Second victim support structures in anaesthesia: a cross-sectional survey in Belgian anaesthesiologists.

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Second victim support structures in anaesthesia: a cross-sectional survey in Belgian anaesthesiologists.

Abstract

Background: Anaesthesiologists are prone to patient safety situations after which second victim symptoms can occur. In international literature, a majority of these second victims indicated that they were emotionally affected in the aftermath of a patient safety incident and received little institutional support after these events.

Methods: Observational cross-sectional survey. Belgian anaesthesiologists and anaesthesiologists in training were contacted through e-mail from May 27th until July 15th 2020.

Results: In total 456 participants completed the online survey. 73.7% (n=336) of the participants encountered a patient safety incident during the last year of their medical practice. 80.9% (n=368) of respondents answered that they do discuss incidents with their colleagues. 18.0% (n=82) discuss all incidents. 19.3% (n=88) admit that these incidents are never discussed in their department. 15.4% of participants (n=70) experienced or thought that the culture is negative during these patient safety incident discussions. 17.3% (n=79) score the culture neutral. Anaesthesiologists who encountered a patient safety incident in the last years scored the support of their anaesthesia department a mean score of 1.59 (ranging from -10 to +10). A significant correlation ($p < 0.05$) was found between the culture during the morbidity and mortality meetings, the support after the incidents and the perceived quality of the anaesthesia department.

Conclusion: Of the participating anaesthesiologists in Belgium, 80.9% discuss some patient safety incidents and 18.0% discuss all patient safety incidents as a normal part of their staff

functioning with an experienced positive or neutral culture during these meetings in 84.6%. Psychological safety within the anaesthesiology departments is globally good, however could and should be optimized. This optimization process warrants further investigations in the future.

Keywords: adverse events, anaesthesia, patient safety incident, second victim

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Introduction

Second victims can be defined as: “Healthcare providers who are involved in an unanticipated adverse patient event, in a medical error and/or a patient related injury and become victimized in the sense that the provider is traumatized by the event. Frequently, these individuals feel personally responsible for the patient outcome. Many feel as though they have failed the patient, second guessing their clinical skills and knowledge base” (1).

Being a second victim can have significant impact on clinicians, colleagues, and subsequent patients (2,3). Symptoms of a second victim can vary depending on the event and personality of the healthcare provider. Anger, depression, guilt, loss of confidence, repetitive reliving of the event are part of the scale of symptoms. These emotions can become so severe that the second victim anaesthesiologist may end up having a burn-out, considering a career switch or even committing suicide (1–5).

Recently a second victim experience and support tool (SVEST) was developed and validated in the United States (6). However a gold standard program on effective support remains absent.

Literature is unanimous on the importance of support for second victims in healthcare (1,2,7–10). When an adverse event occurs, support networks should be in place to protect both the patient and involved health care providers (2). The Scott three-tiered interventional model is an example of a specifically designed model of comprehensive help to provide confidential peer-to-peer aid after stressful clinical events (11). Depending on the format of the program the exact peer support can vary, however communication and psychological safety remains the basis (7–10,12). Previous research found that anaesthesia trained personal thinks that debriefings (89.5%) and talking with colleagues on the subject (98%) would be useful after PSI (3).

Back in 2011, the Institute for Healthcare Improvement (IHI) published a white paper which revealed that many health care organizations did not have an organized response after adverse events (13). The IHI concluded that an organization needs to have specific priorities after such events. The first priority is the care of the patient and it's family members (first victims) and the second priority is the care for healthcare workers exposed to or involved in the PSI (second victims). (2,13).

Research has revealed that most anaesthesiologists (up to 92%) experience at the very least one serious perioperative injury or death of a patient over their entire career. Most of them are emotionally affected after a patient safety incident (PSI). They are also used to receive very little institutional support (3,14–17).

Literature backs the idea that management should take a leadership role in establishing support protocols for health care professionals after adverse event (18,19). However in 2014, Belgian hospitals (59 of 109) in general were investigated on their planned second victim support structures and only a minority of hospitals were somewhat prepared to provide the needed aid (18).

Previous research by Edmondson et al. studied the effect of psychological safety on team functioning (20,21). They found psychological safety to promote performance in working teams and promote a speaking up culture (20,21).

Our current paper focusses on the present status of any support structures in the Belgian healthcare system. In these support structures and meetings psychological safety of the second victim is very important, however not always present in all anaesthesia departments. To our knowledge this is the first study to investigate the status of second victim support structures in anaesthesia in Belgium.

The overall objective of this study is to understand the actual situation in anaesthesia departments in Belgium, therefore the following research questions are posed: Are adverse events discussed in anaesthesia departments in Belgium? What is the perceived culture

around adverse events in anaesthesia departments in Belgium? How do anaesthesiologist and anaesthesiologist in training experience the psychological safety in their department? Is there a relation between the perception of quality of the anaesthesia department and the use of adverse event discussions.

Material and Methods

This investigator-initiated, observational, cross-sectional survey was conducted among board certified anaesthesiologists and residents still in anaesthesia training in Belgium. The study was approved by the ethical committee of UZLeuven, Belgium (Chairperson Prof. dr. Minne Casteels, registration number MP012334) on 10 March 2020 and was executed based on the Declaration of Helsinki.

A survey was sent by e-mail to Belgian anaesthesiologists and anaesthesiology residents. E-mail addresses were gathered out of multiple groups. E-mail addresses of anaesthesia residents were provided by the university anaesthesia departments. E-mail addresses of graduated anaesthesiologists were gathered out of 1.) the database of the professional association in Belgium, from those members who were willing to share their contact details and 2.) e-mail addresses of anaesthesiologists found on Belgian hospital websites, if available. In total 1492 survey e-mails were send. No additional incentive was provided to the participants for their participation to the study.

All recipients had a timeframe starting from the 27th of May until the 15th of July 2020 to fill in the questionnaire. The survey was designed so that all responses would be anonymous and data collection was performed with Qualtrics XM[®]. Respondents unable to understand English were excluded. The survey was conducted only once per respondent. No follow up was planned for respondents. Data was collected anonymous by the type of questions and the absence of internet protocol (IP) address gathering by Qualtrics XM[®].

Study survey

The survey consisted of 5 parts: 1) Participant demographics and characteristics, 2) Second victim symptoms and incidence, 3) Current in hospital supportive culture and structures, 4) Emotional responses 5) Perception of quality. Questions used in the survey were partially based on previous research (1,12,14). Prior to the start, a pilot study was conducted to study the degree of understanding of the questions by Belgian anaesthesiologists and anaesthesiology residents.

Demographic data included gender, age, anaesthesia experience and working place in the hospital. The other parts gauged to second victim symptoms of the participants and the current status of the supportive culture and structures to aid psychological safety. Statements on supportive culture ranged from “When I accidentally make a medical error at work, the event is sometimes used against me in my medical department” to “It is difficult to ask for help from the colleagues of my team” and could be scored from “Very strongly disagree” till “Very strongly agree”. The survey also asked specifically to address the level of psychological support given by their department after a PSI (ranges from -10 to +10). Questions on supportive structures investigated the presence of PSI discussions (morbidity & mortality meetings) and the level of emotional wellbeing during these PSI discussions. The perception of supportive quality in each specific centre and department were investigated by the following questions: “What number would you score your anaesthesia department for general quality of patient care?” and “What number would you score your hospital for general quality of patient care?”. The global quality of patient care was investigated using the question: “Would you advice your hospital to colleagues and family?”. The full survey can be found in the Appendix 1.

Statistical analyses

Descriptive statistics were conducted on the results and are presented as frequencies and percentages of the total amount of respondents. Questions reveal the current status of the support structures for second victim problems. Afterwards a logistic regression analysis was

conducted for the research questions “Is there a correlation between perceived support by the anaesthesia department after a PSI and the score on department general quality of patient care?” and “Is there a correlation between the perceived culture during Morbidity and Mortality meetings and the score on department general quality of care?”. These logistic models were corrected for age, gender, professional group and work situation. All analyses were performed using the statistical software SAS Studio® (SAS Institute Inc, Cary, North Carolina, USA).

Results

In total, 456 anaesthesiologists and anaesthesiologists in training in Belgium fully completed the survey. The response rate of this survey was 30.6% (456:1492).

Demographics

The demographics of all participants were gathered. The male to female ratio was 270 over 186. A relatively good distribution of clinical experience between anaesthesiologist seems present. Most participants (83.8%) work in the operation room, 9.87% work on intensive care, 3.95% work on a chronic pain clinic and 2.41% work on an emergency department. (Table 1)

Patient safety incident (PSI)

In this study 73.7% (n=336) encountered a PSI during their last year of medical practice. Direct involvement in incidents occurring during the most recent year of their medical practice was seen in 56,6% (n=190) of all cases, versus indirect involvement (34,5%, n=116). (Table 2)

Participants who encountered a PSI during the last year (n=336) were asked how well they were supported by their anaesthesia department afterwards. They scored the support of their anaesthesia department a mean score of 1.59 (score ranging from -10 to +10). 25.9% (n=87)

score the support negative, 18.5% (n=62) score the support neutral and 44.3% (n=149) score the support positive. (Figure 1)

Morbidity and mortality meetings

Currently 19.1% (n=88) of surveyors admit that they never discuss PSI in their department. More than a quarter of all participants ,26.6% (n=121) discuss only the very severe PSI (permanent damage/death) in their department and 36.3% (n=165) only discuss PSI with a few select colleagues. The remaining 18.0% (n= 82) indicate that all PSI are discussed as a normal part of their staff functioning.

In general, the experienced culture by the surveyors during the morbidity and mortality meetings, or the thought to culture varies. In total, 15.4% of participants (n=70) experience PSI discussions as a distinctly negative process. 17.3% of participants (n=76) score morbidity and mortality meetings and discussions as neutral processes. A total of 67.3% of participants (n=307) score the debate and feedback processes as mostly positive during the PSI discussions. (Table 3)

Personal feelings of the anaesthesiologist and anaesthesia residents

Only 23,3% of participants see day to day work as a mostly positive experience. 40,3% experience positivity in their work a few times a week. Only 0.4% (n=2) perceive work as overwhelmingly stressful suffering from lack of positive energy. A total of 99,8% (n=455) of all participants experienced enthusiasm at work at least a few times per year. Where 26,1% (n=119) felt job satisfaction enthusiasm on a daily base one anaesthetist (0.2%, n=1) noted a complete lack of any enthusiasm at work during a whole year. (Table 4)

The participants were asked to answer on a few statements to investigate the psychological safety in their anaesthesia department. 16.9% (n=77) of participants answer that a medical error is sometimes used against them. Most people 66.7% (n= 304) can talk about problems and difficult subjects in their medical department. 80.3% (n=366) of the participants don't find it difficult to ask for help. (Table 5)

Perception of quality of hospital and anaesthesia department

The perception of quality of the hospital had an overall mean score of 7.7 out of 10. The perception of quality of the anaesthesia department had a mean score of 7.3.

The global quality of patient care was also investigated. Of the participants 93.0% (n=424) would advise their hospital to colleagues and family.

Correlation between anaesthesia department support and department quality

A significant correlation ($p < 0.001$) was found between the answers on the question: "How well have you been supported by your anaesthesia department after the patient safety incident?" and the question: "What number would you score your anaesthesia department for general quality of patient care?". This means that the general score of the anaesthesia department is dependent on how well the anaesthesiologist was supported after an PSI. It also means that a rise of one on support after an PSI is correlated to a rise of 1.137 (95% CI 1.092-1.183) on general quality of patient care of the anaesthesiology department.

Another significant correlation ($p < 0.0001$) was found between the answers on the question: "How would you describe the culture during these Morbidity & Mortality meetings? If there are currently no meetings after patient safety events, how do you think the culture would be?" and the question: "What number would you score your anaesthesia department for general quality of patient care?". The score on general quality of patient care of the anaesthesia departments depends of the culture during the morbidity and mortality meetings. The rise of one on culture during the morbidity and mortality meetings is correlated to a rise of 1.143 (95% CI 1.097-1.191) of the general quality of patient care of the anaesthesia department.

Discussion

Statement of principal findings

This study found that most (73.7%) of the respondents had experienced at least one adverse event over the last year with varying outcomes to the patient. The respondents who

encountered a PSI in the last years scored the support of their anaesthesia department rather low, despite the quite high percentage in quality and quantity morbidity and mortality meetings (80.9%).

Incidents with sequelae can have an even more dramatic impact on healthcare workers. Lethal patient incidences, although scarce can leave a lasting impression on those involved. In total 40 survey participants described a PSI involvement either directly or indirectly during the last year of practice.

Strengths and limitations

The strengths of this study are: a good nationwide response of 13.8% of all Belgian anaesthesiologists, a wide range of second victim support questions and an anonymous data-gathering system to gather as realistic data as possible without bias.

This present study contains some limitations. Typical survey limitations include selection bias, random sampling error, and handling and analysing subjective perceptions and observations (3). Selection bias can occur based on previously encountered an adverse events and the willingness to fill in the survey. It is possible that by selective response of interested anaesthesiologist random sampling error occurred. Generalizability of result depends on causal power with the generalizability of population-based samples (22). However due to the online survey concept it is possible a convenience sample occurred.

Secondly, because the words adverse event and medical error are prone to subjective interpretation by the surveyors, we defined the words in the survey. However wrong interpretations by the surveyor can never be excluded, therefor possibly resulting in incorrect information.

Thirdly, comparing the response rate on a national scale to previous studies is difficult due to multiple factors. One factor is the absence of a national response rates in previous research

to compare (3,23). The absence of an open access national database with contact details of anaesthesiologists and resident anaesthesiologists makes it very hard to address all.

Fourth, the response rate of 30.6% is in line with previous research and extrapolation of the results should be done with care (24–26). It is possible that by selective response of interested anaesthesiologist random sampling error occurred. This response rate can be due to the taboo subject or to an overload of invitations for participation to research and questionnaires. With this response rate, selection bias can occur. The one who have been involved in an incident might have been more triggered to complete the questionnaire. In practice, there might be an even higher prevalence of second victims.

Lastly we theorize that conducting a survey in time of the global COVID-19 pandemic and may have influenced the outcome. We waited with the start of this study until after the first Belgian COVID-19 wave. This will have had an impact on the response rate as anaesthesiologists were still working in the frontline of this pandemic. On the other hand we noticed an increased focus on the psychological health of healthcare workers nationwide.

The nationwide response correlated to the total amount of Belgian anaesthesiologists and residents in anaesthesia was 13.8% (456:3294) (27). The external validity of this study is relatively high due to a high response rate 30.6% compared to previous research and a high nationwide response of 13.8% (24–26).

Interpretation within the context of the wider literature

To our knowledge, this is the first survey exploring the current second victim support structures in anaesthesia in Belgium. While previous investigations mainly focused on non-specific healthcare workers (1,19), we focus on anaesthesia departments.

Support by peers (close colleagues, family, ...) may to be more important than support from the department structure itself and could explain the discrepancy in score of perceived support from their department and general satisfaction of the job. The low score in support

perceived after a PSI in our data could easily be compensated by close colleagues, family and/or close friends. However literature supports the idea that management, and also the anaesthesia department in that part, should take a leadership role in establishing support protocols after adverse event (18,19).

Debriefing in morbidity and mortality meetings after a PSI is an established good practice in medicine, but a gap exists between principle and implementation. It has value in reducing provider burnout and improving wellness and learning as previous described by Arriaga et al. (2019) (28). In general, the experienced culture by the surveyors during the morbidity and mortality meetings, or the thought to culture varies. Although a morbidity and mortality meeting should ideally be a neutral root cause analysis debate, the name, blame and shame culture is frequently present during these meetings (29,30). The effectiveness and success of a debriefing is dependent on modifiable interpersonal factors, such as communication breakdowns (28).

Implications for policy, practice and research

Patient care and support of the second victim should be priority number one after PSI events. Current structures in Belgian healthcare system do not support the ability to take necessary leave of work for a few days after critical incidents (4). However the best patient care and support of the second victim should be priority after an event and should be evaluated every time after a PSI. Second victim support can be optimized as found in our data. It could be an idea to implement easy access professional support for anaesthesiologist, by internal arrangements by the departments itself. A flexible working schedule could be an option after a PSI, however can be organizationally difficult in small departments. An small optional weekly morbidity and mortality meeting with close colleagues can help in preventing second victim symptoms and should be promoted.

The European Society of Anaesthesiology and Intensive Care (ESAIC) made second victim support the main topic on their yearly congress (Euroanaesthesia 2020). In Belgium the

awareness of second victim in anaesthesia is also gradually increasing. Anaesthesia curricula have long been focusing on crisis management, however handling the aftermath of perioperative critical events has not traditionally been a focus of concern (3). It seems a viable option to implement systematic education on second victim symptoms and peer-support in the master after master in specialized medicine. Implementing this education in other European countries should also be made a top priority. Education will not only promote the wellbeing of anaesthesiologists account, but will also ensure that “no patient is harmed”(3).

Globally second victim support should be of essence with a focus on psychological safety of the anaesthesiologist. It is a potential psychological burden worldwide.

We theorize that the current global pandemic (COVID-19) may have raised the awareness of psychological work-related stress in healthcare providers and may have had a positive effect on the currently experienced peer-support culture in anaesthesia and intensive care.

The aim of this study was to have an insight on the current support victim support structures. To optimize the support by the anaesthesia departments further investigations will be necessary in the future.

Conclusion

Second victim support structures in anaesthesiology are of essence and should be optimized with a focus on psychological safety. Anaesthesiologist who encountered PSI in the last year scored the support of their anaesthesia department rather low. Luckily, according to our survey, most anaesthesiologists participate in morbidity and mortality rounds and incorporate critical appraisal and discussions after PSI. The ability to openly discuss critical events seems to have a positive influence on most of the people taking the time to report to our national survey. Psychological safety within the anaesthesiology departments is globally good, however could and should be optimized. This optimization process warrants further investigations in the future.

Although most report a feeling of well-being on the job, there is a small minority of anaesthesiologists who are refused help during critical events or are blamed after such events. A significant correlation was found between the culture during the morbidity and mortality meetings and the perceived quality of the anaesthesia department. Another significant correlation was found between the support after PSI and the perceived quality of the anaesthesia department.

End-matter

Contributorship: KN and KV conceived of the study. KN, SC, MV and KV initiated the study design. KN, MV and KV helped with implementation. DS provided statistical expertise. All authors contributed to refinement of the study protocol and approved the final manuscript.

Ethics and other permissions: The study was approved by the ethical committee of UZLeuven, Belgium (Chairperson Prof. dr. Minne Casteels, registration number MP012334) on 10 March 2020 and was executed based on the Declaration of Helsinki.

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Tables and figures

Table 1: Demographics of participating anaesthesiologists and trainees in anaesthesiology in Belgium. Data are represented as number of participants (%).

Table 2: Patient safety incidents during the last year of the anaesthesiologist. (n = 456)

Figure 1: How well have you been supported by your anaesthesia department after the patient safety incident? (n=336) X-axis: support score ranging from -10 (not good at all) to +10 (very good). Y-axis: number of participants (n).

Table 3: How would you describe the culture during these morbidity and mortality meetings?

If there are currently no meetings after patient safety events, how do you think the culture would be? Scores vary from -10 (accusing) to +10 (learning, supportive). (n = 456)

Table 4: Table consist of result on 2 questions: 1.) At work I have a lot of positive energy? and 2.) Are you enthusiastic about your work? (n=456)

Table 5: Answer to the following statements: "When I accidentally make a medical error at work, the event is sometimes used against me in my medical department.", "In our medical department I can talk about problems and difficult subjects." and "It is difficult to ask for help from the colleagues of my team." (n=456)

Tables

Table 1: Demographics of participating anaesthesiologists and trainees in anaesthesiology in Belgium.

		Number of participants (n= 456)
Gender	Ratio male / female	270/186
Age	25 - 30 years	106 (23,25%)
	31 - 40 years	114 (25,00%)
	41 - 50 years	91 (19,96%)
	51 - 60 years	107 (23,46%)
	61 - 70 years	38 (8,33%)
Are you a trainee in anaesthesia or a fully certified anaesthesiologist?	Anaesthesia trainee	121 (26,54%)
	Fully certified anaesthesiologist (<5 years active)	70 (15,35%)
	Fully certified anaesthesiologist (5-15 years active)	83 (18,20%)
	Fully certified anaesthesiologist (16-25 years active)	96 (21,05%)
	Fully certified anaesthesiologist (>25 years active)	86 (18,86%)
Where do you mainly work in the hospital?	Operation room	382 (83,77%)
	Intensive care unit	45 (9,87%)

	Chronic pain clinic	18 (3,95%)
	Emergency department	11 (2,41%)

Data are represented as number of participants (%).

Table 2: Patient safety incidents during the last year of the anaesthesiologist. (n = 456)

Patient safety incident	Anaesthesiologists
No	26.32% (n=120)
Yes, with death of the patient	8.77% (n=40)
Yes, with permanent damage to the patient	6.14% (n=28)
Yes, with temporary damage to the patient	26.75% (n=122)
Yes, without damage to the patient	32.02% (n=146)

Table 3: How would you describe the culture during these morbidity and mortality meetings?
If there are currently no meetings after patient safety events, how do you think the culture would be?

Culture during morbidity and mortality meeting	Percentage
-10	0.66% (n=3)
-9	0.44% (n=2)
-8	0.66% (n=3)
-7	0.44% (n=2)
-6	1.54% (n=7)
-5	1.32% (n=6)
-4	3.73 % (n=17)
-3	2.41% (n=11)
-2	3.51% (n=16)
-1	0.66% (n=3)
0	17.32% (n=79)
1	1.75% (n=8)
2	7.89% (n=36)
3	3.29% (n=15)
4	10.96% (n=50)
5	10.31% (n=47)
6	9.65 (n=44)
7	8.55 (n=39)
8	8.77 (n= 40)

9	1.32 (n=6)
10	4.82% (n=22)

Scores vary from -10 (accusing) to +10 (learning, supportive). (n= 456)

Table 4: Table consist of result on 2 questions: 1.) At work I have a lot of positive energy? and 2.) Are you enthusiastic about your work? (n=456)

	Positive energy	Enthusiastic about my work
Always, daily	23.25% (n=106)	26.10% (n=119)
Very frequent, a few times a week	40.35% (n=184)	40.79% (n=186)
Frequent, once a week	17.32% (n=79)	17.32% (n=79)
Regularly, a few times per month	11.62% (n=53)	11.84% (n=54)
Sometimes, once a month	4.17% (n=19)	1.97% (n=9)
Sporadic, a few times a year or less	2.85% (n=13)	1.75% (n=8)
Never	0.44% (n=2)	0.22% (n=1)

Table 5: Answer to the following statements: “When I accidentally make a medical error at work, the event is sometimes used against me in my medical department.”, “In our medical department I can talk about problems and difficult subjects.” and “It is difficult to ask for help from the colleagues of my team.” (n=456)

	Medical error used against me	Talk about problems	Difficult to ask for help
Very strongly agree	1.97% (n=9)	10.53 % (n=48)	2.19% (n=10)
Strongly agree	4.39% (n=20)	23.46% (n=107)	3.73% (n=17)
Agree	10.53% (n=48)	32.68% (n=149)	7.89% (n=36)
Neutral	20.39 % (n=93)	12.28% (n=56)	5.92% (n=27)
Disagree	23.03% (n=105)	12.28% (n=56)	24.78% (n=113)
Strongly disagree	26.32% (n=120)	6.14% (n=28)	27.85% (n=127)
Very strongly disagree	13.38% (n=61)	2.63% (n=12)	27.63% (n=126)

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