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> ACESSE AQUI A REVISTA ONLINE

ORIGINAL ARTICLE

Patient education on transmission based precautions: a context assessment in a university hospital

Educação de pacientes em precauções específicas: uma análise do contexto em hospital universitário

Educación del paciente en precauciones específicas: un análisis del contexto en un hospital universitario

Luize Fábrega Juskevicius,[1] Maria Clara Padoveze,[1] Stephen Timmons.[2]
[1] University of São Paulo School of Nursing, Santos, SP, Brazil.
[2] Nottingham University Business School, Nottingham, United Kingdom.

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Autor correspondente:
Luize Fábrega Juskevicius
luizejuskevicius@gmail.com

ABSTRACT

Background: Special precautions are intended to prevent pathogen transmission within the healthcare settings and may require patient isolation. Inpatients in such situation are under risk of isolation-related adverse events. Previously, we developed a guideline to support patient engagement aiming at to minimize their vulnerability to these events. We seek to understand the context in the pre-implementation phase. **Objective:** to identify barriers and enablers to implement a guidance for effective communication among healthcare workers and inpatients under special precautions. **Methods:** qualitative study using non-participant observation on two wards of a university hospital. We performed twenty hours of observation, focusing on interactions of healthcare workers, visitors and patients. The Consolidated Framework for Implementation Research (CFIR) was used for data analysis. **Results:** Inner-setting: The environment showed proper physical structure for infection prevention, including infection prevention protocols. The organizational culture was favorable to the acceptance of innovative approaches. We found several spaces for interaction among healthcare workers, patients, and visitors. However, effective communication occurred poorly between individuals. There was no standard operational procedures for patient education; therefore, this process leaned on individual initiatives. Individuals: there were several players in the context: doctors, nurses, technicians, physiotherapists, students, teachers, researchers, caregivers, visitors, and police officers. Healthcare workers showed partial adherence to infection prevention measures. **Discussion:** context assessment identified relevant enablers such as proper physical structure and institutional culture. As the main barriers, we identified a lack of systematic planning for patient education and gaps in infection prevention measures, which can undermine the patients' confidence in the healthcare personnel.

Keywords: *universal precautions, health education, nursing, patient participation, communication.*

RESUMO

Introdução: Precauções especiais destinam-se a prevenir a transmissão de patógenos nos ambientes de saúde e podem exigir o isolamento do paciente. Pacientes internados em tal situação estão sob risco de eventos adversos relacionados ao isolamento. Anteriormente, desenvolvemos um protocolo para apoiar o engajamento do paciente com o objetivo de minimizar sua vulnerabilidade a esses eventos. Procuramos compreender

o contexto na fase de pré-implementação. **Objetivos:** identificar barreiras e facilitadores para a implementação de orientações para comunicação efetiva entre profissionais de saúde e pacientes internados em precauções específicas. **Métodos:** estudo qualitativo com observação não participante em duas enfermarias de um hospital universitário. Realizou vinte horas de observação, focadas nas interações entre profissionais de saúde, visitantes e pacientes. O Consolidado para pesquisas de implementação (CFIR) foi usado para a análise de dados. **Resultados:** Ambiente interno: o ambiente apresentou estrutura física adequada para prevenção de infecção, incluindo protocolos de prevenção de infecção. A cultura organizacional foi favorável à aceitação de abordagens inovadoras. Encontramos vários espaços de interação entre profissionais de saúde, pacientes e visitantes. No entanto, a comunicação eficaz ocorreu mal entre os indivíduos. Não havia procedimentos operacionais padrão para a educação do paciente; portanto, esse processo apoiou-se em iniciativas individuais. Indivíduos: foram diversos os atores no contexto: médicos, enfermeiros, técnicos, fisioterapeutas, alunos, professores, pesquisadores, cuidadores, visitantes e policiais. Os profissionais de saúde apresentaram adesão parcial às medidas de prevenção de infecções. **Discussão:** a avaliação do contexto identificou facilitadores relevantes, como estrutura física adequada e cultura institucional. Como principais barreiras, identificamos a falta de planejamento sistemático para a educação do paciente e lacunas nas medidas de prevenção de infecção, o que pode minar a confiança dos pacientes no pessoal de saúde.

Palavras-chave: *precauções universais, educação em saúde, enfermagem, participação do paciente, comunicação.*

RESUMEN

Introducción: Las precauciones especiales están destinadas a prevenir la transmisión de patógenos en entornos sanitarios y pueden requerir el aislamiento del paciente. Los pacientes hospitalizados en tal situación corren el riesgo de sufrir eventos adversos relacionados con el aislamiento. Anteriormente, desarrollamos un protocolo para apoyar la participación del paciente con el fin de minimizar su vulnerabilidad a estos eventos. Buscamos comprender el contexto en la fase de pre-implementación. **Objetivos:** identificar barreras y facilitadores para la implementación de guías de comunicación efectiva entre profesionales de la salud y pacientes hospitalizados en precauciones específicas. Métodos: estudio cualitativo con observación no participante en dos salas de un hospital universitario. Realizó veinte horas de observación, centradas en las interacciones entre profesionales de la salud, visitantes y pacientes. Se utilizó la investigación consolidada para la implementación (CFIR) para el análisis de datos. **Resultados:** Ambiente interno: el ambiente presentó una estructura física adecuada para la prevención de infecciones, incluyendo protocolos de prevención de infecciones. La cultura organizacional fue favorable a la aceptación de enfoques innovadores. Encontramos varios espacios de interacción entre profesionales de la salud, pacientes y visitantes. Sin embargo, la comunicación efectiva ha fallado entre las personas. No hubo procedimientos operativos estándar para la educación del paciente; por lo tanto, este proceso fue apoyado por iniciativas individuales. Individuos: hubo varios actores en el contexto: médicos, enfermeras, técnicos, fisioterapeutas, estudiantes, docentes, investigadores, cuidadores, visitantes y policías. Los profesionales de la salud mostraron una adherencia parcial a las medidas de prevención de infecciones. **Discusión:** la evaluación del contexto identificó facilitadores relevantes, como la estructura física adecuada y la cultura institucional. Como barreras principales, identificamos la falta de planificación sistemática para la educación del paciente y las lagunas en las medidas de prevención de infecciones, que pueden socavar la confianza de los pacientes en el personal de salud.

Palabras clave: *precauciones universales, educación en salud, enfermería, participación del paciente, comunicación.*

BACKGROUND

Healthcare-associated infections (HAIs) are a public health problem, mainly when it comes associated with the emergence of antimicrobial resistant bacteria. HAIs acquisition and spread can be avoided by adopting a set of measures, including standard precautions and special precautions (contact precautions, droplet precautions, and airborne precautions).[1]

There are two relevant issues affecting the use of special precautions: the first regards to the adherence of healthcare workers and visitors, and the second is concerned with the associated adverse events, which may be directly related or aggravated by the isolation and other measures required by special precautions. The most frequently reported adverse events related to the special precautions in the literature were those related to psychological harm, such as increased depression and anxiety in patients. Other adverse events such as falls, may have higher rates in patients in special precaution.[2-5]

Two studies verified the satisfaction of patients about their care and found that inpatients out of special precautions were more satisfied than those under special precautions. This was mainly due to the time that healthcare workers spent to provide care and the relationship of these patients and healthcare workers.[4,6]

Engaging patients as partners in their own healthcare has the potential to provide a safer environment.[2,3,5]

But involving patients in institutional policies for infection prevention can be challenging; besides this, studies demonstrated low adherence to special precautions measures by the healthcare workers, which misinform and undermine patients' confidence in the healthcare team.

In a previous study, aiming to minimize the occurrence of adverse events related to special precautions, we developed a guidance to support healthcare workers to deal with patient engagement. This guidance, named as Com-Efe, is intended to maximize the effective communication among healthcare workers and patients.[7]

The Com-Efe was built upon the conceptual framework of *vulnerability*, which is considered as great potential in the patient engagement process. Vulnerability is defined as "the likelihood of individuals to acquire a disease due to several aspects that even when directly related to the individual, are also related to the context in which this individual is imbedded". Deeply based on the human rights, this framework enables identification of weaknesses and strengths to increase the likelihood to defeat transmissible diseases, recognizing the patient's autonomy.[7-10]

The Com-Efe guideline does not only address to increase the health literacy of the patients, but rather to engage them in their care. Yet, this guidance was not implemented and there is still a gap for what would be the best implementation approach for this guideline at a large scale. The implementation science can provide insights to better understand the context by identifying barriers and enablers to translate theory into practice.[11,12]

Several models and theories are available about the implementation and research in this field. Among them, the Consolidated Framework for Implementation Research (CFIR) emerged from a systematic review carried out in 2009 with the objective of integrating existing theories and creating a fra-

mework to support implementation studies. Comprising five domains and their constructs, the CFIR has the potential to address complex contexts, such as those of health services.[11,12]

The context where the intervention occurs is a determinant factor for the implementation process. A prior context assessment can minimize the flaws along the implementation process by the identification of barriers and enablers related with the environment and individuals, and may strengthen the success of the interventions.

Our study aimed a context assessment to identify barriers and enablers for the implementation of an effective communication guideline (Com-Efe).

METHODS

Study design

We performed a qualitative non-participant observation to provide the researchers with an understanding of the context before the implementation intervention. This was particularly important for this study as the researchers are not part of the original clinical team. In order to maximize the effectiveness of the implementation process we aimed to capture potential barriers and enablers. In this modality of observation, the researcher does not get involved with the context, remaining only as a spectator. The individuals in the context did not know exactly what the researcher was observing, being possible to apprehend the situation as it actually occurring.[13]

Setting

The study was conducted in an university hospital in São Paulo, Brazil. This is a 200-bed secondary level hospital and aims to serve as a field of study and practice for students of healthcare disciplines at undergraduate and graduate courses. The hospital has policies for the prevention of infection developed by infection control team, and detailed standard operating procedures for these measures. The infection control team is composed of a nurse, a medical doctor and an administrative technician. The two wards under observation have a total of 65 beds for medical and surgical patients.

Data collection

A researcher with nursing background and training in implementation science (L.F.J) conducted data collection. When performing the data collection, the researcher introduced herself to the ward nurses, informing she was there to perform some observation purposively for a research, but without detailing the aim of the observation.The researcher was previously unknown by healthcare workers.

Twenty hours of observation, split into ten periods of two hours, was conducted between April and May 2018, and included observations on morning, afternoon, evening and night shifts. The researcher was positioned in various strategic places within the wards such as the prescription area, medication room, procedure room, corridors, inpatient room, TV room, office, and workers' coffee room (Figure 1).The focus of the non-participant observation was to document the interaction between patients, visitors and healthcare workers regarding to infection prevention and control, and the communication with patients. This included notes on the environment, verbal communication, non-verbal communication and purpose of the interaction. Observations were documented in a field diary; the researcher wrote notes at the exact moment of observation or soon after; by the end of the day, they were reviewed and organized according to preliminary categories (infection prevention and communication with patients).

Data analysis

Half way through the observation period, the research team discussed the preliminary impressions of the data according the objectives of the study. This step was aimed to ensure the appropriate information was being obtained and if it was necessary to make any changes to the data collection process. At the end, field notes were transcribed in details and all of the raw data from the observations was shared and discussed among the research team. The relevant aspects representative of relationships and interaction among healthcare workers and other individuals in the context were identified and organized according potential enablers or barriers.

As the final framework of analysis, we used the CFIR. The choice for this model (CFIR) was due its rational and detailed description of constructs and domains, with greater potential to identify barriers and facilitators in the implementation process. The barriers and enablers that emerged from the field notes were further matched to respective constructs, with a focus on the "individuals" and "inner setting" domains.[11,12]

The other domains of CFIR (Intervention characteristics, outer setting and process) were excluded in our study because

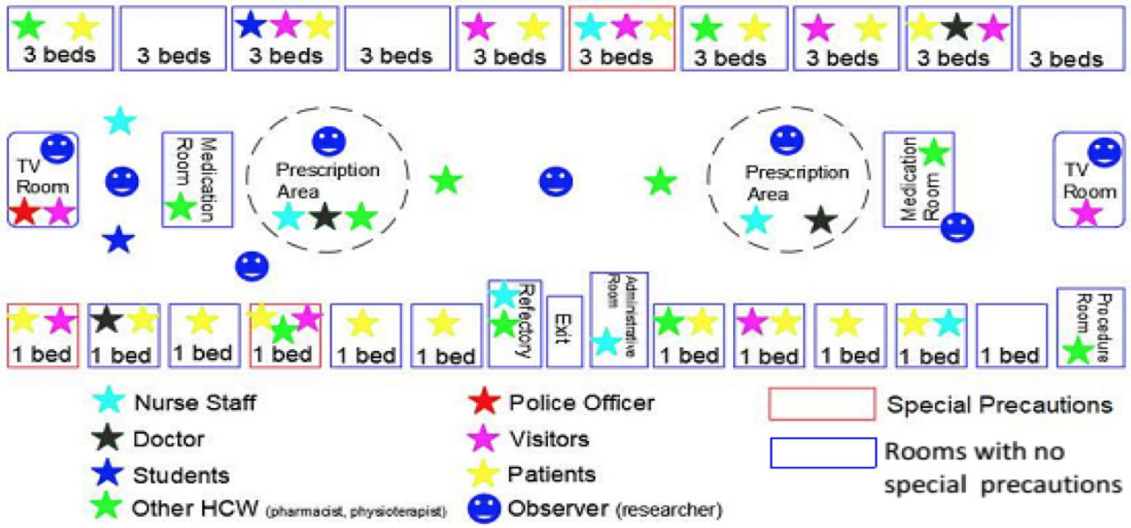

Figure 1. Schematic representation of the moments and places of non-participant observation performed by the researcher. Brazil, 2018.

they were not applicable. The "inner setting" is composed of characteristics of the physical environment, structure and size of the organization, network and communication between individuals, and nature and quality of this formal and informal communication. The "individuals" domain refers to the belief about the change of the individuals involved, how these individuals are capable of change, relationship with the institution, and other personal factors such as tolerance, intellectual abilities, motivation, and values.[11,12]

Ethical issues

Before starting the data collection, we obtained approval from the hospital ethics committee (protocol number 80384517.5.3001.0076) and written permission from the infection control team and the ward managers to conduct the study.

RESULTS

Barriers and enablers were identified within the constructs in the inner setting domain: structural characteristics, network/communication, culture, organizational incentives and tension for change and in the individual characteristics domain: knowledge & beliefs about the Intervention.

The barriers and enablers detailing the context according to the CFIR domains are presented in table 1.

Inner-setting

The physical environment showed to provide a good structure to support prevention measures, such as the availability of personal protective equipment (PPE), proper hand hygienic resources, including alcoholic product available at the point of care and sufficient sinks. There were several spaces for healthcare workers' interactions, and for patients and visitors (Figure 1). For these last, living rooms equipped with armchairs and space for reading were located at the end side of each ward.

There were guidelines in place addressed to prevention measures. Alert reminders at the patients' room about SP measures were noticed. Healthcare workers showed to be familiar with frequent contact with researchers and students, and to participate in pilot innovations in this setting. The institutional culture was likely to favor the acceptance of innovative approaches, due to its characteristic of a teaching hospital.

We observed a lack of a standardized approach for patient education. An example of this occurred in an interaction nurse-patient before a discharge:

> *"An inpatient under special precaution receivedinformation from a nurse about theirrequiredcare following discharge from the ward.Thisincluded information about special precaution that the home care workers should provide to him. However, they did this using their own knowledge in their own individual manner. There were no standards for discharge orientation regarding special precautions"*

Since there were no standard operational procedures for this interaction, the current process leans on individual initiatives, disfavoring the effective communication in several situations.

Table 1. Summary of context assessment in a hospital environment according to domains of "inner setting" and "individuals" of Consolidated Framework for Implementation Research (CFIR) . Brazil, 2018.

Multivariate parameters Domains / Constructs of CFIR	Findings: potential enablers and barriers
I. INNER SETTING	
Structural characteristics	Enabler: The environment is calm, with no excess of people and only few situations of clinical emergency. Enabler: The available physical environment in the wards is favorable to the adherence to infection prevention and control measures. Barrier: Often there are rooms designated for patient care that require special precautions, mostly due to colonization or infection by multi-resistant microorganisms, but also tuberculosis and other communicable diseases.
Networks & Communication	Enabler: The environment has spaces for collective multi-professional interaction, both among professionals (nursing station, medication room, etc.) and among patients, police officers, and visitors (TV/reading room). Enabler: Personal interaction among team members seems to be pleasant, not conflicting. Barrier: The work processes do not ensure effective communication between healthcare workersand patients. Common tasks such as patient transport, care and education have a strong technical focus, but the effective communication relies on individuals' initiatives rather than on standard operation procedures. Barrier: Effective communication occurs poorly, suggesting that individuals take for granted that everyone knows what should be done. Specifically, how to proceed to engage patients and their families does not seem to be systematized, planned or even discussed among the healthcare team.
Culture	Enabler: There are established processes that favor the adherence to prevention measures.There are frequent in-service trainings and continuous presence of students and researchers, which may be a favorable element for the readiness of professionals for innovations in care practices.
Organizacional Incentives & Rewards	Barrier: Work processes are possibly influenced by excessive workload due to understaffing.
Tension for change	Enabler: It can be observed that identified stakeholders (patients and nurses) have a high impact and influence in the context, and the intervention has great representation in their routine/health. Enabler: Nurses, nursing supervisors, and the hospital infection control personnel were identified as promoters or potential (latent) promoters of the intervention.
II. CHARACTERISTICS OF INDIVIDUALS	
Knowledge & Beliefs about the Intervention	Enabler: Prevention measures exist and are adopted by many. Enabler: The individuals composing this inner setting are diverse. In addition to the expected doctors, nurses, auxiliaries, technicians, physiotherapists, there are also students, teachers, researchers, caregivers, visitors, and police officers. Enabler: Other actors such as infection control team and continuing education personnel were not seen during the period of observation. However, their interaction with wards' team could be assumed, because ongoing activities related to these services were observed. Barrier: There were still failures in full adherence to precautions, especially regarding hand hygiene and adequate use of PPE, which can affect the way the patient is treated and perceives the special precautions. Barrier: There is no behavior of alert to correcting failures in prevention measures the moment they occur.

[1]CFIR, Consolidated Framework for Implementation Research. Available at: http://cfirguide.org (accessed 29 November 2018).

Individuals

We observed several players interacting in the environment including nurses, physicians, physiotherapists, pharmacist, auxiliary nurses, patients, visitors, police officers, housekeeping, infection control, and training personnel.

Most of the individuals showed only partial adoption of measures of special precautions. We observed some impairment in the effective communication among individuals, either healthcare workers, patients, or visitors. There was no observed behavior of alerts among healthcare workers in cases of disruption of preventive measures. Below is an example of one of the situations related to this behavior:

> *"Two physiotherapist's researchers come to the ward and checked the medical records of one patient. They informed the lead nurse that they would transfer the patient provisionally to another room to perform physiotherapy procedures. The nurse agreed, but without mentioning any alert on the case, i.e., the patient was under special precaution due to multidrug resistant colonization. At patient's room door, there was a written reminder about required measures for that precaution. However, physiotherapists did not use the correct PPE and did not perform hand hygiene. No other healthcare worker made them aware of the correct procedures when dealing with that patient."*

DISCUSSION

The purpose of this study was to perform a context assessment to identify potential barriers and enablers for minimize flaws when designing an implementation process of a guideline for effective communication (Com-Efe).

Patient engagement increases healthcare workers' adherence to infection prevention measures.[14-16]

Thus potentially reducing the vulnerability of patients to adverse events related to special precautions. In order to achieve such engagement, it is necessary to improve communication among the healthcare workers and patients. A study demonstrated that the extent of patients' knowledge interferes with their level of adherence to overall infection prevention measures.[17]

Knowledge is recognized as one of the basic steps to promote engagement but does not mean simply delivering information: there must be an effective communication between individuals. Effective communication between healthcare workers and patients, guided by the Com-Efe, presumes the dialogue as a priority, in which healthcare workers listening ability becomes crucial. Therefore, the careful context assessment was sought an essential step to foster the implementation of the Com-Efe, aiming to avoid a defective implementation process.

Our study found potential ten enablers and six barriers that should be considered when developing the implementation strategy. The observed environment had adequate structure and process that enable the adherence to the measures of infection prevention, mainly related to special precautions. Nevertheless, we identified gaps in this adherence at several moments, calling attention to other factors that might be playing as barriers such as institutional climate and individual beliefs.[7]

The observation of the context pointed other spaces of coexistence of individuals such as patients, visitors, healthcare workers, and others. However, these spaces have not been explored by the healthcare workers to stimulate interaction between individuals, seeking to improve effective communication. The various spaces and variety of actors implicated in the context at the wards should be addressed when designing the implementation process. For example, the use of spaces such as the living room to engage families and visitors can be further explored, as well the role of students and professors.

In our previous study performed in the same hospital, we identified that many patients had the perception of being better protected because they were in special precautions. Even though, patients reported feeling unable to question professionals non-adherent to the infection prevention measures.[7]

This could be due to ineffective communication between professionals and patients since there is no standard operational procedures regarding the patient education related to special precautions.

Most healthcare workers still view the patients as passive agents in the care process and perhaps undervalue the communication process. However, a core principle underlying patient safety is the patient engagement, encouraging them to be more active in their care.[6,17-19]

Actually, in good methods of communication and health education, emphasis is given in the form of communication, focusing on empowering individuals.[20]

Healthcare workers should mind many aspects of the human relationship to plan patient care, such as: knowing how to listen, sharing ideas, and talking, among others. Communication and health education are currently considered soft technologies related to the process of caring. Most of the institutions are still unaware of how to develop guidance to deal with them, hence, the decision on how to use them becomes individual and not institutional.[21,22]

Of note, on this study we identified through a context analysis a type of culture and processes that is potentially favorable to establish a standardized use of soft technologies, such as the Com-Efe, to improve communication and health education.

The nursing team and the infection prevention service team were detected as potential promoters of the implementation of Com-Efe due to their role and position in the organization. Despite having the power to intervene, they may or may not prioritize the activities to engage patients due to several reasons. Involving these professionals in the early process of implementation has foremost importance. Therefore, the next step will include a specific approach to capture their perception about the intervention to be implemented, including whether the understaffing may be a true barrier or not.

STRENGTHS AND LIMITATIONS

Strengths of the study include, to our knowledge, that a very few studies have devoted to a prior context analysis for implementation process. This study has potential to inspire others to use this strategy to raise the likelihood of the implementation process of soft technologies for infection prevention, which are highly context-dependent.[23,24]

The limitation of the study is that the non-participant observation could not capture all the domains of CFIR that might affect the implementation process, mainly the outer setting.

CONCLUSION

This study has advanced our knowledge in identify some enablers and barrier in this complex context through a prior context assessment that will support the subsequent process of design the implementation. Relevant enablers such as proper physical structure, institutional culture and overall process. Among the main barriers, we identified a lack of systematic planning for patient education and gaps in infection prevention measures regarding special precautions, which can undermine the patients' confidence in the healthcare team.

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