





# BMJ Open Cross-sectional study on patient-physician aggression in Belgium: physician characteristics and aggression types

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**To cite:** De Jager L, Deneyer M, Buyl R, *et al.* Cross-sectional study on patient-physician aggression in Belgium: physician characteristics and aggression types. *BMJ Open* 2019;**9**:e025942. doi:10.1136/bmjopen-2018-025942

► Prepublication history and additional material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2018-025942>).

Received 17 June 2019  
Revised 28 November 2019  
Accepted 03 December 2019



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## ABSTRACT

**Objectives** The aim of this Belgian research study was to describe the characteristics of physicians who are at increased risk for patient-physician aggression. Second, aggression subtypes were described and data were provided on the prevalence of patient-physician aggression in Belgium.

**Design** Cross-sectional survey.

**Setting** Primary and secondary care inside and outside hospitals.

**Participants** Any physician who had worked in Belgium for the preceding 12 months was eligible to participate (n=34 648).

**Main outcome measures** An online, original questionnaire was used to obtain physician characteristics (eg, age, sex, native language), department, working conditions and contact with aggressive patients during their career and during the preceding 12 months.

**Results** The questionnaire was completed by 4930 participants and 3726 (76%) were valid to take into account for statistics. During the preceding 12 months, 37% had been victims of aggression: 33% experienced verbal aggression, 30% psychological, 14% physical and 10% sexual. Multiple answers were allowed. Women and younger physicians were more likely to experience aggression. Psychiatric departments and emergency departments were the settings most commonly associated with aggression. Physicians who provided primarily outpatient care were more subject to aggression.

**Conclusion** Belgian physicians experience several forms of aggression. Those most at-risk of aggression are young and female physicians who work in outpatient, emergency or psychiatric settings.

## INTRODUCTION

On 1 December 2015, 64-year-old family physician Patrik Roelandt was murdered during a house call to a patient. The murderer was known to the police and had a past criminal record, of which his physician was unaware. He is only one of many physicians who have experienced patient-physician aggression and violence. The physician-patient relationship is complex and based on mutual

## Strengths and limitations of this study

- This study is one of the largest ever to address the topic of patient-physician aggression.
- Only physicians with internet access could complete the survey but most Belgian physicians use a computer as part of their medical practice.
- To ensure privacy, physician specialty and geographic location of their practice or hospital were not collected.
- Classifications of aggression and violence are subjective and susceptible to varying interpretations.

trust, with physicians serving as helpers and patients as care-seekers. There is often a very small difference between patient assertiveness and aggression in the physician-patient relationship.

## International aggression research

In 2000, the WHO, in collaboration with the International Labour Office, the International Council of Nurses and Public Services International, investigated workplace violence in the healthcare sector.<sup>1</sup> For that study, a research tool was designed to assess workplace violence experienced by physicians and other healthcare workers.<sup>2</sup> Di Martino used this same tool in 2002 to synthesise the results of rural studies of violence against healthcare workers in several countries.<sup>3</sup> One of his conclusions was that more attention was needed to address aggression in nearly all countries studied. Furthermore, a report with preventive guidelines was prepared based on the results of these studies.<sup>4</sup>

In 2014, the International Society of Orthopaedic Surgery and Traumatology (SICOT) statement in Hyderabad, India called on governments to provide better registration systems, awareness of aggressive

populations, stricter penalties and protections for healthcare workers.<sup>5 6</sup>

In 2016, a review was published about the current state of aggression against healthcare workers in the USA.<sup>7</sup> Little was known at that time about aggression in primary care settings; emergency and psychiatric departments had been the most well-studied environments and were thought to be the most dangerous. Physicians and other healthcare professionals were at risk, however. The authors suggested that stricter penalties be placed for perpetrators of violence against healthcare workers and that easy procedures should be implemented to report incidents. After that report, several investigations were conducted to assess aggression in emergency departments in the USA. About three-fourths of physicians in emergency departments reported experiencing some form of violence and one-fourth of staff members felt unsafe.<sup>8 9</sup>

A large US study showed that 48% of female physicians experienced sex-based intimidation and 37% had experienced sexual harassment during their careers.<sup>10</sup>

A large cross-sectional study of Canadian physicians showed that 98% had experienced minor aggression, 75% severe aggression and 39% very severe aggression.<sup>11</sup>

In China, violence against physicians is a major problem.<sup>12</sup> We speculate that this violence is related to the healthcare organisation system in China, but research on this subject is still ongoing.

A Japanese study found a relationship between patient-physician aggression and post-traumatic stress disorder, with a violence incidence of  $0.20 \times 10^{-3}$  events per practice hour.<sup>13</sup>

In 2011, a cross-sectional study of aggression against Australian family physicians showed that, during the preceding 12 months, 58% had experienced verbal aggression, 18% material damage or theft, 6% physical aggression, 4% stalking, 6% sexual harassment and 0.1% sexual violence.<sup>14</sup> Physicians with less professional experience were more likely to have experienced verbal aggression compared with their colleagues and women were more likely to have experienced sexual harassment compared with men.

In 2005, a Dutch study reported sexual harassment during medical internship.<sup>15</sup> Another study reported that Dutch paediatricians with less professional experience were more likely to encounter patient-physician aggression.<sup>16</sup>

In 2015, a German study reported that 91% of family physicians had been victims of patient aggression during their careers, with 73% experiencing aggression during the preceding 12 months.<sup>17</sup> Serious aggression had been experienced by 23% of those physicians during their careers and 11% during the preceding 12 months. Most participants still felt safe at their practice site, but 66% of female and 34% of male respondents felt insecure on home visits.

## Belgian aggression research

In 1998, researchers using a safety survey in Belgian hospitals showed that psychiatric departments had higher rates of patient-physician aggression.<sup>18</sup> Since starting their work in the psychiatric department, 38% of physicians had experienced theft, 13% physical aggression and 70% verbal aggression. Although 86% of physicians surveyed reported that they did not feel unsafe at their hospital, female physicians did feel insecure in the evenings and insecurity was more prevalent in hospitals where French was spoken compared with those where Dutch was spoken.

Since that study in 1998, several small surveys have been conducted, but none are representative of the Belgian population and none have been published in scientific journals. Although there is sufficient evidence that physicians are at risk for patient aggression, little effort has been made to identify which physicians are at increased risk of aggression.

The aim of this study was to describe the characteristics of physicians who are at increased risk for patient aggression in Belgium. We investigated possible associations between specific types of aggression and physician characteristics and whether aggression occurs more frequently in inpatient or outpatient settings.

## METHODS

### Questionnaire

An online questionnaire in Dutch and French was developed for this cross-sectional survey (online supplementary file). The questionnaire was available from 28 March 2017 to 25 April 2017 on the LimeSurvey platform (Germany, V.2.05+). Paper questionnaires were not provided. Participants had to read the online informed consent and agree to participate by clicking the corresponding key before they could participate in the study.

The questionnaire first asked participants which of the four major types of aggression (physical, verbal, sexual or psychological) the physician had experienced during his or her career and during the preceding 12 months. Questions about the preceding 12 months were more detailed than the career questions. These questions were based on the questionnaire used in the German study by Vorderwülbecke *et al.*<sup>17</sup> We added psychological violence which was not included in the German questionnaire. We used just as in the German study the 12-month period for the detailed questions on the 'most recent aggression' because the recall bias might be too important for a longer period. Experiences with aggression over the last 12 months were also questioned in a German survey called *Arztemonitor 2018*. With over 8000 answering physicians, it is one of the biggest studies on this subject but unfortunately this study was not published internationally.<sup>18</sup>

Physicians were also asked about aggression subtypes and places where aggression had occurred. Next, personal and demographic data were collected for each participant. To preserve participant privacy, questions were limited to sex, year of birth, number of years of practice,

main practice activity and number of coworkers. Based on these data, it should be impossible to track down which physicians completed the survey.

### Participants

In Belgium, all physicians are required to register with the National Medical Council. The council sent an email to the 36 335 active registered physicians with a link to the survey and a request to complete the questionnaire. An initial email was sent on 28 March 2017 and a reminder email was sent on 13 April 2017. Only active physicians who had worked in Belgium for the past 12 months were eligible to participate in the study. Physicians also had to have computer access, an email address and needed to understand Dutch or French.

### Patient and public involvement

Patients and the public were not involved in this study. Given the sensitive subject of patient-physician aggression, we chose not to include the patient's point of view in this study. In future smaller-scale research, this could be done, for example, by means of personal interviews sometime after the registration of the aggression. The input of the public and the patient could also be requested in the development and implementation of the study.

### Difference between aggression and violence

The difference between aggression and violence is not always very clear. The terms aggression and violence are often used interchangeably, although the two are not synonymous. Both concepts are also subjective, with overlapping meanings that can be interpreted differently by different persons. Aggression is any behaviour that can potentially harm people or objects. This behaviour can occur at the physical or psychological level. Aggression can manifest as abusive language, damage to objects, violent threats to others or assaults on persons (including the aggressor himself or herself). Violence is physical assault with intent to harm. Not all aggression leads to violence; violence is a step further than aggression. Throughout this paper, we preferentially use the term aggression. We consider four major classes of aggression: physical, verbal, psychological and sexual.

### Statistical analysis

Statistical analysis was completed using LimeSurvey, Microsoft Excel 2016 and IBM SPSS Statistics 24. Partially completed or unsaved questionnaires were not included in the analysis.

For the statistical analysis, variables were considered as independent (ie, explanatory or input) or dependent (ie, outcome or target).

Descriptive statistics are presented as frequencies (n, %) for categorical variables and medians (and IQRs) for continuous outcomes. Univariate analysis was performed using  $\chi^2$  tests or Fisher's exact test where appropriate. For ordinal variables, p values were calculated using the linear-by-linear association. The 95% CI was calculated using the SE, as given by the formula  $SE = \sqrt{p(1-p)/n}$ .

For large cross-tables with expected values less than five, the Fisher's exact test was used for subgroups using the Monte Carlo method (95% CI and 10 000 samples).

A logistic regression model was developed using aggression during career, aggression during the preceding 12 months, physical aggression, verbal aggression, psychological aggression and sexual aggression as dependent variables. Age (five groups), sex, language, years of practice experience (five groups), medical department and number of colleagues (three groups) were used as independent variables. A stepwise backward (conditional) logistic regression was performed for each of these independent variables. All tests were performed using an  $\alpha$  of 0.05.

## RESULTS

### Participant demographics

The National Medical Council has a register with all Belgian physicians. All 36 335 physicians of the register received an email with an invitation to participate in the study. The 1685 physicians who did not work in Belgium for the preceding 12 months received also an invitation to participate but they were excluded at the beginning of the questionnaire. The questionnaire was completed by 4930 participants and 3726 questionnaires were valid to take into account for statistics.

Most respondents were male (52%) and most completed the survey in Dutch (67%) (table 1). Their median age was 42 years and the median number of years in medical practice was 13. Both continuous variables had non-normal distributions, with p values of less than 0.0001 for both the Kolmogorov-Smirnov and the Shapiro-Wilk tests. The participants were representative of the Belgian physicians with respect to age, gender and maternal language.

Forty-two per cent of respondents worked in a hospital, whereas 22% had a solo outpatient practice and 18% were part of a group practice. Participants from nearly all hospital departments participated in the study. The most represented departments were anaesthesiology (10.6% (n=164)), radiology (8.7% (n=134)), paediatrics (6.6% (n=102)), orthopaedics (6.2% (n=96)) and the emergency department (5.8% (n=89)).

### Prevalence

Table 2 shows the reported prevalence and types of patient-physician aggression. Multiple answers were allowed for responses, as participants may have experienced multiple types of aggression in multiple practice locations. Eighty-four per cent of participants had experienced aggression during their careers, with 37% having this experience during the preceding 12 months. Of those who encountered aggression during the past 12 months, 91% experienced it in a consultation room, 34% outside the consultation room and 39% during emergency medical services in hospitals or in primary care.

**Table 1** Participant demographics (n=3726)

Characteristic	% (n)
<b>Gender</b>	
Men	51.8% (1930)
Women	48.2% (1796)
<b>Maternal language</b>	
Dutch	66.5% (2477)
French	33.5% (1249)
Median age in years (IQR)	42 (22)
Median medical activity in years (IQR)	13 (21)
<b>Type of medical activity</b>	
Solo practice	22.1% (822)
Duo practice	7.8% (290)
Group practice	17.5% (653)
Community Health Centre	2.1% (79)
Hospital	41.5% (1545)
Psychiatric institution	2.5% (94)
Homes for the elderly	0.5% (19)
Health insurance company	1.0% (39)
Company control doctor	0.5% (20)
Community childcare centre	0.1% (4)
Prison	0.1% (5)
Occupational medicine	0.8% (28)
Community centre for mental health	0.4% (14)
School doctor	0.3% (10)
Medical expertise	0.2% (7)
Others	2.6% (97)
<b>Number of collaborators in the practice</b>	
0	27.9% (1039)
1–5	36.2% (1348)
≥5	35.9% (1339)

### Differences between sexes

More women than men encountered patient-physician aggression during their careers (87% versus 82%;

**Table 2** Prevalence and types of patient-physician aggression (n=3726)

Type of aggression	During career % (n)	During past 12 months % (n)
Total	84.4 (3144)	36.8 (1372)
Physical	24.2 (903)	14.4 (538)
Verbal	77.2 (2877)	33.1 (1235)
Psychic	41.7 (1552)	30.0 (1116)
Sexual	10.1 (378)	9.5 (353)
Other	1.5 (55)	1.4 (51)
None	15.6 (582)	63.2 (2354)

$p<0.0001$ ) and during the preceding 12 months (43% vs 31%;  $p<0.001$ ).

During their careers, more men than women had experienced physical aggression (27% and 21%, respectively;  $p<0.001$ ), whereas more women than men had experienced psychological aggression (35% and 49%, respectively;  $p<0.001$ ) and sexual aggression (4% and 17%, respectively;  $p<0.001$ ). There were no differences between men and women with respect to experience of verbal aggression during the careers.

**Table 3** shows the proportion of participants who encountered patient-physician aggression during the preceding 12 months and the subtypes of aggression experienced by both men and women. During this period, women and men experienced similar rates of physical aggression, but verbal aggression was experienced by 38% of women compared with 28% of men ( $p<0.001$ ). Scolding and insulting were particularly common forms of verbal aggression against women. Women also experienced more psychological aggression compared with men (38% and 28%, respectively;  $p<0.001$ ). Almost all subtypes of psychological aggression were more frequently experienced by women. Sexual aggression was experienced by 15% of female physicians compared with 5% of male physicians ( $p<0.001$ ). Of the sexual aggression subtypes, sexual remark aggression and sexual acts by patients on themselves occurred more commonly among women than men.

During the preceding 12 months, more women (40%) than men (28%) experienced aggression in their own consultation rooms ( $p<0.001$ ). Women also encountered more aggression compared with men during on-call duties (17% compared with 12%;  $p<0.001$ ).

### Patient aggression by language spoken

Dutch-speaking (n=2477) and French-speaking (n=1249) physicians experienced similar rates of aggression during their careers (85% and 84%, respectively;  $p=0.781$ ) and during the preceding 12 months (36% and 38%, respectively;  $p=0.561$ ). However, compared with those who spoke French, those who spoke Dutch experienced more verbal aggression (75% and 79%, respectively;  $p=0.004$ ) and sexual aggression (7% and 12%, respectively;  $p<0.001$ ) during their careers.

**Table 4** shows the proportion of participants who experienced patient-physician aggression during the preceding 12 months and details the subtypes of aggression by language spoken. During the preceding 12 months, French-speaking physicians experienced more physical aggression than their Dutch-speaking colleagues. Those who spoke French more often reported severe physical violence (5% compared with 3%;  $p=0.006$ ) and damage or theft (9% compared with 7%;  $p=0.012$ ). Although the rate of verbal aggression did not differ between groups, physicians who spoke French experienced more threats of physical aggression (15% and 17%, respectively;  $p=0.022$ ). Although the rates of psychological aggression did not differ, blaming and blackmailing were more

**Table 3** Types of patient aggression experienced by physicians during the preceding 12 months (n=3726)

Type of aggression	Men (n=1930) (%)	Women (n=1796) (%)	P value
Total	30.9	43.2	<0.0001
Physical aggression	13.7	15.3	0.17
Mild physical aggression (such as pushing, gripping, spitting)	10.2	10.3	0.93
Heavy physical aggression (such as biting, kicking, hitting, strangulation)	4.1	3.4	0.27
Attack with object, weapon and/or animal	1.5	2.1	0.16
Damage to property and/or theft	6.6	7.9	0.15
Verbal aggression	28.3	38.4	<0.001
Threat with physical aggression	15.4	15.5	0.97
Scold and/or insult	27.0	36.9	<0.0001
Psychological aggression	24.1	36.2	<0.0001
Humiliation	7.6	14.0	<0.0001
Blaming and/or intentional guilt delivery	18.9	31.2	<0.0001
Threat with suicide and/or automutilation	10.0	15.2	<0.0001
Manipulation and/or incitement to illegal things	13.0	17.0	0.001
Chantage	6.9	10.5	<0.0001
Load and/or reproach	11.2	10.4	0.42
Sexual aggression	4.7	14.6	<0.0001
Sexual remarks	2.8	13.0	<0.0001
Sexual acts by themselves	0.2	2.0	<0.0001
Hold on	1.9	2.9	0.039
Sexual touch	0.6	1.3	0.023
Rape	0.1	0.1	1.00*
Stalking	1.9	2.4	0.27
Others	1.2	1.6	0.34
None	69.1	56.8	<0.0001

\*Calculated using two-sided Fisher's exact test.

commonly reported by the French-speaking participants ( $p=0.013$  and  $p<0.001$ , respectively). Reports of sexual touching were more common for French-speaking participants ( $p=0.041$ ), whereas reports of patient sexual acts were more common for Dutch-speaking participants ( $p=0.006$ ).

With respect to location, French-speaking physicians were more likely to encounter aggression outside of their consultation rooms compared with their Dutch-speaking colleagues (15% and 11%, respectively;  $p=0.001$ ).

#### Patient aggression by physician age

Younger physicians were more likely to experience patient-physician aggression during the preceding 12 months (figure 1), with 46% of those born in 1980 or later experiencing aggression, compared with 15% of those born before 1950 ( $p$  for trend  $<0.001$ ). This trend of increasing aggression with decreasing age was observed for all types of aggression. For physical aggression, the rate increased from 11% among the oldest physicians to 18% among the youngest physicians ( $p$  for trend  $<0.001$ ).

Verbal aggression increased from 13% to 43% ( $p$  for trend  $<0.001$ ) and psychological aggression increased from 11% to 39% ( $p$  for trend  $<0.001$ ). Furthermore, sexual aggression increased from 4% to 14% ( $p$  for trend  $<0.001$ ).

During the preceding 12 months, a shorter length of professional practice was also associated with increasing rates of aggression (figure 2).

#### Workplace and department

Physicians working in a solo practice (30%) encountered less aggression during the preceding 12 months compared with those working in a group practice (39%,  $p<0.001$ ), community health centre (52%,  $p<0.001$ ) or hospital (36%,  $p<0.003$ ). Workplaces with the highest risk for aggression during the preceding 12 months were psychiatric institutions (73%), centres for mental health (71%), health insurance companies (67%) and community health centres (52%).

The most dangerous work environments for aggression within hospitals were the emergency (82%), psychiatry

**Table 4** Types of aggression experienced by Dutch-speaking and French-speaking physicians during the preceding 12 months (n=3726)

Type of aggression	Dutch-speaking (n=2477) (%)	French-speaking (n=1249) (%)	P value
Total	36.5	37.5	0.56
Physical aggression	13.9	15.5	0.21
Mild physical aggression (such as pushing, gripping, spitting)	9.9	11.0	0.31
Heavy physical aggression (such as biting, kicking, hitting, strangulation)	3.1	5.0	0.006
Attack with object, weapon and/or animal	1.5	2.3	0.06
Damage to property and/or theft	6.5	8.7	0.012
Verbal aggression	33.3	32.9	0.83
Threat with physical aggression	14.5	17.4	0.022
Scold and/or insult	31.9	31.5	0.83
Psychological aggression	29.5	30.8	0.41
Humiliation	11.0	10.0	0.36
Blaming and/or intentional guilt delivery	23.6	27.3	0.013
Threat with suicide and/or automutilation	12.9	11.8	0.33
Manipulation and/or incitement to illegal things	15.4	13.9	0.23
Chantage	6.4	13.1	<0.0001
Load and/or reproach	10.7	11.0	0.77
Sexual aggression	9.9	8.7	0.27
Sexual remarks	8.0	7.3	0.47
Sexual remarks by themselves	1.4	0.4	0.006
Hold on	2.5	2.2	0.57
Sexual touch	0.7	1.4	0.041
Rape	0.1	0.1	1.00*
Stalking	2.0	2.5	0.36
Others	0.9	2.2	0.001
None	63.5	62.5	0.56

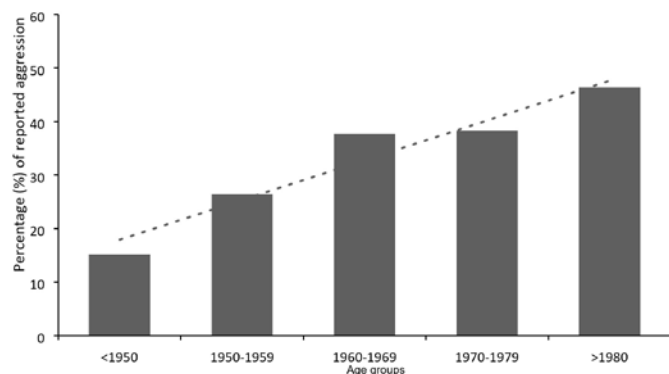
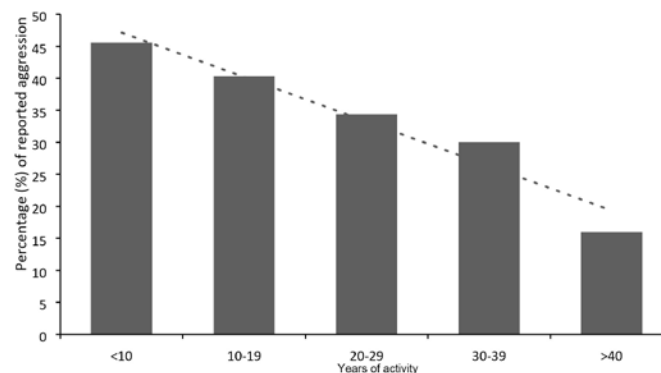
\*Calculated using two-sided Fisher's exact test.

(64%), neurology (58%), geriatrics (53%) and internal medicine (52%) departments. All other departments were associated with aggression reports of less than 50% during the past 12 months.

During their careers, 83% of participants providing inpatient care experienced aggression, compared with 85% of those providing outpatient care ( $p=0.046$ ). Those

working outside a hospital were more likely to experience psychological and sexual aggression compared with those working inside a hospital (45% vs 37%,  $p<0.001$  and 12% vs 8%,  $p<0.001$ ).

During the preceding 12 months, outpatient and inpatient physicians reported similar rates of patient aggression

**Figure 1** Patient aggression experienced by physicians during the preceding 12 months, by year of physician birth.**Figure 2** Patient aggression experienced by physicians during the preceding 12 months, by number of years in practice.

**Table 5** Types of patient aggression experienced by physicians providing inpatient and outpatient care during the preceding 12 months (n=3726)

Type of aggression	Inside hospital (n=1639) (%)	Outside hospital (n=2087) (%)	P value
Total	38.3	35.7	0.11
Physical aggression	16.5	12.8	0.002
Mild physical aggression (such as pushing, gripping, spitting)	14.0	7.3	<0.0001
Heavy physical aggression (such as biting, kicking, hitting, strangulation)	6.0	2.0	<0.0001
Attack with object, weapon and/or animal	1.6	1.8	0.69
Damage to property and/or theft	6.7	7.7	0.23
Verbal aggression	35.8	31.0	0.002
Threat with physical aggression	19.5	12.3	<0.0001
Scold and/or insult	34.5	29.6	0.001
Psychological aggression	30.1	29.9	0.88
Humiliation	10.9	10.4	0.64
Blaming and/or intentional guilt delivery	25.6	24.2	0.32
Threat with suicide and/or automutilation	13.3	11.9	0.19
Manipulation and/or incitement to illegal things	11.4	17.7	<0.0001
Chantage	8.7	8.6	0.87
Load and/or reproach	11.8	10.1	0.11
Sexual aggression	8.3	10.4	0.030
Sexual remarks	7.1	8.3	0.17
Sexual acts by themselves	0.6	1.4	0.020
Hold on	2.3	2.4	0.71
Sexual touch	0.6	1.1	0.09
Rape	0.0	0.2	0.14*
Stalking	1.9	2.4	0.30
Others	0.9	1.7	0.035
None	61.7	64.3	0.11

\*Calculated using two-sided Fisher's exact test.

(table 5). However, those working inside the hospital reported more physical aggression compared with those working in outpatient settings (17% and 13%, respectively;  $p=0.002$ ). Moderate and severe physical aggression occurred more common inside the hospital. Verbal aggression and its subtypes occurred more frequently in the hospital compared with the outpatient setting (36% vs 31%;  $p=0.002$ ). There was no difference in the rate of psychological aggression between outpatient and inpatient settings; however, manipulation or incitement to illegal actions was more common in outpatient than inpatient settings (18% and 11%, respectively;  $p<0.0001$ ). Sexual aggression by patients towards physicians was also

**Table 6** Logistic regression for aggression type

Variables	Sig.	OR	95% CI for OR
<b>Aggression during the career</b>			
Gender	0.007	0.679	0.512 to 0.901
Age	0.008	1.168	1.041 to 1.311
Number of collaborators	0.024	1.212	1.025 to 1.432
<b>Aggression during the past 12 months</b>			
Language	0.016	1.326	1.054 to 1.669
Gender	0.001	0.695	0.556 to 0.868
Years of experience	<0.001	0.775	0.702 to 0.855
Hospital department	0.001	1.012	1.005 to 1.019
Number of collaborators	0.003	1.250	1.081 to 1.446
<b>Physical aggression during past 12 months</b>			
Language	0.005	1.535	1.136 to 2.075
Age	<0.001	1.291	1.128 to 1.478
Hospital department	<0.001	1.020	1.010 to 1.030
Number of collaborators	0.004	1.350	1.099 to 1.659
<b>Verbal aggression during past 12 months</b>			
Gender	0.010	0.744	0.594 to 0.933
Years of experience	<0.001	0.781	0.706 to 0.863
Hospital department	0.001	1.012	1.005 to 1.020
Number of collaborators	0.011	1.211	1.045 to 1.404
<b>Psychological aggression during past 12 months</b>			
Language	<0.001	1.595	1.249 to 2.035
Gender	<0.001	0.647	0.509 to 0.822
Years of experience	<0.001	0.785	0.705 to 0.874
Hospital department	<0.001	1.014	1.006 to 1.022
Number of collaborators	0.001	1.311	1.119 to 1.535
<b>Sexual aggression during past 12 months</b>			
Gender	0.001	0.472	0.307 to 0.725
Years of experience	0.004	0.737	0.600 to 0.906
Hospital department	0.002	1.022	1.008 to 1.038

more common in outpatient (10%) compared with inpatient settings (8%;  $p=0.03$ ), especially for sexual acts by patients.

Practice structure was also associated with aggression. An increasing number of professional partners was associated increasing violence ( $p$  for trend  $<0.001$ ). All types of violence had a similar statistical trend ( $p<0.001$ ) except for sexual violence ( $p$  for trend=0.015).

### Logistic regression

In logistic aggression analysis, age or years of experience were correlated with aggression (table 6). Each variable was related to a different form of aggression: younger age was related to physical aggression and increased aggression during the career, whereas fewer years of professional experience was related to other types of aggression.

Sex was a risk factor in five out of six logistics regression analyses, with females being more at risk for all types of aggression except physical aggression.

The number of professional colleagues was also positively associated with five out of six forms of aggression. Increasing numbers of professional partners was related to increasing risk for patient-physician aggression.

The inpatient setting was also related to most types of aggression, but it was not possible to determine from the logistic regression which departments were most at-risk because the variable was not ordinal. It was confirmed, however, that risk differs by hospital department.

## DISCUSSION

### Aggression during career

This research aimed to characterise the current state of patient aggression towards physicians in Belgium. During their careers, most physicians had experienced some type of aggression within the physician-patient relationship. Verbal aggression (77%) occurred most commonly, but psychological (42%), physical (24%) and sexual (10%) forms of aggression were also important. The rates of verbal, psychological and physical aggression were similar to those reported previously for physicians in Belgium and other countries.<sup>11 17 19–22</sup> The reported rates of sexual aggression were significantly lower than those reported in previous Belgian and international studies, however.<sup>10 21 22</sup>

During their careers, women were slightly more likely than men to experience aggression. Men were more likely to experience physical aggression, whereas women were more likely to experience psychological and sexual aggression. Our findings are consistent with previous Belgian surveys showing more frequent sexual aggression towards female physicians.<sup>20–22</sup> However, we found a much lower rate of sexual aggression against women physicians during their careers than previously reported in international studies.<sup>20–22</sup>

Overall, there were no differences in aggression based on spoken language, although sexual violence was more commonly experienced by Dutch-speaking physicians compared with their French-speaking colleagues (12% vs 7%).

Our finding that aggression occurred less commonly during physicians' careers in solo practice compared with community health centres and group practice differed from that of a previous Belgian survey.<sup>22</sup> One may hypothesise that a work setting with several colleagues may be protective against aggression; however, our findings do not support this hypothesis. Working with five or more colleagues appears to be an independent risk factor for aggression. Settings such as community health centres may attract more patients with problematic socioeconomic backgrounds; thus, these patients may be more likely to express their demands or emotions with aggression. However, multivariate analysis did not show that physicians working in a community health centres are at increased risk for aggression, which seemed primarily

related to number of colleagues, independent of practice type.

Psychiatric institutions were significantly more dangerous workplaces compared with general hospitals, where emergency departments were the most at-risk areas for experiencing aggression. Nearly all physician participants reported that they had experienced aggression during their careers. The finding of higher risk of aggression in psychiatry and emergency departments is consistent with previous studies.<sup>7 19</sup>

Physicians who practiced primarily in outpatient settings were more likely to encounter violence during their careers compared with those who practiced primarily in the hospital. More specifically, outpatient physicians were more likely to experience psychological and sexual aggression.

### Aggression during the preceding 12 months

The logistic regression showed that female sex, younger age or fewer years of experience, a higher number of colleagues and hospital department were independent risk factors for aggression during the preceding 12 months.

Our study also aimed to describe the various subtypes of aggression encountered by physicians during the 12 months preceding survey administration. Our study showed that 37% of physicians had experienced patient aggression (verbal, 33%; psychological, 30%; physical, 14% and sexual, 10%) during the preceding 12 months. These rates were lower than those reported for studies in other countries.<sup>14 17</sup>

The finding that most physicians experienced aggression within their consultation room may be explained by the fact that physicians surveyed spent most of their professional time in their outpatient practice settings. In that setting, more than one type of aggression was frequently reported. Psychological and verbal aggression often co-occurred.

During the preceding 12 months, women were more likely than men to experience aggression (43% vs 31%). Consistent with a previous report, women were more likely to experience verbal (38% vs 28%), psychological (36% vs 24%) and sexual (15% vs 5%) aggression compared with men.<sup>14</sup> Women were also more likely to experience aggression in their own practices (40% vs 28%) and during on-call duties (17% vs 12%).

Native language was not associated with most measures of patient-physician aggression, although French-speaking physicians more often experienced severe physical aggression (5% vs 3%) and blackmailing (13% vs 6%).

From the logistic regression, speaking French was associated with aggression during the past 12 months and more in particular with physical and psychological aggression.

Our finding that all forms of aggression were experienced more commonly by younger physicians and by



those with little practical experience is consistent with results from published international studies.<sup>14 16</sup>

Physicians in solo practice reported less aggression during the preceding 12 months compared with those in group practice and community health centres. Those working in psychiatric institutions had the highest risk for patient aggression among outpatient physicians. In hospitals, the emergency department was the most likely site of aggression. Overall, there were no differences in reported aggression during the preceding 12 months for inpatient and outpatient settings. Physical aggression (especially mild and severe physical aggression) and verbal aggression occurred more frequently among physicians whose primary practice was in the hospital. In contrast, sexual aggression was experienced more commonly by physicians who practiced in outpatient settings. The finding that those who practice in outpatient settings experience more aggression may relate to their role as family physicians who make more frequent home calls compared with specialists.

### Recommendations for prevention

Preventive action should be focused initially on high-risk groups: young female physicians who work in psychiatric facilities, emergency departments and community health centres. Campaigns should focus on sexual aggression and other forms of aggression that are frequently encountered by female physicians.

Demographic changes in the physician population should also be considered. As the percentage of female physicians increases, preventive measures should focus on female physicians to reverse the trend of increasing patient-physician aggression.<sup>17 23</sup> Because one third of the male physicians experienced aggression too, they might also benefit from preventive actions. Awareness and de-escalation techniques should be trained by all students and young physicians. By optimising the setting of the daily patient-physician contacts reasons for aggressive behaviour can be reduced.

The high rate of patient-physician aggression found in our study differs greatly from the actual number of cases of aggression that are officially reported. To the best of our knowledge, less than 100 cases of patient-physician aggression are reported each year to the National Medical Council. This serious under-reporting needs to be addressed. Physicians should be encouraged to report every case of aggression to the police, the national call point of the National Medical Council and possibly to an internal local call point. Reporting should be promoted, among other means, by a national awareness campaign.

### Strengths and limitations

This study enrolled many Belgian physicians from a diverse geographical area and all medical specialties. Despite the low response rate of 10.25% (3726 of 36335 invited physicians participated), the present study is the largest ever internationally published to address this topic, with twice as many participants as the next largest

similar peer-reviewed and published study in other countries.<sup>17 24</sup> However, there is a risk of recall and response bias because the participants might be more motivated to participate if they were ever confronted with aggression. For this reason, the figures regarding the prevalence must be interpreted with caution. But our study population was sufficiently large to demonstrate statistical differences, even among smaller subgroups with regard to the characteristics of physicians at risk for aggression.

Because no paper questionnaires were used, only physicians with internet access could complete the survey. However, no bias is expected from this limitation, as most Belgian physicians use a computer as part of their medical practice. We do not have official figures on the use of computers by Belgian physicians. From the figures of Statbel, the Belgian statistical office, we know that 94% of all Belgians with a high education use the internet daily and 6% at least once weekly.<sup>25</sup>

A second limitation is the demographic data collected for study participants. To ensure privacy, we only collected information that could not be used to identify specific physicians. Consequently, physician specialty and geographic location of their practice or hospital were not collected. In this study, only the main activity and the location of the aggression were collected, per the regulations of the medical ethics committee. Thus, a direct comparison between family physicians and specialists was not possible. Instead, physicians working in hospitals (primarily specialists) were compared with those working in outpatient settings (primarily family physicians).

This paper focuses on the physicians' characteristics related to aggression. Some patient-related factors as there are unmet patient needs, alcohol or drug abuse or mental illness are reported in another paper focusing on the patient characteristics. In future research attention should be paid on other causes of aggression against physicians such as crowding in emergency departments, long waiting hours or stressed, overworked and unprepared medical staff.

Last, classifications of aggression and violence are subjective and susceptible to varying interpretations. Participants may have differing views of what behaviours constitute aggression. Efforts were made to minimise subjectivity in this area by providing survey participants with explanations of aggression classifications and subtypes.

The fact to consider an event as aggression will depend on several characteristics of the situation and the victim. A Flemish study investigated the relationship between the physicians personality (based on the 'Big Five' personality traits) and the reporting of aggression. Physicians with 'reserved' and 'careless' personality types were more likely to report aggression. Physicians with 'innovative', 'challenging' or 'confident' personality types were also at increased risk, but to a lesser extent.<sup>26</sup>

Some other indicators related to aggression were not included in our study. A relevant study identified the perceptions of staff and patients regarding the factors



that lead to violence against nurses and physicians. Both for staff and patients, conditions such as overload, pressure, fatigue and frustration may lead to violence.<sup>27</sup>

### Future research

There are still no exact figures about the incidence and trends of aggression against Belgian physicians and other medical professionals such as nurses or paramedics. Prospective cohort studies with representative study populations would be needed to further study this question. Preventive measures could then be designed and evaluated for effectiveness using prospective interventional research.

### CONCLUSION

More than 80% of Belgian physicians report experiencing patient aggression during his or her career. Female physicians and those who are younger or less experienced are more likely to experience aggression during their careers. During the preceding 12 months, one in three Belgian physicians experienced aggression within the physician-patient relationship. Verbal aggression was reported most often, followed by psychological, physical and sexual aggression. Female and young physicians were more likely to experience aggression during the preceding 12 months compared with male and older physicians. Psychiatric institutions and emergency departments were the practice sites where physicians were most likely to encounter aggression.

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**Acknowledgements** The authors thank all participants and appreciate the support provided by the National Medical Council and the PRaag (Patrik Roelandt Anti-aggression Group).

**Contributors** LDJ, MD, RB, SR, RP and DD: conception, design, analysis and interpretation of data, drafting of the manuscript and final approval of the version submitted.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Competing interests** None declared.

**Patient consent for publication** Next of kin consent obtained.

**Ethics approval** The protocol and questionnaire were reviewed by the Medical Ethics Committee of the University Hospital Brussels and approved on 8 March 2017.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data availability statement** Data are available on reasonable request.

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### REFERENCES

- World Health Organization. *Joint Programme on Workplace Violence in the Health Sector [Internet]*. World Health Organization, 2000. [http://www.who.int/violence\\_injury\\_prevention/injury/work9/en/](http://www.who.int/violence_injury_prevention/injury/work9/en/)
- International Labour Office, International Council of Nurses, World Health Organization, Public Services International. *Workplace violence in the health sector: country case studies: research instruments*. Geneva, 2003.
- Martino DV. *Workplace violence in the health sector: country case studies: Brazil, Bulgaria, Lebanon, Portugal, South Africa, Thailand, and an additional Australian study: synthesis report*. Geneva, 2002.
- International Labour Office, International Council of Nurses, World Health Organization, Public Services International. *Framework guidelines for addressing workplace violence in the health sector*. Geneva, 2002.
- Hinsenkamp M. Violence against healthcare workers. *Int Orthop* 2013;37:2321–2.
- Hinsenkamp M. SICOT Declaration of Hyderabad on violence against healthcare workers. *Int Orthop* 2014;38:685–7.
- Phillips JP. Workplace violence against health care workers in the United States. *N Engl J Med* 2016;374:1661–9.
- Behnam M, Tillotson RD, Davis SM, et al. Violence in the emergency department: a national survey of emergency medicine residents and attending physicians. *J Emerg Med* 2011;40:565–79.
- Kansagra SM, Rao SR, Sullivan AF, et al. A survey of workplace violence across 65 U.S. emergency departments. *Acad Emerg Med* 2008;15:1268–74.
- Frank E, Brogan D, Schiffman M. Prevalence and correlates of harassment among US women physicians. *Arch Intern Med* 1998;158:352–8.
- Miedema B, Hamilton R, Lambert-Lanning A, et al. Prevalence of abusive encounters in the workplace of family physicians: a minor, major, or severe problem? *Can Fam Physician* 2010;56:e101–8.
- Peng W, Ding G, Tang Q, et al. Continuing violence against medical personnel in China: a flagrant violation of Chinese law. *Biosci Trends* 2016;10:240–3.
- Saeki K, Okamoto N, Tomioka K, et al. Work-related aggression and violence committed by patients and its psychological influence on doctors. *J Occup Health* 2011;53:356–64.
- Forrest LE, Herath PM, McRae IS, et al. A national survey of general practitioners' experiences of patient-initiated aggression in Australia. *Med J Aust* 2011;194:605–8.
- van den Muijsenbergh METC, Lagro-Janssen ALM. [Sexual harassment of medical students during their period of work placement]. *Ned Tijdschr Geneesk* 2005;149:764–8.
- Pernot IC, Oudesluys-Murphy AM, Versluis-den Bieman HJM, et al. [Aggression towards paediatricians and trainee paediatricians in the Netherlands]. *Ned Tijdschr Geneesk* 2005;149:542–4.
- Vorderwülbecke F, Feistle M, Mehning M, et al. Aggression and violence against primary care physicians—a nationwide questionnaire survey. *Dtsch Arztebl Int* 2015;112:159–65.
- Gewalt in Praxen alltäglich, Aerztemonitor, 2018. Available: <https://www.kbv.de/html/aerztemonitor.php> [Accessed 29 Jul 2018].
- Ceulemans F. Exclusion intra Muros enquête. *Intra-Muros* 1998;2:4–6.
- Backx P, Ceulemans F, Roelandt P, et al. Arts en agressie. *Artsenkrant* 1999;20:24–21.
- Selleslagh P, Avonts D. Portrait de la violence. *Le Journal du Médecin* 1996;17:5:9–25.
- Nazionale E. 4 op 10 artsen slachtoffer van seksueel ongewenst gedrag [Internet], 2017. Available: <http://www.artsenkrant.com/actueel/4-op-10-artsen-slachtoffer-van-seksueel-ongewenst-gedrag/article-normal-26763.html> [Accessed 8 May 2017].
- Elston MA, Gabe J. Violence in general practice: a gendered risk? *Sociol Health Illn* 2016;38:426–41.
- Hobbs FD. Violence in general practice: a survey of general practitioners' views. *BMJ* 1991;302:329–32.
- Statbel, the Belgian statistical office. ICT usage in households. Available: <https://bestat.statbel.fgov.be/bestat/crosstable.xhtml>

- datasource=7a74849e-2186-4ee8-90f9-80521455fe12 [Accessed 29 Jul 2019].
- 26 Demeur V, Devos S, Jans E, *et al.* Aggression towards the GP: can we profile the GP-victim? A cross-section survey among GPs. *BJGP Open* 2018;2.
- 27 Shafran-Tikva S, Chinitz D, Stern Z, *et al.* Violence against physicians and nurses in a hospital: how does it happen? A mixed-methods study. *Isr J Health Policy Res* 2017;6:59.