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Made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data;	CC, FP, TK, LB
Involved in drafting the manuscript or revising it critically for important intellectual content;	CC, FP, TK, LB
Given final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content;	CC, FP, TK, LB
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ABSTRACT

Aim: To understand family caregiver involvement in delirium prevention care for older adults hospitalized for orthopedic surgery hospitals and family caregiver integration by nurses.

Design: Multiple-case study.

Methods: The model of *Care Partner Engagement* was selected as theoretical framework. Eight cases will comprise an older adult hospitalized a family caregiver and a ward nurse. They will be recruited with a non-probability sampling on two orthopedic surgery wards in two hospitals. Semi-structured interviews with participants will be audiotaped. Sociodemographic data will be collected. These data, researcher field notes and interview transcripts will be subjected to within- and across-case thematic analysis. Regional ethics committee approved the study protocol in August 2018.

Discussion: The study will allow surgical nursing teams to gain a better understanding of the issues and possibilities regarding family caregiver integration in delirium prevention care for older adults.

Impact: Integration of family caregivers in care to prevent older adults' delirium is a challenge for nurses. In practice, this study will allow to gain a better understanding of the integration of family caregivers in care to prevent older adults' delirium, the factors

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that influence it and the ways to improve it. In research, results will be used to develop an intervention whose aim would be a better integration of family caregivers into delirium prevention care that can be tested in the future.

Keywords: caregivers, nurses, older adults, hospitalization, integration, delirium, prevention, surgical care

INTRODUCTION

Most countries in the world are confronted with the challenges of an aging population and must urgently find innovative solutions for bolstering their healthcare systems (Organization for Economic Co-operation and Development, 2018; World Health Organization, 2012).

When hospitalized, older adults are at risk of developing delirium, a common and devastating geriatric syndrome. Delirium has a sudden onset and a rapid course. It presents clinically as an abrupt and fluctuating alteration of attention, consciousness and speech associated with difficulty answering direct questions, registering what is going on around oneself and thinking clearly, swiftly and coherently. Sleep, memory, psychomotor activity and sense of perception can also be affected at times. The prevalence of delirium has been reported to be as high as 37% among people admitted to hospital and its incidence during hospitalization has been estimated at near 83% (American Psychiatric Association, 2013; Inouye, Westendorp, & Saczynski, 2014). The prevalence and

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incidence of delirium has been found to be particularly high in orthopedic surgery wards (Bull et al., 2017; Sykes, 2012).

On the one hand, the causes of delirium are related to predisposing factors, such as older age, dementia, prior cognitive impairment, auditory and visual deficits and the consumption of alcohol and psychotropic drugs. On the other, delirium can be triggered by multiple factors, such as the person's state of health, the care interventions received and the environment. Precipitating factors include infection, pain, malnutrition, electrolyte imbalance, medical monitoring or constraints, use of certain medication, cold-turkey cessation of a long-standing pharmacological treatment, surgery postponement, immobility, absence of watch and eyeglasses and multiple room changes (Arend & Christensen, 2009; Dasgupta & Dumbrell, 2006; Inouye, Zhang, et al., 2007; McCusker et al., 2001).

Several studies in various countries have highlighted the negative consequences of delirium for those affected, their family caregivers, nurses and care facilities. For the person affected, this syndrome can result in a cognitive and functional decline, a lengthening of their hospital stay and a higher chance of being transferred to a long-stay facility or of dying within a year (Inouye et al., 2014; McCusker, Cole, Abrahamowicz, Primeau, & Belzile, 2002; McCusker, Cole, Dendukuri, & Belzile, 2003; Verloo, Goulet, Morin, & von Gunten, 2012). For institutions, delirium necessitates a complex care response that results in a significant increase in costs (Inouye et al., 1999; Young & Inouye, 2007). Moreover, the family caregivers of the persons affected experience negative feelings, fear and a loss of confidence and appetite, especially when the person affected presents a psychomotor disturbance and is agitated (Grover & Shah, 2013). For

nurses, patients with delirium translate into a heavier workload and uncomfortable feelings, such as incomprehension, ambivalence, distress, doubts, guilt, irritation and frustration (Bélanger & Ducharme, 2011).

Increasing the frequency and quality of communication between nurses and family caregivers could be a way to make the most of the human capital surrounding hospitalized older adults and to improve the care offered, if not prevent delirium (Inouye, Studenski, Tinetti, & Kuchel, 2007). For nurses, family caregivers' familiarity with the care recipient can help organize the care trajectory, determine care level, ensure patient safety, offer continuous care and plan hospital discharge. They consider family caregivers as useful resources and partners. They also know that the care recipient's condition has an impact on family caregivers and that family caregivers not only need support and respect, they also need to be valorized. However, nurses claim to lack time. Furthermore, it has been noted that, in practice, nurses do not always have the tools, knowledge and support required to communicate effectively with the variety of family caregivers that they come into contact with (Bélanger, Bourbonnais, Bernier, & Benoit, 2017; Day & Higgins 2015; Walton, 2011).

This phenomenon is closely tied to the culture prevailing in specialized hospital settings, a culture that does not foster the development of a partnership with family caregivers. Molina, Dubois and Lessard (2011) have underscored that hospital settings impose limits on the level of family caregivers' involvement owing to the number of patients to be cared for, the care routine, the visiting hours set and the quantity of care and tests to administer. On top of this, family caregivers decry the controlling and authoritarian attitude of certain nurses, the limited information that nurses share and the

little recognition that they get from nurses for their contribution to care, which is more often than not deemed by nurses to be a nuisance. To maintain control and diminish the effects of hospitalization on older adults, family caregivers seek to protect older adults from care deemed insufficient by supervising the care delivered by nurses, asking questions and voicing their dissatisfaction. They consider that their familiarity with the older adults and their involvement in care can be beneficial in that they permit tailoring the care that older adults receive and thus enhance the quality of the care (Bélanger et al., 2017; Lundstrom et al., 2005).

These observations highlight the benefits for both hospitalized older adults and their family caregivers of a more systematic integration of family caregivers in hospital care. Certain studies have shown that such integration would be an innovative way to diminish the negative consequences of hospitalization for older adults, if not prevent delirium. This would foster a speedier hospital discharge and, in turn, reduce family caregivers burden (Boltz, Resnick, Chippendale, & Galvin, 2014; Lundstrom et al., 2005; Martinez, Tobar, & Hill, 2014).

Background

Though delirium prevention measures are generally standard, their application must be tailored. In this regard, family caregivers play a mediating role between professional caregivers and older adults by seeing to the latter's well-being and best interest (Bragstad, Kirkevold, & Foss, 2014). Moreover, family caregivers give older adults the possibility of regaining their independence when they are lonely and isolated, suffering, desperate, resigned and disengaged (Grenier, 2011). There is some empirical

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evidence of the effects of integrating family caregivers in measures to prevent delirium in hospitalized older adults. A few studies have demonstrated that interventions implemented in conjunction with family caregivers reduced the incidence, intensity and duration of delirium, the length of hospitalization and mortality rates. These interventions also improved older adults performance on instrumental activities of daily living, family caregivers knowledge of delirium and family caregivers preparedness to support older adults. Other studies have shown that family caregivers experienced less anxiety and presented fewer signs of depression throughout the care episode (Boltz et al., 2014; Bull, Boaz, & Jermé, 2016; Calvo et al., 2012; Lundstrom et al., 2005). In a study assessing the feasibility of nurses and family caregivers partnering to prevent delirium in hospitalized older adults, it was found that nurse and family caregiver knowledge of delirium increased significantly post-intervention and that participants demonstrated significantly more respect, collaboration and mutual support (Rosenbloom & Fick, 2014).

Theoretical and operational framework

The model of *Care Partner Engagement* (CPE) developed by Hill, Yevchak, Gilmore-Bykovskiy and Kolanowski (2014) was selected as the study's theoretical framework. The model is consistent with a person- and family-centered approach where the affected person's experience of disease is taken into account (Naldemirci et al. 2016). It is composed of individual and organizational factors, of an involvement and partnering process and of the potential outcomes of this process. older adults' characteristics, family caregiver and nurse knowledge of delirium management and their communication skills are factors that influence involvement and partnering with older adults and their family

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caregivers. In the involvement and partnering process, nurses and family caregivers are encouraged to collaborate to identify delirium development risks, explore FC delirium knowledge and the contribution of adapted information, develop an older adult monitoring plan, convey clinical observations and concert on the interventions to adopt and re-assess and adjust the intervention plan as needed. Finally, we will present the potential effects of the engagement and partnering process on family caregivers' contribution to care, on the older adults themselves and on the care institutions.

The different sections of the CPE reflect the structure, process and outcomes of a care program (Hill et al., 2014) such as described, among others, by Donabedian (2005). They are interdependent. For example, nurse lack of delirium knowledge can have an adverse effect on the engagement and partnering process and, consequently, influence care outcomes.

The CPE was only recently developed and has yet to be tested in clinical practice. As it happens, given the importance of partnering in delirium assessment and management and the personal and social costs associated with the syndrome, the authors of this theoretical framework chose to illustrate its use by applying it to delirium management (Hill et al., 2014). Consequently, the model seems well suited to guide a study aimed at gaining a better understanding of the integration of family caregivers in the care provided to hospitalized older adults, especially when it came to structuring data collection and discussing results.

Reflexivity

In the planned study, reflexivity will be possible by exploring different realities and by considering different ways of organizing the data or presenting the themes (Patton, 2002). Moreover, the presence of numerous people in the research team that will contribute to the analysis and presentation of the data will be a big plus.

To gain an in-depth understanding of the phenomenon of family caregivers' integration in delirium prevention care, the researchers will operate within an interpretive paradigm and will examine this phenomenon particularly through the discourse of the persons concerned (Jackson, 2015). Consequently, they will consider the multiple realities constructed by these persons and the implications of these constructs for their life and their interactions with others (Patton, 2002). Interviews will be conducted by researchers from two French-Swiss cantons. Thus, their sociocultural and linguistic characteristics will be similar to those of the older adult and the family caregiver. Moreover, the researchers will share the same socio-professional background as the nurses. This should help attenuate certain aspects related to the very nature of the interviews and, consequently, create a climate more conducive to exchanges (Yin, 2014). However, to be able to recognize the influence of their own realities, to mitigate their instinctiveness and impulsivity and to enhance the credibility of the results, the researchers will need to mobilize their reflexive skills (Flyvbjerg, 2006; Patton, 2002; Proulx et al., 2012).

Consequently, the researchers will explore, document and explicate how they might influence the different steps in the research process (Burns, Grove, & Gray, 2011). To this end, the process of reflexivity will enable them to formulate and discuss how their

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different experiences might interfere with their interpretation of the phenomenon under study (Creswell, 2015). In support of the process, they will keep field notes to explore and document their values, beliefs, biases and knowledge relative to the phenomenon under study (Larivière & Corbière, 2014; Paillé & Mucchielli, 2013). The content of this log will serve also to ensure reliability regarding the events that take place during the interviews, during the times of observation and while at the wards (Miles, Huberman, & Saldaña, 2014; Watt, 2007). Moreover, collaboration with an outside supervisor (a seasoned researcher in qualitative research) will allow the researchers to raise questions throughout the course of the study, particularly regarding the fit between the methods used and the results obtained, not to mention the implications of these results (Miles et al., 2014).

THE STUDY

Aim and research questions

Against this backdrop, we wish to undertake a study to gain a better understanding of family caregivers involvement in delirium prevention care for older adults hospitalized in the orthopedic surgery wards of two French-Swiss acute-care hospitals and of family caregivers integration by nurses. More specifically, we will seek to answer the following questions:

- 1) What are the perceptions of hospitalized older adults and their family caregivers regarding the role of family caregivers in delirium prevention care?

- 2) How are family caregivers involved in delirium prevention care for hospitalized older adults?
- 3) What are the perceptions of nurses and head nurses regarding the role of family caregivers of hospitalized older adults and their integration in delirium prevention care?
- 4) How do nurses integrate family caregivers of hospitalized older adults in delirium prevention care?
- 5) What are the contextual factors that facilitate or impede the integration of family caregivers of hospitalized older adults in delirium prevention care?
- 6) What are the perceived effects of integrating family caregivers of hospitalized older adults in delirium prevention care?

Method

Design

To achieve our purpose and objectives, a multiple-case study will be carried out. This design is particularly useful when the aim is to understand contemporary phenomena on which researchers have little purchase. Furthermore, this design places a heavy emphasis on the context where the phenomenon under study takes place (Burns et al., 2011; Flyvbjerg, 2006; Larivière & Corbière, 2014).

Sample/Participants

A purposive non-probability sampling strategy will be used to select participants useful to gaining a deep understanding of the phenomenon under study (Fortin & Gagnon, 2016; Larivière & Corbière, 2014). To collect enough data and to ensure arriving at an in-depth understanding of the phenomenon without jeopardizing the study's feasibility, eight cases will be recruited (Martinson & O'Brien, 2010). Each case will be composed of a hospitalized older adult, a family caregiver and a nurse. To delve deeper into the facilitators and barriers of family caregivers integration, we will include the head nurses (HN) of the orthopedic surgery wards as well. To recruit the older adults, the family caregivers, the nurses and the HN, selection criteria (inclusion and exclusion) will be applied (see Table 1) to be able to replicate the procedure from case to case (Yin, 2014). More specifically, we will ensure that the cases are evenly split between the targeted wards and that the characteristics of the older adults, the family caregivers and the nurses comprising the sample are diversified. It is recognized that men and women contribute differently to caring for older adults (Oulevey Bachmann, Wild, Von Rotz, Danuser, & Morin, 2013) and that nurses with more than four years' experience demonstrate greater expertise both in their decision-making process and in their clinical reasoning (Benner, 1995). Accordingly, we will make sure to recruit an equal proportion of male family caregivers and female family caregivers and of nurses with four or less years' experience and nurses with more than four.

Setting

The study will be carried out in two orthopedic surgery wards that receive a large percentage of older adults at risk for delirium (Bruce, Ritchie, Blizard, Lai, & Raven, 2007). These wards are located in public hospitals in two Swiss cantons.

Procedure

The HN will inform older adults meeting the selection criteria of the possibility of participating in the study. The older adults that agree to meet with the research team will be informed by a member of the team of the purpose of the study and its implications for participants. The older adults that consent to take part will designate a family caregiver to be contacted by telephone by a member of the research team to fix an appointment to provide information on the study and its implications for participants. For each case, at the end of the hospital stay, a specialized nurse clinician will identify the nurse that cared for the older adult and that interacted with the family caregiver and will ask that nurse whether they are interested in meeting a member of the research team to obtain more information on the study and its implications for participants. If they agree, the research team will set up a meeting with the nurse to provide any further information, answer any questions and, if applicable, proceed with the interview. If they refuse, a second nurse will be contacted following the procedure described above. The HN will be recruited directly by the research team.

Data Collection

Data will be collected from various sources (see Table 2) throughout the hospital stay of the older adults in the sample (Larivière & Corbière, 2014). In addition to gathering sociodemographic data on each participant through a questionnaire, we will conduct individual semi-structured interviews with older adults, their family caregivers, the nurses that cared for the older adults and the HN. The interviews will follow an interview guide (see Table 3) and should last from 20 to 60 minutes. They will serve to obtain the participants' perceptions on the following: family caregivers' integration in delirium prevention care; how family caregivers are integrated or were integrated in this care; what facilitated or impeded this integration; and effects of integration on the older adults participating in the study. They will be conducted the day the older adults are discharged or no later than within two weeks, at the hospital or at home. In addition, we will ask family caregivers to keep a log for the duration of the hospital stay to document their integration in delirium prevention care. In particular, they will be asked to describe their activities with the older adults, their interactions with nurses and their perceptions of the effects of their contribution on the older adults and on care. Finally, the research team will keep field notes during their visits and interviews. These notes will allow us to collect information regarding the behaviors of the participants and the contextual factors that might facilitate or impede family caregivers' integration in delirium prevention care.

Data Analysis

We will carry out within- and across-case thematic analyses to formulate a general theoretical explanation of the phenomenon under study, that is, the integration of family caregivers of hospitalized older adults in delirium prevention care. Data analysis will

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begin as soon as data collection begins and will be iterative (Larivière & Corbière, 2014). It will entail processing the quantitative data from the sociodemographic and clinical questionnaires and the qualitative data from the interviews with the older adults, the family caregivers, the nurses and the HN, as well as the family caregiver's logs and the research team's field notes.

Processing the quantitative data will entail creating tables where to organize the sociodemographic and clinical data. These tables will help us describe the characteristics of the participants (older adults, family caregivers, nurse, HN). Processing of the qualitative data will entail transcribing the digital audio data obtained through the interviews and copying the content of the family caregiver's logs and of the research team's field notes into a Word 2010® file.

Once the quantitative and qualitative data have been processed, within- and across-case analyses will be carried out. For the within-case analysis, the transcripts and the content of the logs and field notes will be organized by case and will be subjected to a thematic analysis to identify information, relationships and meanings relative to our research questions (Larivière & Corbière, 2014). These analyses will be carried out using the QSR Nvivo®11 software for textual data analysis. Excerpts from the transcripts will be used to illustrate trends and will serve to re-contextualize the phenomenon to achieve a more in-depth understanding of it (Gagnon, 2012). Then, an across-case analysis will be carried out to evidence similarities and difference between cases, on the one hand and to seek to explain and explore possible causal relationships, on the other (Sorin-Peters, 2004).

Synthesis of Results

As recommended by Yin (2014), to properly illustrate the knowledge that will derive from this protocol, we will use tables and storytelling to describe the final results. One table will serve to present the themes and sub-themes to emerge from each case. Two other tables will serve to describe the differences and similarities across cases. We will also develop narratives to enhance the reader's or audience's understanding. Based on the results of the within-case analyses, these narratives will serve to illustrate the differences and similarities across cases. This manner of presenting results is recommended by Yin (2014) as a means of adapting oneself to the audience's needs. It is clearly described by Bourbonnais and Michaud (2018), who underscored that the presentation of research results through storytelling was an effective means of knowledge translation. Narratives help make sense of human behaviors in a specific context and illustrate how to take significant action in response to these behaviors. Moreover, they encourage reflexivity on practice, foster a better retention of the information conveyed and narrow the gap between theory and practice (Bourbonnais & Michaud, 2018).

Ethical Considerations

The research protocol was approved (no. 2017-01160) by the regional ethics committee on research with humans on 18 August 2018. Each person targeted for recruitment will be handed an information and consent form that will specify the purpose of the study, what participation entails and the measures that will be taken to protect the rights of participants. All persons targeted will have at least 24 hours to reflect on the matter before consenting. Participants will be free to withdraw from the study at any time

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without any consequences and without affecting the care and services to which they are entitled. Participants will not be compensated for their time. The collected data will be treated with the utmost confidentiality, coded and stored under lock and key. Results will be presented in aggregate form. No participant will be identifiable in the presentations and publications.

Validity and Rigour

We will ensure scientific rigor by implementing various measures, drawing on the guidelines proposed by Larivière and Corbière (2014). Internal validity will be ensured through the triangulation of data collected from multiple sources and the keeping of field notes throughout the study. External validity will be ensured by the selection of cases that are reproducible over time, the use of purposive sampling to achieve case diversity, the recruitment of many cases and the use of across-case analysis. Finally, reliability and construct validity will be ensured through the detailed documentation of each step of the research in field notes and through the verbatim transcription of the entire content of the interviews. Furthermore, the thematic analysis of the interview data will be performed by three researchers. This will contribute to the validity of the process and of the results.

DISCUSSION

This study will allow us to gain a better understanding of the integration of family caregivers of hospitalized older adults by nurses, the factors that influence this integration and the ways to improve it. It will contribute to the development of knowledge

concerning the interactions between nurses and the family caregivers of hospitalized older adults. A phenomenon strongly associated with the growth of older adults in the population and in care settings (Kohli, Bläuer Herrmann, Perrenoud, & Babel, 2015; Organisation for Economic Co-operation and Development, 2018; World Health Organization, 2012). The results of the study could have implications for practice and research.

Implications for Practice

The few researchers that have investigated the integration of family caregivers in care have underscored or evidenced that family caregivers can play a major role in preventing delirium (Bull et al., 2017; Martins, Conceição, Paiva, Simões, & Fernandes, 2014; Mitchell et al., 2017; Rosenbloom & Fick, 2014; Steis et al., 2012), particularly by handling certain aspects of care (e.g., comfort, orientation, reassurance). This collaboration has been found to be beneficial to family caregivers, who have reported a higher level of perceived support and respect from nurses (Al-Mutair, Plummer, O'Brien, & Clerehan, 2013; Mitchell, Chaboyer, Burmeister, & Foster, 2009). Our study will allow us to delve deeper into the phenomenon and to design interventions to address it as a whole, in all its complexity.

We need to arrive at a more in-depth understanding of the role that family caregivers can play in delirium prevention and of the ways that nurses can facilitate their integration in care. From a practical point of view, integrating family caregivers in care would have multiple benefits. For hospitalized older adults, this partnership would help them engage in regaining their autonomy and pursuing their life plan. For family

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caregivers, integration in their hospitalized loved one's care would allow them to feel respected, valorized and supported. For nurses, it would reinforce the monitoring and tailoring of care and contribute to the organization of the care trajectory through to discharge. Moreover, at a time when quality of care and patient safety risk being undermined by a shortage of health professionals, partnering with family caregivers could reduce the incidence of delirium and, by the same token, the clinical and financial burden associated with it.

Implications for Research

The study results should also yield valuable information that could help raise nurse awareness of the phenomenon and encourage them to try out different interventions to facilitate family caregivers' integration in delirium prevention care and, consequently, improve quality of care for the target client group. The results will allow us also to critique the components of the process put forth by Hill et al. (2014) in their CPE model and to improve on it, as the case may be.

Future research should further explore the complexity of integrating family caregivers in care and take account of the systemic nature of this multi-stakeholder process. In this regard, it seems essential to develop interventions informed by the results of this study and to do so in partnership with family caregivers, care teams and managers. In fact, this study is supposed to be the first part of a future research program aimed at understanding how family caregivers integration in delirium prevention care comes about, developing an intervention to facilitate this integration by way of a pilot project or an action-research project, conducting experimental studies to implement this

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intervention more widely in various settings and with different client groups and evaluating its results.

Study Limitations

The study has a few perceivable limitations worth mentioning. As the study will take place in a very specific care context, the results will not be generalizable. Nevertheless, the results will be useful for formulating research questions or hypotheses for future studies. The desire among the different participants to project a positive image of themselves during the interviews could color what they say. To avoid this bias, the interviewers will need to create a reassuring environment conducive to sharing. In addition, the interview guides developed on the basis of a specific theoretical framework could diminish the quality and depth of the data collected. In this regard, the researchers will need to make an effort to distanciate themselves from this framework during data collection and analysis to preserve a conceptual openness that will allow grasping the phenomenon as a whole and taking account of its various issues and possibilities.

CONCLUSION

The results of this multiple-case study will allow to understand how the family caregivers of older adults hospitalized in orthopedic surgery wards are integrated in care to prevent delirium. This understanding will contribute to the development of nursing practice and of future research on the integration of family caregivers of hospitalized older adults in delirium prevention care.

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In addition, the results will support the education of nurses and the management of health care services. The resulting stories will be useful in raising awareness among nurses and nursing students of the specificity of their role in caring for older adults hospitalized for orthopedic surgery. They will support their reflection on the importance of finding strategies to work with family caregivers to prevent delirium. The results will also help nurse managers to improve the organization of care services to facilitate the presence and integration of family caregivers in the stages of the care process. In short, like Nightingale (1969), it is envisaged that the results of this study will help nurses and nursing managers to become aware that surgery is a repair, but that to recover, the elderly must be in the best possible conditions, including in the presence of people they know.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

Author contributions

Criteria	Author Initials
Made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data;	CC, FP, TK, LB
Involved in drafting the manuscript or revising it critically for important intellectual content;	CC, FP, TK, LB
Given final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content;	CC, FP, TK, LB
Agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.	CC, FP, TK, LB

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Table 1***Selection Criteria for Participants***

Participant	Inclusion Criteria	Exclusion Criteria
Older Adult	<ul style="list-style-type: none">• >70 years old• Man or woman• Non-elective hospitalization in the orthopedic surgery ward of either of two partner hospitals• Capable of discernment• Speak and understand French	<ul style="list-style-type: none">• Presence of major irreversible neurocognitive problems• Presence of delirium at admission
Family Caregiver	<ul style="list-style-type: none">• Designated by the older adult as their significant family caregiver*• Capable of discernment• Speak, understand and write French	
Nurse	<ul style="list-style-type: none">• Has worked in orthopedic surgery ward for more than six months• Was in contact with the family caregiver of the older adult in their care	<ul style="list-style-type: none">• Agency nurse• Student
Head Nurse	<ul style="list-style-type: none">• Has worked in department for more than six months	<ul style="list-style-type: none">• Interim head nurse

*In this study, “significant family caregiver” will be defined as the person that, on a regular basis, is present and provides support to the older adult and that is involved or takes an interest in care.

Table 2***Synthesis of Data Collection***

Data	Source	Time of Collection
Sociodemographic characteristics of older adult, family caregiver, nurse and HN	Questionnaire	At start of hospital stay, after recruitment
Clinical characteristics of older adult	Questionnaire	At start of hospital stay, after recruitment
Perceptions of older adult and family caregiver	Semi-structured interview with older adult and family caregiver	At end of hospital stay
Nature of FC involvement with hospitalized older adult	family caregiver log	Throughout hospital stay
Perceptions of nurse and HN	Semi-structured interviews with nurse and HN	At end of hospital stay
Integration of family caregiver by nurse	family caregiver log	Throughout hospital stay
	Semi-structured interview with nurse	At end of hospital stay
	Semi-structured interview with family caregiver	At end of hospital stay
Contextual factors facilitating or impeding family caregiver integration in care	Researcher field notes	Throughout hospital stay
	Semi-structured interview with nurse	At end of hospital stay
	Semi-structured interview with older adult	At end of hospital stay
	Semi-structured interview with family caregiver	At end of hospital stay
	Semi-structured interview with HN	Between first and last interview with older adult or family caregiver
Perceived effects of family caregiver integration in care	Semi-structured interview with older adult	At end of hospital stay
	Semi-structured interview with	At end of hospital stay

	family caregiver Semi-structured interview with nurse	At end of hospital stay
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Note. HN: head nurse

Table 3

Semi-Structured Interview Guide

Older Adults
<p>We would like to ask you a few questions about your hospitalization for orthopedic surgery:</p> <ul style="list-style-type: none">• To your eyes, what role did your family caregiver play in preventing delirium?• How was family caregiver involved in your care?• How was your family caregiver integrated in your care?• When your family caregiver was involved in your care, what effect did it have on you?• What facilitated or impeded your family caregiver's involvement in your care?• Is there anything else you would like to tell us in connection to your family caregiver's involvement in your care?
Family Caregivers
<p>We would like to ask you a few questions about your older loved one's hospitalization for orthopedic surgery:</p> <ul style="list-style-type: none">• To your eyes, what role did you play in preventing delirium?• How were you involved in your older loved one's care?• How were you integrated in your older loved one's care?• When you were integrated in the care, what effect did it have on your older loved one?• What facilitated or impeded your involvement in your older loved one's care?• Is there anything else you would like to tell us in connection to your integration in your older love one's care?
Nurses
<p>We would like to ask you a few questions about Mr. or Mrs. [person's family name]'s hospitalization for orthopedic surgery:</p> <ul style="list-style-type: none">• To your eyes, what role did this person's family caregiver play in preventing delirium?• How was the family caregiver involved in Mr. or Mrs. [person's family name]'s care?• How did you integrate the family caregiver in Mr. or Mrs. [person's family name]'s care?• When the family caregiver was involved in care, what effect did it have on Mr. or Mrs. [person's family name]?• What facilitated or impeded the family caregiver's involvement in Mr. or Mrs. [person's

family name]’s care?

- Is there anything else you would like to tell us in connection to the family caregiver’s involvement in Mr. or Mrs. [person’s family name]’s care?

Head Nurses

- To your eyes, what role do family caregivers play in preventing delirium?
- To your eyes, how are family caregivers involved in delirium prevention care?
- How are they generally integrated in delirium prevention care?
- What facilitates or impedes the integration of family caregivers in care? More specifically, with respect to nurses, other professionals in the care team, family caregivers, policies and regulations, the physical environment, and how work is organized.
- Is there anything else you would like to tell us in connection to the integration of family caregivers in care?