JCN Journal of Clinical Nursing

Journal of Clinical Nursing

Perceived aggression towards nurses: study in two Italian health institutions

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Aims. The goal of the present study was to quantify the perceived aggression towards nurses working in two Italian health care institutions and to verify the hypothesis of an association between the characteristics of aggressors and the type of aggression.
Background. Violence and aggressiveness, particularly aimed at nurses, are a common, but inadequately investigated phenomenon in Italian health care institutions.
Design. A cross-sectional study.
Methods. The study was performed, studying a sample of 700 nurses (37% of the personnel in 94 units) in two health care institutions in northeast Italy using an anonymous multiple-choice questionnaire.
Results. Forty-nine percent of the nurses responded that they had experienced aggression in the previous year, 82% of that was only verbal. This happened more often to female nurses working in the emergency department and in geriatric and psychiatric units. A statistically significant association ($p < 0{\cdot}001$) was found between the perception of fatigue, stress and work dissatisfaction and the frequency of aggression. Aggressors were usually patients or their relatives (57%) and were mainly men (66%). Fifty-three percent of assaulted nurses did not ask for help after the event.
Conclusions. This study confirms the high incidence of perceived, mainly verbal aggression towards nurses.
Relevance to clinical practice. Action to prevent aggressive episodes may include concentrating on job motivation, encouraging participatory leadership and promoting the best possible working conditions. The absence of any systematic event reporting and documentation makes the assaulted workers feel defenceless.

Key words: aggression, community care, hospital, nurses, violence

Accepted for publication: 22 July 2009

Introduction

Situations where workers are assaulted, attacked, intimidated, frightened, or killed are defined as 'workplace violence' (Smith 2002), an increasing problem in health care institutions, particularly for nurses. The phenomenon is difficult to quantify because it is difficult to define, and more studies are needed to clarify which workers are most susceptible to workplace violence (Winstanley & Whittington 2004a). The epidemiology of the phenomenon varies between countries and clinical units. Among European countries, 52% of emergency department nurses in Ireland had experienced physical or verbal aggression by patients or their relatives in the previous 12 months (Rose 1997). In Sweden, 51% of nurses involved with geriatric and disabled patients had experienced threats and verbal or physical violence that came in 96% of cases from patients or care recipients (Menckel & Viitasara 2002). In England, 68%

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doi: 10.1111/j.1365-2702.2009.03118.x

reported verbal aggression and 27% reported physical aggression by patients and visitors in the previous 12 months (Winstanley & Whittington 2004a). In the state of Florida (United States), 88% of nurses experienced verbal aggression and 74% suffered physical violence by patients and family members or visitors in the course of a year (May & Grubbs 2002). In the state of Minnesota, 39% of nurses experienced verbal aggression from patients/clients, as well as doctors, patients' visitors, other employees and supervisors in the course of a year (and on more than one occasion in 36% of cases), while physical aggression perpetrated mainly by patients/clients was reported by 13% of respondents (Gerberich *et al.* 2004). In Canada, more than 60% of those interviewed reported an increase in violence and its magnitude and said they were afraid of patients (Fernandes *et al.* 1999). In Australia, 50% of geriatric nurses, 47% of public institution nurses and 29% of private institution nurses reported an increase in aggressiveness in the previous three months, mainly from patients and their visitors and relatives, but also from other nurses (Hegney *et al.* 2003). In Tasmania, 64% reported cases of recent verbal and/or physical aggression. Patients/clients or their visitors were identified as the main culprits, followed by medical and nursing colleagues (Farrell *et al.* 2006). In Kuwait, 48% of nurses suffered verbal aggression and 7% reported physical violence over a six-month period; mainly at the hands of their patients (51%) (Adib *et al.* 2002). In Turkey, 98% of nurses suffered verbal abuse and 20% reported clients having been physically violent (Senezun Ergün & Karadakovan 2005). As far as we are aware, no Italian research on these phenomena has been published in the international journals. In 2007, the Italian Ministry of Health (Ministero della Salute 2007) espoused the need to prevent violence and aggression in health care institutions.

The literature describes also the common manifestation of violence and aggression. Verbal aggression includes shouting, insults, telephone threats, strong criticism and reprimands; physical aggression may involve pushing, trapping, scratching, kicking, biting, slapping, exposure to blood or other body fluids (Yassi 1994, Menckel & Viitasara 2002, Crilly *et al.* 2004, Joubert *et al.* 2005) and even assault with sticks, blades, shoes, or other means (Adib *et al.* 2002). The severe consequences of physical aggression may include trauma, lacerations and fractures (Jenkins *et al.* 1998).

Another topic cited in the literature is the aggressor. Duncan *et al.* (2001) wrote that whatever the type of aggression, the aggressors are usually patients, but Rowe and Sherlock (2005) also included relatives, volunteers, housekeepers and in-house staff (nurses, medical doctors and other health care workers). Sofield and Salmond (2003) wrote instead that medical doctors were responsible for the highest percentage of verbal abuse, followed by patients and relatives. Derazon *et al.* (1999) found that, when the aggressors were patients, they were mainly middle-aged males, usually in places such as the emergency room. According to McKenna *et al.* (2003b), when the aggressors are nurses, they tend to be 30- to 49-year-old women with many years of work experience, and they can have very stressful effects on their victims. Whittington *et al.* (1996) wrote that postoperative confusion, the process of receiving treatment and delayed treatment were common precursors of aggression. Jenkins *et al.* (1998) analysed the factors that precipitated violence, which were mainly alcohol, waiting times and drugs. May and Grubbs (2002) also analysed the risk factors of violence, discovering that assaults were perpetrated mainly by patients with cognitive dysfunction, substance abuse and people who were angry because of the patient's condition; the most common causes of assault by family members and visitors was anger about the enforcement of hospital policies, the patient's condition/situation, long waiting times and the health care system in general. In the study published by Lynch *et al.* (2003), illness was the main perceived cause of offences by patients, whereas 'distress', alcohol and sociopathic behaviours were the main putative causes among relatives. Lin and Liu (2005) wrote that verbal expressions of violence were mainly because of misunderstanding and drunkenness on the part of patients and their families and personal problems in the nurses' relationships with doctors and co-workers. The cases of physical violence reported by the nurses were perpetrated by patients who were mentally unstable.

According to Whittington *et al.* (1996) and Wells and Bowers (2002), victims were mainly clinical nurses who worked in general hospitals, but Menckel and Viitasara (2002) wrote that nurses' assistants are often vulnerable too. In the study by Hegney *et al.* (2006), the risk was higher for older nurses, but some authors (Yassi 1994, Adib *et al.* 2002, Hegney *et al.* 2003, Gerberich *et al.* 2004, Privitera *et al.* 2005) found that violence and aggressiveness were focused more often on male nurses with less work experience. Tolhurst *et al.* (2003) found physical aggression more frequent in multi-specialty institutions and after hours. Kwok *et al.* (2006) maintained that risk factors for workplace violence included working in male wards and in certain specialties, such as in Accidents and Emergencies, the Community Nursing Service and the Orthopaedics and Traumatology Department. Ryan and Maguire (2006) confirmed that emergency departments are site at high risk of violence. Aggression was also frequently reported in medical and surgical wards (Winstanley & Whittington 2004a) and in psychiatric units (Farrell 1999), but also in intensive care and

nursing homes (Gerberich *et al.* 2004). Incidents occurred in patients' rooms (Adib *et al.* 2002), triage areas (Crilly *et al.* 2004), corridors, reception areas, waiting rooms, doctor's offices, rest rooms and elevators (Gerberich *et al.* 2004). Abuse was frequent during the daytime (Graydon *et al.* 1994, Ayranci 2005) but also occurred at night (Lin & Liu 2005). Some researchers reported that the frequency was higher in the afternoon (Adib *et al.* 2002, Crilly *et al.* 2004).

After episodes of violence respondents reported an impaired job performance for the rest of the shift or for the rest of the week, fear of patients, hiding their identity from patients, a decline in job satisfaction, absenteeism, transfers and resignation (Fernandes *et al.* 1999). O'Connell *et al.* (2000) also reported that nurses most frequently reported feeling angry or emotionally hurt after experiencing verbal or physical aggression. According to McKenna *et al.* (2003a), aggressive behavior on the part of patients caused moderate or severe distress in 55% of assaulted workers. McKenna *et al.* (2003b) found absenteeism increased among newly graduated nurses who experienced horizontal violence (a sabotage that is direct at co-workers who are at the same organisational level) across clinical settings and a large number of respondents considered abandoning of nursing. In the study performed by Uzun (2003), most nurses (92%) reported that verbal abuse negatively affected their morale. After episodes of violence at the hospital, nurses suffered from one or more after-effects: flashbacks, sleeplessness, fearfulness, depression or absenteeism (Atawneh *et al.* 2003). Finally, Needham *et al.* (2005) said that patients' aggressiveness generally had adverse consequences for carers and especially for nurses.

Nurses often confide to friends, relatives or colleagues, but many times they ignore the incident. In 63% of cases of verbal aggression and 21% of those of physical aggression (Rose 1997) or in 42% of cases overall (Kwok *et al.* 2006), the victims saw the aggression as part of the job (May & Grubbs 2002). The victims further mentioned a lack of confidence in their employers, the absence of a reporting system (Rippon 2000) or empathy for the patient (Farrell 1997). Their coping skills included speaking with the aggressor, writing a report, physical exercising and staying with friends and family (Fernandes *et al.* 1999). In Sweden, about half of the nurses reported having received support (Nolan *et al.* 1999), but nurses in the UK reported receiving little support (Nolan *et al.* 1999). Preventive procedures were scarce and tolerant towards violent patients (Rose 1997). Nurses also reported that safety measures were insufficient and that they felt vulnerable (Catlette 2005). For these reasons, the nurses requested more training (Badger & Mullan 2004) and legal action (Senezun Ergün & Karadakovan 2005). Training regarding preventive action has proved useful and can have lasting effects, even when it is provided for student nurses (Beech & Leather 2003).

The purpose of the present study was to quantify aggression towards nurses in two Italian health care institutions, describing the characteristics of aggressors and victims and associating these with the types of aggression. Our results may be useful in developing preventive strategies and managing this problem.

Methods

Sample

The study was performed at two health care institutions located in a city in northeast Italy, one a large university hospital and the other a general hospital providing community care. We studied 94 different clinical units: outpatient departments, home care services, day hospitals, A & E services inside and outside the hospital, general and specialised surgery departments, operating rooms, intensive care units, geriatrics departments, long-term care wards, general and specialised medicine departments, paediatrics and psychiatry departments. The opportunity sample comprised 37% of nurses from each unit, for a total of 700 nurses, including clinical nurses and head nurses who had been working for at least 12 months. The study was conducted from 24–28 July 2006. Questionnaires were distributed by the nurse manager of each department to nurses who worked the first two shifts for two consecutive days as of the date when the study began. Questionnaires were collected the next day.

Instrument

Data were collected using a newly constructed questionnaire with 35 multiple-choice questions. The instrument was developed in Italian, after a comprehensive review of the literature. We used others questionnaires, such as those proposed by Rose (1997), The Perception of Prevalence of Aggression Scale (POAS) developed by Jansen *et al.* (1997) and The Scale of Aggressive and Violent Experiences (SAVE) proposed by Ryan and Maguire (2006) to identify variables of interest in the Italian settings. The first draft was discussed with a team of nurses involved in management and training. Then the questionnaire was used in a pilot study on a sample of students on the Master course in Science of Nursing in the local university and further revised. The questionnaire included questions pertaining to workers' personal and professional details, work experience, place of

work, frequency and characteristics of aggression, characteristics of aggressors and effects of aggression.

Ethical considerations

The study was approved by the general and nursing hospital management in the two institutions. The head nurses were informed of the study by the nursing management and were asked to enrol the single nurses involved.

Data analysis

Data were analysed with SPSS v.15.0 software for Windows (SPSS Inc., Chicago, IL, USA). First, a preliminary descriptive variable analysis was performed, using absolute frequency distribution and percentage.

We verified the association between qualitative or categorical variables using the chi-square test. When the expected frequency was less than five, the association between qualitative or categorical variables was verified applying Fisher's exact test. In particular, the association was tested between the socio-demographic, occupational factors and aggression; between victim's socio-demographic, occupational factors and type of aggression; between aggressor's socio-demographic, occupational factors and kind of aggression and between victim's socio-demographic, occupational factors, kind of aggression and source of aggression.

The analysis of the data required multiple tests; therefore, we are more likely to reject the null hypothesis when it is true. To avoid inflation of the alpha level Bonferroni correction was applied to α 0·05 (number of tests = 50), and values of $p < 0{\cdot}001$ were considered statistically significant.

Results

We distributed 700 questionnaires and collected 595 (85%). The sample's data are summarised in Table 1. The respondents were mainly women (79%) between 31–40 years old (52%); most were Italian (99%). Nurses worked mainly as staff nurses (90%) and had a hospital-based nursing diploma (63%). Forty-seven percent had been working for more than 15 years.

Two hundred ninety-four nurses (49·4%) reported at least one episode of aggression in the previous year. Among the nurses who experienced violence, 40·5% reported only one episode of aggression in the course of the year, 30·9% reported two episodes and 28·6% reported three or more episodes. Two hundred and forty nurses reported episodes of verbal aggression (81·6%), 14 reported physical aggression (4·8%) and 40 reported both types of aggression (13·6%).

Table 1 Demographic and occupational characteristics of the participants at the study

Variable	Modality	*n*	%
Sex	Male	119	21
	Female	460	79
Age	21–30 years	94	16
	31–40 years	310	52
	41–50 years	148	25
	≥51 years	42	7
Nationality	Italian	582	99
	Foreign	8	1
Marital status	Married	322	55
	Unmarried	232	39
	Divorced	37	6
Role	Staff nurse	531	90
	Head nurse	61	10
Educational qualification	Diploma in nursing (hospital based)	373	63
	Diploma head nurse/obstetrics	34	6
	University diploma in nursing/BSc in nursing	163	27
	Diploma in nursing management and education	2	0
	Clinical masters degree/ specialisation	16	3
	MSc in nursing	4	1
Years of work	0–5	93	16
	6–10	99	17
	11–15	120	20
	>15	277	47
Years of work at the unit	1–5	243	41
	6–10	143	24
	11–15	64	11
	>15	140	24
Working hours	Day shift	303	51
	Day and night shifts	291	49
On call	Yes	181	31
	No	408	69
Place of work	Intensive care unit	101	19
	Medicine	80	15
	Surgery	79	15
	Operating room	74	14
	Paediatrics department	44	8
	Emergency room	38	7
	Home care	32	6
	Outpatient day hospital	31	6
	Psychiatry department	18	3
	Geriatrics department	17	3
	Obstetrics/gynaecology department	15	3
	Other	1	0
Do you often feel tired at work?	Yes	373	63
	No	220	37
Do you often feel stressed at work?	Yes	345	58
	No	247	42
Do you feel satisfied with your work?	Yes	427	73
	No	156	27

Physical aggression mainly involved kicks/punches (53%), slaps (13%), scratches (9%), throwing objects (6%) and various others (19%).

Aggressors were mainly patients and their relatives (57%), followed by nurses (21%), medical doctors (13%) and other health care workers (10%). Most were male (66%), Italian (88%) and < 50 years of age (59%). Where aggressors were patients, they frequently had a medical diagnosis of psychiatric (33%), neurological (11%), oncological (12%) or other types of disease (44%). Nurses responded that the possible causes of aggression from patients were dissatisfaction with the service, receiving bad news, or delays in care. Bad news, the death of a relative and long waiting times were reported by the nurses as the causative factors of aggression coming from patients' relatives. When the aggressor was another health care worker, the reported causes mainly concerned relational or managerial problems.

Environments where verbal aggression occurred most often included common spaces (31%), patients' rooms (27%), reception areas (14%) and nurses' stations (13%). Physical aggression occurred mainly in patients' rooms (57%), common areas (20%) and other environments (17%).

The aggressive event was reported by 52·6% of nurses, who reported in 45% of cases to the head nurse or the nursing department management; 46% complained to medical personnel (e.g., medical doctor in charge of the unit, the doctor on call, or the hospital's medical director); the remainder stated in the questionnaire that they had reported the episode to other people. Fifty-two percent of the nurses answered that they had not asked for help after the event; among those who had, 72% spoke to a colleague, 12% with a spouse, 9% with a friend and 6% with other people.

Table 2 shows the associations between personal details, working conditions and the nurses' feelings about their work with their likelihood of being victims of aggression. In particular, we found that women are more likely to be victims of aggression (52%) than men (42%), and this difference approached statistical significance. When we performed an analysis separately by ward, we discovered that female have a significantly higher probability of being victims of violence than males in surgery wards ($\chi^2_{(1df)} = 5{\cdot}01$ $p = 0{\cdot}025$). Age, level of formal education and professional role were unassociated with the risk of aggression. As for the units where they worked, the nurses most exposed to the risk of aggression worked in psychiatric, emergency and geriatric units. It is important to emphasise the association between job-related attributes (like stress, fatigue and satisfaction experienced with work) and the probability of being victims of aggression. In fact, episodes were more frequent among nurses who reported being tired ($p < 0{\cdot}001$) or stressed ($p < 0{\cdot}001$) and among those who said they were not satisfied with their job ($p < 0{\cdot}001$).

The characteristics of both victims and aggressors are summarised in Table 3, including personal and occupational details, perceptions about work, types of aggression and the associations between the aggressors' characteristics and the type of aggression (only verbal or physical). The probability of being a victim of physical aggression was higher among nurses who worked in shifts and mainly among staff in psychiatric units. We recorded no episodes of physical aggression towards nurses working in gynaecology wards. The nationality of the aggressor was not associated with the type of aggression; however, the older age groups displayed more frequent characteristics of physical aggression. No statistically significant association emerged between the type of aggression and the victims' job-related attributes.

Table 4 explores the association between the sources of aggression. This is grouped into external sources (patients and relatives) and internal sources (other staff), the characteristics of the victims and aggressors and the type of episode. The episodes of aggression were equally distributed between internal and external sources at the university hospital, whereas at the general hospital the aggressors were more frequently patients or their relatives. Some wards, e.g., geriatric, psychiatric or emergency rooms are at higher risk of having aggressive patients. The main source of physical aggression is from patients. Male patients more frequently displayed characteristics of aggression towards female staff. According to demographic characteristics, aggressors towards employed people are almost always older (more than 65 years old) patients.

Discussion

The present study had a high participation rate, i.e., 85% of the nurses selected, which was higher than in other, similar studies on this topic (25% Kwok *et al.* 2006, 33, % Winstanley & Whittington 2004a, 65% Fernandes *et al.* 1999). The high participation rate may be thanks to the cooperation of the nurse managers and to the importance attributed to this topic by nurses working at institutions where this problem had yet to be investigated.

Participants were mainly nurses with nursing diplomas awarded by hospital-based teaching institutions that provided no specific education on the prevention and management of aggressions and violence. However, this topic is still not discussed on the university Bachelor's course on the Science of Nursing (BSN).

Table 2 Demographic and occupational characteristics of the participants at the study, by aggression

Variable	Modality	No aggression 301 (50·6%)	Aggression 294 (49·4%)	df	χ^2-value	*p* (Fisher test)
Sex	Male	69 (58·0%)	50 (42·0%)	1	3·82	0·052
	Female	220 (47·9%)	239 (52·1%)			
Age	21–30 years	50 (53·2%)	44 (46·8%)	3	3·72	0·445
	31–40 years	147 (47·6%)	162 (52·4%)			
	41–50 years	77 (52·0%)	71 (48·0%)			
	≥51 years	25 (59·5%)	17 (40·5%)			
Nationality	Italian	293 (50·4%)	288 (49·6%)			0·880*
	Foreign	4 (50·0%)	4 (50·0%)			
Marital status	Married	169 (52·7%)	152 (47·4%)	2	1·67	0·434
	Unmarried	113 (48·7%)	119 (51·3%)			
	Divorced	16 (43·2%)	21 (56·8%)			
Role	Staff nurse	269 (47·5%)	261 (52·5%)	1	0·23	0·634
	Head nurse	29 (50·8%)	32 (49·3%)			
Educational qualification	Diploma in nursing (hospital based)	192 (51·5%)	181 (48·5%)			0·680*
	Diploma head nurse/obstetrics	17 (50·0%)	17 (50·0%)			
	University diploma in nursing/BSc in nursing	78 (48·2%)	84 (51·9%)			
	Diploma in nursing management and education	0 (0·0%)	2 (100·0%)			
	Clinical masters degree/specialisation	9 (56·3%)	7 (43·8%)			
	MSc in nursing	3 (75·0%)	1 (25·0%)			
Years of work	0–5	52 (55·9%)	41 (44·1%)	3	5·69	0·157
	6–10	43 (43·4%)	56 (56·6%)			
	11–15	55 (45·8%)	65 (54·2%)			
	>15	149 (53·8%)	128 (46·2%)			
Years of work at the unit	1–5	119 (49·0%)	124 (51·0%)	2	3·86	0·283
	6–10	66 (46·2%)	77 (53·9%)			
	11–15	31 (48·4%)	33 (51·6%)			
	>15	80 (57·1%)	60 (42·9%)			
Working hours	Day shift	161 (53·1%)	142 (46·9%)	1	1·83	0·177
	Day and night shifts	138 (47·6%)	152 (52·4%)			
On call	Yes	94 (51·9%)	87 (48·1%)	1	0·16	0·685
	No	204 (50·1%)	203 (49·9%)			
Place of work	Intensive care unit	58 (57·4%)	43 (42·6%)	10	37·44	<0·001
	Medicine	43 (53·8%)	37 (46·3%)			
	Surgery	37 (46·8%)	42 (53·2%)			
	Operating room	50 (67·6%)	24 (32·43%)			
	Paediatrics department	30 (68·2%)	14 (31·8%)			
	Emergency room	11 (29·0%)	27 (71·1%)			
	Home care	14 (43·8%)	18 (56·3%)			
	Outpatient day hospital	10 (32·3%)	21 (67·7%)			
	Psychiatry department	4 (22·2%)	14 (77·8%)			
	Geriatrics department	5 (29·4%)	12 (70·6%)			
	Obstetrics/gynaecology department	7 (46·7%)	8 (53·3%)			
Do you often feel tired at work?	Yes	160 (42·9%)	213 (57·1%)	1	23·8	<0·001
	No	140 (63·6%)	80 (36·4%)			
Do you often feel stressed at work?	Yes	141 (40·9%)	204 (59·1%)	1	30·7	<0·001
	No	158 (64·0%)	89 (36·0%)			
Do you feel satisfied with your work?	Yes	243 (56·9%)	184 (43·1%)	1	21·4	<0·001
	No	55 (35·3%)	101 (64·7%)			

Table 3 Demographic and occupational characteristics of the victims of violence and the characteristics of aggressor, by kind of aggression

Variable	Modality	Physical or physical and verbal 54 (18·4%)	Verbal only 240 (81·6%)	df	χ^2-value	*p* (Fisher test)
Victim's characteristics						
Demographic						
Sex	Male	11 (22·00%)	39 (78·00%)	1	0·66	0·417
	Female	41 (17·15%)	198 (82·85%)			
Age	21–30 years	9 (20·45%)	35 (79·55%)	3	1·68	0·794
	31–40 years	32 (19·75%)	130 (80·25%)			
	41–50 years	10 (14·08%)	61 (85·92%)			
	≥51 years	3 (17·6%)	14 (82·4%)			
Marital status	Married	22 (14·47%)	130 (85·53%)	2	3·91	0·141
	Unmarried	28 (23·53%)	91 (76·47%)			
	Divorced	3 (14·29%)	18 (85·71%)			
Occupational						
Role	Staff nurse	51 (19·54%)	210 (80·46%)	1	1·96	0·162
	Head nurse	3 (9·38%)	29 (90·63%)			
Working hours	Day shift	17 (11·97%)	125 (88·03%)	1	7·49	0·006
	Day and night shifts	37 (24·34%)	115 (75·66%)			
Place of work	Intensive care unit	10 (23·26%)	33 (76·74%)			0·001*
	Medicine	5 (13·51%)	32 (86·49%)			
	Surgery	5 (11·90%)	37 (88·10%)			
	Operating room	2 (8·33%)	22 (91·67%)			
	Paediatrics department	3 (21·43%)	11 (78·57%)			
	Emergency room	5 (18·52%)	22 (81·48%)			
	Home care	4 (22·22%)	14 (77·78%)			
	Outpatient day hospital	1 (4·76%)	20 (95·24%)			
	Psychiatry department	9 (64·29%)	5 (35·71%)			
	Geriatrics department	4 (33·33%)	8 (66·67%)			
	Obstetrics/gynaecology department	0 (0·00%)	8 (100·00%)			
Do you often feel tired at work?	Yes	36 (16·90%)	177 (83·10%)	1	0·74	0·389
	No	17 (21·25%)	63 (78·75%)			
Do you often feel stressed at work?	Yes	36 (17·65%)	168 (82·35%)	1	0·09	0·766
	No	17 (19·10%)	72 (80·90%)			
Do you feel satisfied with your work?	Yes	36 (19·57%)	148 (80·43%)	1	0·99	0·321
	No	15 (14·85%)	86 (85·15%)			
Aggressor's characteristics						
Aggressor's role	Colleague	6 (9·68%)	56 (90·32%)			< 0·001*
	Head nurse	1 (5·88%)	16 (94·12%)			
	Medical doctor	1 (2·70%)	36 (97·30%)			
	Patient's relative	1 (2·00%)	49 (98·00%)			
	Patient	44 (38·26%)	71 (61·74%)			
Sex	Male	43 (22·51%)	148 (77·49%)	1	5·76	0·016
	Female	11 (11·00%)	89 (89·00%)			
Age	20–35 years	11 (23·91%)	35 (76·09%)	4	34·44	< 0·001
	36–50 years	13 (10·48%)	111 (89·52%)			
	51–65 years	8 (10·67%)	67 (89·33%)			
	66–80 years	16 (48·48%)	17 (51·52%)			
	> 80 years	5 (45·45%)	6 (54·55%)			
Nationality	Italian	45 (17·65%)	210 (82·35%)	1	2·00	0·367
	Foreign	9 (25·0%)	27 (75·0%)			

The frequency of aggressive episodes was similar to the figure reported in other European countries. The study published by Rose (1997) was related only to an emergency department, however, while a broader-based study by Menckel and Viitasara (2002) reported only 5% of aggressions from other personnel, as opposed to the 41·7%

Table 4 Characteristics of the victims of violence and kind of aggression, by source of aggression

Variable	Modality	Internal sources (other staff) 120 (41·7%)	External sources (patients and relatives) 168 (58·3%)	df	χ^2-value	*p* (Fisher test)
Victim's characteristics						
Demographic						
Sex	Male	18 (37·5%)	30 (62·5%)	1	0·42	0·518
	Female	100 (42·6%)	135 (57·4%)			
Age	21–30 years	18 (41·9%)	25 (58·1%)	3	0·32	0·956
	31–40 years	67 (42·4%)	91 (57·6%)			
	41–50 years	29 (41·4%)	41 (58·6%)			
	≥51 years	6 (35·3%)	11 (64·7%)			
Nationality	Italian	117 (41·5%)	165 (58·5%)	1	0·12	0·732
	Foreign	2 (50·0%)	2 (50·0%)			
Marital status	Married	57 (38·0%)	93 (62·0%)	2	5·32	0·070
	Unmarried	49 (42·2%)	67 (57·8%)			
	Divorced	13 (65·0%)	7 (35·0%)			
Occupational						
Role	Staff nurse	104 (51·6%)	152 (48·4%)	1	1·37	0·241
	Head nurse	16 (40·6%)	15 (59·4%)			
Hospital	University	94 (49·5%)	96 (50·5%)	1	9·85	0·002
	Not university	23 (28·8%)	57 (71·3%)			
Years of work	0–5	16 (40·0%)	24 (60·0%)	3	1·56	0·667
	6–10	20 (35·7%)	35 (64·3%)			
	11–15	27 (43·6 %)	36 (56·4%)			
	>15	57 (45·2%)	69 (54·8%)			
Working hours	Day shift	161 (53·1%)	142 (46·9%)	1	1·83	0·018
	Day and night shifts	138 (47·6%)	152 (52·4%)			
On call	Yes	42 (51·2%)	40 (48·8%)	1	4·11	0·043
	No	77 (38·1%)	125 (61·9%)			
Place of work	Intensive care unit	30 (69·8%)	13 (30·2%)			<0·001*
	Medicine	13 (35·1%)	24 (64·86%)			
	Surgery	19 (45·2%)	23 (54·8%)			
	Operating room	18 (85·7%)	3 (14·3%)			
	Paediatrics department	4 (30·8%)	9 (69·2%)			
	Emergency room	3 (11·1%)	24 (88·9%)			
	Home care	4 (25·0%)	12 (75·0%)			
	Outpatient day hospital	7 (33·3%)	14 (67·7%)			
	Psychiatry department	1 (7·1%)	13 (92·9%)			
	Geriatrics department	0 (0%)	12 (100%)			
	Obstetrics/gynaecology department	5 (62·5%)	3 (37·5%)			
Do you often feel tired at work?	Yes	87 (41·6%)	122 (58·4%)	1	0·01	0·917
	No	33 (42·3%)	45 (57·7%)			
Do you often feel stressed at work?	Yes	90 (44·3%)	133 (55·7%)	1	1·81	0·178
	No	30 (35·7%)	54 (64·3%)			
Do you feel satisfied with your work?	Yes	70 (39·3%)	108 (60·7%)	1	1·38	0·241
	No	47 (46·5%)	54 (53·5%)			
Kind of aggression						
Frequency	1	25 (29·1%)	61 (70·9%)	3	9·18	0·027
	2	30 (44·8%)	37 (55·2%)			
	3	31 (49·2%)	32 (50·8%)			
	>3	33 (50%)	33 (50%)			
Kind of aggression	Physical	1 (7·1%)	13 (92·8%)	1	8·83	0·003
	Verbal	112 (47·9%)	122 (52·1%)			
Reported	Yes	49 (33·3%)	98 (66·7%)	1	8·80	0·003
	No	69 (50·7%)	67 (49·3%)			

Table 4 (Continued)

Variable	Modality	Internal sources (other staff) 120 (41·7%)	External sources (patients and relatives) 168 (58·3%)	df	χ^2-value	*p* (Fisher test)
Aggressor's characteristics						
Sex	Male	64 (33·9%)	125 (66·1%)	1	14·4	< 0·001
	Female	56 (57·1%)	42 (42·9%)			
Age	20–35 years	20 (44·4%)	25 (55·6%)	4	34·44	< 0·001
	36–50 years	69 (56·6%)	53 (43·4%)			
	51–65 years	29 (38·7%)	46 (61·3%)			
	66–80 years	0 (0%)	32 (100%)			
	> 80 years	0 (0%)	11 (100%)			
Nationality	Italian	119 (47·4%)	132 (52·6%)	1	25·78	< 0·001
	Foreign	1 (2·8%)	35 (97·2%)			

identified in our research. The frequency of aggression that we recorded was lower than in a North American study investigating aggression perpetrated by patients, visitors and personnel (May & Grubbs 2002). Unfortunately, our data are not comparable with the results of studies that used different time intervals. Some studies asked nurses to report only on violence experienced during the previous six months (Adib *et al.* 2002), five months (Crilly *et al.* 2004), or three months (Hegney *et al.* 2006). Verbal aggression was more common in our study (81·6%), as in the study of Senezun Ergün and Karadakovan (2005), although it related only to aggression from external sources, while we must emphasise that 18·4% of nurses reported suffering physical violence.

In short, our results demonstrate that violence and aggression towards nurses are widespread in Italy and often disregarded. It is important to emphasise, that although the retrospective investigation could not introduce errors in the victims' characteristics reported and could introduce only random rather than systematic noise in the study of the aggressors' characteristics and it might have negative fallout on the recall of the frequencies of episodes and on the measurement of their prevalence. The aim of the present study was not to exactly evaluate the prevalence of violence, however, but to establish the association between episodes of violence and other issues.

Some researchers (e.g., Hegney *et al.* 2006) recognised that nurses are victims of increasing workplace violence, which may be associated with the shortage of nurses, a situation that increases work stress and might also be significant in Italian health care institutions. This state of stress in the health care workers may be perceived by patients and may sometimes make the latter more aggressive. In fact, a significant result emerging from our study is that nurses with negative feelings about their work, dissatisfaction, stress and fatigue mention having been victims of violence and aggression more frequently. That is why it may be useful to improve the atmosphere in the workplace and contain the use of overtime, which can be very stressful for nurses. Worker stress may trigger aggressive behavior in response to workers adopting a defensive behavior towards their clients (Needham *et al.* 2005) or isolating themselves or adopting other negative attitudes (Almost 2006). Winstanley and Whittington (2002) suggested that these responses could reflect burnout syndrome, which has been linked with aggression at work. Emotional exhaustion and depersonalisation were significantly higher in those staff more frequently victimised suggesting that aggressive encounters might lead to an increase in burnout. Equally, the converse might be true and a cyclical model is put forward. It would be interesting to explore whether nurses who experience these feelings are also more inclined to interpret their clients' and colleagues' behavior as aggressive. On the other hand, a state of fatigue or stress may elicit an aggressive behavior in nurses. These hypotheses warrant further study using validated, non-retrospective tools to associate nurse's feelings towards their work environment with the frequency of episodes of aggression.

In our sample, females experienced more episodes of aggression. Other factors, such as demographics (age, nationality and marital status) and professional conditions (e.g., role, qualifications, years of work experience, years of experience in a unit, working hours) revealed no association with the risk of aggression – a finding not entirely consistent with the literature. In fact, Gerberich *et al.* (2004) reported in a similar study on 6300 nurses that aggression was more frequent in males, but this difference may have to do with their greater exposure to potentially harmful situations. Anderson and Parish (2003) studied Hispanic nurses working

in Texas and found that males were more at risk for physical and verbal abuse, but this was a pilot study focusing only on a specific ethnic group. In the present study, we found that age was generally not a risk factor for aggression, whereas, Senezun Ergün and Karadakovan (2005) noted that older nurses experienced more episodes of verbal aggression, but their study focused only on emergency department nurses.

Working hours and emergency room on call status were generally not risk factors for aggression in our sample, although shift workers were more exposed to physical aggression, which is consistent with Crilly *et al.* (2004), who studied emergency department violence. Aggression in the emergency department occurred mainly during the night shift.

A patient's room was a frequent location for episodes of aggression, but Adib *et al.* (2002) and Gerberich *et al.* (2004) found occurrences in other places too, such as corridors, public area, nurses' stations and reception areas, in all kinds of health care facilities, as also emerged from our research.

Aggressors were mainly patients, followed by relatives, nurses and doctors, which is consistent with the literature. The aggressors were predominately men and physical aggression was exhibited mainly by patients. Gerberich *et al.* (2004) found that patients and geriatric patients, in particular, were the main culprits in case of physical violence. The places with the highest incidence of aggression were psychiatric, geriatric and emergency units (Farrell 1999). Geriatric units, in particular, followed by intensive care units and home care services, are the environments at the highest risk of physical violence. As Gerberich *et al.* (2004) said, working with the older people has a higher probability of physical aggression. Patients are frequently admitted to the geriatric ward with acute or chronic cognitive impairment that may be responsible for their loss of self-control. But literature shows that aggressors often have impaired cognitive processing but they are not necessarily older. Winstanley and Whittington (2004b), in their study, reported that in 64% of cases, aggressors were actually displaying some impairment in cognitive processing at the time of the incident. Data suggested that many patients may not have been fully aware of their situation and might have experienced some difficulty in comprehending the staff member's actions, which triggered the episode of violence.

Aggression by patients tended to be caused by dissatisfaction with the service; while nurses hypothesised that horizontal (staff-to-staff) violence was caused by relational problems, as in the study on a university hospital in Hong Kong, published by Lin and Liu (2005). The others causes of horizontal violence were managerial issues. It is important to bear in mind that many of the nurses in our sample worked in a large, complex university hospital, where problems can relate to organisational issues, shift management and the cohabitation of many teams at the same unit. Managerial problems were also recognised by Almost (2006) as likely causes of conflict in his concept analysis on conflicts among health care workers.

The present study only superficially explored the coping strategies used by victims, a topic that has been studied more extensively by others (e.g., Rowe & Sherlock 2005). Only half of the nurses reported the episode of violence and only one in two asked for help after the event, turning mainly to colleagues. These results are consistent with other studies. In a Turkish study, 83·5% of the episodes of aggression were not documented, but it is probably easier to report violence in a specific setting, such as emergency department (Senezun Ergün & Karadakovan 2005). In a study by Nolan *et al.* (1999), approximately half of the nurses received support, which is a quite frequent situation in psychiatric settings; the figure reported by O'Connell *et al.* (2000) was 65%, but this study only concerned general wards and high dependency areas.

The main limitations of the present study lie in that the respondents reported retrospectively on their experience of violence at work. Cross-sectionals surveys are less valid than cohort studies because the former do not allow for longitudinal observation, limiting the opportunity to analyse causal relationships because it is difficult to determine whether the risk factor preceded the outcome in time. Additionally, the study only measured nurses' perceptions of aggression, which may not necessarily have coincided with actual episodes of aggression, particularly in cases of perceived verbal aggression.

Another limitation is correlated within our sample. The sample included 595 nurses. One goal of the proposed study is to test the null hypothesis that the proportion positive is identical in the two populations. The criterion for significance (alpha) has been set at 0·05. The test is two-tailed, which means that an effect in either direction will be interpreted. For example, taking into consideration the missing data, the sample size could include 350 and 200 for the two groups respectively; hence, the study will have a power calculation of 83·9% to yield a statistically significant result, when computation assumes that the difference in proportions is 0·13. Instead, the number of nurses who experienced violence was 298. In this case, an exemplificative sample size was set up with 140 and 140 for the two groups, consequently giving the study a power calculation of 81·6% to yield a statistically significant result, when this computation assumes that the difference in proportions is 0·17.

Future studies could be performed in other health care units and with other health care workers, particularly

medical doctors, who are often victims of aggression too. In particular, future studies could explore other health care professionals, such as psychiatrists (Nolan 1999), social workers, dieticians and physiotherapists (Yassi 1994) and include the causes that prompted the episode of aggression, the attitudes of nurses who unleash aggressive reactions, the outcomes of aggressive episodes and coping strategies. It would also be useful to assess the presence of managerial and preventive strategies, evaluating their efficacy and determining the preferences of personnel on the matter.

Conclusions and relevance for clinical practice

The present study confirmed that aggression towards nurses exists. The aggression mainly originates from patients who are dissatisfied with service, as reported in the international literature, suggesting the need to assess patient satisfaction with a view to improving care. Considering that the higher risk areas include geriatric, psychiatric and emergency units, the first preventive and managerial measures should be implemented in these settings.

Aggression from patients' relatives stemmed from their receiving bad news or long waiting times, therefore it is important to improve communication methods and establish supportive relationship, create a dedicated space for informing relatives, improve service delivery methods and reduce waiting times. Some episodes of aggression from other health care workers, mainly attributable to relational problems, may be overcome by managerial action to deal with conflicts: in nursing, this primarily means implementing prevention and accommodation measures and facilitating cooperation (Valentine 2001).

Nurses are at the highest risk of aggression when more tired, stressed and dissatisfied with their work. Preventing aggressive episodes may include concentrating on job motivation, encouraging participatory leadership and promoting the best working conditions, accurately estimating the nurses' real workload and the amount of staff required. For frequent managerial problems, possibly because of the complexity of the health care environment, it is a good idea to help workers voice the problems they face in the running of their units, but also to review how personnel are assigned to specific units.

Preventive strategies can definitely be implemented, including providing security at strategic locations in health care institutions, documenting patients prone to be aggressive and using alarm systems. Training can also improve workers' reactions to aggressive episodes and may cover prediction and prevention techniques, self-defence and ways to avoid provoking patients. Because a system for documenting these events is currently not available, systematic reporting methods (in particular, to guarantee that workers will be heard), documenting episodes of aggression and monitoring the outcomes on individual workers would be helpful. Such a system would prevent nurses who are the target of violence from feeling alone and without a support network.

Additionally, nurses and institutions should reduce their tendency to justify violent behaviour on the part of their patients. Aggressive behaviour should neither be considered a normal reaction in the health care system, nor as an accepted part of being ill. Bullying behaviour towards other nurses and younger nurses in particular, should also be prevented. These favourable results can only be achieved by training nurses adequately, a task that is primarily up to the academic institutions.

Contributions

Study design: AZ, MG, ST, AB; data collection and analysis: AZ, MG, ST, AB and manuscript preparation: AZ, AB.

Conflicts of interest

The authors declare that they have no conflict of interests.

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