ORIGINAL ARTICLE

The reality of patient bodily waste management: Nurse perceptions of current practice & staff safety

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ABSTRACT

Objective: The purpose of this study was to evaluate nurse knowledge about the risks of exposure to patient bodily waste, nurse perceptions about procedures and reporting, and current levels of satisfaction with how risks of exposure to patient waste are managed. Patient bodily waste management impacts healthcare workers and healthcare organizations. For nurses and other healthcare workers, the risk of exposure to pathogens can have adverse health effects, increase stress, and reduce satisfaction with their job, potentially leading to issues related to retention. Evidence suggests that proper training and using devices to reduce exposure risks and improve shorter bedside toileting, may reduce stress, and improve work satisfaction. Reducing risk of increased healthcare associated infections of patients and healthcare workers may have a positive impact on the organization with reduced cost of care.

Methods: A survey focused on nurses' knowledge about their risk of exposure, nurse understanding of procedures and incident reporting, and morale and satisfaction with their job was conducted. Results. The findings suggest that there were conflicting responses related to the acknowledgement of risk, reporting incidents, and the use of personal protective equipment.

Results: The findings suggest that there were conflicting responses related to the acknowledgement of risk, reporting incidents, and the use of personal protective equipment.

Conclusions: Organizations benefit from addressing these concerns to improve morale and satisfaction, nurse retention, healthcare worker dignity, and the quality of patient care.

Key Words: Nursing, Risk of exposure, Patient bodily waste, Personal protective equipment, Satisfaction, Morale, Quality of care

1. INTRODUCTION

Healthcare organizations must consider the means of collecting and disposing of patient bodily waste as part of their overall infection control plan designed to reduce healthcare associated infections (HAIs).[1] Manual washing and disinfecting of bedpans and other vessels pose a risk of exposure to caregivers and the indoor environment via splash and aerosol.[2,3] Furthermore, manual washing has the potential to leave pathogens residing on the bedpan surface.[1] Bedpans can harbor a wide range of pathogens, including *Clostridium difficile* (C. diff), norovirus, Methicillin-resistant *Staphylococcus aureus* (MRSA), *Pseudomonas aeruginosa* (Psa), species of Salmonella, *Klebsiella pneumoniae* (K. pneumoniae), *Acinetobacter baumannii* (AB) and vancomycin-resistant enterococcus (VRE).[4,5] The risk of transmission of these pathogens can be increased if the bed pans are not thoroughly

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cleaned and disinfected after use. In one study, a positive correlation between healthcare worker practices for managing patient bodily waste and the incidence of Enterobacteriaceae (ESBL-PE) was noted. The researchers concluded that there is an urgent need for development of public health efforts to integrate programs to enhance knowledge and practices of healthcare workers to better control the spread of multidrug-resistant bacteria with infection control programs.[6]

Very few published studies focus specifically on patient bodily waste management, however hand hygiene is associated with the issues surrounding bodily waste management and health safety. Hand hygiene is a critical component in infection control in healthcare settings. Nurses, being at the forefront of patient care, play a pivotal role in preventing HAIs through proper hand hygiene practices to reduce the incidence of HAIs, therefore reducing the risk of increased morbidity, mortality, and healthcare costs.[7] The Centers for Disease Control (CDC) recommends the use of alcohol-based hand sanitizers (ABHS) for routine hand antisepsis in healthcare settings. Handwashing with soap and water is recommended when hands are visibly soiled or after caring for patients with infectious diarrhea.[8] Despite clear guidelines, compliance with hand hygiene practices among nurses remains a challenge. Workloads and time constraints such as high patient-to-nurse ratios and urgent care demands can limit the time available for proper hand hygiene.[9] Skin dryness and irritation from frequently using ABHS products may discourage consistent practice.[7] Other factors of compliance include lack of readily available hand hygiene products and perceived efficacy.[10,11]

Hand hygiene disrupts the transmission of pathogens from healthcare workers to patients. By practicing effective hand hygiene, healthcare workers can significantly reduce the transmission of pathogens like methicillin-resistant *Staphylococcus aureus* (MRSA), *Clostridium difficile*, and various Gram-negative bacteria that can be transmitted via contaminated hands. Reducing the transmission of these pathogens reduce risk of exposure and subsequent incidence of HAIs.[9] Many studies have demonstrated the positive impact of improved hand hygiene practices on reducing HAI rates.[7,12–14] One study conducted in a New York hospital implemented a hand hygiene improvement program and observed a 37% reduction in the rate of HAIs over a two-year period.[15] Another study in a French hospital found that hand hygiene compliance increased from 48% to 66% which as associated with a significant decrease in MRSA infections.[9]

In addition to reducing infection rates, improved hand hygiene practices contribute to substantial cost savings. HAIs extend hospital stays and necessitates additional treatments leading to higher healthcare costs. Improving hand hygiene compliance in hospitals could prevent millions of HAIs annually, resulting in savings of $25B to $31.5B in medical costs.[16,17]

Improved hand hygiene practices contribute to the overall infection control efforts in healthcare facilities. By reducing the reservoir of pathogens on healthcare workers' hands, the likelihood of environmental contamination is also minimized.[14,18,19] A comprehensive approach to infection control enhances safety and quality of patient care.[7] Patient bodily waste management is part of that comprehensive approach. Having the proper tools and education for managing patient waste will improve infection prevention efforts in healthcare systems. Studies should be conducted to ascertain the impact of improved practices for patient bodily waste management to discern the value, both in terms of reducing risk of infection and cost implications.

Another related topic of concern is needlestick injuries (NSIs). NSIs are classified as a significant occupational hazard in healthcare settings, causing risks of transmission of bloodborne pathogens such as hepatitis B virus, hepatitis C virus, and human immunodeficiency virus. Occupational NSIs are common in healthcare facilities, affecting a significant proportion of healthcare workers. One study estimated that approximately 2 million healthcare workers experience NSIs annually leading to a substantial number of infections with bloodborne pathogens.[20] Factors contributing to NSIs include high patient-to-staff ratios and long working hours leading to fatigue and lapses in concentration, increasing the likelihood of an error; insufficient training on the proper handling and disposal of sharps can result in accidental injuries; and the absence of safety-engineered devices, such as needleless systems and safety syringes.[3,20–23] Like patient bodily waste management, ongoing education, the use of safety-engineered devices, and comprehensive infection control protocols are essential to protect healthcare workers from needlestick injuries and their potentially serious consequences.

Patient bodily waste management impacts nurses, other healthcare workers, and the healthcare organization. For nurses and other healthcare workers, the risk of exposure to pathogens can have adverse health effects, increase stress, and reduce work satisfaction, potentially leading to retention issues.[24–26] Proper training and using safety-engineered devices to reduce exposure risks and improve shorter bedside toileting, may reduce stress, and improve work satisfaction.[27] Reducing risk of exposure reduces HAI risk of patients, nurses, and other healthcare workers, reducing the cost of care for organizations.[4,5,28]

2. METHODS

2.1 Subject selection & recruitment

The subject population targeted for the research was nursing professionals filling a variety of nursing roles requiring an associate, bachelor, or advanced nursing degree. The American Nurses Association (ANA) database is a membership listing of professional nurses which was used for recruitment by nurse type, practice setting, specialty, and academic degree. Additionally, recruitment included participants at professional conferences such as Association of Professionals of Infection Prevention and The American Nurses Credentialing Center National Magnet Conference, mailing lists of nurses and infection preventionists, and participants in continuing education presentations. No population within the professional nurse inclusion criteria were excluded from participation. No vulnerable populations are included in this study. All participants were of working age, 18 years and older. An exemption from IRB review was provided by Baylor University Institution Review Board on June 22, 2023.

The study was anonymous, and, through the recruitment process, no emails were recorded. Consent was obtained and the survey was provided in Spanish and English according to the IRB Exempt protocol. For those who started and did not complete the survey, their responses remained in the data and were used in the analysis. Questions that were not answered were reported as missing data. None of the participants withdrew from the study nor asked to be removed from the data set. Undue influence or coercion was minimized by making an anonymous solicitation. The opportunity to participate was squarely in the potential participant's corner. The researchers did not have access to emails for those who decided not to participate. Researchers did not have access to emails for those who participated and responded in any way. This is not a randomized selection list; rather the selection is driven by finding participants in professional settings.

2.2 Research design and method

The purpose of this project was to gain insight into nursing needs, perceptions, and satisfaction related to patient bodily waste management. The hypothesis for this study was that healthcare organizations have systems in place for the safe elimination of bodily waste management and nurses are knowledgeable of the risks and utilize resources provided to maintain a safe working environment. To that end, the following are the aims of the study:

Aim 1: Knowledge and Level of Exposure. The survey assessed nurse knowledge about the risks of exposure to non-blood bodily material and the level of those exposures.

• Sub Aim: The evaluation of the data determined if there were differences in knowledge and perceptions based on type of hospital and other demographic factors.

Aim 2: Procedures and Reporting. The survey assessed the level of reporting and current procedures to mitigate impacts of exposures to non-blood bodily material.

• Sub Aim: The evaluation of the data determined if there were differences in procedures and reporting based on type of hospital and other demographic factors.

Aim 3: Satisfaction and Morale. The survey assessed nurses' current levels of satisfaction and morale with how risks of exposure to non-blood bodily material were currently managed.

• Sub Aim: The evaluation of the data determined if there are differences in satisfaction and morale based on type of hospital and other demographic factors.

The methodology of this study utilized a survey with a quantitative design. The survey was developed specifically for this inquiry. The first set of questions aligned with Aim 1 and focused on knowledge about the risk and their personal level of exposure. The second set of questions aligned with Aim 2 and focused on the participant's understanding of procedures and incident reporting. The next set of questions aligned with Aim 3 and focused on morale and satisfaction with their job. The final set of questions were demographic questions intended to be used as dependent variables for analysis. The demographic questions encompassed variables such as age, gender, and the number of years a nurse had been employed in the healthcare sector. Additional inquiries pertained to the type of healthcare facility (e.g., community hospital, university hospital), the facility's size as determined by bed count, and its geographical location (e.g., rural, suburban, urban). In this study, rural areas are defined as regions with low population density and extensive open spaces primarily dedicated to agriculture and natural resource-based industries. Urban areas are characterized by high population density and a significant concentration of infrastructure, businesses, and cultural amenities. Suburban areas are described as a blend of rural and urban environments, featuring residential neighborhoods near urban centers that provide access to city amenities and open spaces.

This area of inquiry is understudied and has limited research in literature. However, the literature on this topic and related topics (e.g., needle stick injuries and hand hygiene) contributed to the development of the survey questions. Review of the survey was conducted by an expert in the field and a pilot study assessed the questions to get additional input from those who are most affected by management of bodily

waste.

A pilot survey was shared with ten potential respondents who were not part of the selection cohort but had an interest in the topic. The purpose of the pilot study was to assess the veracity of the questions and determine if there were any obstacles for participants to complete the survey. Seven participants completed the pilot survey. The data and open comments were analyzed and reviewed. Based on several added comments for the pilot study, all agreed that there were no questions that could not be answered given the choices provided and no additional topics or questions should be added to the survey. The composition of the survey remained unchanged. After the completion of the analysis of the pilot survey, the survey was released. Since no personal information was collected and participation was voluntary, the risk of bias was minimized. The survey was available to the participants for approximately three weeks in both English and Spanish languages. Data collection took place during the 2023 calendar year after IRB Exempt approval. The survey was administered in electronic format using Qualtrics.[29]

2.3 Analysis

Primary aims were addressed using descriptive statistics, proportions in categories of responses. For sub aims, to determine if there were significant differences across groups, either a Pearson's Chi-squared test or Fisher's exact test were run. The Fisher's exact test was run only if the assumptions for the expected counts of a Chi-squared test were not met, specifically for gender and whether the facility is a Magnet facility for specific questions. A Magnet hospital is a healthcare organization recognized for excellence in nursing services and adherence to high standards of patient care.[30] The cutoff point to determine significance was set to alpha = 0.05. For text answer questions, we tokenized responses, removed stop words, and used stemming to avoid duplicates of words. Graphical methods were utilized to display results for all analysis as appropriate. All computations were done in the statistical software program R, version 4.1.1[31] and for text data using the "textdata" package.[32]

3. Results

3.1 Demographics

Of those who provided consent to participate (N = 379), 65% responded to the questions in the survey (N = 253). Respondents were predominantly female (89%), over 50 years old (46%), and experienced (45% with more than 20 years of experience) (see Table 1). Fifty-six percent work in community hospitals, 52% were of medium size although large and small hospitals were well represented. Federal government hospitals represented only 6.1% with 13% at university hospitals (see Table 2). Forty-four percent work in urban settings although there was reasonable representation in rural and suburban settings as well.

Table 1. Sociodemographic characteristics of sample (N = 379)

Characteristics	*n* (%)
Age	
20 or under	2 (0.8%)
21-29	14 (5.3%)
30-39	67 (25%)
40-49	61 (23%)
50-59	58 (22%)
60 or over	64 (24%)
Gender	
Female	237 (89%)
Male	26 (9.8%)
Prefer to self-describe	2 (0.8%)
Years as healthcare worker	
0-5	17 (6.4%)
5-10	32 (12%)
10-15	50 (19%)
15-20	48 (18%)
20 or more	119 (45%)
Years at Current Facility	
0-5	93 (35%)
5-10	60 (23%)
10-15	51 (19%)
15-20	29 (11%)
20 or more	30 (11%)

3.2 Knowledge about risk of exposure

Nurse responses to survey questions about their knowledge of risk exposure indicated high agreement (see Table 3).

Respondents had high agreement that:

- Management of patient bodily waste is important (94%).
- Responsible containment using waste management devices can decrease costs of HAI (91%).
- Repeated exposure desensitizes healthcare workers to risks (81%).

When considering risk associated with exposures to patient bodily waste:

- Needle stick injury was considered the highest risk (86%).
- Blood and stool splash/spills to the eye, nose, or mouth was considered high risk (83%).
- Stool splash/spills on skin or clothing was considered high risk by 73% of respondents.

Table 2. Workplace characteristics of sample (N = 379)

Characteristic	*n* (%)
Facility Type	
Community hospital	147 (56%)
Federal government hospital	16 (6.1%)
Other	66 (25%)
University hospital	33 (13%)
Location	
Rural	52 (20%)
Suburban	95 (36%)
Urban	114 (44%)
Facility Size	
Large hospital: 500 or more beds	67 (26%)
Medium hospital: 100 to 499 beds	132 (52%)
Small hospital: Fewer than 100 beds	56 (22%)
Magnet Facility	
No	177 (69%)
Yes	80 (31%)
Pathway to Excellence Facility	
No	174 (69%)
Yes	77 (31%)
Professional Designation	
Advanced Practice Registered Nurse (APRN)	7 (2.6%)
Certified Nurse Assistant (CNA)	2 (0.8%)
Certified Nurse Educator (CNE)	1 (0.4%)
Clinical Nurse Specialist (CNS)	5 (1.9%)
Infection Preventionist (IP)	65 (25%)
License Practical Nurse (LPN)	3 (1.1%)
Nurse Practitioner (NP)	9 (3.4%)
Other	13 (4.9%)
Registered Nurse (RN)	160 (60%)
Specialty	
Cardiac Catheterization Laboratory	2 (0.8%)
Cardiac/Coronary Care	5 (1.9%)
General Practice	26 (10%)
Geriatrics	21 (8.1%)
Intensive Care	19 (7.3%)
Medical-Surgical	43 (17%)
Neurological Intensive Care	2 (0.8%)
Orthopedics	5 (1.9%)
Other	124 (47%)
Pediatrics	13 (5.0%)

For the question, "How concerned are you about the risk associated with blood splash/spill exposures (low risk to high risk)?" gender (see Figure 1) and age were significantly different (p = .003 for gender; p = .04 for age). Male participants were more concerned than female participants and nurses over the age of thirty were more concerned.

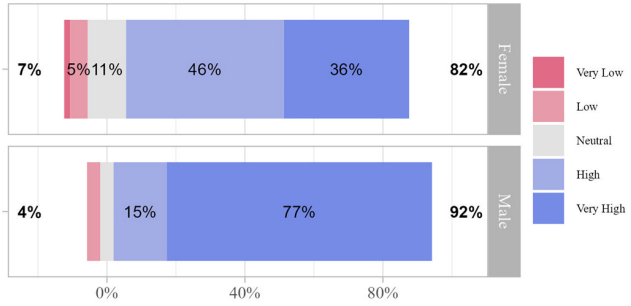

Figure 1. Nurses' concern about the risk associated with patient bodily waste exposures

Type of facility and urban/suburban/rural facility were significantly different for "How concerned are you about the risk associated with stool splash/spill to the eyes, nose, and mouth during cleaning (low risk to high risk)?" were significantly different (p = .027 for type of facility, p = .036 for urban/suburban/rural facility). Community hospital and Federal government hospital nurses were more concerned than nurses working in university and other hospitals. For location, Nurses at urban and suburban hospitals were less concerned.

3.3 Procedures and reporting

For questions focusing on organizational procedures, an interesting pattern emerged showing that knowledge of procedures did not align with follow-through of reporting; and similar results indicating that while PPE is available, nurses typically only use gloves (see Table 4). Eighty-eight percent of respondents responded that they did not report stool splash or spill events despite 76% agreeing that their hospital has clear and easy reporting methods. The respondents overwhelmingly feel they would need to "justify" such a report.

When asked which of the following mitigation mechanisms and devices has your hospital implemented (macerators, bedpan liners, splash screens, and bedpan or urine bottle management), the response suggested lack of implementation of mitigation methods.

Three questions focused on actions taken by the respondents to mitigate their own risk.

- Only 29% of respondents consider the impact of exposures close to meal breaks.
- Eighty percent of nurses use PPE, although 99% only use gloves.

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Table 3. Survey responses for knowledge questions (N = 379)

	Strongly disagree *n* (%)	Somewhat disagree *n* (%)	Neither agree/disagree *n* (%)	Somewhat agree *n* (%)	Strongly agree *n* (%)
Management of waste is important	11 (4.1%)	2 (0.8%)	4 (1.5%)	24 (9.0%)	225 (85%)
Exposures desensitize workers to risks	19 (7.1%)	22 (8.3%)	10 (3.8%)	90 (34%)	125 (47%)
Containment can decrease cost	5 (1.9%)	6 (2.3%)	13 (4.9%)	72 (27%)	169 (64%)
Concern: needle stick	4 (1.5%)	16 (6.0%)	19 (7.2%)	97 (37%)	129 (49%)
Concern: blood splash	4 (1.5%)	13 (4.9%)	27 (10%)	112 (43%)	107 (41%)
Concern: stool splash (eyes/nose/mouth)	3 (1.2%)	19 (7.4%)	25 (9.7%)	109 (42%	102 (40%)
Concern: stool splash (skin)	4 (1.5%)	28 (11%)	37 (14%)	106 (41%)	85 (33%)

Table 4. Survey responses for procedures/reporting questions (N = 379)

	Strongly disagree *n* (%)	Somewhat disagree *n* (%)	Neither agree/disagree *n* (%)	Somewhat agree *n* (%)	Strongly agree *n* (%)
Would feel need to justify actions	35 (13%)	25 (9.4%)	31 (12%)	105 (40%)	69 (26%)
Hospital has clear reporting methods	7 (2.7%)	24 (9.2%)	33 (13%)	97 (37%)	101 (39%)
	Never	**Sometimes**	**About ½ of time**	**Most of time**	**Always**
Reporting Frequency:					
Stool splash (eyes/nose/mouth)	119 (84%)	12 (8.5%)	2 (1.4%)	2 (1.4%)	6 (4.3%)
Stool splash (skin/clothes)	124 (78%)	24 (15%)	3 (1.9%)	3 (1.9%)	5 (3.1%)
Mitigation Measures Implemented:					
Plan gap with meals	117 (46%)	34 (13%)	30 (12%)	40 (16%)	34 (13%)
Protection disposing sharps	7 (2.7%)	15 (5.8%)	9 (3.5%)	51 (20%)	177 (68%)
Protection cleaning bedpans	13 (5.1%)	26 (10%)	13 (5.1%)	45 (18%)	157 (62%)
Gloves	0 (0%)	2 (0.8%)	0 (0%)	14 (5.4%)	245 (94%)
Face Mask	38 (15%)	94 (37%)	25 (9.7%)	35 (14%)	65 (25%)
Face Shield	88 (35%)	90 (35%)	22 (8.6%)	22 (8.6%)	33 (13%)
Gown or Apron	30 (12%)	93 (36%)	30 (12%)	40 (16%)	64 (25%)
Respirator	144 (57%)	83 (33%)	4 (1.6%)	8 (3.2%)	12 (4.8%)
Goggles	109 (43%)	89 (35%)	17 (6.8%)	12 (4.8%)	24 (9.6%)
	No		**Maybe**		**Yes**
Macerators	202 (80%)		39 (15%)		12 (4.7%)
Bedpan Liners	162 (63%)		27 (11%)		68 (26%)
Splash Screens	175 (68%)		22 (8.5%)		62 (24%)
Bedpans	101 (39%)		64 (24%)		97 (37%)

Agreement for the following statements were significantly different by gender (see Table 5 and Figure 2).

• "I would feel the need to justify my actions if I were to make an incident report for needle stick, blood spill or splash, or stool spill or splash" (p = .023). Male nurses were more concerned with justification of their actions then female nurses.

• "My hospital has implemented regular self-reporting checklists and tools for compliance with procedures when man-

ually cleaning bedpans" (p = .010). Female nurses had more confidence in their processes and procedures than male nurses.

• "My hospital has adequate engineering controls such as ventilation, equipment, and protective barriers for reducing hazards from coming into contact with healthcare workers" (p = .049). Male nurses indicated more confidence in their facility engineering controls than female nurses.

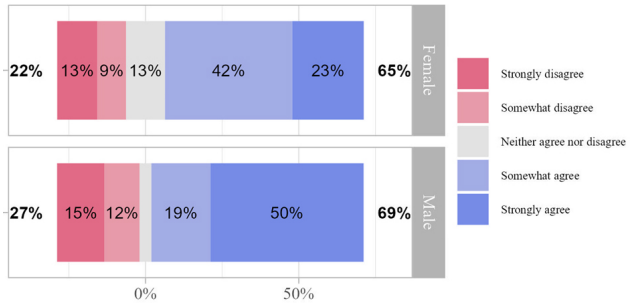

Figure 2. Nurses who feel the need to justify their actions if an incident report was made for a needle stick, blood splash or spill, or stool splash or spill by gender

The question "In the past 3 months, how often did you report a... blood splash or spill?" was significantly different by age and years of experience (p = .004 and p = .008, respectively). Nurses, age 29 or less, were less likely to report along with nurses with 5 years or less experience.

The question "In the past 3 months, how often did you report a... needle stick injury?" was significantly different by type of facility and magnet facility (p < .001 and p = .034, respectively). Federal government hospital nurses were most likely to report whereas in Magnet certified facilities, nurses were least likely to report an incident.

The statement, "My hospital has adequate engineering controls such as ventilation, equipment, and protective barriers for reducing hazards from coming into contact with healthcare workers" was significantly different by the size of the facility with p = .034. Nurses in medium size facilities (100-499 beds) responded that engineering controls were adequate compared to nurses at large hospitals (500+ beds) and small hospitals (< 100 beds).

For magnet facilities, the statements "My hospital has implemented regular self-reporting checklists and tools for compliance with procedures when manually cleaning bedpans" and "My hospital has adequate engineering controls such as ventilation, equipment, and protective barriers for reducing hazards from coming into contact with healthcare workers" were significant (p < .001, p = .023, respectively). In both cases, nurses in magnet facilities found the procedures and processes inadequate compared to nurses in non-magnet facilities.

4. Nurse Satisfaction and Morale

There was strong agreement among nurses with the role that managing patient bodily waste plays in morale and satisfaction (89%), nurse retention (74%), healthcare worker dignity (91%), and quality of patient care (89%) (see Table 5).

Table 5. Survey responses for nursing satisfaction and morale questions (N = 379)

	Strongly disagree *n* (%)	Somewhat disagree *n* (%)	Neither agree/disagree *n* (%)	Somewhat agree *n* (%)	Strongly agree *n* (%)
Investing fosters job satisfaction.	2 (0.8%)	0 (0%)	26 (9.8%)	85 (32%)	153 (58%)
Investing improves nurse retention.	0 (0%)	3 (1.1%)	65 (24%)	81 (30%)	117 (44%)
Utilizing containment improves the quality of patient care.	2 (0.8%)	2 (0.8%)	25 (9.4%)	81 (30%)	156 (59%)
Containment solutions positively impact healthcare worker dignity.	2 (0.8%)	3 (1.1%)	19 (7.1%)	64 (24%)	178 (67%)
How satisfied are you with the current protocol?	18 (6.8%)	60 (23%)	82 (31%)	79 (30%)	25 (9.5%)
What is your level of stress while performing bodily waste tasks?	12 (4.6%)	77 (30%)	112 (43%)	47 (18%)	11 (4.2%)
What is your level of anxiety while performing bodily waste tasks?	19 (7.3%)	85 (33%)	111 (43%)	35 (14%)	9 (3.5%)

While the respondents recognize its importance, 39% were satisfied with the current protocols in their workplace for managing bodily waste. Only 22% reported stress and 17% reported anxiety when performing these tasks.

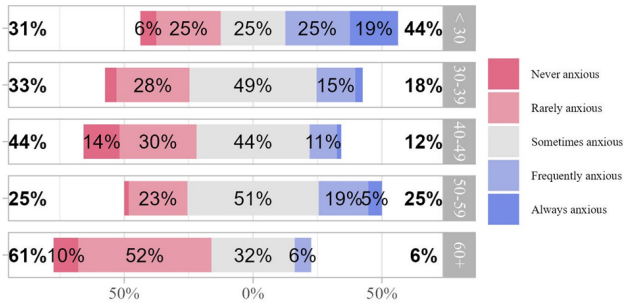

Figure 3. Nurses report levels of anxiety while performing tasks associated with patient bodily waste as a part of the healthcare worker job by age

When asked about the level of personal stress or anxiety while performing tasks associated with patient bodily waste as a part of your job as a healthcare worker, both were significantly different by age (see Figure 3) (p = .006 and p < .001 respectively). Nurses 30 years or younger reported more stress and anxiety associated with managing patient bodily waste.

For facility size (see Table 6), the statement, "Investing in best nursing practices for patient bodily waste management improves nurse retention" had a p-value of .018 with nurses at small, medium, and large hospitals agreeing. A related statement, "My hospital has adequate engineering controls such as ventilation, equipment, and protective barriers for reducing hazards from coming into contact with healthcare workers," was significant with nurses in medium size hospitals (100-499 beds) indicating that they had confidence in the facility engineering controls for reducing hazards for healthcare workers (p = .034).

Nurses agreed that "investing in best nursing practices for patient bodily waste management fosters a culture of job satisfaction." and for the question, "what is your level of anxiety while performing tasks associated with patient bodily waste as a part of your job as a healthcare worker?" nurses working for Pathway to Excellence facilities reported more anxiety compared to nurses at other hospitals (p = .006 and p = .018 respectively) (see Table 7). A Pathway to Excellence hospital is a healthcare organization recognized by the American Nurses Credentialing Center (ANCC) for creating a positive work environment where nurses can excel. It is a workplace where nurses are valued, professional development is encouraged, and a collaborative culture is promoted.[33]

Table 6. Significant differences by facility size (N = 379)

Facility Size	Large: 500+ beds, (N = 67)	Medium: 100-499 beds, (N = 132)	Small: < 100 beds, (N = 56)	p-value
My hospital has adequate engineering controls such as ventilation, equipment, and protective barriers for reducing hazards for healthcare workers.				**.034**
Extremely inadequate	6 (9.1%)	6 (4.5%)	4 (7.1%)	
Somewhat inadequate	15 (23%)	18 (14%)	9 (16%)	
Neither adequate nor inadequate	14 (21%)	17 (13%)	12 (21%)	
Somewhat adequate	15 (23%)	68 (52%)	21 (38%)	
Extremely adequate	16 (24%)	23 (17%)	10 (18%)	
Unknown	1	0	0	
Investing in best nursing practices for patient bodily waste management improves nurse retention.				**.018**
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	
Somewhat disagree	1 (1.5%)	0 (0%)	1 (1.8%)	
Neither agree nor disagree	18 (27%)	35 (27%)	11 (20%)	
Somewhat agree	13 (19%)	37 (28%)	27 (48%)	
Strongly agree	35 (52%)	60 (45%)	17 (30%)	

Table 7. Significant differences by pathway to excellence facility (N = 379)

Pathway facility	No (N = 174)	Yes (N = 77)	p-value
Investing in best nursing practices for patient bodily waste management fosters a culture of job satisfaction.			**.006**
Strongly disagree	1 (0.6%)	1 (1.3%)	
Somewhat disagree	0 (0%)	0 (0%)	
Neither agree nor disagree	13 (7.5%)	11 (14%)	
Somewhat agree	67 (39%)	13 (17%)	
Strongly agree	93 (53%)	52 (68%)	
What is your level of anxiety while performing tasks associated with patient bodily waste as a part of your job as a healthcare worker?			**.018**
Never anxious	12 (7.1%)	7 (9.1%)	
Rarely anxious	63 (37%)	18 (23%)	
Sometimes anxious	74 (44%)	31 (40%)	
Frequently anxious	15 (8.8%)	18 (23%)	
Always anxious	6 (3.5%)	3 (3.9%)	
Unknown	4	0	

5. Discussion

The safe disposal of patient bodily fluids or waste typically falls within the realm of nursing responsibilities, impacting not only their personal safety but also influencing the well-being of patients and the financial health of the healthcare organization. Body fluids are defined as blood, feces, urine, vomit, saliva, semen, vaginal secretions, and any other fluids that originate from a human body.[34] Materials tainted with blood or bodily fluids, as well as waste from patients, may be infectious, elevating the risks of exposure. Nurses expressed a strong consensus regarding the significance of managing bodily waste in patient care. Furthermore, repeated encounters with spills and splashes of bodily waste can desensitize healthcare workers to the associated risks. Finally, employing proven waste management strategies for responsible containment has the potential to reduce costs, improving fiscal management of the organization. Utilizing a bodily waste system designed to protect both patients and healthcare workers may, in turn, diminish the risk of HAIs.

Evaluating the risk associated with blood splashes and spills, a notable contrast emerged: a higher percentage of males (77%) expressed an elevated level of concern compared to females (36%). It is worth noting however, that male participants constitute less than 10% of the total sample (p = .003). Of greater concern is the age disparity (p = .04). The youngest age group (21-29) exhibited less concern. Efforts should be directed toward providing education and training to better inform and equip younger professionals in addressing these concerns. Nurses working in community hospitals demonstrated the highest level of agreement regarding concerns related to the risk of stool splashes or spills during the cleaning process (p = .027). Notably, nurses uniformly acknowledged the significance of ensuring the safe management of patient bodily waste.

Accidental splashes or spills of patient bodily waste can increase the risk of exposure to contaminated materials and surfaces. Healthcare systems have procedures that require reporting, clean-up, decontamination, and disposal of bodily waste spills. The data shows that needle stick injury and stool splash or spill during cleaning effecting the eyes, nose, or mouth were the least experienced incident types, while blood splash or spill and stool splash or spill during cleaning effecting skin or clothing showed increased incidents impacting respondents. However, a high percentage of these same respondents indicated that they did not report these events, despite being aware and agreeing that their hospital system has clear and easy reporting methods, stating that a justification for the reporting was a determining factor in not reporting. Those reporting incidents were likely to be the younger (< 30) and older nurses (> 50). Underreporting is expected, but by not reporting, the commitment to develop policy and procedures to improve the outcomes are less likely.

While males were more likely to respond that controls and methods in place were adequate, but they were also more likely to have a higher level of concern about the risk and felt the need to justify reporting an incidence. Hospitals recognized as Magnet facilities were more likely to report or have

implemented controls and procedures to support mitigation through reporting and engineering controls, which may lead to improved nurse satisfaction. Overall, nurse responses to the type of devices that have been implemented by one's organization suggest a gap between nurse perceived risk of exposure and a lack of implementation of mitigation strategies such as the use of macerators, bedpan liners, splash screens, and bedpan or urine bottle devices.

Personal protective equipment (PPE) is equipment, such as gloves, safety glasses or face shields, shoe covers, respirators, and gowns or coveralls worn to minimize exposure to hazards that cause serious workplace injuries and illnesses.[18] Nurses in this study use PPE for personal protection when performing bodily waste management tasks, however, 99% consistently use only gloves. While healthcare organizations have policies and procedures in place, individual choice of nurse professionals suggests that organizational expectations of reporting incidents and utilizing PPE for personal safety are not being met. By not providing the necessary information, nurses may prevent opportunities to make productive changes to mitigate risks.

Satisfaction, morale, and dignity are crucial elements in maintaining a healthy and thriving nursing profession.[24,26] These factors contribute not only to the well-being of individual nurses but also to the overall quality of patient care and the healthcare system. Ensuring a safe and healthy work environment preserves the dignity of nurses. Adequate staffing levels, proper equipment, and measures to prevent workplace injuries and illnesses contribute to a workplace that increases satisfaction and morale.

Respondents to the nurse survey showed strong agreement with the role of managing patient bodily waste in morale and satisfaction. Nurses perceive that investing in best nursing practices fosters a culture of job satisfaction and improves nurse retention, especially nurses from large facilities. Nurses also perceive that utilizing containment devices such as bedpan washer shields and liners to minimize risk exposure improves the quality of patient care and positively impacts healthcare workers' dignity. However, nurses were not satisfied with the current controls and protocols in their workplace for handling patient bodily waste. As a function of their job, 47% of nurses have some level of stress associated with performing tasks associated with patient bodily waste with younger respondents and those employed at Pathway to Excellence facilities reporting higher levels of stress and anxiety. While nurses face a variety of challenges, understanding the risks and the opportunity for improved procedures and devices about patient bodily waste management is a factor that can improve morale and nurse satisfaction, and contribute to a stable workforce.

This study relied on responses from participants who are credentialed nurses. A potential limitation is response bias where participants may provide dishonest or socially desirable answers rather than their true opinions leading to biased results. This study had only two open-ended responses that contribute to the narrative described in this manuscript. An imbalance in the demographics made some comparisons challenging. For instance, there were significant differences based on gender, but the percentage of male participants was low when compared with the female participants.

For organizations to retain and recruit quality nursing professionals, policies and procedures must be in place to support quality patient care while protecting the health and safety of healthcare workers, including nurses. Empowering nurses to contribute to a better understanding of the challenges and potential improvements in patient bodily waste management are likely to increase satisfaction and morale, leading to improved patient care outcomes and a stronger healthcare system.

Recommendations for improving management of bodily waste in hospitals

1. There is a need for the development of public health efforts to integrate programs to enhance knowledge and practices of healthcare workers to better control the spread of multidrug-resistant bacteria with comprehensive infection control programs.

2. A comprehensive approach to infection control, including hand hygiene, needlestick injury, and patient bodily waste management will enhance safety and quality of patient care while providing a safe work environment.

3. Proper training and using safety-engineered devices to reduce exposure risks, improve shorter bedside toileting, reduce stress, and increase work satisfaction. Investing in a patient bodily waste management system fosters a culture of job satisfaction.

4. Utilizing proven waste management strategies for responsible containment has the potential to reduce costs, improving fiscal management of the organization. Utilizing a bodily waste system designed to protect both patients and healthcare workers may, in turn, diminish the risk of HAIs.

5. Encourage use of recommended PPE for personal safety to reduce incidents of exposure and mitigate risk.

6. Encourage incident reporting. Remove the fear of retribution. Support nurses so that when problems arise, policy and procedures can be amended to improve outcomes.

7. Ensuring a safe and healthy work environment preserves the dignity of nurses. Adequate staffing levels, proper equipment, and measures to prevent workplace injuries and illnesses contribute to a workplace that increases satisfaction, morale, and contributes to a stable workforce.

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AUTHORS CONTRIBUTIONS

Conceptualization, D.H. and R.X.S.; methodology, D.H. and R.X.S.; validation, R.X.S and A.K. formal analysis, R.X.S and A.K. investigation, D.H. and R.X.S.; resources, D.H. and R.X.S.; data curation, D.H., A.K. and R.X.S.; writing—original draft preparation, D.H., A.K. and R.X.S.; writing—review and editing, D.H. and R.X.S.; visualization, D.H., A.K. and R.X.S.; supervision, D.H. and R.X.S.; project administration, D.H. and R.X.S.; All authors have read and agreed to the published version of the manuscript.

ETHICAL STATEMENT

Informed patient consent was not required because no patient clinical or identity data was collected, and no patient interventions were completed during the course of study. Therefore ethical review board approval was not required and waived.

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The author declares that there is no conflicts of interest.

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DATA SHARING STATEMENT

No additional data are available.

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