



# Abusive behaviour in Canadian and US operating rooms

## Comportements abusifs dans les salles d'opération canadiennes et américaines

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### Abstract

**Background** Disruptive intraoperative behaviour has detrimental effects on clinicians, institutions, and patients. Abusive behaviour is an egregious form of disruptive behaviour that has a particular risk of detrimental consequences. The prevalence of abusive behaviour in the operating room (OR) is uncertain. We therefore examined the prevalence and frequency of exposure to abusive behaviour in a cohort of Canadian and US OR clinicians.

**Methods** This was a sub-study of an international survey examining disruptive behaviour in the OR. It included a cohort of clinicians from Canada and the United States who were recruited from six perioperative associations and two institutions. Clinicians were asked about their intraoperative exposure to three abusive behaviours: physical assault, verbal threats, and intimidating invasion of their personal space. From the responses, we derived the proportion of clinicians who experienced or witnessed abuse (i.e., prevalence) and the number of abusive events experienced by all respondents (i.e., frequency).

**Results** Of the 7,465 clinicians who responded to the original international survey, 2,875 were part of this abuse

sub-study (United States = 1,010, Canada = 1,865). In the preceding year, 667 clinicians (23.2%; 95% confidence interval [CI], 21.6 to 24.8) personally experienced abuse, while 1,121 clinicians (39.0%; 95% CI, 37.2 to 40.8) witnessed colleagues being abused. In total, the group of respondents reported experiencing 14,237 abusive events in the preceding year.

**Conclusions** Both the number of clinicians who are exposed to abusive behaviour and the large number of reported events are concerning. Since these events can undermine team-work and affect patients, coworkers, and institutions, efforts are needed to further evaluate and manage the problem.

### Résumé

**Contexte** Les comportements peropératoires perturbateurs ont des effets délétères tant sur les cliniciens que sur les institutions et les patients. Un comportement dit abusif est une forme flagrante de comportement perturbateur qui comporte un risque particulier de conséquences délétères. La prévalence des comportements abusifs en salle d'opération (SOP) est inconnue. Nous avons donc examiné la prévalence et la fréquence d'exposition à des comportements abusifs d'une cohorte de cliniciens de SOP canadiens et américains.

**Méthode** Il s'agit d'une sous-étude d'un sondage international examinant les comportements perturbateurs en SOP. Notre étude a inclus une cohorte de cliniciens du Canada et des États-Unis recrutés dans six associations périopératoires et deux institutions. On a interrogé les cliniciens à propos de leur exposition peropératoire à trois comportements abusifs : les agressions physiques, les menaces verbales et l'invasion intimidante de leur espace personnel. À partir de leurs réponses, nous avons dérivé la proportion de cliniciens ayant été victimes ou témoins

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Alexander Villafranca and Kirby Magid have contributed equally to the work.

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d'abus (soit la prévalence) et le nombre d'événements abusifs subis par tous les répondants (soit la fréquence).

**Résultats** Parmi les 7465 cliniciens ayant répondu au sondage international original, 2875 ont pris part à cette sous-étude sur les abus (États-Unis =1010, Canada = 1865). Au cours de l'année précédant le sondage, 667 cliniciens (23,2 %; intervalle de confiance [IC] 95 %, 21,6 à 24,8) ont personnellement subi des abus, alors que 1121 cliniciens (39,0 %; IC 95 %, 37,2 à 40,8) ont été témoins d'abus à l'égard de collègues. Au total, le groupe de répondants a été exposé à 14 237 événements abusifs au cours de l'année précédente.

**Conclusion** Tant le nombre de cliniciens exposés à des comportements abusifs que le nombre important d'événements rapportés sont inquiétants. Étant donné que ces événements peuvent nuire au travail d'équipe et affecter les patients, les collègues et les institutions, des efforts sont nécessaires afin d'évaluer ce problème et de le régler.

Disruptive behaviour can be defined as behaviour that is interpersonal (i.e., directed toward others or occurring in the presence of others), results in a perceived threat to victims and/or witnesses, and violates a reasonable person's standard of respectful behaviour.<sup>1</sup> In the operating room (OR), disruptive behaviour can interfere with communication, team-work, clinical decision-making, and technical performance,<sup>1,2,3</sup> and ultimately increase the risk of patient morbidity and mortality.<sup>2,4,5</sup> It can also negatively impact the psychologic and physical health of staff.<sup>6-14</sup> The effect on institutions includes decreased productivity, staff turnover, increased costs, and legal liability.<sup>1,15</sup>

Abusive behaviour is an egregious form of disruptive behaviour that includes physical and psychologic abuse. Both the US and Canadian Departments of Justice consider physical abuse to include actions where an individual "uses force against another person without that person's consent,"<sup>16,17</sup> while they consider psychologic abuse to include actions where an individual uses "words or actions to control, frighten, isolate, or devalue another."<sup>16,17</sup> Abusive behaviour has a greater potential for deleterious consequences than less egregious forms of disruptive behaviour. While the less egregious forms of disruptive behaviour in the workplace are associated with immediate negative feelings such as anger, frustration, hurt, and shame,<sup>18,19</sup> workplace abuse is associated with more severe long-term consequences such as anxiety disorders and post-traumatic stress disorder.<sup>11,20,21</sup> Given its severity, abusive

behaviour should be a "never event" in the workplace setting.

In a previous communication that engendered significant public discourse, we reported that many Canadian OR clinicians were exposed to abusive behaviour over a twelve month period.<sup>4,22,23</sup> The current report details the prevalence of abusive behaviour in a larger sample of clinicians in both Canada and the United States, including clinicians from the initial pilot report.<sup>4</sup> It also provides a more extensive description of clinician exposure to abuse by differentiating between abuse that was experienced and abuse that was witnessed, and by describing the number of abusive events experienced by the group of respondents.

## Methods

### Participants and procedure

We obtained approval from the Health Research Ethics Board at the University of Manitoba. There were several stages for the study. In the first stage, two scales were developed to measure exposure and responses to disruptive behaviour.<sup>24</sup> From July 2012 to August 2014, these scales were distributed to 23 perioperative associations in seven countries. Then, in the second stage, we evaluated the prevalence and predictors of exposure to disruptive behaviour, as well as how people respond to disruptive behaviour. Exposure to abusive behaviour was not examined in the aforementioned scales, but was measured in a sub-study of clinicians from Canada and the United States who were recruited from six perioperative associations and two institutions. As a secondary recruitment strategy, we asked members of several perioperative associations to forward the email invitation to surgical colleagues in their workplace.

### Outcomes and statistical analysis

The sub-study participants completed nine additional questions assessing exposure to abusive behaviour (Appendix). These questions assessed three examples of abuse: assault, verbal threats, and a personal space invasion with intent to intimidate. Respondents could be exposed to abusive behaviour in three ways: directed toward the respondent (personal exposure); directed toward clinicians in the same profession as the respondent (ingroup exposure); and toward clinicians in a different profession (outgroup exposure).

We calculated 12 prevalence estimates. Of primary interest were the proportions of clinicians who personally experienced, witnessed, or were exposed in any way to any example of abuse. Prevalence estimates for witnessing

**Table 1** The organizations that distributed the survey, the number of clinicians who were surveyed (i.e., sampling frame), and the response rates for each organization

Association	Sampling frame (n)	Number of responses (n)	Response rate (%)
Association of Canadian University Departments of Anesthesia	2,480	644	26.0
Operating Room Nurse's Association of Canada	2,600	318	12.2
Canadian Society of Clinical Perfusion	319	114	35.7
Canadian Association of General Surgeons	9,671*	388	4.0
Canadian Federation of Medical Students	1,922	401	20.9
American Association of Nurse Anesthetists (AANA) -CRNA response	2,967	420	14.1
University of Manitoba	700 additional nurses	Unknown	Unknown
US institution 1	1,349 clinicians, 169 students	369 clinicians, 100 students	Clinicians: 27.3 Students: 59.1
Viral responses (US)	Unknown	121	Unknown
Total estimated (excluding unknown)	22,177	2,875	12.96

\*Estimated as total number of surgeons in Canada

CRNA = certified registered nurse anesthetists

abuse were derived from the questions assessing ingroup and outgroup exposure. To gain a more detailed understanding of clinician abuse, we also calculated the prevalence estimates for experiencing, witnessing, or being exposed to each of the three examples of abuse.

The *frequency* of personal exposure to abusive behaviour was calculated in three steps. First, all responses to the three questions assessing personal exposure were converted from a relative frequency (e.g., every few months) to an absolute frequency (e.g., six times per year). Second, the personal exposure for each respondent was calculated as the sum of their responses to the three personal exposure questions. Third, the total number of abusive events experienced by the entire respondent group was calculated as the sum of the events experienced by the individual clinicians. In contrast, the number of abusive events respondents witnessed was not turned into an annual frequency, since a single witnessed event was more likely to be reported by numerous clinicians, thereby inflating the estimates.

As a low survey response rate can skew prevalence estimates<sup>25,26</sup> we conducted a modified wave analysis to evaluate whether the respondent group included an over-or under-representation of clinicians who had been exposed to abuse. The wave analysis placed all respondents and non-respondents on a continuum, based on their motivation to complete the survey. Early respondents were assumed to be the most motivated, those with longer response times less motivated, and non-respondents the least motivated.<sup>27</sup> As the outcome measures of non-respondents are unknown, inferences can be made based on the relationship between how frequently clinicians were exposed to abuse and the time it took to respond. Spearman's rank correlations were

used to determine whether there were significant relationships between the time to respond to the survey and exposure to each of the three examples of abusive behaviour. A positive correlation would indicate that clinicians who were exposed to a particular example of abuse were less likely to respond than clinicians who had not been exposed, while a negative correlation would indicate that these clinicians would be more likely to respond. Analyses were conducted using R version 3.5 (Foundation for Statistical Computing, Vienna, Austria). The confidence intervals (CI) for proportions and frequencies were calculated using the Clopper-Pearson method.

## Results

### Response rate and respondent socio-demographics

It is estimated that the abuse questions were distributed to at least 22,177 clinicians, of which 2,875 responded (13% response rate). The response rate for the different associations and institutions ranged from 4% to 59% (Table 1). The socio-demographics of the respondents are shown in Table 2.

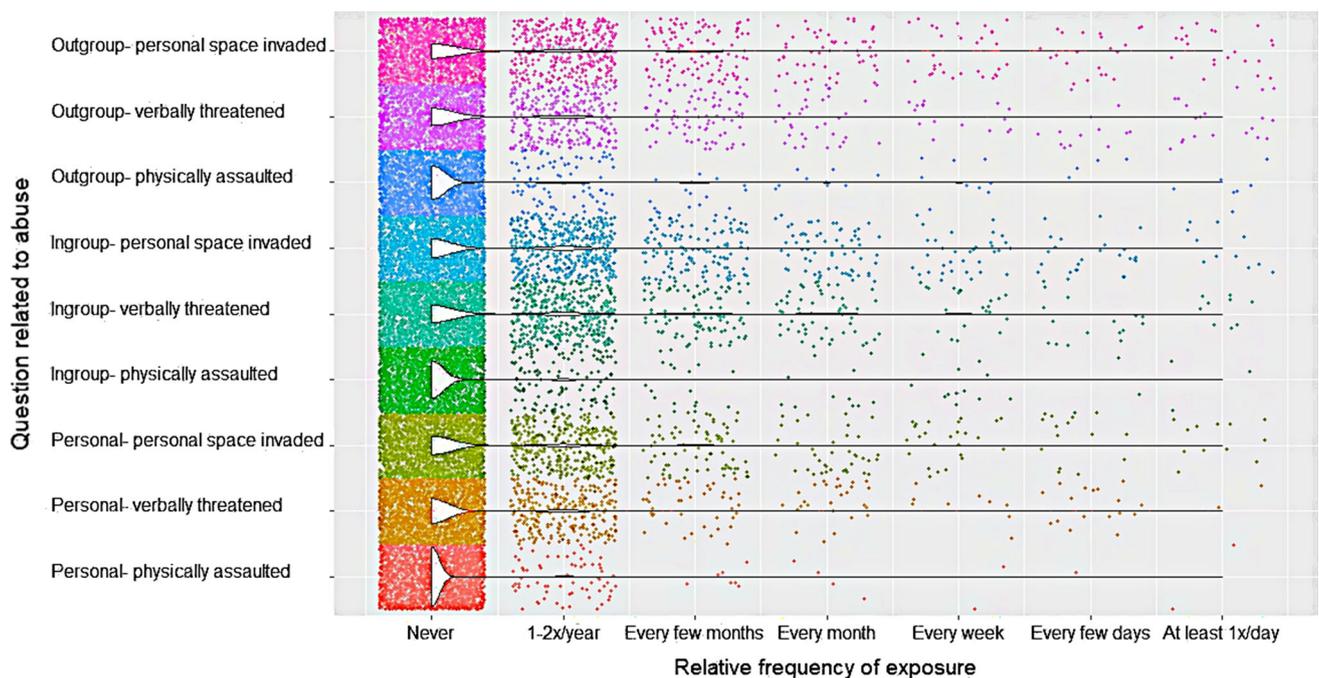
### Response patterns

The responses to the nine questions are shown in Fig. 1. The violin plots show that the responses to all nine questions were right skewed, with the most common response being "never." For all questions, a minority of

**Table 2** The socio-demographics of the respondents

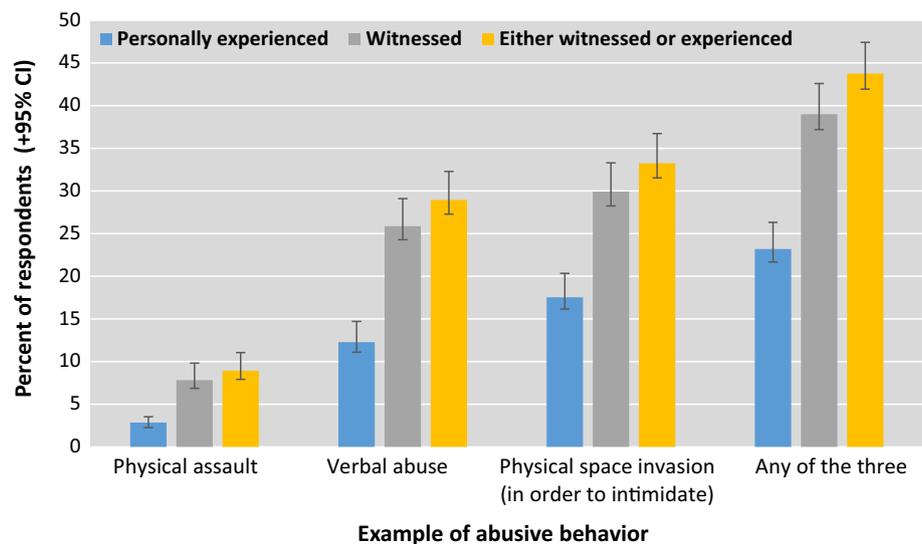
	Category	n (%)
Country	Canada	1,865 (64.9)
	US	1,010 (35.1)
Hospital funding	Not for profit (public)	2,020 (70.3)
	For profit/mixed	855 (29.7)
Profession	Anesthesiologist	831 (28.9)
	Nurse (surgical)	480 (16.7)
	Surgeon	462 (16.1)
	CRNA (in the United States)	420 (14.6)
	Other (technicians, students)	682 (23.7)
Management position	Yes	511 (17.8)
	No	2,364 (82.2)
Age (yr)	< 30	755 (26.3)
	30-40	694 (24.1)
	41-50	592 (20.6)
	51-60	620 (21.6)
	> 60	214 (7.4)
Sex	Female	1,527 (53.1)
	Male	1,348 (46.9)
Visible ethnic or cultural minority	Yes	549 (19.1)
	No	2,326 (80.9)
Sexual orientation	Heterosexual	2,744 (95.4)
	Non-heterosexual prefer not to disclose	131 (4.6)

CRNA = certified registered nurse anesthetists



**Fig. 1** Dot and violin plot of the responses to the nine questions. Each dot represents a clinician's answer to one of the questions. The nine shapes (i.e. violins) show the probability of each response option (e.g. never, 1x/year, etc.) for each question

**Fig. 2** Prevalence of the three abusive behaviors, stratified by type of exposure (experienced, witnessed, or either)



respondents indicated exposure on a monthly, weekly, or, in some cases, even a daily basis.

#### Prevalence of abusive behaviour

In the preceding year, 667 clinicians (23.2%; 95% CI, 21.6 to 24.8) personally experienced abuse, while 1,121 clinicians (39.0%; 95% CI, 37.2 to 40.8) witnessed colleagues being abused. In total, 1,258 (43.8%; 95% CI, 41.9 to 45.6) respondents were exposed in some way to at least one abusive event (Fig. 2), and 401 (31.9%; 95% CI, 30.2 to 33.7) of respondents were exposed to multiple abusive events per year. The prevalence estimates for each of the three examples of abuse, stratified by exposure type, are also shown in Fig. 2. Depending on the example of abuse and the type of exposure, the prevalence ranged from 2.8% to 44%.

#### Frequency of experienced abuse

In total, 14,237 abusive events were personally experienced by 699 clinicians. These included: 966 assaults, reported by 85 clinicians; 4,915 verbal threats, reported by 372 clinicians; and 8,356 personal space invasions, reported by 528 clinicians.

#### Wave analyses

There was no correlation between the time to respond and exposure to physical assault ( $r_s = -0.004$ ,  $P = 0.85$ ,  $n = 2,875$ ). In contrast, weak positive correlations were found between the time to respond and exposure to verbal threats ( $r_s = 0.058$ ,  $P = 0.002$ ,  $n = 2,871$ ) and the time to respond and exposure to personal space invasion ( $r_s = 0.066$ ,  $P < 0.001$ ,  $n = 2,872$ ).

#### Discussion

This study reveals disturbing information regarding the occurrence of abusive behaviour in the OR. In the preceding year, the 2,875 clinicians surveyed reported 14,237 abusive events; 23% of the respondents were the target of abuse, while 39% reported seeing a colleague being abused. As the survey respondents represent only a small fraction of the OR workforce in North America, the actual number of abusive events in Canada and the United States is likely orders of magnitude greater. Given the negative effect of abusive behaviour on team-work, clinical decision-making, staff health, institutions, and patient outcomes,<sup>1,2-15</sup> in addition to the negative psychologic implications this may have for individuals who frequently witness abusive behaviour, the results of this survey may be a cause for concern.

It is difficult to compare the overall prevalence estimates with previous research since the studies measured different behaviours falling under the definition of “abuse” and often did not differentiate between abuse that was witnessed or personally experienced. Nevertheless, comparisons to previous research can be made for the general exposure to each of the three individual examples of abuse. In the present study, one in ten clinicians were exposed to a physical assault, one in four were exposed to verbal threats, and one in three were exposed to a personal space invasion. The prevalence estimate for assault in our study is comparable to a previous investigation of abuse in the OR,<sup>28</sup> which found that one in ten OR nurses in South Korea reported experiencing violence.<sup>28</sup> Similarly, while we found that around one in four clinicians personally experienced verbal threats, a closer examination of the distribution revealed that 3.5% of clinicians experienced this behaviour at least once per month.<sup>29</sup> This is roughly

congruent to a study of intraoperative bullying in two academic medical centres, which found that 3.6% of clinicians personally experienced verbal threats of violence or physical abuse at least once per month.<sup>29</sup> To our knowledge this is the first study examining the prevalence and frequency of clinicians having their personal space invaded with the intention to intimidate. Previous research has examined intraoperative proxemics (i.e., the study of study of how humans use space when communicating) but with the purpose of informing the proper design of robotic aids and avoiding interpersonal misunderstandings.<sup>30</sup>

This study has several important limitations. Firstly, the response rate was low, which could have inflated the prevalence estimate because clinicians who had experienced abuse were over represented. Nevertheless, avoiding this limitation would be difficult, since achieving a high response rate with clinician surveys is challenging,<sup>31</sup> and the achieved response rate is comparable to that seen in the National Physician Survey conducted by the Canadian Medical Association and the Royal College of Physicians and Surgeons of Canada.<sup>31,32</sup> In addition, one of the three wave analyses showed that there was no relationship between the time to respond and exposure to physical assault. Even more compelling, the other two wave analyses showed positive associations between time to respond and exposure to verbal threats and personal space invasion. This indicates that individuals exposed to certain examples of abuse were less likely to respond to the survey, thereby potentially biasing the prevalence estimates toward under-representing the problem. Secondly, the veracity of every reported instance of abuse is uncertain, and while the frequency estimates could be skewed because of recall bias, efforts were taken to prevent this possibility. Since it may be more difficult for individuals to recall the exact number of abusive behaviours they experienced, especially if the number was large, they were asked to report a relative frequency. This was then converted to an absolute frequency, and the sum of the frequencies was calculated. Assuming that each question was answered accurately, this would result in a more reliable and accurate response than relying on the respondents to first calculate the absolute number for each question, and then mentally calculate their total exposure. Additionally, we only calculated the frequency of abuse that was personally experienced, which are memorable events. Even if recall bias existed, the perception alone that abusive behaviours are occurring frequently provides impetus to investigate these claims further. A third limitation is that only a small number of specific examples of abuse were examined. Prevalence estimates could vary if three different examples of abuse were selected. Nevertheless, we used three examples of abuse that met the US and Canadian Departments of Justice's definition.<sup>17,33</sup> Similarly, prevalence estimates

would likely increase if a larger number of examples were examined, but this would only underscore the importance of our findings. Lastly, despite our best efforts, there could have also been residual bias due to our sampling strategy, respondent interpretation of the questions, as well as response bias.

This study also has several strengths. Firstly, it focuses on behaviours that should be considered "never events" and avoids the hyperbolic labelling of less egregious disruptive behaviour as "abuse." Previous studies have defined the term "abusive behaviour" broadly and have included behaviours such as yelling and sarcastic speech.<sup>13,16,18,19,34</sup> These studies represent a broad evaluation of disruptive behaviour, rather than a focused study of abusive behaviour. Secondly, this study is the largest to date, and unlike previous studies, it has respondents from most of the professions who work in the OR.<sup>4,13,28,34,35</sup> Lastly, exposure to abuse was characterized using numerous estimates of prevalence and frequency, thereby providing greater information about exposure.

The implications of this study are important. Clinicians and managers must recognize that egregious examples of disruptive behaviour are not a thing of the distant past in ORs in Canada and the United States, including behaviours that fit the definition of abuse provided by the Justice Departments of both countries.<sup>16,17</sup> Abusive behaviour represents a legal liability and an acute and persistent threat to both patient safety and clinician well-being. Further efforts are needed to completely eliminate abusive behaviour from the OR.

**Conflict of interest** The authors declare no competing interests.

**Editorial responsibility** This submission was handled by Dr. Gregory L. Bryson, Deputy Editor-in-Chief, *Canadian Journal of Anesthesia*.

**Author contributions** *Alexander Villafranca* contributed to all aspects of this study, including conception and design of the study, acquisition, analysis, and interpretation of data; and drafting of the manuscript. *Kirby Magid* contributed to all aspects of this study, including conception and design of the study; acquisition, analysis, and interpretation of the data; and drafting of the manuscript. *Amy Young* contributed to the conception and design of the study, acquisition of the data, and editing of the manuscript. *Ian Fast* contributed to interpretation of the data and the drafting of the manuscript. *Eric Jacobsohn* contributed to the conception and design of the study, interpretation of the data, and drafting of the manuscript.

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## Appendix The survey questions that assessed exposure to abusive behaviour

### Measure of exposure

A. In the past year, while in the OR, I have:

1. Been physically assaulted.
2. Been verbally threatened.
3. Had my personal space invaded as an intimidation tactic.

B. In the past year, while in the OR, I have observed a member of my profession:

4. Being physically assaulted.
5. Being verbally threatened.
6. Having their personal space invaded as an intimidation tactic.

C. In the past year, while in the OR, I have observed others (not in my profession):

7. Being physically assaulted.
8. Being verbally threatened.
9. Having their personal space invaded as an intimidation tactic.

*Note.* Frequency scale: never (0), a few times/year (1), every few months (2), every month (3), every week (4), every few days (5), and at least once/day (6)

OR = operating room

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