Dubosson (Magali), Fragnière (Emmanuel), Héritier (Anne-Sylvaine), Meier (Samuele), Wainwright (Charles), « Favoriser la "co-socialisation" entre le patient et l'infirmière pour atténuer les risques de la numérisation des services de santé »

Résumé – La numérisation des services a également affecté la pratique des soins hospitaliers. Ici, nous appliquons la méthode des groupes de discussion dans un but exploratoire auprès d'étudiants praticiens en soins infirmiers afin de voir si la numérisation des processus administratifs dans les hôpitaux a un impact sur leurs modes de fonctionnement habituels pour le traitement des patients. Les données recueillies montrent une déconnexion entre les difficultés évoquées par le personnel infirmier dans l'exercice de leur profession et la numérisation des processus. Suite à ces observations, nous proposons un nouveau modèle théorique basé sur le modèle de création de connaissances SECI (socialisation, externalisation, combinaison, internalisation). Notre modèle conceptuel consiste à coupler la "boucle SECI" du patient avec la "boucle SECI" du soignant au niveau de l'étape de socialisation.

Mots-clés – connaissances explicites et tacites, groupe de discussion, travailleurs de premières ligne, socialisation, processus de travail, numérisation

Dubosson (Magali), Fragnière (Emmanuel), Héritier (Anne-Sylvaine), Meier (Samuele), Wainwright (Charles), « Fostering "co-socialization" between patient and nurse to mitigate the risks of digitalizing health care services »

Abstract – The digitalization of services has also affected the practice of hospital care, particularly among nurses. In this study, we applied the focus group method with an exploratory aim among practicing students in nursing to see if the digitalization of administrative processes in hospitals was having an impact on their usual operating modes for treating patients. The collected data shows a disconnection between the difficulties evoked by the nursing staff in regard to exercising their profession and the digitalization of processes. Following these observations, we propose a new theoretical model based on the SECI (socialization, externalization, combination, internalization) knowledge creation model. As the patient is co-producer of the service, our

conceptual model consists of coupling the "SECI loop" of the patient with the "SECI loop" of the nurse at the level of the socialization stage.

FOSTERING "CO-SOCIALIZATION" BETWEEN PATIENT AND NURSE TO MITIGATE THE RISKS OF DIGITALIZING HEALTH CARE SERVICES

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INTRODUCTION

Psychosocial risks are defined as risks to mental, physical and social health arising from employment conditions and from organizational and relational factors that may interact with mental functioning (Gollac and Bodier, 2011). In other words, working in a stressful environment increases the risk of suffering from physical illness or psychological distress (Clarke and Cooper, 2004). In practice, psychosocial risks are described by terms such as burnout, poor performance, deteriorated work environment, negative stress, illness, and turnover (INRS, 2006). In the service sector, frontline employees, that is, those who deal directly with customers, may be suffering from intense stress pressures (Miller

et al., 1988). Yet these frontline workers are expected to perform tasks and roles that a robot cannot perform, such as expressing empathy or solving complex new situations requiring creativity. Solving client problems can provide a sense of competence, accomplishment, and growth (Dormann and Zapf, 2004). Instead of focusing on these rewarding and positive aspects, frontliners may still be forced to cope with stressful situations due to overdemanding customers (Kim and Stoner, 2008) or misunderstandings about role perception (i.e. role conflict or role ambiguity) that could lead to a decrease in performance, job satisfaction, and organizational commitment (Brown and Peterson, 1993).

When employees feel that they are unable to close a gap between their abilities and the requirements or expectations of their organization, it may lower their efficiency at work and cause health problems (Toderi *et al.*, 2015). Moreover, burnout often affects the best staff, namely those who are unusually skilled and who take the initiative (improvise) in the case of service failures (Malakh-Pines *et al.*, 1981). In the era of the fourth industrial revolution, with massive amounts of digital technology being integrated into each and every aspect of daily life that can be digitalized by converting analog information into digital form (Gray and Rumpe, 2015), these frontline jobs are placing employees under even more intense stress (Ahlers, 2016). Human resources have to be seen as strategic and, in this context (Noe, 2017), it is imperative to effectively prevent and mitigate psychosocial risks.

In a Swiss research project involving more than 5,000 employees, a process of human risk management was used to enhance performance, to maintain or improve health, to reduce absenteeism, and to boost business profits[1]. In Switzerland, the majority of the workforce is employed in the service sector. In this research, we chose to focus on the population of nurses. The objective of this exploratory study is twofold: on the one hand, we aim to explore and better understand the professional context of nurses who are on the front line in the increasingly technological and digitalized environment of health care, and, on the other hand, we want to assess the propensity of nurses to regularly reveal information about their feelings and attitudes regarding their professional life in order to estimate the level of psychosocial risk and thus better embrace the digitalization of these professional services.

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1   Promotion santé suisse & Association d'assurances (2011).

The paper is organized as follows. In Section 2, we present a literature review that explains the specific challenges encountered by nurses in an increasingly digitalized working environment. In Section 3, we explain the methodology that has been employed to collect data among nurses, which is based on a focus group approach. In Section 4, we describe the main results based on the transcripts of the focus group. In Section 5, a discussion develops several research ideas and finally a model derived from the SECI model (Socialization, Externalization, Combination, Internalization), in order to better take into account the practitioner dimension (*i.e.*, tacit knowledge) of the nursing profession in the digitalization of the health sector. In Section 6, we conclude and provide suggestions for further research.

1. LITERATURE REVIEW

The world of labor has undergone many changes in recent years, leading to new health risks (EUOSHA, 2007). Technology and social development have influenced the relationship between people and their work, so that managing psychosocial risks in the workplace has become an increasing challenge (Jain *et al.*, 2011). Research in the psychosomatic field (Honkonen *et al.*, 2006; Kendal-Tackett, 2009) has highlighted an association between psychological health and physical body response. Clarke and Cooper (2004) have shown that working in a stressful environment increases the risk of suffering from physical illness and/or from psychological distress. According to Chiarini (2012), disorders like anxiety, depression, sleep disorders, and burnout are among the most common work-related pathologies. Subsequently, stress and psychosocial risks are linked to lower productivity, high absenteeism, and high staff turnover (Hassard *et al.*, 2014).

Moreover, consistency between the actual job and employee's perceived work experience of the employee could act as a catalyst of strain because stress occurs when a gap is observed between role expectations and actual role performance (Lambert and Lambert, 2001). Thus, when employees feel that they are unable to make up the difference between

the requirements or expectations placed on them, it may reduce their work efficiency and cause health problems (Toderi *et al.*, 2015).

The introduction of new technologies is often seen as a positive element that supports employees' work. However, it appears that in some circumstances the introduction of new technologies may lead to increased stress (Tovey and Adams, 1999; Jennings, 2008), lower job satisfaction, and increased psychosomatic complaints (Korunka *et al.*, 1995).

Jobs in the service sector have become the main source of employment in Western countries (Zeithaml and Bitner, 2006), and in Switzerland approximately 75% of the working force is employed in this area (Office fédéral de la statistique, 2017). In this sector, frontline employees suffer from intense stress pressures (Miller *et al.*, 1988). Indeed, although customer relationships can be a source of satisfaction, it has been observed that this same relationship can also be a significant source of stress (Tolich, 1993), dissatisfaction and pain (Korczynski and Bishop, 2008), or burnout (Dormann and Zapf, 2004). Furthermore, if the job leaves an employee stuck between customer and management pressures, the work can be experienced as a conflict between quality and quantity objectives (Korczynski, 2008). Frontline workers must provide high-quality services to customers, but at the same time they have to meet the quantitative targets imposed by management. The way of dealing with the discrepancy between the reality of work as experienced by the employee and the constraints imposed by management is crucial. Thus, another element that has been highlighted as influencing employee stress is the management style that could mitigate or exacerbate such constraints (Leveck and Jones, 1996; Weinberg and Creed, 2000; Laschinger *et al.*, 2001; Hall, 2007).

Nursing is typically a service sector profession where frontliners perform tasks, such as communicating with empathy or understanding a patient's needs, that a robot cannot do. At the same time, nurses deal with industry-specific stressors such as patients' physical and mental pain, coping with death, extended working hours, work-life conflict, insufficient staff, inappropriate management style, physical labor, multidirectional interpersonal relationships (patient, relatives, co-workers, superiors), rising health care costs, inability to provide high-quality service, increased paper burdens, increased reliance on technology (Heim, 1991; Lambert and Lambert, 2001; Jennings, 2008; McVicar, 2016) and the overall digital transformation of the health sector (Agarwal *et al.*, 2010).

A major concern is the observable effects of these stressors on staff in terms of employee dissatisfaction (Zangaro and Soeken, 2007), burnout (Bakker *et al.*, 2005), intentions to quit their job (Jennings, 1994), and on patient outcomes as they are compromising the quality of services provided to patients (Leiter *et al.*, 1998; Vahey *et al.*, 2004). Coping with stressors is a major concern in the health care sector that must be dealt with to prevent employee health problems and staff turnover, as well as to reinitiate a cycle of positive interactions (*i.e.*, co-creation) between nurses and patients. When patients receive better service, they will express fewer complaints, and the staff will respond more positively, leading in turn to better service (Rust *et al.*, 1996).

For employers, the costs arising from the damaging impact of stress are very high. Often burnout affects the best personnel, those who are typically the most skilled and who take the initiative (*i.e.*, improvise) when there are service-related problems (Malakh-Pines *et al.*, 1981).

2. METHODOLOGY

In this exploratory study, we wanted to analyze nurses' perception of their work and their representation of the psychosocial risks they faced. We chose to conduct a focus group since it is an effective qualitative method for assessing social representations among the health sector (Flynn *et al.*, 2018). Focus groups allow researchers to gather the expression of ideas presented in a social context (for instance, in a conversation between colleagues) and thus to study conversational practices that are used to discuss a particular topic. Focus groups make it possible to analyze how these representations are built, transmitted and transformed (Linell, 2001). Moreover, it is a simple and practical way to gather information from several people at once, with each person responding individually one at a time (Kitzinger *et al.*, 2004).

A focus group normally involves between 4 and 12 participants (Krueger, 2014) and a moderator. The role of the moderator is to ask questions, listen, keep the conversation going. and ensure that everyone has a chance to participate. The moderator has to explain the objectives

and the conditions of the study because, as Krueger (2014, p. 34) states, "those who participate in the study must be informed of the study's rewards and risks, told the study is voluntary and confidential, and told they can quit participating at any time. In addition, the participants sign a statement that they are aware of these features."

To engage participants who are more reflexive, Krueger (1998) suggests introducing activities such as listing, sorting, and ranking. These kinds of activities can take various forms by adapting them to the recruited sample and to the specific field of investigation. These activities can also be used at various stages of the focus group session, for example, as a warm-up, as a transition to another topic, or to summarize what has been discussed during the session (Colucci, 2007). We decided to use a card-ranking exercise to summarize the discussion. For this task, participants were provided with a list of terms, written on cards to be ranked according to a given dimension.

Our focus group brought together 10 young nurses—9 women and 1 man—working in western Switzerland and was hosted at the Haute Ecole de Santé in the small city of Sion. In one of the classrooms, we arranged the chairs in a circle (as suggested by Krueger [2014]), so that everyone could see each other. The moderator was seated among the participants. A recorder was placed in the middle of the interaction area, and a camera recorded the discussions to provide a second source of high-quality transcripts. Once the participants were seated, the conditions for participation and the sequence of the proceedings were explained to them. All participants agreed and signed a document summarizing the conditions of participation. Then the camera and the audio recorder were switched on. The focus group was conducted over a one-hour period.

Prior to this event, six researchers had built up a discussion guide with a series of questions designed to elicit participants' feelings and insights about the human risks incurred in a hospital environment where information technology is becoming increasingly prevalent. This issue was addressed through the following main questions:

1. In the context of your job, did you observe any human-related risk?
2. How would you feel if your hospital started collecting information about employees and teams in order to prevent psychosocial risks?

3. What information about yourself and your work environment would you be willing to share?
4. Which incentives would make you feel motivated to provide that information?

When all the topics of the guide had been addressed, we introduced the card ranking activity. Each participant received 40 cards with a brief description of hypothetical work situations that could be an indication of a positive or negative attitude or behavior: for example, "unable to cope with the demands of patients," "having poor relationships with colleagues," "lack of time to do the job." These work situations were identified through a review of the literature on stress and well-being at work. Participants were asked to divide the cards into three categories: "not important," "neutral," and "important." To help them in their reflection and to contextualize their thinking, we proposed the following scenario: "You work in a team at the hospital in close collaboration with a colleague who has a work-related problem. You have plenty of opportunities to carefully observe this person's behavior. She or he trusts you and talks to you. What are the most important indicators that may explain this situation? Or what could be a good indicator of the situation?" The answers were collected and the participants discussed them so as to come to a consensus on what should be considered the most important and least important elements. Participants were also asked to explain the reasons underlying their assessment. The content of the discussion was fully transcribed and analyzed through the framework-analysis method.

3. RESULTS

Our results are presented hereafter, categorized according to the frameworks found through the analysis of the participants' discussions. Each dimension is interpreted and supported by concrete examples from the participants' verbatim. Each quotation is preceded by a letter (A, B, C, etc.), which stands for the name of the otherwise anonymous participant.

3.1. MOTIVATIONS FOR WORKING AS A NURSE

Most participants expressed a desire to be in direct contact with people, to be helpful by spending time dealing directly with the patients.

> B: *"I like everything about medicine, care and especially contact with patients."*

They see this job as a vocation, where it is crucial to help another person get better.

> E: *"It's a bit like a [nursing] vocation. But there's also human contact, everything medical and technical."*

Knowledge directly related to the medical profession also seems to be a very important motivation.

> L: *"I'm interested in everything related to anatomy and physiology."*

One person also mentioned the possibility of having a full and broad career based solely on a bachelor's degree. In summary, the motivations for performing these tasks are a combination of emotional, rational, and technical elements.

> F: *"The human contact, the fact that you can also be a senior. There are many areas in which you can evolve. It's interesting."*

3.2. THE MOST IMPORTANT HUMAN-RISK FACTORS

Work overload leads to conflicts with colleagues, decreased motivation, poor performance, and prevents nurses from being more in touch with patients.

> G: *"In everyday life, all these factors such as understaffing and the overload of work in some sectors; it's also difficult… It is now … and here."*
> B: *"Just the overload, it causes conflicts between colleagues and then we don't want to go to work. There are tensions, in fact."*

With the integration of more technologies, the profession is also changing as many other professional activities are evolving. Nurses have to perform more and more paperwork (for which they can blame the "bureaucracy"). One reason for this is the digitalization of processes in

hospitals, which calls for more information on what is being done and who is responsible for what.

F: *"Maybe it's because we don't have much time. We don't have time to spend with patients, and maybe that's what the patients want. Actually, we're not very useful because the nurse is not in contact with the patient; she's busy doing paperwork."*

Distancing from the patients is often a source of frustration for our participants because they can't assume the role they had in mind when they started this job (see dimension above). Furthermore, a deteriorated work quality elicits ongoing negative comments from patients, their relatives, and stakeholders involved. This lack of recognition for the work of staff and the negative comments from patients, family, doctors, and superiors is a major source of negative attitudes and behaviors, such as demotivation and conflicts.

Most of the time, nurses suffer from a lack of autonomy combined with a high level of responsibility. The status of their profession does not reflect the added value they bring. As a result, they suffer from a lack of recognition since they are relegated to a role with very little latitude for action, a strong allegiance expected from doctors, confined in a posture that could be labeled as a "medical delegation role."

C: *"There is also the lack of recognition for the work of the staff because we see that some nurses or health care workers do a great deal of work but are neither valued nor rewarded by anyone… neither by the patients, nor the family, nor the doctor."*
G: *"Patients being treated or their families… I think they don't really realize the workload we have. They are people that we just see for a short period of time and they don't know that this might be our seventh workday in a row, that we've had to work harder each day to take care of them. Then, on top of that, they ask us to make a little extra effort or provide one more care when we can't stand it anymore."*
E: *"There is also the lack of recognition in comparison to all other health care professions. For example, the physiotherapist, the occupational therapist, the dietician, they have all been recognized as proper disciplines. Nurses are still somewhat dependent on the doctor. They [doctors] never share information with nurses. We always have the same role, a kind of medical delegate who has to smile. We can't change the way we are perceived by patients, relatives, or other health care colleagues."*

Depending on the care unit in which they work, nurses experience different levels of stress. For example, working in a rehabilitation sector is less stressful than working in a sector where the nurse has to deal with the death of patients.

> G: *"In some sectors I know that there are nurses who are severely affected by death. Our job is very difficult with all these deaths, all the stress involved…, if on top of that you're tired and you have a stressful workplace, it's even more difficult."*

Working hours are an important factor exerting work pressure in the workplace. Shift work schedules are often irregular and involve alternating day and night shifts, which leads to significant fatigue.

> E: *"There are also working hours. There are units where you work eight hours a day, sometimes ten hours, sometimes twelve hours. You have day shifts, night shifts…"*

Our participants believe that teamwork plays a protective role. However, for this to happen, the team must get along well and be able to work together. Otherwise, it is not possible to support and help each other. If the team does not play its role, there is a risk that patients will not receive adequate service. In fact, nursing teams play a central role. Teams that do not function well, where the atmosphere is not good, quickly become dysfunctional and inefficient. As soon as team spirit is no longer present, the team's ability to carry out its mission decreases extremely rapidly.

> C: *"I find that it depends a lot on the team we are part of, because the team is meant to be around to help, to support each other. If doesn't work, if there are tensions, clans and divisions in the team, if you feel bad, you don't feel safe. If there is no one to rely on or tell things to… I would say that that's also the role of the superior. They [the superiors] are in a higher position, to value us, or to tell us if it's going well or not. But not to constantly blame us because that puts an additional strain on the team."*
>
> G: *"I think it's certainly important for the patients, particularly since we have to take care of a lot of patients…, when we get along well and there's a good atmosphere at work, among colleagues. When they [the patients] arrive in a care unit where there's a good team rather than if it's already tense… it also affects the patients."*

Burnout and depression are the most visible symptoms of these problems. But it is often too late to act. Our participants think that it is ironic that in the health sector, those who take care of other people' health are not able to promote and set up the conditions necessary to ensure their own health.

> C: *"I was in a team that didn't work well in the end; nobody got along with anybody. I was trying to do things right, and so were the others. Some of them were exhausted.*

> *I left the team, and sometime later I heard that the whole team had been replaced. There were a lot of depressed people and burnouts."*
>
> G: *"In addition, as professionals, we are supposed to have high medical standards. Whereas precisely when there are people who are exhausted or people who are not well in the unit… It is even more negative in the field of health… That's a pity."*

To sum up, psychosocial risks are generally generated by working conditions, the organization of the hospital, the hierarchical relationships, and the nature of the work itself. The consequences of psychosocial risks are described in terms such as burnout, poor performance, poor work quality, negative stress, illness, and turnover. Good relationships with colleagues could help to better support and protect themselves in a dysfunctional environment and provide a better level of patient care.

3.3. COLLECTING PERSONAL INFORMATION

One of the main inhibitors to sharing reliable information is the fear of being judged and punished on the basis of the answers provided. There is therefore a risk of not answering questions truthfully.

> F: *"It depends on people's personalities… some people may be more assertive and others a little more shy. And they won't have the courage because they're afraid…"*
>
> L: *"Actually, it's better if it [a survey] is anonymous. When it's anonymous, we can say what we like because we know anyway, if there's retaliation afterwards, it can't fall on us because nobody knows who said what. So the fact that it's anonymous could lead me to get something off my chest …"*

An important factor for improving the quality of the information provided is the organization in charge of the survey. Even if there is a statement of confidentiality of respondents and responses, participants are suspicious if their employer is involved in the process. They prefer an outsourced administration of the questionnaire that would handle the entire process, from collection, through analysis, up to reporting the results.

Nurses would be willing to get involved in such feedback on a long-term basis provided that the information is actually used by management to improve the administration of the organization. If managers do not strictly adhere to this commitment, there is a risk that the participation rate will drop to a very low level, or a risk that "employees do not play by the rules." It is therefore essential to provide clear evidence that the

information collected is not only used for statistical purposes, but is actually used to support relevant actions.

Participants also suggested that someone should come and explain the information collection process. This would be an essential factor in ensuring the success of the operation. This should avoid the trap of an impersonal and cold memo.

> H: *"What could also be motivating for me is the follow-up. If we know that something will be implemented, that everything we say will be taken into account, it would motivate me to say what I feel and what is going on. More than if it's just to gather information for statistics. We will act according to the rules if we know what's really being taken into account and if afterwards there are things that will be implemented."*
> E: *"I think we've all completed questionnaires at the hospital or elsewhere. In fact, they just send us the questionnaire without telling us what it is for… We have questionnaires filled out… but at least give some feedback… it's for statistics, yeah, statistics, what's the point?"*
> I: *"I think the questionnaire is quite impersonal. I would really like to have someone like you in front of me and then discuss, and then I could really say what I think. A questionnaire, you fill it out in two seconds. It's not precise enough."*

The questionnaire might initially be administered in a structured form with closed-ended questions either remotely via the internet or by mail (traditional or electronic), but it is also important to establish individual human contact between the person collecting the information and the respondent. Direct personal contact humanizes the relationship and also encourages the deepening of responses through a qualitative approach.

> H: *"I think it's better on paper because it's something we could do at home, for example, but otherwise, I don't think we should take our problems back home. When I fill it in, I start thinking about these problems even more than I do at the office… I think that's a real shame."*

The time required for data collection is crucial. Indeed, depending on the collection method, it can take more or less time. If the data collection system takes too long, there is a risk of additional workload. If at the same time, there is no rush. Taking the time to "ritualize" the process can then be an advantage in making the data collection system more acceptable and convincing.

> G: *"I think it will be complicated for this profession. Our tasks are already taking up a lot of time, and all the nurses I know have already a huge overload of work. If*

> *we tell them that they have to take time away from their work, if we don't give them time to do it… they won't find the time."*

The time needed to complete the questionnaire must be integrated into the normal course of a work day. It should be considered as a legitimate work activity, just as important as any other task mentioned in the job description. For example, employees could schedule to spend three minutes filling in the questionnaire each week at the end of the week before leaving work.

> H: *"I think we always have five minutes to fill out a questionnaire. It's quick to answer. If we want things to change, we have to participate. At the end of our day, take three minutes before leaving to read a questionnaire and complete it… anyway, we often finish late, so three minutes more or three minutes less…"*

During the focus group discussion, participants reacted positively to the idea of implementing a process for regularly collecting personal information. In particular, they felt that if information was collected about their stress and fatigue levels, it would be positive because they would feel listened to, recognized, and valued. They highlighted the importance of ensuring that these data collections are anonymous and that they reflect the specificities of the different sectors in which nurses are working. It is important to gather everyone's point of view and not to hide it in a global perspective. The individual case must be treated in all its uniqueness and complexity. This would also allow the point of view of minorities to be respected and valued.

3.4. RANKING OF PSYCHOSOCIAL RISK FACTORS

This section summarizes the results of the ranking activity conducted by the focus group. Table 1 presents a synthesis of the results of the participants' rank order of factors and of the discussion to reach consensus. The results are clear and consensual. Indeed, all of them chose "no longer have the patience to handle patients' requests" and then "no longer see any sense in my work" as psychosocial risk factors. This shows that nurses attach great importance to their mission and that their priority goes first and foremost to the patients, well before the institution. The profession is chosen and practiced as a true vocation.

Among the factors that play a minor role, the "fear of losing my job at any time" is completely ignored. This fact was at first surprising when compared with other studies conducted in other contexts and considering the relatively low remuneration of the nursing profession. Upon further consideration, we think that this can be attributed to the special situation of the Swiss labor market for nurses. Participants explained that if they lose their job or decide to resign, they will soon find a new job, as nurses' qualifications are highly sought after nowadays.

These attitudes are quite consistent. Nursing is a difficult job, but it can be highly rewarding. To enjoy it, nurses choose to stay or resign based on their perception of their ability to properly fulfill their role as caregivers for their patients.

TAB. 1 – Most and least important factors leading to psychosocial risk.

Importance	Factors	Votes
+	No longer have the patience to handle patients' requests	4
	No longer see any sense in my work	2
	Don't like my job	1
	Lack of time to do my work	1
	No boundaries between private life and work	1
	Feeling exploited	1
–	Fear of losing my job at any time	5
	Feeling ignored by superiors	1
	No fair reward	1
	Lack of control over work	1
	Unpleasant or unnecessary comments from the superior	1
	Take no pride in my job	1

4. DISCUSSION

The results from our focus group confirm the main stressors observed in the literature (Heim, 1991; Lambert and Lambert, 2001; Jennings, 2008; McVicar, 2016). Among the most important stressors, participants mentioned working hours; night shifts; lack of recognition from physicians, patients, and their relatives; emotional strain related to death; lack of autonomy; and overload of paperwork. In this stressful environment, the ultimate line of defense seems to be your team, as long as the work atmosphere is good. If it is not, co-worker problems are the element most often associated with burnout and job dissatisfaction (Khamisa *et al.*, 2015). Other research studies highlight the importance of social support in mitigating unhealthy work conditions (Constable and Russel, 1986; Lambert and Lambert, 2001; Jennings, 2008; Johansen and Cadmus, 2016). The main risk of unhealthy workplaces is the inability to provide adequate patient care.

Psychosocial risks must therefore be managed by collecting information about individuals and teams. Focus group participants endorsed a process for sharing information about their workplace situations. This would make them feel more listened to, considered, and valued. But this process has to meet certain conditions. The procedure must guarantee anonymity and, to that end, it would be preferable that it be conducted by an organization independent from the institution. The information transmitted must be used fairly quickly and effectively for communication and action. It is necessary to give a real sense of purpose to the process. However, this approach must under no circumstances lead to an added burden in an already overloaded work environment.

In this context, we want to apply the paradigm proposed by Rust *et al.* (1996) where the notion of "employee as servant" becomes "employee as customer" of the employer. From this perspective, a frontline employee has to be considered not only as a person who must listen to managers, but above all as a person to whom managers must listen, since she or he is often in the best possible position to assess the organization's needs for improvement and the methods implemented to meet client needs and expectations (Manz and Sims, 1993). Very often, the employee has implicitly found means and solutions to meet the day-to-day needs of customers.

The consequences of psychosocial risks are often manifested as mental and physical problems for employees, resulting in a loss of human capital for the company. This is a business problem since turnover can threaten the "stability and development of enterprises" (Wang *et al.*, 2011).

Employee turnover erodes the knowledge base and the knowledge creation process (SECI) as theorized by Nonaka *et al.* (2000). In fact, the know-how acquired and accumulated by individuals through their work experience and the organizational routines that are implemented to carry out the daily activities of the company are compromised by the loss of human capital. The production of new knowledge is also at risk.

The SECI model is based on four processes (see Figure 1), namely socialization, externalization, combination and internalization. Socialization is the process of converting new tacit knowledge through the sharing of experiences. Externalization is the process of articulating tacit knowledge into explicit knowledge. This step helps to crystallize knowledge. Combination is the process of converting explicit knowledge into more complex and structured sets of explicit knowledge. Through internalization, the explicit knowledge created is shared within an organization and converted into tacit knowledge by individuals. According to the SECI model, newly created knowledge, in order to be relevant, must go through these steps of "knowledge transformation."
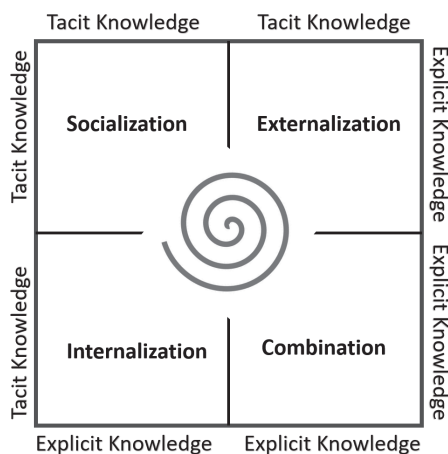

Fig. 1 – The SECI model (Nonaka *et al.*, 2000).

Our interviews highlighted two important factors contributing to the mitigation of human risks in the hospital environment, which are the work team, which plays a role as a buffer in the event of a problem, and working in direct contact with patients, which gives real sense to his or her work. Our participants talked about feeling a strong sense of mission to do this work. Organizing teamwork enables the sharing of knowledge and practices, and if it works well with a positive atmosphere, it will play its role of protection against the pressures of an unhealthy work environment. There is also another level of socialization that occurs in the nurse–patient relationship. This level of socialization is the one that will truly convey a sense of meaning to the work provided that nurses feel that they are able to carry out their mission.

However, this dual level of socialization is increasingly undermined by the introduction of technology and especially by the paperwork it paradoxically requires (see Figure 2). At the stages of internalization and externalization, information technology is strongly leveraged to collect, process, structure, and store explicit knowledge. Participants in our study complained about increasing demands for getting involved in these information management processes. According to them, getting entangled in paperwork implies a significant risk of degradation of social-ization processes. Indeed, there is a risk of pulling the nurse team away from the patients to feed the paper-intensive system. Having to deliver downgraded work will lead to frustration that will grow even more as a result of negative comments from the patient, the patient's relatives, colleagues, and superiors. If patients perceive a poor quality of care, there is also a risk of compromising the recovery process by preventing a beneficial co-production process. Risks affecting the socialization loop around patient care may, in turn, lead to conflict within the work team, which will affect the team's production capacity and patient care as well.

At the level of socialization, technology is rather used as an increas-ingly essential tool for care. Socialization in itself is based on the sharing of implicit practices and knowledge that will be taken up and used implicitly. There is therefore no exploitation of information technology in this sharing. Rather, IT is seen as a necessary evil, imposed for purely organizational reasons external to the employees' genuine vocation as nurses, at the upstream and downstream stages of internalization and externalization.
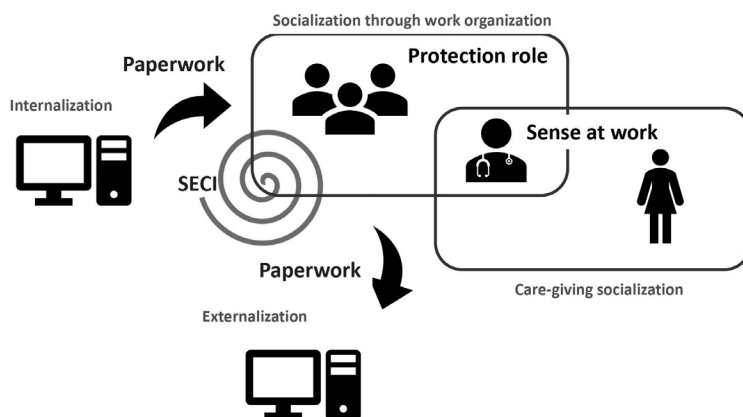
FIG. 2 – Risk of undermining the dual process of socialization (source: authors).

It is therefore essential to manage human risks that could prevent these two socialization processes from taking place. For this reason, it is important to be able to collect information to detect problems experienced by nurses in relation to the sense of meaning found in the work and the working atmosphere. The participants in our study warmly endorsed an approach to collecting data (internalization according to the SECI model) that could measure the factors that foster this dual socialization process and prevent factors that could damage it. Managing these aspects more effectively might also lead to higher recognition of the work done and of the people who give so much. For the hospital, it would make it possible to respond to recurring problems of turnover, burnout, negative stress, and absenteeism among other losses.

CONCLUSION

As the literature shows and our results confirm, a crucial point for the nurse is to consistently meet the patient's requests effectively and with empathy. The nurses want to fulfill their role as caregivers even if it is difficult. All the stressful dimensions that have been identified in

this research prevent the nurse from being closer to and connecting with patients. Technology that is gradually pervading the entire workspace further disrupts and obstructs the nurse–patient relationship. ICTs are currently experienced as an additional stress factor that increasingly dehumanizes the relationship with the patient as it results in even more paperwork and bureaucracy instead of real interaction. The main consequence of the identified human risks is that the service provided is insufficient for all parties, leading to a risk of dissatisfaction for all.

Employees are eager to be involved, under certain conditions, in the collection and transmission of data that could be useful to improve the quality of service. This is in line with our assumption that a digitalized service can be successfully implemented when it is used to support the core mission of a particular job. By this logic, a device (tool and process) to manage human risks so as to detect them early would be an essential mechanism to improve the efficiency of the hospital through a preventive rather than reactive system.

It is for this reason that our theoretical development has been based on the SECI model (socialization, externalization, combination, internalization) of knowledge creation developed by Nonaka *et al.* (2000). Indeed, the profession of nurse is a professional service, where the nurse physically interacts with the patient to provide care. The digitalization of hospital processes and particularly of the management and planning of nursing teams means that the nurse is involved less and less in the phases of socialization in terms of knowledge creation and more and more involved in phases of externalization and internalization. As a result, the nurse loses the strong attention she or he used to have with patients. By coupling the nurse's SECI loop with the patient's SECI loop in the socialization phase, we believe we can better mitigate the risks of a drop in the quality of care that might be caused by the strong digitalization of the health care sector.

This research is part of a larger project whose objective is to develop a tool and processes to prevent human risks in the workplace. These exploratory results must be compared with the results of complementary work carried out in different fields. They will also have to be verified and confirmed by quantitative surveys in order to be generalized. Further research in this area will verify whether they contribute to reducing turnover and maintaining a useful knowledge base in companies.

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