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A Qualitative Study of Factors Influencing Unsafe Work Behaviors Among Environmental Service Workers: Perspectives of Workers, and Safety Managers: The Case of Government Hospitals in Addis Ababa, Ethiopia

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ABSTRACT

BACKGROUND: Environmental Service (EVS) is a term that refers to cleaning in healthcare facilities. EVS personnel are exposed to a variety of hazards, including physical, chemical, ergonomic, cognitive, and biological hazards that contribute to the development of diseases and disabilities. Recognizing the conditions that promote unsafe behavior is the first step in reducing such hazards. The purpose of this study was to (a) investigate the attitudes and perceptions of safety among employees and safety managers in Addis Ababa hospitals, and (b) figure out what factors inhibit healthy work behaviors.

METHODS: The data for this study was gathered using 2 qualitative data gathering methods: key informant interviews and individual in-depth interviews. About 25 personnel from 3 Coronavirus treatment hospitals were interviewed to understand more about the factors that make safe behavior challenging. The interviews were recorded, transcribed, and then translated into English. Open Code 4.02 was used for thematic analysis.

RESULTS: Poor safety management and supervision, a hazardous working environment, and employee perceptions, skills, and training levels were all identified as key factors in the preponderance of unsafe work behaviors among environmental service workers.

CONCLUSIONS: Different types of personal and environmental factors were reported to affect safe work behavior among environmental service personnel. Individual responsibility is vital in reducing or eliminating these risk factors for unsafe behaviors, but management's involvement in providing resources for safe work behavior is critical.

KEYWORDS: Safe work behavior, environmental service, occupational health, coronavirus

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Introduction

Cleaning of healthcare facilities is performed for medical, sanitary, and public health reasons. Maintaining an environment with a low pathogenic burden is essential for avoiding complications during the care and recuperation of patients.[1] One specific department that is cardinal to organizational outcomes is environmental services (EVS). From fostering a culture of safety to improving hospital user experience as well as employee engagement, the EVS department plays a vital role in transforming the culture of an organization.[2]

EVS is a term that refers to cleaning in healthcare facilities.[2] EVS personnel perform a critical role in health care, collaborating with hospital staff to ensure the safety of patients and staff through proper medical cleaning and disinfection. Because of its importance, the service is frequently referred to as "the first line of defense against infection control."[3] EVS staff clean patient rooms, nursing units, surgical areas, offices, laboratories, waiting rooms, and restrooms regularly to assist in the prevention of hospital-acquired infections.[4] This is a crucial activity in a healthcare facility because a defective environmental service has an impact on a hospital's ability to function and the quality of treatment it provides.[3] And amid a pandemic marked by the need for cleanliness, it makes perfect sense that the individuals cleaning the hospitals where Coronavirus (COVID-19) victims fight for their lives are of critical importance.

Hospital environmental hygiene, however, is far more complex than other types of cleaning. EVS personnel are exposed to a variety of hazards, including physical, chemical, ergonomic, cognitive, and biological hazards that contribute to the development of diseases and disabilities.[3,5,6] Despite these risks, environmental service personnel are generally undertrained, underpaid, and underappreciated by other hospital staff. When this is combined with understaffed environmental service departments, it leads to long-term concerns about patient and healthcare worker safety.[4,7,8] The EVS workforce has also been proven to be one of the most vulnerable groups to nosocomial COVID-19 infections.[9]

Currently, in Addis Ababa, 9 government-owned hospitals serve as COVID-19 treatment centers. Despite the many studies on safe work behaviors among front-line health care

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professionals, there is scant evidence on barriers to safe work practices among environmental service personnel. The limited literature on factors affecting safe practices among hospital cleaners reveals that we currently lack adequate models for standards and techniques that can work at scale to maintain safety in contexts where risks are prevalent, compliance costs are high, and enforcement capability is poor. Given the very different healthcare systems and regulatory environments, the approaches used successfully in developed countries cannot be directly applied to developing ones. In light of this, the purpose of this article is to investigate the attitudes and expectations of environmental service personnel and safety managers in Addis Ababa government hospitals during COVID-19, as well as to identify the factors that impede safe work behaviors among these workers in 2020.

Methods and Materials

The study was conducted in 3 government hospitals in Addis Ababa city, the Ethiopian capital, from June 25 to July 22, 2020. The 3 government hospitals were purposefully chosen for this investigation because of their large COVID-19 patient flow. The study team consisted of 4 investigators, 4 professional data collectors, and 1 supervisor. The supervisor and the 4 data collectors received 2 days of intensive training. Lessons on data collection strategies and how to effectively handle study participants were conducted during the training.

The study involved 2 groups of participants in each hospital. One group was made up of personnel from the environmental services department, while the other was made up of in-hospital Infection Control and Patient Safety personnel (IPPS). An on-site survey was conducted in each hospital to identify study participants. As per the census, there were 69 environmental service workers and 15 infection control and patient safety specialists across all 3 hospitals.

Study participants were then selected using staff rosters provided by the hospitals' Human Resources departments. The authors wanted to include as many EVS/IPPS staff as feasible to reflect workers along the typical patient trajectory. Thus, purposive sampling was used to acquire data that was representative of the setting. Semi-structured key informant interviews (KII) and in-depth interviews (IDI) were used to collect data in this study. Interviews were conducted until the data was saturated, or until recurring patterns emerged in the individuals' narratives. The study included 19 EVS personnel and 6 infection prevention and patient safety officers from various task classifications, hospital settings, and seniority levels.

The study team developed the interview guides after conducting a thorough evaluation of the relevant literature (Supplemental Material S1 file). The interview guides used with both groups of participants were made similar to ensure that the replies were comparable. The interviews lasted 35 to 45 minutes; probing questions were used when replies were unclear or ambiguous, or to get more extensive information. In addition to the study participants, the interview included an interviewer, a note-taker, and an observer.

The tape-recorded interviews were transcribed in Amharic and translated into English by the researchers. The translated data were exported into Open Code 4.03 software to facilitate coding and analysis. A priori themes were coded based on the study objectives and emergent themes were identified based on the narratives of research participants. The credibility of the analysis was further enhanced by having 2 researchers analyze each data set. All members of the research team worked systematically through entire data sets, giving full and equal attention to each data item. Individual extracts of data were coded in as many different themes as they fit and as many times as deemed relevant. Memos were recorded to identify interesting aspects in the data items and emerging impressions that may form the basis of themes across the data set.

Biweekly research meetings were held throughout the coding process to allow time for peer debriefing and to help the research team to examine how their thoughts and ideas were evolving as they engaged more deeply with the data. Meeting minutes were recorded as a means of establishing an audit trail and to help keep track of emerging impressions of what the data means and how they related to each other. A method of negotiated agreement was then used to reconcile any differences. Related verbatim quotes are used to help in the interpretation of the data when presenting the data.

Wachemo University College of Medicine and Health Sciences' institutional review board granted ethical approval (IRB). Before collecting data, a permission letter was obtained from the Addis Ababa City Health Bureau. Furthermore, participants' involvement was contingent on their full approval and agreement. All the study participants were de-identified during the analysis and the reporting of the data used in this study.

Result

This study included a total of 25 hospital personnel. Environmental service personnel accounted for 19 of the total, while personnel from the Infection Control and Patient Safety departments accounted for 6. Females made up 20 of the study participants (80.0%). The participants' mean age was 38.2, with a standard deviation (SD) of 8.2 and a range of 18 to 59.

Factors Related to Unsafe Work Behaviors

Themes and sub-themes (categories) identified

Three main themes emerged from the participants' perspectives concerning the factors associated with unsafe work behaviors—(1) Poor management and supervision of safety, (2) Unsafe workplace conditions, and (3) Perceptions, skills, and training level of workers (Table 1).

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Table 1. Classification of themes, categories, and codes according to the thematic analysis.

MAIN THEMES	SUBTHEMES (CATEGORY)	SUB-CATEGORIES
Poor management and supervision of safety	Ineffective safety management	- Lack of ready access to personal protective equipment (PPE) in the workplace.
		- Poor design and quality of available PPE
		- Insufficient training
		- Haphazard inventory tracking
		- Delayed payments for wages and salaries that minimize security incentives
		- Lack of rewards and recognitions for positive safety outcomes
	Poor monitoring and supervision of safety	- Negligent control of PPE compliance
		- Haphazard safety inspections
Unsafe workplace conditions	Unsafe psychological environment	- Fatigue relating to work
		- Excessive loads of work
		- Condescending safety supervision and maltreatment
		- Stress-related to work
		- Separation from family
	Unsafe physical environment	- Excessive noises
		- Increased traffic
Perceptions, skills, and training level of workers	Safety misconceptions and risk perception	- Concerns about PPE interfering with work
		- Hazards that are "normalized" over time
	Socio-cultural aspects of work	- Culture, beliefs, and attitudes getting in the way of workplace safety
	Workers not skilled enough to deal with safety issues	- Lack of experience and skills in dealing with hazards

Theme 1: Poor management and supervision of safety

Ineffective safety management. Almost all of the participants cited a general lack of personal protective equipment (PPE) as a primary impediment to safe behaviors. There was also evidence of a tendency to suggest that hospital administrators were unaware of the need for timely, adequately, and appropriately provided PPE. One respondent, for example, voiced dissatisfaction with the shortage of crucial PPE supplies, as described below (P12 refers to participant 12).

> *P12: One barrier to safe behaviors is that the personal protective equipment if available is very worn-out and defective. I've been working here for 6 months, and so far I haven't gotten any PPE. I use the worn-out equipment that was used by those who worked here before the pandemic.*

Furthermore, many participants stated that personal protective equipment such as masks, gloves, and goggles were either too big or too small for them to wear comfortably. As a result, it appears that the workers were left with nothing to use.

> *P4: Although I know we are supposed to use facemasks while cleaning, I prefer instead to cover my face with a scarf because the masks the hospital gives us do not fit properly.*

On the other hand, key informants considered in this study justified supply shortfalls as follows: (K2 refers to Key-informant 2).

> *K2: . . . We [hospitals] survive with our existing old gear because the pandemic has strained all available resources. We take what we can get and use it to the best of our advantage; the government provides what it has and what it can.*

Respondents cited a lack of training as another key cause for the staff's failure to fully engage in safe work practices.

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Participants discussed their training and expressed their dissatisfaction with the frequency of training (and adequacy by implication).

P16: They do train us but in my view, it's not adequate. It was only given to us once since the pandemic began . . . I'd have preferred it if it were at least once every few weeks. A lot of new personnel have come and gone after the training. Thus, beginners are usually left to their own devices to find out why the equipment is needed and how and when it is used.

Key informants clarified that given the costs that go into scheduling training more than once a year; priority was given to clinical workers.

K2: Training on how to protect themselves from COVID-19, as well as steps for appropriate PPE use, is given to all staff. The training was given to physicians and nurses twice this year, but it was given once to the other staff members. We must prioritize our resources, and use them more where they are most needed

The lack of best practices in safety management was also visible from the participants. This impacted the work behavior of the staff. For example, a worker's job status, such as whether they are a permanent or temporary employee, affects their access to training or PPE, even if both types of employees may be exposed to the same risk.

P13: as you know, safety goggles protect us from exposure to droplets from infected individuals, but it's hard for those of us working under temporary contracts since our bosses say it's only for permanent employees and not for others.

P8: Permanent hospital employees were given a participation fee of $7 (300 Ethiopian birr) for COVID-19 prevention training, but for workers employed under contractual terms there was no such fee. So many of our colleagues skipped the training out of anger.

In addition to these ineffectual best practice regimes, the lack of efficient inventory management systems within hospitals was identified as a significant impediment to employees' pursuit of safe work practices.

P8: Often the hospital wards get so loaded with COVID patients that we have to work overtime and when we ask for mask or glove replacements, our superiors say okay, but once we enter the storeroom, the item is out of stock. We can't afford to lose our jobs so we work under these circumstances.

Finally, the apparent mismatch between participants' expectations of benefiting from reward programs and hospital administrators' incapacity to set up effective programs appears to have an impact on employees' enthusiasm for safe work practices.

P1: Here those who work hard are not valued; in other divisions, I have, many acquaintances, and for their selfless duties they get bonuses and rewards, this should be introduced here to encourage safety, to endorse hard work.

Poor monitoring and supervision of safety. Maintaining workplace safety and health in any workplace is as much the duty of the manager as it is the responsibility of the employees themselves. In the present study, participants discussed in detail the lack of strict supervision and scheduled inspection as one of the major barriers to safe work behavior among the cleaning staff.

P5: Supervisors came this morning but they asked us how the work was going and not about our protection. . . . There's no concern about what we're missing, more so when we're on the night shift.

Theme 2: Unsafe workplace conditions

Unsafe psychological environment. The data gathered in this study demonstrates the prevalence of a high-stress environment. Many participants, for example, regarded departmental pressure as onerous due to productivity demands.

P16: We feel the pressure. We feel that any interruption in our services could cause severe problems. These patients may be individuals who we know or whom we work with. We see them fight for their lives and feel like we must make their stay here as comfortable as possible. So it's hard when you're feeling that, that constant urge to fix everything.

Some features of the workers' characterization of workplace conditions were also reflected upon by key informants.

K4: Any worker who develops or is suspected of developing symptoms gets placed in our isolation centers. So the alienation from your family and the concerns about your job security is constantly at the back of your mind . . . you suffer psychologically, of course, ideally not to the point of stress-induced accidents.

Others felt that they were working under extreme pressure. They stated that some mid-level staffs seem to believe, perhaps incorrectly, that exhibiting an authoritarian attitude toward workers is the way to enhance productivity and achieve objectives in the workplace.

P2: Often, because of personal or family issues, people may miss work, so our bosses come here to check who is absent and late, not to ask us if they can do something for us . . . Most of the questions that are asked here are questions such as has the floor been cleaned? Have the toilets been washed? And if not; they go on a long rant but never really ask why?

Unsafe physical environment. Noise, increased traffic, and other changeable environmental variables impacting workplace safe behaviors were also discussed.

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K6: These are unusual times, there are people in the halls, inpatient wards are packed . . . people here are crying for relatives . . . people there are gasping for air . . . the staff is constantly interacting with each other. . . your voice is being muffled with masks on . . . so you have to repeat things to your colleagues or you are momentarily pulling them down to be audible. . . COVID-19 has made hospitals congested beyond belief.

Theme 3: Perceptions, skills, and training level of workers

Safety misconceptions and risk perception. Similarly, subgroup demographic characteristics (eg, job position and experience level) also had a tremendous impact on safety perceptions. For some, the key factor in avoiding infections was to rely on experience and self-confidence while doing the work; this is reflected in their optimistic views of themselves and their conceptualizations of advantageous improvements related to age, such as the ability to execute tasks with minimal risk to oneself.

P10: the techniques of working safely and preventing any kind of danger have been perfected by seasoned staff, so I feel like I can function perfectly well if there is a pandemic or an outbreak. Guidelines add little to my know-how

Other young participants seem to have accepted that more seasoned employees are less likely than their novice peers to get a work-related illness. One worker related this to the levels of promotion that, as seen in the excerpt below, come with experience.

P6: Older and more seasoned staffs are more likely to be in team leader roles and are often active in activities that do not require them to face dangerous conditions.

Socio-cultural aspects of the work. Socio-cultural aspects of work such as culture, beliefs, and attitudes too became apparent as a major impediment to safe work behaviors. A repeated allusion from the interviewees was that some had a negative attitude toward safe work behaviors within the workforce.

P18: Several workers in our hospital believe that using personal protective equipment is a waste of time and that using masks increases the incidence of syncope because it doesn't give the brain enough oxygen, particularly the older employees. They say to us the only security we need is God.

For some, perceptions of minimal health threat from the Coronavirus dissuaded safe work behaviors.

P12: Whether or not you take precautions, we're all bound to inevitably get it . . . I hear most people don't even notice when they get it . . . it's like the flu at best.

Workers not skilled enough to deal with safety issues. Participants were quick to point out that many of their coworkers, particularly the new ones, lacked the basic skills and experience required for employees to execute their jobs properly. According to them, this resulted in many employees using untested work techniques and normalizing workplace risks.

P14: We see inexperienced workers take greater risks when conducting routine tasks. The hospital administration frequently assigns the task of training to employees who have been on the job longer. But we don't get additional time to do that many times; we still need to finish our jobs. Therefore we leave it to the new employee to ask questions. So if you're inexperienced; in cleaning hospitals in the COVID-19 era, it shouldn't be your meal ticket.

Discussion

The COVID-19 pandemic presents substantial challenges to health systems around the world, including balancing the additional service delivery needs required to combat the pandemic with maintaining and improving access to critical health services.[10] Historically underfunded health systems in parts of Africa were strained to breaking point during the pandemic.[11] In many cases, frontline health workers lacked adequate protective equipment for much of the pandemic, putting their lives at risk.[12]

It is well established that effective performance in any healthcare setting necessitates the availability of appropriate facilities, and supplies.[13] Employers are responsible for providing, replacing, and paying for personal protective equipment that can protect the user against health and safety risks at work, reduce physiological stress, facilitate engagement, and keep people comfortable, according to the Ethiopian infection prevention and patient safety guideline, and the national healthcare waste management guideline.[14-16] However, the implementation of such recommended evidence-based measures leaves much to be desired as Ethiopian health care workers still lack access to appropriate PPE.[17,18]

This was especially evident in the current study; the lack of adequate and appropriate personal protection equipment was a serious impediment to employees' safe work practices. Hospitals in low-income countries use the same supply chains as hospitals in wealthy countries to get medical supplies, but they have significantly less negotiation leverage to secure resources.[19] In Sub-Saharan Africa, healthcare spending accounts for only 5% of GDP or approximately half of the global average.[20] PPE is in short supply throughout the region. Purchasing PPE can be a difficult process for African healthcare providers, many of whom are small and medium-sized operations. Highly specialized knowledge of the market is needed to gain a clear grasp of what equipment to buy, where to get it, and how much to pay for it.[21]

Simultaneously, the pandemic has brought greater financial strains, particularly on healthcare facilities. There are direct expenses associated with the disease, as well as indirect costs associated with the general economic downturn. During the crisis, many of the smaller healthcare facilities that provide

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crucial services in countries across the region have battled to stay afloat. As a result, healthcare professionals have little additional revenue to spend on PPE.[22] Bridging this financing gap and helping with the knowledge gap is critical to help more healthcare providers access needed equipment. Linking partners across the supply chain, from PPE manufacturers to financial institutions to healthcare businesses, is critical to getting this right.[19]

Similarly, any behavior in a health-related workplace must be sustained by a high degree of knowledge and empirical evidence.[23] Within the academic literature, a focus on the training and empowerment of EVS personnel in lower and middle-income countries (LMICs) has gathered pace in recent years. In an assessment of hospital training practices in India, Bangladesh, The Gambia, and Zanzibar, less than a third of the facilities assessed provided formal training to their EVS personnel.[7] Similar investigations in Ghana, Tanzania, and Nigeria have also highlighted deficiencies in the training, knowledge, and practices of EVS personnel.[24-26] According to these studies, training for both healthcare staff and hospital cleaners represents an enormous opportunity for quality improvement. In the present study, the absence of appropriate and up-to-date safety training in hospitals was seen as contributing to the cleaners' inability to effectively adhere to safety regulations. Moving forward, the people who are largely responsible for cleaning hospitals must be included in the focus in order to develop and maintain a safe atmosphere in Ethiopian hospitals.

Hospital policy as a feature may affect the observance of safety protocols.[27] Despite their key role in infection prevention and control (IPC), little reference is made to cleaning staff in many of the international and regional IPC/environmental hygiene guidelines. The absence of cleaners among the key stakeholders included in the WHO Essential Environmental Health Standards in Health Care, generally referred to as the gold standard, is a glaring example of this omission.[28]

Past studies also point to a generalized neglect of cleaners in LMICs; cleaners have little control over their role, responsibilities, and work environment.[8,24] In the present study, workers' perceptions of hospital administrative models were identified as impediments to their workplace safety. EVS personnel had the impression that the hospitals' administrative models were geared to prioritize technical outputs over people and the environment. However, these viewpoints are not limited to medical establishments. Within the wider context of LMICs, there is a societal undervaluing of these individuals' roles and rights.[7,8] Even so, small efforts can be made to begin to address these challenges, beginning with the work environment.

EVS personnel, healthcare providers, and the rest of the hospital staff must cultivate productive, mutually respected relationships. While hospital training is crucial for preventing HCAIs, it also has the potential to influence relationships with healthcare providers, foster recognition of cleaning staff as valuable members of the workforce, and assist cleaning staff in understanding the importance of their role in infection prevention.[8] Nonetheless, it is important to recognize that without broader system changes; the benefits of training may not be fully realized. A successful program, according to the WHO core components for IPC programs, must work across the entire system and include organizational and cultural change.[29,30] This should include a stronger emphasis on staffing and cleaning equipment.[31]

The physical environment, as an element of the workplace, has a direct impact on worker safety.[32] Overcrowding in hospitals harms healthcare delivery and results.[33] Despite WHO recommendations to reduce hospital overcrowding, it continues to be a problem in most African hospitals today.[34] The primary cause is a mismatch between bed supply and demand, as well as a poor flow of patients through beds. As demand increases and the bed supply shrinks, flow through hospitals becomes impaired.[35] EVS personnel in the current study reported that the recent crowded working environment produced by the pandemic jeopardized their ability to work safely. As a result, today's managers must alter their management culture to make significant progress in these areas. First and foremost, it is critical to place a strong emphasis on diverting patients to community services and providing additional services in the community that are often provided in hospitals (eg, hospital outreach programs). Further significant improvements will necessitate large infrastructure and workforce investments in order to expand the workforce's flexibility and the healthcare system's capacity.[36]

Because of the trade-offs between hazardous exposures and the challenges of donning, wearing, and doffing PPE, EVS personnel frequently fail to properly adhere to PPE and infection control protocols.[37,38] Individual-level factors including knowledge, beliefs, attitudes, risk perception, and socio-demographics have consistently been highlighted as factors that influence PPE-related behaviors and safety compliance in several studies conducted throughout the developing world.[21,39-41]

EVS personnel, managers, and institutions must work together to improve the safety culture in healthcare facilities. This culture necessitates a company-wide commitment to developing, implementing, evaluating, and maintaining effective and current safety practices.[42] Although organizational and cultural considerations in the context of workplace safety have garnered a lot of attention in recent years, individual-level factors affecting healthcare worker safety have received less attention.[7]

Several individual-level characteristics were observed to contribute to poor compliance and other safety-related outcomes in the current study. While some EVS personnel relied on their own risk assessments when selecting whether or not to use PPE, others had significant knowledge gaps when it came to correct PPE use, transmission modes, and other infection control concerns. These mindsets eventually lead to increased

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risk-taking and an inability to prepare for the next unknown.[8] According to a Tanzanian study, however, these beliefs, habits, and knowledge gaps can be altered through scientific problem-based training programs.[24]

There are some limitations to the current study. This is a 3-site study, and the findings are unlikely to be representative of all other hospitals. Other hospitals will inevitably have their own characteristics that mediate barriers to safe practices; however, some of the ones found in this study will likely resonate there as well. Furthermore, social desirability may skew participant responses, causing them to deliver sociably desired answers. As a result, it's impossible to rule out the possibility of some individuals being reluctant to share their real-life experiences. The PPE findings described in this study are almost entirely based on the participants' perceptions, rather than empirical evidence, such as assessments of protective garment effectiveness, durability, and fit. The reported results have not been independently corroborated. Though perceptions are important, they can be skewed by passion and vested interests, and thus may fail to accurately reflect actual circumstances. Aside from these flaws, the study has several advantages. This is the first study in Ethiopia that provides a full and meaningful assessment of barriers to safe practices among EVS personnel.

Future Direction for Research

The number of hospitals and the regions studied in this study was limited due to a lack of research resources. Future research should include a broader network of hospitals. Future research may also be required to determine the expenses associated with injuries caused by unsafe work practices, as well as worker and process downtime due to injuries induced by unsafe practices. Furthermore, while research and more broadly publications from LMICs are scarce, what is available illustrates that EVS personnel are a neglected part of the health workforce, with either no or inadequate training; the current study also demonstrated that training is an important determinant of safe practices. It was done, however, in a broader context. The type and frequency of training, as well as the information presented, may need to be investigated more in future studies. Finally, in terms of the research agenda, more work should be done to see how findings from high-income countries might complement or be coupled with those from LMICs' neglected frontlines.

Conclusion

This was the first study to look into what drives environmental service workers to engage in unsafe workplace practices. Changes in the organization's policies, processes, managerial actions and priorities, and resources dedicated to safety are all required to implement a safety culture. Furthermore, the commitment to, and support of, safety should be conveyed to workers at all levels through active and sincere engagement by those in leadership positions. Thus, improved access to personal protective equipment, decent working conditions, occupational health and safety training, mental health and psychosocial support, remuneration and incentives, and a supportive work environment, including a manageable workload, should be part of the solution efforts going forward. Finally, and importantly, individual accountability is key to improving and sustaining safe practices.

Author Contributions

AT: wrote the proposal, supervised the collection , entry, and analysis of data, and engaged in the development of the manuscript. AH, FE, AG: Participated in the design, methodology, data analysis, and review of the manuscript The final paper was read and approved by all authors.

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Availability of Data and Materials

All the data supporting the findings are included in this paper.

Supplemental Material

Supplemental material for this article is available online.

REFERENCES

1. Dancer SJ. Hospital cleaning in the 21st century. *Eur J Clin Microbiol Infect Dis*. 2011;30:1473-1481.
2. Han JH, Sullivan N, Leas BF, Pegues DA, Kaczmarek JL, Umscheid CA. Cleaning hospital room surfaces to prevent health care-associated infections: a technical brief. *Ann Intern Med*. 2015;163:598-607.
3. Dancer SJ. The role of environmental cleaning in the control of hospital-acquired infection. *J Hosp Infect*. 2009;73:378-385.
4. Peters A, Otter J, Moldovan A, Parneix P, Voss A, Pittet D. Keeping hospitals clean and safe without breaking the bank; summary of the Healthcare Cleaning forum 2018. *Antimicrob Resist Infect Control*. 2018;7:132.
5. Ilesanmi OS, Omotoso B, Falana D. Hazards of hospital cleaners in a tertiary health facility in Southwest Nigeria. *Int J Occup Saf Health*. 2015;4:5-10.
6. Faremi F, Olatubi M, Ogunlade B, Ajayi O. Knowledge of occupational hazards among cleaning workers: a study of cleaners of a Nigerian University knowledge of occupational hazards among cleaning workers: a study of cleaners of a Nigerian University. 2018.
7. Cross S, Gon G, Morrison E, et al. An invisible workforce: the neglected role of cleaners in patient safety on maternity units. *Glob Health Action*. 2019;12:1480085.
8. Storr J, Kilpatrick C, Lee K. Time for a renewed focus on the role of cleaners in achieving safe health care in low- and middle-income countries. *Antimicrob Resist Infect Control*. 2021;10:59.
9. Shields A, Faustini SE, Perez-Toledo M, et al. SARS-CoV-2 seroprevalence and asymptomatic viral carriage in healthcare workers: a cross-sectional study. *Thorax*. 2020;75:1089-1094.
10. Sohrabi C, Alsafi Z, O'Neill N, et al. World Health Organization declares global emergency: a review of the 2019 novel coronavirus (COVID-19). *Int Surg J*. 2020;77:217.
11. Kraef C, Juma P, Kallestrup P, Mucumbitsi J, Ramaiya K, Yonga G. The COVID-19 pandemic and non-communicable diseases – a wake-up call for primary health care system strengthening in sub-Saharan Africa. *J Prim Care Community Health*. 2020;11:2150132720946948.
12. Benson NU, Fred-Ahmadu OH, Bassey DE, Atayero AA. COVID-19 pandemic and emerging plastic-based personal protective equipment waste pollution and management in Africa. *J Environ Chem Eng*. 2021;9:105222.
13. Salehi H, Pennathur PR, Da Silva JP, Herwaldt LA. Examining health care personal protective equipment use through a human factors engineering and product design lens. *Am J Infect Control*. 2019;47:595-598.
14. Haylamicheal ID, Desalegne SA. A review of legal framework applicable for the management of healthcare waste and current management practices in Ethiopia. *Waste Manag Res*. 2012;30:607-618.

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15. Molina L, Lopez H, Bussolo M. Ethiopia-infection prevention guidelines for health care facilities in Ethiopia. 2022. https://elibrary.moh.gov.et/library/wpcontent/uploads/2021/07/IC-Vol1-Refernce-Manual launched.pdf
16. Ayalew Y. Leadership, management and Governance (LMG) practices in Ethiopian Public Hospitals: 2018–and 2019. *Ethiopian J Health Dev*. 2021;35:97-104.
17. Sahiledengle B, Tekalegn Y, Woldeyohannes D. The critical role of infection prevention overlooked in Ethiopia, only one-half of health-care workers had safe practice: a systematic review and meta-analysis. *PLoS One*. 2021;16:e0245469.
18. Deressa W, Worku A, Abebe W, Gizaw M, Amogne W. Availability and use of personal protective equipment and satisfaction of healthcare professionals during COVID-19 pandemic in Addis Ababa, Ethiopia. *Arch Public Health*. 2021;79:146.
19. Cohen J, Rodgers YVM. Contributing factors to personal protective equipment shortages during the COVID-19 pandemic. *Prev Med*. 2020;141:106263.
20. Lv Z, Zhu H. Health care expenditure and GDP in African countries: evidence from semiparametric estimation with panel data. *Sci World J*. 2014;2014:1-6.
21. Roux CL, Dramowski A. Personal protective equipment (PPE) in a pandemic: approaches to PPE preservation for South African healthcare facilities. *S Afr Med J*. 2020;110:466-468.
22. Zungu M, Voyi K, Mlangeni N, et al. Organizational factors associated with health worker protection during the COVID-19 pandemic in four provinces of South Africa. *BMC Health Serv Res*. 2021;21:1080.
23. Sorensen G, Sparer E, Williams JAR, et al. Measuring best practices for workplace safety, health, and well-being: the workplace integrated safety and health assessment. *J Occup Environ Med*. 2018;60:430-439.
24. Gon G, Kabanywanyi AM, Blinkhoff P, et al. The Clean pilot study: evaluation of an environmental hygiene intervention bundle in three Tanzanian hospitals. *Antimicrob Resist Infect Control*. 2021;10:8.
25. Ilesanmi O, Omotoso B, Amenkhienan I. Accidents, injuries and the use of personal protective equipment, among hospital cleaners in a tertiary hospital in south west Nigeria. *Res J Health Sci*. 2015;3:275-284.
26. Otu RA, Doo IA. Hospital solid waste management at Tetteh Quarshie memorial hospital, Akuapem-Mampong, Ghana. *Int J Environ Waste Manag*. 2015;16:305-314.
27. Little J, Coughlan B. Optimal inventory policy within hospital space constraints. *Health Care Manag Sci*. 2008;11:177-183.
28. Adams J, Bartram J, Chartier Y. *Essential Environmental Health Standards for Health Care*. World Health Organization; 2008.
29. Storr J, Twyman A, Zingg W, et al. Core components for effective infection prevention and control programmes: new WHO evidence-based recommendations. *Antimicrob Resist Infect Control*. 2017;6:6.
30. World Health Organization. *Guidelines on Core Components of Infection Prevention and Control Programmes at the National and Acute Health Care Facility Level*. World Health Organization; 2016.
31. Méhaut P, Berg P, Grimshaw D, Jaehrling K, Van Der Meer M, Eskildsen J. Cleaning and nursing in hospitals: institutional variety and the reshaping of low-wage jobs. Institutional variety and the reshaping of low wage jobs. In Low-Wage Work in the Wealthy World|Low-Wage Wk. in the Wealthy World. New York: Russell Sage Foundation. 2010. p. 319-366.
32. Mj E, Eu A, Nm P. Impact of workplace environment on Health Workers. *Occup Med Health Aff*. 2017;5:261-266.
33. Eitel DR, Rudkin SE, Malvehy MA, Killeen JP, Pines JM. Improving service quality by understanding emergency department flow: a White Paper and position statement prepared for the American Academy of Emergency Medicine. *Emerg Med J*. 2010;38:70-79.
34. Forero R, Hillman KM, McCarthy S, Fatovich DM, Joseph AP, Richardson DB. Access block and ED overcrowding. *Emerg Med Aust*. 2010;22:119-135.
35. Affleck A, Parks P, Drummond A, Rowe BH, Ovens HJ. Emergency department overcrowding and access block. *Can J Emerg Med*. 2013;15:359-384.
36. Savanth SS, Babu KRM, eds. Hospital queuing-recommendation system based on patient treatment time. In: *Proceedings of the 2017 International Conference on Intelligent Computing and Control Systems (ICICCS)*. IEEE; 2017.
37. Harrod M, Weston LE, Gregory L, et al. A qualitative study of factors affecting personal protective equipment use among health care personnel. *Am J Infect Control*. 2020;48:410-415.
38. Honda H, Iwata K. Personal protective equipment and improving compliance among healthcare workers in high-risk settings. *Curr Opin Infect Dis*. 2016;29:400-406.
39. Tamene A, Afework A, Mebratu L. A qualitative study of barriers to personal protective equipment use among laundry workers in government hospitals, Hawassa, Ethiopia. *J Environ Public Health*. 2020;2020:5146786.
40. Hersi M, Stevens A, Quach P, et al. Effectiveness of personal protective equipment for healthcare workers caring for patients with filovirus disease: a rapid review. *PLoS One*. 2015;10:e0140290.
41. Poller B, Tunbridge A, Hall S, et al. A unified personal protective equipment ensemble for clinical response to possible high consequence infectious diseases: a consensus document on behalf of the HCID programme. *Infect J*. 2018;77:496-502.
42. Morello RT, Lowthian JA, Barker AL, McGinnes R, Dunt D, Brand C. Strategies for improving patient safety culture in hospitals: a systematic review. *BMJ Qual Saf*. 2013;22:11-18.

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