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Major Article

Positive deviance and hand hygiene of nurses in a Quebec hospital: What can we learn from the best?

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Background: Although it is well known that hand hygiene is the most effective measure to prevent health care-associated infections, hand hygiene adherence is low in Quebec, as it is elsewhere. For this study, an innovative framework was used to explore the clinical practice of nurses regarding hand hygiene and the factors that influence it: positive deviance, or the idea that there are people who find better solutions to problems than their peers. This study investigated positive deviance at the level of the care team to shed light on group dynamics.

Methods: We conducted focused ethnographies on 2 care units—a medical-surgery unit and a palliative care unit—at a Montreal university hospital. Data collection consisted mainly of systematic observations and individual interviews with nurses.

Results: The results show that positive deviance related to hand hygiene is instigated by social cohesion within a care team, created, in this study, by the mobilizing leadership of the head nurse in the medical-surgery unit and the prevailing humanist philosophy in the palliative care unit.

Conclusions: In health care, it can be useful to apply the positive deviance approach to care teams instead of individuals to better understand the ideologic and structural differences linked to better hand hygiene performance by the nurses.

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BACKGROUND

The growing media coverage of health care-associated infections reveals that this is a real concern for society.¹ Hand hygiene is recognized as the most effective strategy for preventing this type of infection.^{2,3} That said, the weak adherence to this practice by health care professionals has been documented extensively in different care settings,⁴⁻⁶ despite widespread efforts and the use of multiple strategies.⁷ Although a number of factors could explain the weak adherence to hand hygiene, including workload, staff shortage, and lack of hand hygiene products,⁸ the difficulties encountered in improving it suggest that changing this behavior is a complex task. In the early 1990s, a behavioral change approach—positive deviance—

was successfully implemented to combat infantile malnutrition in Vietnam.⁹ Since then, the positive deviance approach has been used in many fields related to public health and medicine to identify and promote better performance in different areas.¹⁰ According to this approach, for any given problematic situation, most settings have positive deviants who find better solutions than other people with access to the same resources.¹¹ The approach typically involves 4 stages: identify positive deviants, use qualitative methods to discover the strategies that allow positive deviants to outperform their peers, verify whether these strategies could apply to more people, and share the successful strategies with key people.¹² On the individual level, positive deviance can be defined as an intentional behavior that differs positively from the norms of a reference group, in terms of intentions and adherence to metanorms.¹³ Whereas norms are the rules that govern a behavior,¹³ metanorms (or hypernorms) go beyond these norms and represent ethical principles that stem from cultural, religious, or philosophic beliefs.¹⁴ “While positive deviance can be used to describe the behaviour of exemplary individuals, the term can also be extended to describe

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the behaviours of successful teams and organisations.”¹⁵ The positive deviance approach has been used to promote hand hygiene, but the works cited do not explain the theoretic criteria used by the researchers to characterize positive deviants.¹⁶⁻¹⁸ This study investigated positive deviance at the level of a group of individuals, specifically, a care team, to shed light on dynamics within the group. To achieve this, we conducted 2 focused ethnographies, which revealed that positive deviance related to hand hygiene was achieved differently in each care team under study and that better hand hygiene practice can depend on factors that differ significantly in different contexts. To our knowledge, this type of comparative focused ethnography from the perspective of positive deviance in relation to hand hygiene has never been conducted before. We hope it will contribute to knowledge development on both hand hygiene and positive deviance.

METHODS

For this study, we adapted the first 2 stages of the Bradley¹² positive deviance approach: identify the 2 top-performing hand hygiene care teams and conduct focused ethnographies to understand the factors that influence this practice in a hospital setting.

Research design

Focused ethnography was selected because it allowed the researcher to observe the care teams in their daily tasks while taking into account organizational culture and various sources of contextual information. This type of ethnography requires less time in the field than the traditional ethnographic approach and is suitable when the researcher is already familiar with the problem.¹⁹ Because the principal author has >20 years of experience in the prevention of health care-associated infections, focused ethnography was an appropriate choice because less time was required to become familiar with the social and clinical dynamics in each unit. (It is important to mention that the principal author had never worked in the hospital under study and was not known to any of the participants). The data collection consisted mainly of systematic observations, individual interviews, field notes, and informal conversations. We also met with the hospital's infection prevention nurses to learn how hand hygiene practices were managed in all care units.

Study setting

This study took place in a university hospital in Montreal, Quebec. It was chosen because hand hygiene audits have been carried out there every 2 months since August 2013, which provided useful data about the nurses' hand hygiene adherence rates in each care unit when the study began in January 2015. In this hospital, when hired, nurses receive 60-90 minutes of training on infection control measures, including hand hygiene. They also have access to an online course on hand hygiene, and distributors of hydroalcoholic solutions are available in each care unit.

Units

We used the results of the hand hygiene audits carried out every second month between August 2013 and December 2014 and calculated a mean (%) hand hygiene adherence rate among nurses in each care unit. (The hand hygiene adherence rate corresponds to the ratio of the number of times hand hygiene was performed by the nurses over the number of opportunities observed during that period). The 2 top-performing care teams turned out to be in a palliative care unit, with an average rate of nearly 70%, and in a medical-surgery unit, with an average rate of nearly 60%. The objective was

to determine whether there were shared or specific factors in these 2 care teams that could explain the high hand hygiene adherence rates. The average adherence rate for the nurses in all care units was just over 30%.

Participants

All nurses working in the selected units were approached to take part in the study. To avoid influencing the behavior of the nurses regarding hand hygiene, the purpose of the study presented to them referred globally to all measures used to prevent health care-associated infections, including hand hygiene. In all, 21 nurses agreed to participate: 15 (of a total of 19) in the medical-surgery unit and 6 (of a total of 9) in the palliative care unit.

Observation

The researcher had the opportunity to access all of the nurses' daily activities. She accompanied and observed the nurses during their clinical interventions, took part in discussions with patients, and asked the nurses questions about what she observed to establish an accurate portrait of the factors that influence hand hygiene. The observations were conducted in blocks of approximately 4 consecutive hours, 2-3 times a week, and took place between January 26, 2015, and March 30, 2015, in the medical-surgery unit and between September 10, 2015, and October 12, 2015, in the palliative care unit. At the same time, the researcher reviewed all the documents on infection control measures available in the units and on the hospital's intranet (manuals, brochures, and posters), and the 20-minute online course on hand hygiene.²⁰

Semi-structured interviews

Participants were questioned individually about their perceptions of infection control on their unit and the constraints and difficulties they face applying the different measures, including specific questions about hand hygiene. With the agreement of the head nurses, most of the interviews were carried out in a closed room, during work hours or, for a few participants, during their meal breaks. These participants were allowed to eat during the interview. Two interviews took place outside the workplace. Most of the interviews ranged from 45-60 minutes, but some lasted 90 minutes. With the agreement of the participants, the interviews were recorded for transcription. They took place from March 22-May 15, 2015, in the medical-surgery unit and from October 1-19, 2015, in the palliative care unit.

Data processing and analysis

All the data collected during the interviews were transcribed verbatim, and those from informal conversations and observations were recorded in writing. All the data were coded using the QDA Miner program (Provalis Research, Montréal, Québec, Canada), and then a content analysis was conducted, using the Patton method.²¹ A qualitative data analysis expert was consulted 3 times to ensure the accuracy of the data analysis process, and the results were presented to the study participants for validation.

Ethics

The study's research protocol was approved by the hospital's ethics committee. The nursing care management offered support by facilitating connections with the infection prevention team and the head nurses of the selected units. After the study was pre-

sent to the 2 selected care teams, the nurses were given a week to read and sign the consent form.

Conceptual framework

Positive deviance is the central concept of our study. The positive deviance approach guided us toward an explanation of the better performance of 2 care teams regarding hand hygiene in comparison with their colleagues in other care units in the same hospital.

RESULTS

Sociodemographic data of the participants

As shown in Table 1, the participants of this study are mainly women, and the average age is higher in palliative care. In the medical-surgery unit, most of the participants have a bachelor's degree in nursing, and in the palliative care unit, most have a college diploma in nursing. The nurses in the palliative care unit also had an average of 5 more years of experience.

Factors that influence the participants' hand hygiene adherence

Our study results suggest that several factors influencing hand hygiene adherence are shared by both care teams (Table 2), whereas others are specific to each care team under study.

Factors shared by the care teams in both units under study

Knowledge

All the participants were well aware of the importance of hand hygiene to prevent the transmission of health care-associated in-

fections and avoid the consequences of those infections for very vulnerable patients. Even though they felt they knew enough on the matter, they still acknowledged the importance of attending information and awareness sessions on the issue of health care-associated infections. Information documents on hand hygiene and health care-associated infections are also available in both care units.

Professional awareness

We noted that participants were aware of their role and responsibility as nurses in the prevention of health care-associated infections. Some of them said that their adherence to hand hygiene was dictated by their professional awareness and that protecting their patients and providing high-quality care were important to them. In fact, protection and safety of the patients were 2 factors that came up very frequently in the participants' comments on hand hygiene. They said that performing hand hygiene before taking care of their patients was part of their nursing practice and that they had a duty to protect these patients, whose immune systems are deficient. In the medical-surgery unit, several participants said how saddened they were when a patient developed a health care-associated infection. They also recounted terrible experiences that had encouraged them to maintain their adherence to hand hygiene practices.

Self-protection and, by extension, protection of their families, played an important role in the participants' hand hygiene adherence. They said that in addition to protecting their patients, it was critical to protect themselves because they did not want to be contaminated and risk falling ill. In addition, several participants, especially those with young children, said they did not want to bring bacteria back home. The unfortunate experiences of some of the participants, such as developing gastroenteritis during an outbreak or acquiring *Clostridium difficile*, shook them and spurred them to

Table 1
Sociodemographic data of participants

| Characteristic | Medical-surgery unit (n = 15) | Palliative care unit (n = 6) |
|-----------------------------------|--|---|
| Sex | 14 women 1 man | 5 women 1 man |
| Mean age (y) | 39 | 48 |
| Degree | Master's degree in nursing: n = 1 Bachelor's degree in nursing: n = 10 College diploma in nursing: n = 4 | Master's degree in nursing: n = 1 Bachelor's degree in nursing: n = 1 College diploma in nursing: n = 4 |
| Mean no. of years of practice (y) | 9 | 14 |

Table 2
Factors shared by both care teams regarding hand hygiene practices

| Factor | Example |
|-------------------------------------|---|
| Knowledge | To know how, when, and why to wash your hands |
| Hand hygiene practices | "Everyone knows very well how and when to wash their hands. Plus we have an online training. It explains the method and the different reasons to wash your hands. I think the knowledge is there." (P1, MSU) |
| Role of hand hygiene | "Hand hygiene is essential to prevent infections." (P1, PCU) |
| Impact on patients | "Patients will die, but before then, they can be very sick. It would be a shame if they contract, for example, <i>Clostridium difficile</i> ." (P2, PCU) |
| Professional awareness | "We have patients who are in critical situations, already weakened; they do not need this as well." (P1, MSU) |
| Care practices | Doing our jobs well to protect the patients. |
| Safety/patient protection | "This is part of the professional awareness. For me, it is part of the care. If we do not wash our hands, it is as if we contaminated our patient... so if it is not done, we are not doing our job." (P1, MSU) |
| | "Nurses are very aware of the need to wash their hands." (P1, PCU) |
| | "It's always for the patients. I work for the patient. For us, it is nothing to wash our hands, but for the patient, it can change a lot of things." (P4, MSU) |
| Self-protection | Protect yourself in order not to be sick and risk contaminating your loved ones. |
| Protecting yourself and your family | "Hand hygiene is important to me. Very important. I do it to protect myself. I do not want to get sick." (P13, MSU) |
| | "We try to protect ourselves, because otherwise there will be no staff. I can catch anything here! You are on the frontlines, then you can bring it to your child!" (P6, PCU) |
| Hydroalcoholic solutions | Accessibility and availability |
| | "The fact that we have hydro-alcoholic solutions everywhere helps with hand hygiene." (P5, PCU) |
| | "What I like is that there is one when you exit a room. It is rare not to find what I need to wash my hands." (P2, MSU) |

MSU, medical-surgery unit; P, participant; PCU, palliative care unit.

practice better hand hygiene. Several participants in the medical-surgery unit also remembered a summer when there was an outbreak of multiresistant bacteria. They said they did not want to experience that situation again and believed that high levels of hand hygiene adherence helped prevent this type of outbreak.

Accessibility and availability of hydroalcoholic solutions

All participants systematically use hydroalcoholic solutions, mainly before and after contact with a patient or the patient's environment. The availability of distributors at the door of each room and inside the room greatly facilitates adherence to hand hygiene. We did not note a significant difference in hand hygiene adherence before and after contact with the patient or the patient's environment in either unit.

Factors specific to each care team under study

The following factors that influence the participants' hand hygiene were revealed in the comparison of the care teams under study.

Leadership of the head nurse: medical-surgery unit

Our observations and interviews with the participants revealed that the high adherence rate in this unit is closely linked to the mobilizing leadership of the head nurse and a collective decision to improve hand hygiene adherence. From the beginning of our observations in this unit, it was clear that for the head nurse, the prevention of health care-associated infections and hand hygiene, in particular, were priorities. During informal conversations, he mentioned how important the patients' protection and safety were to him. The head nurse is very present in the unit and seizes every opportunity to congratulate the nurses when they perform hand hygiene or offer reminders about how important it is, with an encouraging attitude. Participant 11 stated, "The head nurse is aware that we have a lot of work but he encourages us when he sees that we make an effort to wash our hands: Very good handwashing!" We observed that he posts the results of the hand hygiene audits that are published every 2 months on a board in the staff meeting room with a word of encouragement. The head nurse also discusses these results with the nurses at every team meeting and makes sure that they all take the online course on hand hygiene once a year. He also had sinks installed in the corridors and a second hydroalcoholic solution dispenser at the door of every room. "Here, we wash our hands." This statement, mentioned by participants, was often heard during the observation periods. All the efforts made to improve hand hygiene adherence have made this an automatic practice. Most participants said that it has become such a reflex that they do not even think about it anymore.

Humanist care approach: palliative care unit

Our observations revealed that the participants in this unit demonstrated a lot of humanism, defined by participant 2 as "an attitude that expresses compassion, gentleness and love." The nurses take the time to talk to their patients, touch them, listen to them, and find solutions to their problems. This humanist approach was mentioned by participant 3: "Behind the nurse, there is a person with values and morals. That means you do not provide care the way others do; you are who you are. It is important to keep your values and not just fit into a mould." It appeared, over the course of the interviews, that some participants had a life experience that predisposed them to work in a palliative care unit. One of them had been involved in humanitarian missions, and another said she had really appreciated being able to accompany a family member during the last months of her life. Regarding hand hygiene, all participants said they felt it was their duty to influence others (volunteers, doctors, or family members) for the patients' benefit. These nurses

are taking care of patients who are very vulnerable both physically and psychologically, and we saw them provide care with humanism. We observed the patience one of them had when she bathed an irritable and very authoritarian patient. Even though they say they have a lot of work to do, the participants say they take time to communicate with the patients and their families. This is, in fact, one of the reasons one of them chose to work in palliative care. Although the priority for this unit is to ensure that the patients are comfortable and not suffering, the participants say they also ensure that the care is offered in a safe environment and that every possible measure is taken to prevent the transmission of infections, and they say that hand hygiene is part of this.

The results reveal the similarity, in both units, of the participants' clinical practices regarding hand hygiene. As the previous sections illustrated, several factors that could explain the nurses' hand hygiene adherence are shared by both care teams, such as knowledge, professional awareness, self-protection, and the accessibility and availability of hydroalcoholic solution. Other factors that might explain the better hand hygiene performance are specific to each care team, however: the mobilizing leadership of the head nurse in the medical-surgery unit and the humanism-based practice in the palliative care unit.

DISCUSSION

In the hospital under study, the measures regarding hand hygiene practice in every care unit consist of information sessions on infection control, including hand hygiene, which are given on hiring, the availability of online training on hand hygiene, the accessibility of hydroalcoholic solution, and hand hygiene audits every 2 months. To understand how and why some care teams adhere to hand hygiene better than other care teams in this hospital, we adapted the first 2 stages of the Bradley positive deviance approach to the level of the care teams.¹² We focused the study on 2 positive deviant care teams, that is, the top performers according to the results of the hand hygiene audits. We found it useful to have access to regularly collected data on hand hygiene (audits) as a starting point to identify the positive deviant care teams. It bears mention that when our study was underway, Baxter et al²² also proposed the use of routinely collected data to identify positively deviant wards. For the second stage, we conducted 2 focused ethnographies. This allowed us to determine that the participants' clinical hand hygiene practices did not differ much between the 2 care teams: they mainly use hydroalcoholic solutions. Moreover, we did not observe any significant differences between hand hygiene adherence before and after contact with the patient or the patient's environment. The participants seemed to be very concerned with protecting their patients. This result is different from the conclusions of some studies, which suggest that if health care professionals wash their hands more often after contact with a patient than before, it might be because they primarily want to protect themselves.^{2,23} Our study sheds light on the participants' professional awareness regarding their role and responsibility, as nurses, in preventing health care-associated infections.

Regarding the factors that influence the participants' hand hygiene adherence, we found several factors were shared by both care teams, namely, knowledge, self-protection, and the accessibility and availability of hydroalcoholic solutions. Regarding existing studies on that matter, Smiddy et al⁸ also found, in a systematic review of qualitative studies conducted between 2000 and 2014, that these factors are important. In keeping with Lin et al,²⁴ we found that the type of training (college or university) did not have an impact on the participants' adherence to hand hygiene, but in contradiction to them, we found that age did not seem to be a determining factor. Some factors influencing hand hygiene adherence were specific to each

care team in our study, however. On the medical-surgery unit, the mobilizing leadership of the head nurse played a decisive role. According to Pierre and Dion,²⁵ a mobilizing leader rallies the various contributors to a shared vision, guides them in the development of their practice, and orients the team members toward the desired results. In a 4-year observational study following the departure of a care unit manager who demonstrated leadership in hand hygiene adherence, Lieber et al²⁶ noted that the adherence rate among the health care professionals dropped from 50.7% to 5.7%, suggesting that the manager's leadership had a positive effect on the practice of hand hygiene. The immediate feedback that the head nurse on the medical-surgery unit gave to the nurses when he saw them practice hand hygiene was encouraging. The various strategies embraced by him, such as presenting and discussing the results of hand hygiene audits at team meetings, posting the results on the board in the meeting room with congratulations and providing reminders, are, in our opinion, factors that encourage a care team to take a personal interest in improving hand hygiene adherence rates. The results obtained in this study illustrate the link between the mobilizing leadership of the head nurse and improved hand hygiene performance. Although part of this leadership could be related to the personality of this head nurse, we think that training on this type of leadership is an avenue to consider for all head nurses in care units. The training could take the form of coaching that is respectful of different personalities, focusing on the development of leadership skills and organizational capacities to guide the teams toward the desired results.²⁵ As for the palliative care setting, we think the high levels of hand hygiene adherence could be related to the humanist philosophy of care, defined by one of the participants as "an attitude that expresses compassion, gentleness and love," that guides, underpins, and motivates the care team in this specific care setting. A phenomenologic study conducted in Quebec with patients in a rehabilitation center suggests that a care approach based on humanism might play a role in patient safety; the researchers explain this result as being related to increased professional kindness and accountability for the well-being of patients and their families.²⁷ We agree with Cara et al²⁸ that a care approach based on humanism is essential for nursing practice in a setting where health care is more complex, and that significant constraints (eg, lack of time, work overload) faced by the nurses increase the risk of dehumanizing practices. We recommend that a care approach based on humanism be advocated in care settings, but we also acknowledge that a significant portion of this humanism may already be part of the personality of nurses who decide to dedicate their lives to these patients.

Mertens et al¹³ suggest that positive deviance is a behavior that differs positively from norms in terms of its intentions, often in line with metanorms, also sometimes called hypernorms. Metanorms refer to ethical principles anchored in cultural, religious, or philosophical beliefs¹⁴ and could very well apply to the mobilizing leadership of the head nurse who advocates patient safety (organizational metanorms) or a humanist philosophy of care (humanist metanorms). Within these 2 care teams, these metanorms seem to have created what Kwok et al²⁹ describe as social cohesion: "a process which enables each individual in a group to develop a sense of engagement in a common enterprise." In the medical-surgery unit, the care team has worked together with the head nurse to improve hand hygiene practice, and in the palliative care unit, the care team shares a common philosophy of care. In other words, we can retain from this study that the term positive deviance can apply to care teams and that positive deviance regarding hand hygiene can be instigated differently within these teams. Based on the results of this study, we think that the positive deviance approach is of interest in finding out why a care team adheres to hand hygiene better than other care teams in the same hospital. Before operationalizing this approach to improve the hand hygiene adherence of other care teams, however,

it is important to be aware that the factors that explain the better performance in some care team may not apply to others.

The positive deviance approach applied in our study revealed that the mobilizing leadership of the head nurse in the medical-surgery unit and the philosophy of care based on humanism in the palliative care unit create a social cohesion that generates positive deviance (better performance) regarding hand hygiene in 2 care teams. On the basis of these results, we offer the following recommendations to influence hand hygiene practices: (1) coach head nurses to improve their mobilizing leadership and (2) promote a care approach based on humanism in care institutions. We think that the positive deviance approach offers added value in the field of health care, particularly when applied to groups rather than individuals, to reveal the ideologic and structural differences that may exist between care units and explain their respective performances at certain levels, including better hand hygiene adherence to prevent health care-associated infections and improve patient safety and quality of health care. In Canada, patient safety is of great interest to the public, professional, political, and scientific communities.³⁰ We intend to explore the contribution of the positive deviance approach to nursing practice in the interprofessional context of improving patient safety and quality of health care.

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