

Research Article

Harassment and Bullying In the Operative Theatre: An Evaluation Based on an Anonymous Survey Conducted In France

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ABSTRACT

It is difficult to estimate the incidence of harassment in the operating theater, and such estimation was never performed for anesthesia. We had performed an anonymous national survey based on a questionnaire filled up by healthcare providers working in the operating theater. A cover letter was associated, explaining the goal of the survey and informing that participation in this survey was voluntary and anonymous. Before completion of the questionnaire; the responders were required to read the national legal definition of the harassment.

The effects of gender and to be a nurse are confirmed by the multivariate analysis as an independent risk factor of harassment and bullying. If the same ratio was found on the side

of anesthesia (i.e. nurse Vs. physician). It was reported that the anesthesiologists were significantly more represented in victims' group than the surgeons. We reported a low rate of sexual harassment. The consequences of harassment and bullying on the social, professional and personal life are not negligible. We could not find some different and specific risk factor compared to the usual world of work, and particularly in the hospital world. However, these results confirm the need for preventive and curative measures.

Keywords: Harassment; Bullying; Hospital; Operative theatre; Operative room; Physicians; Nurses

Introduction

Medicine is a hierarchical and highly competitive profession with an apprenticeship-style training approach. Some of the environmental stressors inherent in the field of hospital practice are singularly unique. In particular, the operative theater is a working place with high levels of stress and is often perceived as a haven for "locker-room" conversations. Healthcare professional with different expertise (anesthetists, surgeons, nurses) are working together in this environment with sometimes different objectives (i.e. medical Vs. financial goals). However, they share constraints that force them to collaborate. In this setting the burden of work (i.e. demands exceeding resources) and the interactive relationships may induce psychological distress and/or the loss of self-control [1]. Physicians and nurses may thus experiment produce physical and/or psychological distress such as burnout (emotional exhaustion, depersonalization, and reduced personal accomplishment) and depression [2,3].

- On the other hand, not only managers, but also team members or peers, have been reported to develop deviator intimidating behaviors in the operating theater, because there are themselves under pressure to achieve their objectives [4]. This is particularly true during the last decade, when the rate of nurses bullying was evaluated close to 40 % [5]. Earlier in 2001, it was reported a rate of

45% of bullying by the perioperative nurses. If the main perpetrators was medical (78%); it was also reported from supervisors (11%) or colleagues (11%) [6,7]. Probably due to very rare complaints (under-reported), the true incidence of bullying or harassment was, for a long time, underestimated. However, because these challenging behaviors are increasingly being acknowledged, this issue is more and more frequently highlighted. Moreover, the literature is mainly based on the Anglo-Saxon social culture. Very few data is available from the Mediterranean culture. So since it is difficult to estimate the incidence and severity of harassment in the operating theater, we performed a national survey based on a questionnaire filled up by healthcare providers working in the operating theater (OT).

Methods

The survey was approved on 2 April 2012 by the Directory Board (House of Delegates) of the French Society of Anesthesiology and Intensive Care (Société Française d'Anesthésie et de Réanimation: SFAR); agreements were obtained from the subcommittee dedicated to professional issues (Comité Vie Professionnelle: CVP), and from the subgroup on occupational health (Santé du Médecin Anesthésiste Réanimateur au Travail: SMART group),

from the National ethic committee, and from the National Committee of Informatics and Freedom (CNIL).

The questionnaire was available on a secured website. The promotion of the study was made from the website of the SFAR (www.sfar.org), disseminated in schools, departments, hospitals, unions, specialized newspapers and professional media. Registration website was open for 8 months (from December 2013 to July 2014).

Definition of Harassment and Bullying (or Abuse)

A cover letter was associated to the questionnaire, explaining the goal of the survey and informing that participation in this survey was voluntary and anonymous. Before completion of the questionnaire; there sponders were required to read the legal definition of the “harassment”, “sexual harassment”, “sexism” and “Segregation” that was included.

According to the French law (article L.122.49 à 122.54 du Code du travail; Code pénal 333_22_2), bullying (or moral harassment) was defined by repeated acts having the purpose or the effect of degradation of working conditions likely to prejudice the rights and dignity of the employee at work and dignity, to alter his physical or mental health, and/or jeopardize his professional future. The stakeholder could be an employer, a framework, a supervisor, a colleague of the victim or any other person.

Sexual harassment (revised law 31 July 2012) was defined as the imposition of repeated words or behavior with sexual connotations that either undermines the dignity because of their degrading and humiliating character, or because of their daunting, hostile or offensive features. It includes the fact of using any form of serious pressure in the real or apparent purpose of achieving a sexual act that is sought to benefit the predator.

Sexism and segregation refers discrimination based on gender, sexual orientation or existence of any alleged or actual disability.

Questionnaire Preparation

The questionnaire (see supplement) was elaborated from the literature [8-22] and then amended by expert opinions [23-25].

The first part of the questionnaire included nine questions and was designed to describe basic socio-demographic and work-related characteristics of the respondents, including age, sex, marital status, number of children, level of academic and professional undergraduate education (nurse: anesthetist or perioperative nurse; physician: surgeon or anesthesiologist attending; student: nurse or medical students; fellow/resident; scrub person; technicians, or others), duration of professional seniority (the fact of being or not the holder of the position), administrative or medical tasks, institution (academic, non-academic or private institution).

The level of satisfaction in the public society, in the institution, in the operating theaters (OTs), in the family and the household economic status was evaluated (by yes or no). The global professional level of satisfaction was evaluated by a numerical scale graded from 0 to 10 (0 = worst and 10 = best). Respondents were questioned about previous relationship problems (harassment or bullying, humiliation, contempt, violence, overwork, severe

personal problems, loneliness or other) that may have occurred in another place than the ORs.

In the second part of the study, firstly the responders had to classify themselves into one of four categories: 1 = victims of harassment and/or bullying (V subgroup); 2 = witness (W subgroup), 3 = both (V-W subgroup) or 4 = none of the three previous statuses (neither nor: N-N subgroup). Then, four questions stratified by sub-groups attempted clarifying features of harassment: verbal, written, gestural or physical; direct or suggestive; public or private; deliberate or not. The following four questions stratified by sub-groups attempted to define the characteristics of the alleged perpetrator(s): identified or not. If yes: sex, professional status, relationship with the victim. Then, a row of questions tried to evaluate the personal and the professional alleged impact.

Respondents were also questioned about the potential factors that they feel predispose to such workplace behaviors (i.e. OT). The next questions concerned the supportive approaches (institutional or legal policies) to be promoted in the aim to prevent or to solve such situations. The final questions explored the possibility for the respondents of being stalker and the reasons for. There was no exclusion criterion.

Statistical Analysis

The first goal the study was to establish the incidence and severity of harassment in the OT. The primary endpoint was to compare the characteristics of the two major groups: victim vs. non-victim groups. The secondary endpoints were to compare the characteristics of sub-groups: V, V-W, W, and N-N groups.

ANOVA F-test or chi-square test was used to compare groups for continuous or categorical variables, respectively. Multivariable logistic regression with stepwise backward selection procedures was used to identify the variables that contributed independently to the risk of harassment or bullying. We estimated adjusted ratios (OR) along with 95% confidence intervals. The *P* value of < 0.05 was considered statistically significant.

Results

On thousand six hundred and sixty-six responses were collected between December 2013 and July 2014, we registered 1666 responses. Overall, there were 35.6 % respondents (593 responses) in the non-victim group (i.e. 234 respondents in the N-N subgroup= 14%, and 359 in the W subgroup = 21.5%), and 58.9 % (981 responses) in the victim group (273 in the V subgroup = 16.4% and 708 in the V-W subgroup = 42.5%). There were 5.5% missing data (= 92 responses could not be classified).

The first step was across-sectional cohort analysis. When a difference was significant in the overall population, a comparison between the 2 defined groups (i.e. victim and non-victim) was carried out. Then comparison between the 4 subgroups was made when some intra-group variations were observed. Surprisingly, some responders from the group N-N, who normally should not answered some questions, expressed opinions. So, we made the choice to keep their answers which pooled with the answers of the W subgroup) (i.e. in non-victim group).

Demographics and work-related features

Table 1.a provides descriptive statistics of the demographic and professional characteristics across self-reported status of 1666 subjects for each 4 subgroups; and **Table 1.b** provides results for the two groups (i.e. victim Vs. non-victim) (**Tables 1.a and 1.b**).

The mean age of responders was 43.8 +/- 10.9 years without significant difference between the 4 sub-groups ($P = 0.131$) or between the victim and the non-victim groups ($P = 0.083$).

According to the sex ratio, the total number of females who responded to the questionnaire was slightly higher ($n = 957$: 59.1%) than the male. However, the percentage of female was significantly higher in the victim group (16.4% Vs. 39.3% for victim and the non-victim groups, respectively; $P < 0.0001$). There was not significant intra group difference into the victim group ($P = 0.29$), and into the non-victim group ($P = 0.05$; $n = 94$ in N-N sub-group and $n = 179$ in W sub-group). The effect of gender is confirmed by the multivariate analysis as an independent risk factor: OR = 1.4 (1.51 in the final model; $\text{Pr} > \text{Chi Sq}$: $P = 0.0013$) (**Table 2**).

With regard to family characteristics, single status is a risk factor when comparing victim and non-victim groups ($p = 0.0187$). The fact of having children was not discriminant.

There was a significant correlation between the level of harassment previously observed or experienced, and belonging to the group of victims (Vs. non-victim) and subgroups of this category (V-W and V subgroups, see **Table 1.b**). The existence of previous harassment is confirmed by the analysis of the risk of being a victim as function of the number of items reported (harassment, humiliation, contempt, violence, overwork, severe problems and loneliness). The OR goes from 1.35 to 3.93 when it was reported 2 items or 4 and more (**Table 2**). In the intra group

analysis, the difference remained significant ($P = 0.007$) in the V-W compared to V subgroups; while, there was no difference in the comparison into the non-victim group (i.e. N and W subgroups).

There was a significant difference in the level of life satisfaction from the victim group compared to the non-victim group ($P < 0.0001$) (**Table 1.b**) with a significant variation of the OR (low satisfaction levels: OR = 2.05 compared to high levels: OR = 0.40) (**Table 2**). In the intra group evaluation the difference remains significant (5.36 +/- 1.91, 5.35 +/- 2.14, 6.60 +/- 1.76, and 6.76 +/- 1.86 for V-W, V, W, and N-N subgroup, respectively). A poor social integration was a significant risk factor of harassment ($\text{Pr} > \text{Chi Sq}$: $P < 0.0001$) (**Table 1.b**).

There was a comparable rate of respondents among the different healthcare providers: 40.5% were practitioners (with more anesthesiologists 65.5% than surgeons 34.5%), and 42.5% were nurses (55.5% of nurse anesthetist and 44.5% perioperative nurse). Because the other professional categories (technician and others) were under-represented, no analysis was possible for these categories. To be a nurse was an independent risk factor of harassment and bullying (**Tables 1.a, 1.b and 2**; $n = 201$ Vs. $n = 481$ for non-victim and victim group, respectively). This was confirmed by the risk analysis ($\text{Pr} > \text{Chi Sq}$: $P = 0.0007$). This risk remained independent to the gender factor. There was a trend of more risk for perioperative nurse Vs. nurse anesthetist (OR = 1.56 and 1.31, respectively).

Physicians were similarly represented in the both groups ($n = 318$ and 325 for non-victim and victim group, respectively) (**Tables 1.a and 1.b**). The surgeons were significantly more represented in non-victim group than the anesthesiologists (66.2% Vs. 40.4%) as confirmed by the OR analysis (0.43 for surgeon and 1.0 for anesthesiologist) (**Table 2**) ($\text{Pr} > \text{Chi Sq}$: $P < 0.0001$).

Table 1.a Demographic and professional characteristics across self-reported status of 1666 subjects.

Variables	Value	N-N (0) N=234 % (n)	V-W (3) N=708 % (n)	W (2) N=359 % (n)	V (1) N=273 % (n)	P-value (2 sided)	2 vs. 1	2 vs. 3	1 vs. 3	2 vs. 0	1 vs. 0	3 vs 0
Gender	Female	40.2 (94)	65.7 (465)	49.9 (179)	69.6 (190)	<0.0001	<0.0001	<0.0001	0.290	0.052	<0.0001	<0.0001
Marital status	Divorced	8.1 (19)	8.5 (60)	5.6 (20)	12.5 (34)	0.0014	<0.0001	0.269	0.044	0.349	0.269	0.873
	Married	79.5 (186)	78.7 (557)	84.7 (304)	76.9 (190)							
	Single	11.5 (27)	11.3 (80)	8.1 (29)	17.2 (47)							
	Widow	0.4 (1)	1 (7)	1.4 (5)	0.4 (1)							
Profession	Physicians	65.4 (153)	31.2 (221)	46 (165)	38.1 (104)	<0.0001	0.128	<0.0001	0.194	<0.0001	<0.0001	<0.0001
	Nurse	23.1 (54)	50.7 (359)	42 (151)	14.4 (122)							
	Other	11.5 (27)	17.9 (127)	12 (43)	17.2 (47)							
Public facility	Yes	58.1 (136)	73.4 (520)	66 (239)	67.3 (201)	<0.0001	0.089	0.027	0.874	0.089	0.001	<0.0001
Responsibility	No	74.8 (175)	82.8 (586)	80 (290)	82.8 (226)	<0.0001	0.0238	0.1958	0.1873	0.1873	<0.0001	0.001
	Medical	15.8 (37)	6.9 (49)	9.7 (35)	4.8 (13)							
	Administrative	4.3 (10)	6.4 (45)	5 (18)	9.9 (27)							

Hochberg p-value adjustment for 2x2 comparisons

Table 1.b Demographic and professional characteristics across self-reported status of 1666 subjects.

Variables	Value	Total N	Missing N=92	N-N and W N=593	V and V-W N=981	p
Gender	Missing	46	43.5 (40)	0.3 (2)	0.4 (4)	<0.0001
	Male	663	25 (23)	53.6 (318)	32.8 (322)	
	Female	957	31.5 (29)	46 (273)	66.8 (655)	
Age				45.6 [11.4]	44.3 [11.6]	0.0836
Marital status	Missing	51	47.8 (44)	0.3 (2)	0.5 (5)	0.0187
	Divorced	135	2.2 (2)	6.6 (39)	9.6 (94)	
	Married	1277	43.5 (40)	82.6 (490)	76.1 (747)	
	Single	187	4.3 (4)	9.4 (56)	12.9 (127)	
	Widow	16	2.2 (2)	1 (6)	0.8 (8)	
Children	Missing	50	46.7 (43)	0.5 (3)	0.4 (4)	0.2003
	No	416	14.1 (13)	23.8 (141)	26.7 (262)	
	Yes	1200	39.1 (36)	75.7 (449)	72.9 (715)	
Profession	Other	248	4.3 (4)	11.8 (70)	17.7 (174)	<0.0001
	Surgeon	233	8.7 (8)	25.1 (149)	7.7 (76)	
	Nurse anesthetist	384	4.3 (4)	21.1 (125)	26 (255)	
	Perioperative nurse	308	2.2 (2)	13.5 (80)	23 (226)	
	Missing	51	54.3 (50)	0 (0)	0.1 (1)	
	Anesthesiologist	442	26.1 (24)	28.5 (169)	25.4 (249)	
Profession	Missing	51	54.3 (50)	0 (0)	0.1 (1)	<0.0001
	Physician	675	34.8 (32)	53.6 (318)	33.1 (325)	
	Nurse	692	6.5 (6)	34.6 (205)	49 (481)	
	Other	248	4.3 (4)	11.8 (70)	17.7 (174)	
Public institution	Missing	131	59.8 (55)	4.6 (27)	5 (49)	<0.0001
	No	417	16.3 (15)	32.2 (191)	21.5 (211)	
	Yes	1118	23.9 (22)	63.2 (375)	73.5 (721)	
Responsibility	Missing	124	66.3 (61)	4.7 (28)	3.6 (35)	<0.0001
	No	1305	30.4 (28)	78.4 (465)	82.8 (812)	
	Medical	137	3.3 (3)	12.1 (72)	6.3 (62)	
	Administrative	100	0 (0)	4.7 (28)	7.3 (72)	
Responsibility	Missing	124	66.3 (61)	4.7 (28)	3.6 (35)	0.0662
	No	1305	30.4 (28)	78.4 (465)	82.8 (812)	
	Yes	237	3.3 (3)	16.9 (100)	13.7 (134)	
Level of harassment previously experienced	Missing	181	70.7 (65)	10.1 (60)	5.7 (56)	<0.0001
	Harassment	280	1.1 (1)	5.4 (32)	25.2 (247)	
	Humiliation	368	6.5 (6)	11.8 (70)	29.8 (292)	
	Contempt	608	12 (11)	28.7 (170)	43.5 (427)	
	Violence	153	4.3 (4)	5.6 (33)	11.8 (116)	
	Overwork	673	12 (11)	39.1 (232)	43.8 (430)	
	Severe problem	138	1.1 (1)	7.1 (42)	9.7 (95)	
	Loneliness	161	4.3 (4)	5.9 (35)	12.4 (122)	
Number of situations experienced before	Missing	181	70.7 (65)	10.1 (60)		<0.0001
	1	575	14.1 (13)	43.5 (258)	31 (304)	
	2	378	7.6 (7)	25.5 (151)	22.4 (220)	
	3	259	5.4 (5)	12.8 (76)	18.1 (178)	
	4 or plus	273	2.2 (2)	8.1 (48)	22.7 (223)	
Global professional level of satisfaction *	Missing	71	59.8 (55)	0.3 (2)	1.4 (14)	<0.0001
	Low	411	4.3 (4)	13.2 (78)	33.5 (329)	
	Mild	807	18.5 (17)	49.9 (296)	50.4 (494)	
	High	377	17.4 (16)	36.6 (217)	14.7 (144)	
Level of social integration §	Missing	95	62 (57)	0.7 (4)	3.5 (34)	<0.0001
	1	286	5.4 (5)	11.6 (69)	21.6 (212)	
	2	391	5.4 (5)	16 (95)	29.7 (291)	
	3	299	4.3 (4)	17 (101)	19.8 (194)	
	4	595	22.8 (21)	54.6 (324)	25.5 (250)	

• Values are percentage (frequency) or mean [SD].

• *Evaluated and then summed in four domains: society, institution, operating room and family (one point each).

• § on a 10 point-scale: 1 to 4 is low, 5 to 7 is mild and 8 to 10 is high.

Table 2 Association with being a victim, assessed through logistic regression model to estimate adjusted odds ratios (OR), based on 1441 subjects (911 victims) without missing data.

Variable	Full model		Final model	
	OR	95% CI	OR	95% CI
Gender, female	1.40	1.06-1.85	1.51	1.16-1.95
Age, for 10 years increase	1.12	0.98-1.29		
Marital status, Married	1.00			
Divorced	0.89	0.56-1.42		
Single	1.26	0.83-1.92		
Widow	0.37	0.10-1.32		
Public institution	1.31	0.95-1.80		
Profession, Anesthetist	1.00			
Surgeon	0.43	0.28-0.67	0.47	0.32-0.69
Anesthetist nurse	1.31	0.91-1.89	1.49	1.07-2.09
Perioperative nurse	1.56	1.04-2.34	1.56	1.08-2.25
Other	1.54	0.99-2.39	1.47	1.00-2.16
Responsibility	0.95	0.65-1.38		
Global level of satisfaction				
Low	2.05	1.46-2.87	2.33	1.71-3.18
Mild	1.00		1.00	
high	0.49	0.36-0.66	0.53	0.40-0.71
Number of situations experienced before				
1	1.00		1.00	
2	1.35	0.99-1.85	1.27	0.95-1.70
3	1.92	1.33-2.77	1.98	1.41-2.78
4 or more	3.93	2.62-5.89	3.78	2.56-5.52

Characteristic of harassment and bullying

Characteristics of the harasser were clearly determined in 78.4% of all cases (**Table 3**). The incidence increases to 93.23% in respondents who experienced harassment (W, V, and W-V subgroups). The harasser had the same sex than the victim in 46.1% (51.33%, if we excluded the N-N group). The harasser had a higher hierarchical position than the victim in 61.85% (73.2%, N-N group excluded) vs. 17.8% with the same hierarchical level (20%, group N-N excluded). The harassers were physicians in 57.8% of the cases (67.9%, N-N group excluded) ($P = 0.018$); nurses in 19.9%, and administrative officers in 9.76% (anecdotally: patient family 0.63%; patient 0.35%).

Sexual harassment

Few respondents (6.33%) reported being (or to see) victims of sexual harassment. However, despite the anonymity guaranteed by the procedure, there was a high level of missing data: 30.61%; $n = 497$.

Social harassment and bullying

Characteristics of the respondents are reported in **Table 4**. The aggression was significantly more direct than suggestive, more verbal than written, more public than private, and more gestural than physical assault. The feelings of the victim group were:

Table 3 Characteristics of the alleged perpetrator/4 questions.

Variables	Value	Total N	Missing N=92	N-N N=234	V-W N=708	W N=359	V N=273	P
Identifiable person	Missing	227	87 (80)	55.6 (130)	1 (7)	2.2 (8)	0.7 (2)	<0.0001
	No	103	1.1 (1)	10.3 (24)	6.4 (45)	6.4 (23)	3.7 (10)	
	Yes	1336	12 (11)	34.2 (80)	92.7 (656)	91.4 (328)	95.6 (261)	
Opposite gender as gender	Missing	260	89.1 (82)	58.1 (136)	3 (21)	4.2 (15)	2.2 (6)	0.0030
	No	768	5.4 (5)	30.3 (71)	52.5 (372)	49.9 (179)	51.6 (141)	
	Yes	638	5.4 (5)	11.5 (27)	44.5 (315)	46 (165)	46.2 (126)	
Profession	Missing	246	87 (80)	59 (138)	2.1 (15)	2.5 (9)	1.5 (4)	0.0430
	Other	425	4.3 (4)	13.7 (32)	27.7 (196)	26.5 (95)	35.9 (98)	
	Medical	995	8.7 (8)	27.4 (64)	70.2 (497)	71 (255)	62.6 (171)	
Hierarchical level	Missing	249	87 (80)	58.5 (137)	2.3 (16)	3.3 (12)	1.5 (4)	0.1606
	Equal	297	6.5 (6)	11.1 (26)	19.9 (141)	17 (61)	23.1 (63)	
	Lower	62	1.1 (1)	2.6 (6)	3.4 (24)	4.5 (16)	5.5 (15)	
	Higher	1058	5.4 (5)	27.8 (65)	74.4 (527)	75.2 (270)	70 (191)	

Values are percentage (frequency).

Table 4 Characteristics of harassment.

Variables	Value	Total N	Missing N=92	N-N and W N=593	V-W and V N=981	P
Features of harassment	Missing	297	89.1 (82)	28.8 (171)	4.5 (44)	<0.0001*
	Verbal	1136	9.8 (9)	64.4 (382)	75.9 (745)	
	Written	233	1.1 (1)	6.7 (40)	19.6 (192)	
Features of harassment	Missing	465	90.2 (83)	42.8 (254)	13 (128)	0.0029
	Public	1108	9.8 (9)	54.8 (325)	78.9 (774)	
	Private	93	0 (0)	2.4 (14)	8.1 (79)	
Features of harassment	Missing	496	92.4 (85)	42 (249)	16.5 (162)	<0.0001*
	Direct	649	4.3 (4)	25.8 (153)	50.2 (492)	
	Suggestive	521	3.3 (3)	32.2 (191)	33.3 (327)	
Features of harassment	Missing	1051	94.6 (87)	71.5 (424)	55 (540)	0.8127
	Gestural	450	3.3 (3)	21.1 (125)	32.8 (322)	
	Physical	165	2.2 (2)	7.4 (44)	12.1 (119)	

Values are percentage (frequency)

violence (82.5%), humiliation (64.0%), and contempt (50.8%).

In order to interpret the risk factors of harassment 10 items were explored. The mixture of genders was not significant between the groups or between the subgroups ($P = 0.131$), confirmed by the lack of feminization effect ($P = 0.479$). While some other factors were significantly reported: promiscuity 44.45%, clichés and other misconceptions 32.78%, and loneliness 21.7%. This was particularly interpreted as a management failure 39.33%, with a significant difference between the four sub-groups (54%, 48.7%, 36.2%, and 18.4% for V-W, V, W, and N-N group, respectively; $P < 0.0001$). But not due to some of the specific aspects of the job like a long time on duty, night call ($P = 0.115$).

On the one hand, in the victim group, the type of proceedings run was largely marked by the lack of personal action: 51.9% (missing value 6.3%). In very few cases harassment led to administrative (9.3%) or judicial complaint (4.8%) in the victim group. The W subgroup of non-victim group has brought their support to administrative (5.6%) or judicial (2.5%) complaint. Personal requests for shifting position (12.3%) or help (17%) were significantly more frequent in the victim group than in the W subgroup (6.4% and 10% for shift and help, respectively).

On the other hand, the measures preventing harassment are significantly requested in the victim group compared to the non-victim group ($P > 0.0001$). A watchful structure (44.9%), law reminder (44.1%), and disciplinary board (43.8%) with displaying sanctions (40.4%) were requested (Vs. 26.8%, 34.2%, 31.2%, and 25.9% for non-victim group). Psychological help (48.7%), discussion group (33.4%), and union involvement (32.8%) were also requested for the victim group.

Consequences of social harassment and bullying

The respondents of victim group reported serious difficulties at work (84.6%), with overwork (50.5%), a feeling of isolation (81.9%) particularly due to the lack of verbalization of the problem and/or the lack of non-punishment of the aggressor (72.1%).

For the victims, the consequences at work were a clear impression of loss of motivation expressed by: investment reduction (75.5%), efficiency reduction (44.4%) and increase absenteeism (38.3%) with a feeling of loss of opportunities (12.5%) (Vs. 34.2%, 19.7%, 14%, and 4.6% for non-victim). A strong impact on the professional career was noted: abandonment of the position at work (38.3%), change of hospital (19.5%) or change of OTs (17.9%), change of orientation (15.4%) and change of unit (12.0%). The global professional impact (evaluated by the sum of items) was significantly different (2.67, 2.65, 2.46, 1.66; for V-W, V, W, and N-N sub-group, respectively; $P < 0.0001$).

Compared to the non-victim group the victims reported a significant impairment in the family activities (31.1% vs. 6.7%, respectively; $P < 0.0001$), social activities (25.2% vs. 6.2%, $P = 0.001$), sports practice (35% vs. 9.3%; $P = 0.0002$). This impact was associated with sleep disturbances (65.4% vs. 20.7%; $P < 0.0001$). The global personal impact was also significantly different between the four subgroups (3.97, 4.31, 3.19, 2.62; for V-W, V, W, and N-N group, respectively; $P < 0.0001$).

There was no significant difference in the level of fatigue (65.9% vs. 24.8%; $P = 0.105$); anxiety and depression (36.8% vs. 13.7%; $P = 0.349$), medication (24.3% vs. 8.1%; $P = 0.149$),

suicide attempt (2.7% vs. 0.5%; $P = 0.199$), and addiction (like alcohol, tobacco or drugs: 15.7% vs. 4.4%; $P = 0.052$), for victim and non-victim groups. The difference was significant ($P < 0.0001$) when we compare each subgroups (sleep disorder: 65.0%, 66.7%, 25.1%, and 14.1%; weariness: 67.1%, 62.6%, 28.1%, and 19.7%; food disorder: 21.6%, 22.3%, 6.7%, and 4.3%; anxiety and depression: 35.2%, 41.0%, 19.2%, and 5.1%; attempted suicide: 2.3%, 3.7%, 0.8%, and 0%; psychoactive drug consumption: 22.9%, 27.8%, 11.1%, and 3.4%; addiction: 16%, 15%, 4.7%, and 3.8%, for V-W, V, W, and N-N subgroup, respectively).

A significantly different level of satisfaction was documented ($P < 0.0001$) between the two groups; with no intra-group difference (i.e. between N-N Vs. W subgroups, and between V and V-W subgroups). Overall, there was a clear correlation between the level of social satisfaction and the belonging to the non-victim group ($\text{Pr} > \text{ChiSq}$; $P < 0.0001$; OR 1.452 (1.317-1.600 vs. 0.731 (0.685-0; 781) for victim vs. non-victim).

Have you been yourself a persecutor?

Although the response rate was low ($n = 224$); the victim group recognized to be more persecutor than the non-victim group (29.3%, vs. 20.7%). The profile of the persecutor is a male (58.7%) about 46.6 +/- 10.7 years old, and physician (54.2% vs. 30.8% for nurses) with no real responsibility (73%). Usually it was unwillingly without hierarchical effect ($n = 161$ VS. $n = 28$) with a hierarchical effect.

Discussion

Our study is the first assessment made in France on this microclimate (i.e. closed world of the operating rooms) of the world of work. Our results are in line with the recent meta-analysis with the incidence rate of bullying in surgery estimated around 37.7%, and 31.2% for the incidents of harassment [4,13,26]. Our results are similar to those reported with a recent review and meta-analysis on the burnout in French physicians [27]. We report surprisingly, a low rate of sexual harassment compares to the level of 30% recently reported in academic medicine self-reported [28], but was similar to that reported in previous studies performed in the wards 2 to 6% [13]. The effects on surgical nurses (i.e. job dissatisfaction, mental health problems, and even suicidal ideation) were recently confirmed in recent systematic review [26], but it was never reported similarly for nurse anesthetists. In the same manner, nobody challenged the anesthesiologists about their behavior compared to the large evaluation of surgical specialties. The absence of a clear difference between nurse's anesthetists and surgical nurses suggests that the same patterns of work apply in the world of anesthesia as that of surgery (i.e. relationship between nurses and doctors). On the other hand, the difference found between anesthesiologists and surgeons suggest the absence of independence between the both.

So, it was not surprising to observe the fact that the feeling being harassed induces difficulties in family and social structures. The question remaining is: is it a cause or a consequence? It is also possible that there is a blurring interpretation due to a not enough clear explanation or interpretation of "before working in the OT". Dissatisfied health employees could be the most vulnerable to bullying and harassment [29]. Conversely, satisfied physicians

tend to be more committed to the work of their organization. Heavy workloads, lack of justice, poor recognition or interference with social life are all linked to dissatisfaction. As victims of harassment and/or bullying may have higher job turnover, marriage failure, drug and alcohol abuse, caffeine and nicotine addiction and shorter life expectation. Of course, personality traits (like neuroticism) could be increase or decrease the perception of the work life [30].

As in all steps of the society, female and low position in the professional hierarchy (i.e. nurse), are independent risk factors. Bullying can start at any level. On the one hand, administration and politicians dictate economic rules and caregivers must adapt to these rules to try to give the best care to patients. On the other hand, for many reasons, the evolution of the world of work gradually turned from the schema of the "captain only master on board after God" (usually the surgeon) or according to the sociological term of "dominant male" to an indispensable team work spirit [31]. As imagined as a teaching standard there is a misconception that certain bullying or harassment behaviors are effective and are a necessary teaching method to improve trainees' performance [4]. Previously, the culture of obedience and tolerance was "part of the job" [32]. If the learned behaviors were perpetuated; new practices are gradually changing habits, for a more peaceful atmosphere. Despite contextual factors, this behavior has a major impact on healthcare worker and probably on patient safety.

Across cultures, nations and organizations there are many definitions of bullying behavior. This national cross-sectional survey based on an anonymous self-reporting procedure describes factors of harassment and bullying in operative theater. Although this method has certain limitations, it was reported that participants may be less likely to divulge certain information in face-to-face interviews, especially information of a sensitive nature [30], so we chose this semi-structured anonymous interview protocol. Despite the clear national legal definitions, it is difficult to make the difference between bullying and harassment based on the own interpretation. In different cultures the word harassment has different meanings. In most cases, it is the individual perception of them as a victim that is important, not the intentions of the alleged perpetrator. The gender discrimination was not clearly enough checked in our questionnaire to draw some tendencies. May be due to the fact, the surgery and anesthesia still not remains a male-dominant field.

If different methods for tackling mistreatment are perceived as potentially effective, but their efficacy was not clearly demonstrated. Work into cognitive rehearsal programs and operating room simulation may be useful, but their ability to improve the working culture in operating theater has not been demonstrated.

Despite the fact that the operative theater (OT) is a very complex working environment with work pressures and various stressful situations (i.e. need to act quickly; long and irregular working hours). Our results were not really different to the global word of the work. Some differences could be noticed. Physicians (anesthesiologist and surgeons) have direct involvement with the patient and his family. Paramedics (anesthetist nurses, operative nurses, technicians and other participants) are more involved in the practical organization of the OTs. There is in this setting, a need for an extraordinary degree of collaboration. Nevertheless,

despite reliance on team members, the personal burden could be at risk for psychological distress (i.e. demands exceed resources). It is well documented that cognitive function is commonly compromised during activities that demand high degree of self-control [1]. Nevertheless; the social organization must protect everyone and must be particularly vigilant for the most fragile workers. As reported in our questionnaire, there is a strong demand for explanation, posting of operating rules in society and penalties incurred.

There are several limitations to our study. Due to a questionnaire effect; it is possible that there was an overrepresentation of the victims as responders (62.3 %), who were probably more prone to respond than the non-victims (37.7%). We could suppose that the victims, in addition to being more motivated to answer, probably have more participation in the distribution of the questionnaire (internet diffusion exclusively; n = 930 Vs. institutional way; n = 334).

Missing data were in a large proportion in the N-N group (14.5% for N-N; 7.2% for W, 8.1% for V and 4.87% for W-V subgroups). This makes sense because we expected no response for all other specific questions upon the characteristic of the harassment and bullying. However, it was surprising to find some responses which could be interpreted a "philosophic" opinion. But, these responses probably decrease the level of significance of our data.

It may be difficult to confirm the true represent ability of our results based on the 1666 answers if we compare to the population working in ORs. Based on the French National database (HASDAQSS-July 2009) we could estimate the number of French OTs around 8 000; if we estimate the number to 4 to 6 people for each OT (one surgeon with at least 1 or 2 operative nurses, one anesthesiologist and/or nurse anesthetist, and one more technician) we could evaluate the number of 36 000 to 48 000 persons concerned (3.5% to 4.6%).

Due to the fact that respondents select their answers from narrow range of options, we did not specifically seek the feeling of neither gender discrimination, sexism, nor the undermining behavior because it was more subjective.

Conclusion

Although the figures probably vary largely depending on the country, these data confirmed similar results observed in the working world. But no more, and despite many clichés and suppositions we could not specifically describe some different and specific risks factor. However, some suggestions could be done [33]: support your colleague, be non-judgmental and non-accusatory, if issues are identified offer to help, have a plan in case the individual is unwilling to admit or recognize there is a problem, follow-up. But clearly say, as previously reported, that there is no room for complacency [34].

Declarations

Institutional ethics committee: checked with IRB committee; it is not required.

Conflict of interest: None of the authors has a conflict of interest to report on this topic.

Participation: All the authors participated in the realization of the study, the processing of the data, and the writing of the manuscript.

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