010.445.452
20. McAllister, G. (2015). Healthcare waste management: The current issues in Africa. Journal of Environmental and Public Health, 2015, 526016.
21. Mochungong, P. I. (2011). Medical solid waste management in Cameroon: A case study of the Bamenda Regional Hospital (Doctoral dissertation, University of South Africa).
22. Ndapandula, E., Amukugo, H. J., & Iita, H. (2018). Assessment of healthcare waste management practices and associated environmental risks in Namibia: A case study of Windhoek Central Hospital. Journal of Environmental and Public Health, 2018, 1-10. https://doi.org/10.1155/2018/6879751
23. Njue, M., Oyugi, H., Fergusson, P., & Kimani, M. (2015). Analysis of medical waste management in public and private hospitals in Nairobi, Kenya. Journal of Environmental and Public Health, 2015, 1-9. https://doi.org/10.1155/2015/209505
24. Ogefunsho, O. O., Awodele, O., Akinyede, A., Ogunjobi, A. A., & Dada, A. O. (2016). Healthcare waste management in Nigeria: A case study. Journal of Environmental and Public Health, 2016, 1-6. doi:10.1155/2016/9316254.
25. Okechukwu, A. A., Okechukwu, O., & Bamgbola, O. T. (2017). Knowledge, attitude, and practice of

healthcare waste management among health workers in a tertiary hospital in Abakaliki, Nigeria. Journal of Environmental and Occupational Science, 6(2), 82-91.

26. Okechukwu, E. F., Modestus, U. S., Nwali, M. I., & Ike, N. (2017). Knowledge, attitude, and practices of healthcare workers in clinical waste management at Federal Medical Centre Umuahia, Abia State, Nigeria. African Journal of Medical and Health Sciences, 16(2), 88-93. doi: 10.4103/ajmhs.ajmhs_6_16.
27. Sarko, A. H., Nasih, N. A., & Ali, Z. H. (2017). Assessment of medical solid waste management in the general hospitals of Sulaimani City, Iraq. Zanco Journal of Medical Sciences, 21(2), 150-157.
28. Sarko, K. A., Nasih, O., & Ali, S. M. (2017). Assessment of medical waste management in three hospitals in the Upper East Region of Ghana. Journal of Environmental and Public Health, 2017, 1-11. doi:10.1155/2017/4024293
29. Tambe, A. B., Nzefa, L. D., Fongang, C. J., & Djouma, F. N. (2016). An appraisal of medical waste management among selected health facilities in Kumba Health District, Cameroon. International Journal of Environmental Research and Public Health, 13(2), 183.
30. Vanesh, B. T., Mohd, N. H., & Nor, A. Z. (2011). Supervision and enforcement for healthcare waste management. Procedia Engineering, 20, 489-496. https://doi.org/10.1016/j.proeng.2011.11.193

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