

## Second victims among baccalaureate nursing students in the aftermath of a patient safety incident: An exploratory cross-sectional study

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### ABSTRACT

**Background:** A patient safety incident (PSI) is considered to have an impact on nursing students. Healthcare professionals often feel personally responsible for the unexpected patient outcome and feel as though they have failed their patient. In this way they may become second victims of the incident. Little is known about possible initiatives from hospitals or teaching institutions regarding the support of their students involved in a PSI.

**Aim:** The study aims to examine the prevalence, symptoms and support in the aftermath of a PSI in baccalaureate nursing students.

**Methods:** A cross-sectional study in four teaching institutions for baccalaureate education across eleven campuses in Belgium. Students completed an online survey between February 2018 and March 2018.

**Results:** About one in three (38.4%) students were involved in a PSI during their clinical experience. Of these, 84.7% experienced second victim symptoms. Most common symptoms were hypervigilance (65.7%), stress (42.5%) and doubting knowledge and skills (40.6%). Besides negative effects, the PSI also led to a more positive attitude. Students expect most support and room for open discussion from staff nurses (80.8%).

**Conclusion:** Nursing students may already become second victims during their education. PSIs have a major impact on their performance and personal life. Students have the right for a decent treatment, respect, understanding and compassion, support, transparency and the opportunity to contribute to improving procedures. Teaching institutions should therefore bear the responsibility to prepare students of the probability of the occurrence of PSIs during their clinical experience.

### Introduction

Patient Safety Incidents (PSIs) occur in one in seven patients and may have an impact on patients and family (first victims), caregivers (second victims) and organizations (third victims) (National Academies of Sciences, Engineering, and Medicine, 2018; Seys et al., 2013; Wu, 2000). In Belgium every year on average 100,000 patients are involved in an PSI. Of these, 1500 patients die as a result of an unanticipated adverse event (Patient Safety - OECD, n.d.). Wu (2000) was the first to describe the term second victim with the aim to provide a framework for providing support to health professionals who are affected psychologically and

sometimes physically by the burden of harm to their patients. Scott et al. introduced a detailed definition of second victims: “A healthcare provider involved in an unanticipated adverse patient event, medical error, and/or patient related-injury who becomes victimized in the sense that the provider is traumatized by the event. Second victims often feel personally responsible for the unexpected patient outcome. They think they have failed their patient, second guessing their clinical skills and knowledge base” (Scott et al., 2009).

The impact of PSIs among 6508 healthcare providers was studied in 32 Dutch hospitals. Almost 70% of the healthcare providers had been involved in a PSI at any time during their career. Of these, 7.1% had

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been involved in a PSI with permanent harm or death during the last 6 months (Vanhaecht, Seys, Schouten, et al., 2019). Fifty to sixty percent of all caregivers will become a second victim (Edrees, Paine, Feroli, & Wu, 2011; Mira et al., 2015). They can suffer on both a professional and personal level (Schelbred & Nord, 2007). Feelings of guilt, anger, hypervigilance, having doubts about knowledge and skills, feeling unable to provide quality care, psychological distress such as depressive feelings, anxiety, insomnia, nightmares, flashbacks, guilt, self-blame, loss of self-assurance and even symptoms similar to post-traumatic stress disorder (Edrees et al., 2011; Seys et al., 2013; Vanhaecht et al., 2019; Wu et al., 2017). These feelings can also occur if the PSI does not lead to harm (Jones & Treiber, 2012).

Second victim support is needed to help healthcare workers, and will improve the quality of care and patient safety (Seys et al., 2013; White, Waterman, McCotter, Boyle, & Gallagher, 2008). Support can be provided at the individual level and at the organizational level. At the individual level open discussion and disclosure of the mistake could have a positive impact on stress and reduce the likelihood of future mistakes and should be organized and facilitated (Seys et al., 2013; Vanhaecht et al., 2020).

Despite previous research on support of second victims, little is known about possible initiatives from hospitals or educational institutions regarding the support of their students. A study among general practitioners in training revealed that 27% of the students did not receive any support after a PSI (Venus, Galam, Aubert, & Nougarede, 2012). These findings are supported by a study in the United States and a recent Belgian study in nine nursing schools, which confirmed the lack of follow up policy (Disch, Barnsteiner, Connor, & Brogren, 2017; Ule-naers, Grosemans, Schrooten, & Bergs, 2021).

The aim of this study is to investigate the prevalence, symptoms and the support in the aftermath of a PSI among baccalaureate nursing students.

## Methods

### Design

We conducted an exploratory cross-sectional descriptive study using a convenience sample in four Dutch speaking teaching institutions for baccalaureate education across eleven campuses in Belgium. The study was performed by means of an online survey that took place between February 2018 and March 2018.

### Participants

Regular baccalaureate nursing students and advanced baccalaureate students were included. Eligibility criteria to complete the survey were: (a) sufficient knowledge of Dutch, (b) enrolment at the participating teaching institutions, (c) completion of at least one or currently doing a clinical experience.

Teaching institutions received an email with information regarding the purpose and the conditions attached to the study. The online link was distributed by the teaching institutions, using their online learning platform. Students were never directly contacted by the researchers. Participation was voluntary, without financial incentives, and respondents were guaranteed anonymity and confidentiality.

### Setting

In Belgium nursing education is provided at two levels: European Qualifications framework (EQF) level 5 and at baccalaureate level or EQF level 6. Level 5 nursing is organized as a three-year program. Level 6, baccalaureate nursing education, is a four-year program. The four-year program exist since 2016–2017, therefore there are currently no 4th year students. Both educational programs comprise 2300 h of clinical experience. Students are exposed to clinical practice from their first

year in both programs. Despite a significant difference in focus, both level 5 and baccalaureate education give access to the same title of nurse responsible for general care as defined in the European Directive 2013/55/EC. Following on the baccalaureate program, students can opt for an advanced baccalaureate program in geriatrics, intensive & emergency care, oncology, surgery nurse, care management and pediatrics & neonatology. Only after the baccalaureate or advanced baccalaureate education program, students can proceed to a master's degree in nursing at university. Students in level 5 nursing or master's program were excluded.

### Instrument

The online web survey (LimeSurvey GmbH, 2017) was based on previous research and was adapted, together with experts, to the context of our target group, nursing students (Vanhaecht, Coeckelberghs, Seys, Schouten, & Zeeman, 2017). In addition to the structured questions, we included four open-ended questions: “Can you describe what exactly happened during the incident?”, “What helped you on a professional level in dealing with this incident?”, “What helped you personally in dealing with this incident?” and “What advice do you have for your educational institution on this topic?”. These questions allowed nursing students to add additional information and concepts.

The survey included seven topics: (1) student demographics, (2) incidence of PSIs, (3) the level of severity of the incident, i.e. the impact of the incident on the patient, which can range from no harm to the patient to death of the patient, (4) In topic four, we examine which symptoms students show and how long these symptoms remain present after the involvement in a PSI and the impact on professional and personal life. (5) Support after a PSI, i.e. we try to find out from whom students get and expect the most support after being involved in a PSI? In addition, we also look at students who were not involved in a PSI to see who they consider to be their most important confidant. (6) Anticipation on future PSIs, here we examine the attitudes during future clinical experiences of students in the aftermath of a PSI. (7) Psychological health of the students. Topics 1, 2, 6 and 7 were available to all students. Topics 3, 4 and 5 were filled out by students who had been involved in a PSI during a clinical experience. The content and the understanding of the target population were taken into account.

### Ethical considerations

Ethics approval was obtained from the ethics committee of University Hospitals Leuven. Written approval was obtained from all teaching institutions by signing informed consent. By completing the questionnaire, students implied consent for their responses to be included in the analysis and subsequent reporting.

### Data analysis

Fully and partially completed surveys were included resulting in different numbers of participants for each topic. For each topic of the survey, we performed data extraction and translated the responses into dichotomous, categorical or continuous variables. In order to categorize the PSI characteristics (topic 4), we used the Conceptual Framework for the International Classification for Patient Safety (WHO, 2009). Descriptive statistics were calculated with SPSS software version 23 (IBM corp, 2015).

## Results

### Student demographics

In total, 844 students were included in this cross-sectional study. Demographics of the students are outlined in Table 1. Almost 85% of the respondents were female ( $N = 712$ ). The majority are between 18 and

**Table 1**  
Demographic data and involved in a patient safety incident.

	Sample	Involved in a PSI during their education (%)	Involved in a PSI in the past 6 months (%)
Total	844	324 (38.4)	210 (24.9)
Gender			
Male	132	52 (39.4)	36 (27.3)
Female	712	272 (38.2)	174 (24.4)
Age			
<18 years	2	0 (0)	0 (0)
18–25 years	714	264 (37)	165 (23.1)
26–35 years	72	31 (43.1)	24 (33.3)
36–50 years	50	27 (54)	19 (38)
+50 years	6	2 (33.3)	2 (33.3)
Baccalaureate in nursing			
First year	279	16 (5.7)	12 (4.3)
Second year	216	100 (46.3)	73 (33.8)
Third year	258	152 (58.9)	84 (32.6)
Evening classes & distant learning	60	34 (56.7)	27 (45)
Advanced baccalaureate			
Geriatrics	1	1 (100)	0 (0)
Intensive and emergency care	17	12 (70.6)	10 (58.8)
Oncology	1	1 (100)	1 (100)
Surgery nurse	2	1 (50)	0 (0)
Care management	1	1 (100)	1 (100)
Pediatrics and neonatology	9	6 (66.7)	2 (22.2)

25 years of age ( $N = 714$ ). There is an equal distribution of first ( $N = 279$ ), second ( $N = 216$ ) and third ( $N = 258$ ) year students of the regular bachelor.

#### *Incidence of patient safety incidents*

Overall, 324 (38.4%) students had been involved in a PSI during a clinical experience at any time point of their training. While in 6 months prior to the survey 210 (24.9%) students had been involved in a PSI. The distribution between male and female was almost equal. Of the third year and advanced baccalaureate students 174 out of 289 (61.9%) had been involved in a PSI at any time. Of these students, 98 out of 174 (56.3%) had been involved in a PSI in the last six months prior to the survey (Table 1).

#### *The level of severity of the incident*

Of the 324 students who were involved in a PSI, 182 reported that the PSI caused no harm to the patient (56.2%), 122N PSIs caused temporary harm to the patient (37.7%) and 10 caused permanent harm to a patient (3.1%). Of them, 10 respondents (3.1%) were involved in a PSI that resulted in death of the patient. Overall, 304 out of 324 (93.8%) students filled out the survey topic on the level of severity of the incident. A PSI regarding medication was most common (34.2%), followed by patient accidents which are mainly related to falls (33.2%) and PSIs as a result of the behaviour of staff or patient due to careless behaviour (19.4%).

#### *Symptoms in the aftermath of a patient safety incident*

Of the students that reported involvement in a PSI, 294 filled out the survey topic regarding the impact of the PSI. Merely, 84.7% of the students experienced a certain impact following a PSI, but some even with major harm to the patient/family, did not report negative symptoms.

About one in six (15.3%,  $N = 45$ ) students who were involved in a PSI did not experience symptoms of distress. One student was involved in a PSI with permanent harm to a patient and two students were involved in

a PSI that led to the death of a patient. Fig. 1 displays the duration of symptoms after involvement in a PSI. Following symptoms are most common among nursing students in the aftermath of a PSI: hypervigilance (65.7%), stress (42.5%), doubt knowledge and skills (40.6%), fear (38.4%) and shame (36.7%). One month in the aftermath of a PSI this was respectively 24.8% ( $N = 73$ ), 8.8% ( $N = 26$ ), 7.8% ( $N = 23$ ), 5.1% ( $N = 15$ ) and 5.1% ( $N = 15$ ). Flashbacks, one month after the PSI were reported in 4.8% ( $N = 14$ ) of the students. 2.4% ( $N = 7$ ) students considered quitting their training as result of a PSI.

#### *Sources of support*

Support, expected (Dark Grey) or received (Black) in the aftermath of a PSI is shown in Fig. 2.

Results show that 81.1% of the students talked to staff nurses ( $N = 228$ ), 60% to fellow students ( $N = 168$ ), 46.6% to their supervisor from the educational institution ( $N = 131$ ) and 38.4% to the patient ( $N = 108$ ).

There are 155 students (55.2%) who did not talk to the patient and think this was the right decision.

Students expect most support and presence from staff nurses (80.8%), fellow students (70.3%) and the supervisor from the educational institution (66.7%) in the aftermath of a PSI.

Overall, 44.8% of the students would consider and 37.7% have doubts about talking to the patient about the incident. The biggest difference between the experienced (black) and expected support (dark grey) in students can be seen in the need for support from the supervisor from the educational institution (46.6% vs. 66.7%) and the partner (31.4% vs. 52.2%). There are 14 students (4.8%) who didn't talk to anyone about what happened in the aftermath of a PSI. Reasons for not speaking about the incident were not asked.

The figure also shows where students expect to find support after a PSI, even if they were not involved (Light grey). The supervisor from the educational institution (86.1%), staff nurses (72.3%), fellow students (58.6%) and the head nurse (57.4%) would be the most important people to provide support.

#### *Attitude of students towards PSIs*

Involvement in a PSI can result in both positive and negative attitudes of students. In total, 88.2% would give more attention to details ( $N = 240$ ), 82% would change their working methods ( $N = 223$ ), 83.8% would ask for more advice ( $N = 228$ ) and 79.8% would ask a colleague what he/she would have done in a similar situation ( $N = 217$ ). Whereas 7.3% would try to avoid similar patients ( $N = 20$ ) and 1.8% would try to talk as less as possible about the incident ( $N = 5$ ) (Fig. 3).

#### **Discussion**

This study provides insights in the prevalence, symptoms and support of baccalaureate nursing students in the aftermath of a PSI. The impact of PSI on nursing students remains an underestimated problem. Second victim support is needed to help nursing students and will improve the quality of care and patient safety (Seys et al., 2013).

More than a third of the students was involved in a PSI, and a quarter of the students were involved in a PSI in the last six months. Almost 10% of the students reported their involvement in a PSI resulting in permanent harm or death of the patient. These students were particularly at risk for poor well-being and reduced professional functioning during their clinical experience as they were involved in a PSI with such serious consequences.

Some students had fundamental doubts about continuing their studies. However clinical experience is a critical, complex and challenging component of nursing students development. Students can develop anxiety with a negative influence on their learning outcomes (Ulenaers et al., 2021). Involvement in a PSI can jeopardize the mental

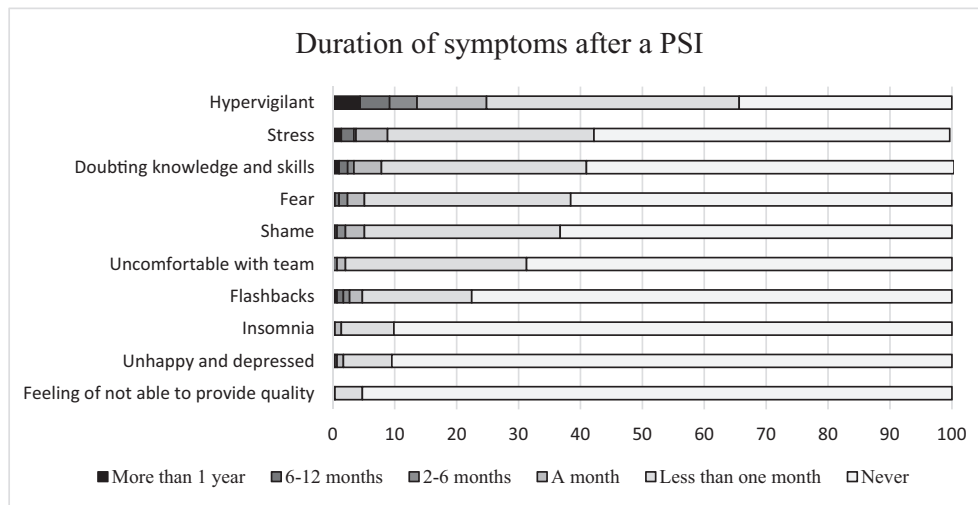


Fig. 1. Duration of symptoms in the aftermath of the most significant PSI (N = 294).

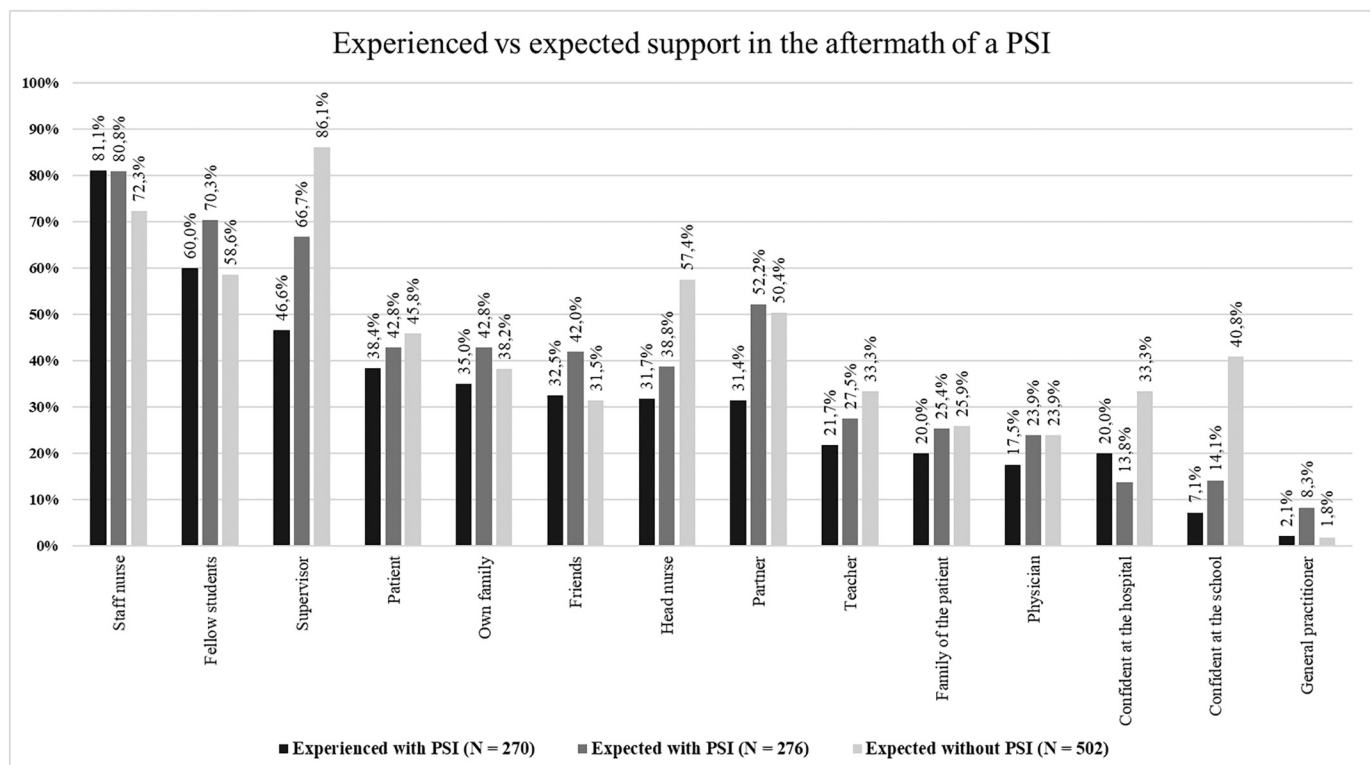


Fig. 2. Experienced (Black) and expected (Dark Grey) support by students that were involved in a PSI, support expected by students that were not involved in a PSI (Light Grey) (ordered according to experienced point of contact).

health of students and emphasize the importance of recognizing second victim symptoms (Quillivan, Burlison, Browne, Scott, & Hoffman, 2016; Seys et al., 2013; Ulenaers et al., 2021; Vanhaecht et al., 2019, 2020). More than 80% of the students experienced second victim symptoms after the occurrence of the most significant PSI. The duration of symptoms in the aftermath of are remarkable. The most common symptoms among baccalaureate nursing students are hypervigilance, stress, doubting knowledge and skills and, fear. Almost one third of the students suffered hypervigilance for more than one month. Previous research of 5572 doctors and nurses in 32 hospitals in The Netherlands concerning the duration of symptoms in the aftermath of a PSI showed a similar order in occurrence of the different types of symptoms

(Vanhaecht et al., 2019). A difference was observed regarding the duration of the symptoms, as these were clearly lower compared to previous research. An explanation for this could be an underestimation by students or the level of responsibility. Students are less likely to be held responsible for a PSI, since the staff nurse bears the final responsibility. Another explanation may be that students are limited in their clinical experience as a healthcare worker, the first year students in the current research had only just started their first clinical experience.

The psychological impact of a PSI on nursing students can be compared to PTSD (Quillivan et al., 2016). One month in the aftermath of a PSI students still experience symptoms which has a profound impact on their professional and personal life. Educational institutions and

## Positive and negative attitude regarding a PSI

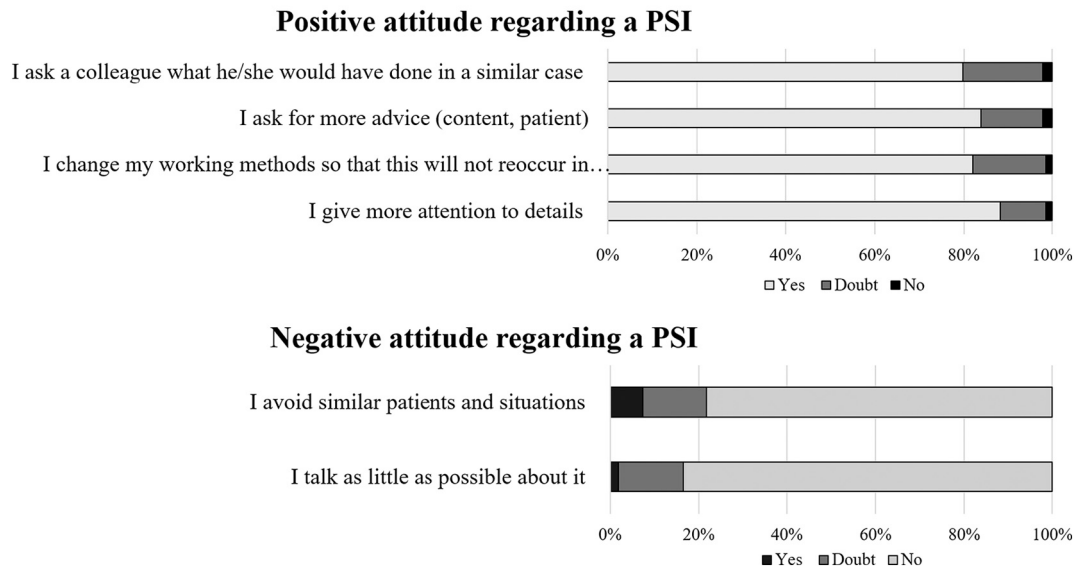


Fig. 3. Positive and negative attitude regarding a PSI (N = 272).

healthcare organizations need more awareness that some of the symptoms may seriously impact patient safety and quality of care.

As healthcare providers involved in PSI are at risk of diminished personal well-being and reduced professional performance peer support is more and more considered essential (Vanhaecht et al., 2019).

The importance of peer support is confirmed by our current results where students expect support and presence primarily from the staff nurses, fellow students and the supervisor from the educational institution. Peer support from medical colleagues appears more important in the coping process than talking to family and friends (Engel, Rosenthal, & Sutcliffe, 2006). Overall, 4.8% didn't talk to anyone. It is worrying that there are students who would not talk about the incident with the patient or with anyone else and consider this as the right decision.

There are recommendations on how to inform patients, but there continues to be mistrust, even fear, among healthcare professionals of doing it, because of the potential consequences of such a conversation (Mira et al., 2017). It may be due to the fact that students do not consider this as their responsibility, but rather the responsibility of the physician. Or maybe it's not clear to students who they can turn to for support.

Incidents result fortunately also in positive reactions (asking for more advice, paying more attention to details or changing their working methods) and has a positive impact on the emotional stress of the second victim and reduces the likelihood for future mistakes. Students are trying to learn from the PSI, which includes information seeking, problem solving and attempting to deal with the problem.

The importance of these positive reactions need to be highlighted by teaching institutions and hospitals. Unfortunately, there are also negative reactions (avoiding similar patients or situations, not speaking about the PSI). These reactions might point out that there is an attitude problem among some nursing students, an explanation could be that they do not fully understand the gravity of PSIs.

Our findings suggest that baccalaureate nursing students in Belgium are not receiving nor seeking the necessary support they expect in the aftermath of a PSI.

### Implications to nursing education and practice

Considering the potential numbers of second victims among nursing students and given that to date teaching institutions and hospitals have hardly begun to address this issue, it seems advisable to take steps to

raise awareness among healthcare professionals and students as well as to reinforce a safety culture. Both educational institutions and healthcare organizations should play a proactive role in providing support to nursing students involved in a PSI and should not wait until students develop burn-out or quit their education.

Students indicate a strong need to be heard, prepared, and supported. Students should be informed as early as possible about PSIs and the associated consequences, preferably before exposure to clinical practice. If students nevertheless were involved in an incident, the right support must be provided, whereby psychological safety must be one of the cornerstones.

The following three pillars have to be taken into account by committees of teaching institutions and hospitals. First, a patient safety incident should be made more open to discussion. Supervisors should encourage students to openly discuss incidents. Secondly, students need a decent education and background about what PSIs are and how they should deal with their feelings. In addition, more practical tips need to be provided on how start a conversation with a patient in the aftermath of an incident. These two measures should form part of a nurse's basic training.

Moreover, second victimship need to become part of national and local patient safety and quality improvement initiatives (Rinaldi, Leigheb, Vanhaecht, Donnarumma, & Panella, 2016). Senior organizational leaders should organize and support the organization support network. Organizational leaders and supervisors in healthcare need to establish resources to help clinicians deal with the emotional impact of the PSI for example with support protocols and assure that they are treated respectfully and compassionately. Students are nurses of tomorrow and we need to look after their well-being and joy in work from the beginning of their clinical exposure.

### Limitations and future research

As in any study, there are strengths and there is room for improvement. The strength of this study lies in the fact that it is one of the first to look at second victimship among baccalaureate nursing students in Belgium and in general. The results of this study give a powerful signal and therefore also emphasize its importance.

Despite this, no statements can be made about the response rate, as there was no information about the total number of nursing students



enrolled at this point in time. In addition, the representativeness can be questioned because not all universities of applied sciences in Belgium were included.

Another limitation relates to the self-reporting survey (Polit & Beck, 2006). This self-reporting can ensure that respondents give socially desirable answers. Also, respondents have a ‘blind spot’ in the knowledge they have about themselves (Pronin, Lin, & Ross, 2002).

It may be useful to carry out similar research on students in level 5 program to see if there are major differences in the aftermath of a PSI in compare with baccalaureate students. In addition, larger studies across multiple international nursing schools are needed.

## Conclusion

It is clear that baccalaureate nursing students already become second victims and that this has a major impact on their performance and personal life. The extent to which patient safety incidents are managed will most likely have an important impact on the resilience of nursing students. The vast majority of the students experienced second victim symptoms in the aftermath of the most significant patient safety incident. Hence a small amount of students thought about quitting the program after witnessing a PSI. Students bear the right for an appropriate treatment, respect, understanding and compassion, support, transparency and should be encouraged to reflect about the incident in order to reduce observed symptoms. They should be made more aware by their teaching institution of the probability of the occurrence of patient safety incidents during their clinical experiences. In this way we can ensure that the new generation nurses become competent and skillful clinical leaders.

## Ethical approval

Ethics committee approval was obtained from ethics committee of University Hospitals Leuven.

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## Declaration of competing interest

No Conflict of interest has been declared by the authors.

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