Unlock the doors

Aggressive behaviour and seclusion on closed psychiatric wards

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CHAPTER 9

General discussion

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Many patients and staff members associate the seclusion room on psychiatric wards with loneliness, anxiety, anger and other negative emotions. The general aim of this thesis was to add knowledge on seclusion and aggressive behaviour, ultimately in order to use this knowledge in prevention strategies that improve patient care in mental health services.

Main findings

The first part of this thesis assesses the risk of aggression and adverse events on acute psychiatric wards (**part I**). We performed a grounded theory study to assess the perspectives of patients and nurses on the cause of aggressive incidents and their suggestions towards prevention of aggressive behaviour (**chapter 2**). Firstly, we analysed the underlying theory of different perspectives of patients and nurses towards aggressive behaviour. Secondly, we asked patients and nurses for recommendations to prevent aggression in the future. We found that with the majority of incidents, patients and nurses described similar facts of the aggressive events. However, the interpretation of the severity of the aggressive behaviour showed differences. Because severity of aggressive behaviour is no objective construct, we introduced the concept *perceived severity*. Perceived severity is the subjective severity of aggressive behaviour perceived by the aggressor, victim or witness. Regarding the recommendations of patients and nurses for prevention, we found that patients generally give recommendations for their own case, a concept that we named personalised de-escalation techniques. Nurses mentioned recommendations on more general level, such as earlier admission of less restrictive interventions or changes in the treatment facilities of the ward. Most patients were, despite of their psychiatric condition, already soon after the incident, capable to give valuable information to prevent aggressive behaviour of themselves in the future.

In **chapter 3**, we report the results of a multivariable analysis of a database of adverse events and medical errors of the Pennsylvania Health Care Cost Containment Council. We analysed the database for associations between patient characteristics and the incidence of adverse events (model 1) and medical errors (model 2). One of the adverse events analysed was aggressive behaviour of patients. We found that longer length of stay, older patients' age, admission during weekends and Medicare/Medicaid health insurance (compared to

commercial insurance) were associated with higher risk of adverse events and medical errors.

In **chapter 4**, we investigated the influence of patient, nursing team and shift characteristics concerning the incidence of aggressive behaviour. Nursing team characteristics consisted of demographic, professional and psychological characteristics (personality trait measured by the Five-Factor Model [1] and feeling of safety). Subsequently, we analysed the difference between verbal and physical aggressive behaviour in relation to patient, nursing team and shift characteristics. We found associations between less aggressive behaviour and nursing shift team with more male nurses, OR (95% CrI) = .56 (.34 − .82), and lower scores on extraversion, OR (95% CrI) = 1.67 (1.21 − 2.27). We also found an indication that high scores nurses' team level of neuroticism were associated with more aggressive behaviour, OR (95% CrI) = 1.23 (.99 − 1.53). Aggressive behaviour was less prevalent in the night shift. Several patients characteristics were associated with more aggressive behaviour, namely young age, bipolar disorder, comorbid personality disorder and comorbid intellectual impairment. Comorbid substance abuse seemed associated with less aggressive behaviour in our sample. The statistical models of verbal and physical aggression were generally comparable. The finding that nurses' team level of extraversion was associated with aggressive behaviour seemed mostly due to verbal aggressive incidents. The finding that nurses' team level of neuroticism was associated with aggressive behaviour predominately existed for physical aggression.

The second part of this thesis assessed the risk of seclusion on acute psychiatric wards (**part II**). We started with giving an overview of the existing knowledge on the influence of nurses on the use of coercive measures (**chapter 5**). In this systematic review, we investigated the quality and results of the current body of evidence on the attitude of nurses towards coercive measures and the influence of nursing staff characteristics on the use of coercive measures. In scientific literature, two major themes characterise the attitude of nurses towards coercive measures. The first theme is that the attitude of nurses shifted from a therapeutic paradigm (i.e. coercive measures have mainly therapeutic properties) to a safety paradigm (i.e. coercive measures have mainly security properties). Currently, nurses consider coercive measures as undesirable, but necessary as last resort to protect patients, staff members and visitors from dangerous behaviour of patients. Nurses expressed a

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preference to the least intrusive intervention. The latter observation leads to the second major theme, the perceived necessity of less intrusive alternative interventions, especially to prevent the use of seclusion and restraint. However, there is no consensus in literature and practice on the intrusiveness of the different coercive measures. The assessment of intrusiveness seems dependent to usual practice of institutions, regions and countries. Nurses that use seclusion as measurement of last resort tend to view seclusion as less intrusive than mechanical restraint and vice versa. This illustrates that a more objective measure of the intrusiveness of coercive measures is currently impossible. In this review, we also assessed the literature on nursing staff characteristics associated with coercive measures. The literature on this matter is inconclusive and the quality of the investigated studies varied extensively. Based on the existing literature, we could not draw any firm conclusions on this topic.

In the second part of our research on seclusion, we investigated the influence of nursing staff on the use of seclusion on an acute psychiatric ward, using a prospective observational design. In **chapter 6**, we describe the results of five months of data collection on specifically demographic, professional and shift characteristics of the nursing team. After multivariable regression analyses, we found a (trend level) association between female gender and more seclusion, OR (95% CI) = 2.71 (.44 - 16.71). We also found a (trend level) association between large physical stature and less seclusion, OR (95% CI) = .27 (.07 – 1.04). The latter seemed to be most robust after correcting for confounding. After the full two-year data collection period, we analysed the influence of the nursing team with a cross-classified multilevel model. In **chapter 7**, we describe associations of nursing team demographic, professional and psychological characteristics and shift characteristics with the incidence of seclusion, which we analysed with the logistic cross-classified multilevel model. We found an association between teams with only male nurses and less seclusion, OR (95% CrI) = .28 (.05 – .81). We also saw a potential association between higher team scores on personality trait openness and less seclusion, OR (95% CrI) = .70 (.40 – 1.11), although not statistically significant at $p < 0.05$ level. Nurses used less seclusion during night shifts, OR (95% CrI) = .41 (.18 – .84). Patients' young age, bipolar disorder, other diagnosis than bipolar or psychotic disorder, involuntary admission and psychiatric comorbidity (e.g. personality disorder) were associated with more seclusion.

The third part of this thesis is on advanced methodology in aggression research (**part III**). We performed a simulation study in which we tested the cross-classified multilevel model (CCMM) (**chapter 8**). We simulated several scenario's, varying in sample size, standard error and number of clusters to assess in which scenario CCMM is preferable to general multilevel analysis in clinical research. We defined cross-classification due to non-hierarchical relation between patients and staff teams as "patient and shift effects". We found that patient and shifts effect caused little bias in the effect sizes of the covariates in the simulated statistical models. However, we found that when ignoring the cross-classified structure, the standard error of the (fixed) covariates is underestimated. Consequently, this might lead to biased inference about statistical significance (i.e. Type I error).

Methodological considerations

In this thesis, we investigated the influence of factors on the incidence of aggression and seclusion. I will discuss methodological considerations on the studies we performed on the psychiatric closed admission ward of the Academic Medical Center, nowadays part of Amsterdam University Medical Centers (**chapters 2, 4, 6 and 7**). Incidence of aggression and seclusion are highly complex phenomena, of which no isolated cause can be determined. To deal with this complexity, we combined literature research with quantitative and qualitative research methods. We performed quantitative research methods with highly advanced statistical methods, to minimise the risk of bias due to complex data structures.

However, the interpretation of the findings presented in this thesis must take into account the following limitations. We used a cohort study with a two-year study period to investigate the influence of nursing staff characteristics on seclusion and aggressive behaviour. Because of the observational and naturalistic nature of the study, we cannot draw firm conclusions on causal inferences of our findings. We corrected for a large number covariates in the statistical model to increase the validity of our findings. However, we cannot rule out the existence of residual confounding by unmeasured covariates. The structure of the data is complex and so is the appropriate analysis of the data. Logistic regression analysis assume that all observations are independent (2). In case of clustered (i.e. dependent) data, the variance of the model is overestimated which could result in a Type I error (assumption of a significant difference due to underestimated standard errors) (3). By using the cross-

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classified multilevel model in **chapters 4 and 7**, we aimed to prevent Type I errors in this thesis. However, the mathematical complexity of this model in combination with limited sample sizes makes it necessary to be cautious in interpreting the results.

As mentioned earlier, the incidence of aggressive behaviour and seclusion are complex phenomena and thereby, complex to investigate. We performed quantitative and qualitative research on our closed admission ward to assess this subject from different perspectives. We acknowledge that several factors could be of major influence on aggressive behaviour and seclusion, but were not part of our data collection. The first is the current psychiatric state of the patient. We aimed to measure the state of the patient at admission with the Global Assessment of Functioning (GAF) (4) and the Health of Nation Outcome Scale (HoNOS) (5). Unfortunately, due to poor quality of the data, we had to exclude these variables from the final analysis. Moreover, the psychiatric state patient on acute psychiatric wards can change rapidly, so admission status might not have been valid enough to give insight on this matter. We assume that the current state of patients can have influence on the risk of aggression and seclusion, as previous research suggested that patient that show more severe psychiatric symptoms are more at risk for aggressive behaviour and seclusion (6, 7). Secondly, we assume that interaction between staff members and between staff and patients can have major influence on our outcomes. Aggressive behaviour mostly occurs in patient-staff interaction (8, 9). With accurate and valid information concerning these interactions, we would have been able to account for this important factor. However, to the best our knowledge, there are no reliable instruments to measure patient-staff interaction on closed psychiatric admission wards. Thirdly, we analysed nursing staff characteristics on team level. As a result, we cannot draw any conclusions on the influence of individual characteristics of the nurse. However, seclusion are generally decisions of the nursing shift team and not of an individual nurse (10). A more important limitation is that we were not able to measure the interaction between nurses in the shift team, which might affect the use of seclusion and other coercive measures. Although some instruments exist to measure staff interaction (11), these instruments measure interaction on a general level instead of measuring the interaction during a nursing shift.

We performed our qualitative and quantitative studies on a single research ward. The patient and staff population of this ward is roughly comparable to other acute admission

wards in the Netherlands, despite of the situation in a university hospital. However, we know from literature that the influence of patients and nurses on the use of seclusion and the incidence of aggressive behaviour varies between wards. Some of our findings might be specific to this ward and not necessarily for acute admission wards in general. Therefore, due to the single research ward, generalisability of our findings might be limited.

The final limitation is the potential influence of quality improvement projects on the incidence of aggressive behaviour and the use of seclusion. Prevention of aggression and seclusion is a "hot topic" in international mental health care (12). The closed admission ward of our interest conducted several quality improvement projects before and during the data collection period, such as the implementation of *High Intensive Care* (13) and the implementation of the *First Five Minutes* training (14). Because of these projects, the risk of aggression and seclusion changed during the study period. Because of the constant quality improvement of hospitals, this is inevitable. Unfortunately, we have no data on the magnitude of this effect, which makes it a potential source of information bias.

Interpretation

In scientific literature, we found that nurses consider seclusion (or restraint, depending on the country) as a necessary intervention to respond to dangerous patient behaviour, which is mostly aggressive behaviour. In our cohort study, we found that shift teams with predominantly female nurses are more likely to use seclusion. Based on our systematic review, we conclude that the effect of nurses' gender is ambiguous. Some studies support our findings (15, 16); others find contrary effects or no difference between male and female nurses (17-22). Most of these studies had relatively small sample sizes, short data collection periods and/or a single ward for data collection. A possible explanation is that the effect of gender on seclusion is highly specific for a wards' team, which makes it informative for a specific nursing team, but hardly generalisable to other wards. Another explanation for these differences could be that our findings are more robust since they originate from a prospective study with a relatively large sample size. A second finding, although not significant on a $P < .05$ level, in our cohort study was an association between high mean scores of nursing shift teams on the openness personality trait and lower odds of seclusion. Openness (or openness to experience) is a personality traits that is characterised by

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curiosity, creativity, sensitive to emotions of others, risk-taking and willingness for new experiences (23). It could be that teams with high mean score on openness would be willing to avoid seclusion because of the motivation to try to avoid seclusion and perhaps the sensitivity to negative emotions of the patients regarding seclusion. Pawlowski and Baranowski (24) used a different personality test - Gough's Adjective Check List (25) - in their study of the association of nurses' personality and initiation of coercive measures. They found that a low score on the creativity subscale was a strong predictor for initiation of coercive measures (24). Although comparison of different personality models is difficult, our findings are potentially in line with this previous finding.

In our qualitative study, we found that patients and nurses share some views on the predecessors of aggressive incidents, but differ on the *perceived severity* of the incident. Patient tend to consider aggressive incidents less severe than nurses do. Other studies that compared the view of patients and nurses on the cause of the same aggressive incident also found differences, but did not conduct further analyses of the nature of these differences (9, 26). In our cohort study, we found that teams with predominantly male nurses encounter less patient aggression compared to teams with predominantly female nurses. Since aggressive behaviour is the main cause for the use of seclusion, it makes sense that teams with predominantly female nurses are associated with both seclusion and aggressive behaviour. Previous research also describes the association between female nurses and aggression, although it is limited in number of publications (6). Besides nurses' gender, we found that nursing teams with higher mean scores on personality traits extraversion or neuroticism seem associated with more aggressive incidents. Extraversion is a personality trait that is characterised by social and dominant individuals, who are full of energy and enjoy interaction with other people (23). Neuroticism is a personality trait that is characterised by the disposition for negative thoughts and anxiety; neurotic individuals tend to be emotionally instable and sensitive for stress (23). After analysis of verbal and physical aggression separately, we found that extraversion was primarily associated with verbal aggression and neuroticism with physical aggression. Our study is, to our knowledge, the first to investigate the association between nursing staff personality traits (measured at shift team level) and aggressive patient behaviour using the Five-Factor Model (1). Two earlier studies used other personality tests and provided no support for our findings. Bilgin, Keser

Ozcan (27) found that physical assault was associated with low scores on so called interpersonal styles (this style is somewhat comparable to personality trait openness). Başoğul, Arabaci (28) found associations between more verbal aggression and sociotropy, a personality trait somewhat comparable to agreeableness.

A potential explanation for the association of extraversion and verbal aggression could be that extravert nurses have more interaction with patients, which could result in being more at risk for verbal aggressive behaviour due to patient-staff interaction. Another possibility is that nurses with higher scores on the extraversion subscale are experienced as more dominant. Neuroticism is associated with avoidance of possibly dangerous situations, which could be a possible explanation of the association we found with physical aggression. Early de-escalation of nurses can prevent physical aggression to emerge (29). However, for de-escalation of possible upcoming aggression, nurses need to reach out to patients, which can cause fear and stress in nurses. People who tend to avoid fearful experiences might also avoid early de-escalation, which could increase the chance those situations to escalate to physical aggression. However, due to the explorative nature of our study, these suggestions serve as hypotheses for future examination.

Implication for clinical practice

The prevention of aggressive behaviour and seclusion is an important ambition of Dutch mental health care. The use of seclusion in the Netherlands decreased substantially in recent years, despite failing to meet the original ambition of 10% reduction each year (30, 31). To decrease the use of seclusion further, several quality improvement programs are available in the Netherlands and the rest of the world, on different levels of patient care. Organisational models *High Intensive Care* (13, 32, 33) and *Six Core Strategies* (34, 35) focus on the organisation of psychiatric wards from the start of building to clinical leadership. *Safewards* gives several interventions to prevent conflict and coercion and improve the wards' treatment climate (36, 37). These quality improvement programs have several differences, but all acknowledge the importance of skilled nursing staff. An important focus of quality of care on acute psychiatric wards is personal contact between patients and staff members to make ensure wards' safety. Establishing contact with patients might very well be one of the most important skills of nurses on acute psychiatric wards (13, 38, 39). Interactive

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engagement instead of reactive engagement is helpful to establish a recovery-focussed atmosphere (40). However, to establish contact with patients with severe mental illness is not straightforward and nurses could use support in developing these skills further. We found indications that nursing teams with high scores on the openness scale are less prone to use seclusion and that higher score of teams on extraversion and neuroticism scales are associated with more aggressive behaviour. If these findings are causal, they can serve as indication of improving contact skills of nursing staff. In the next sections, I speculate further on the implications of these findings.

Establishing contact with severe ill psychiatric inpatients can be challenging and sometimes call for unusual interventions. An example is the Safewards intervention *Know Each Other* (41). The ward present staff members with their picture and their role on the ward. Staff members provide some information about themselves, such as their favourite TV-show, hobbies or their experience in mental health care (41). By opening up about themselves, nurses aim to break the ice if connecting with patients is difficult. Personality trait openness is broader than opening up to other people; it also stands for creativity and the willingness to take risks if necessary. These qualities also seem important for nurses' de-escalation skills and for the decision-making process for the use of coercive measures. After all, not using seclusion can induce feelings of fear and insecurity and nurses have to cope with that (12). To support nurses on diminishing the use of seclusion, a focus of mental health institutions on the prevention of aggressive behaviour is essential. Nurses should be stimulated to use their creativity and knowledge about patients to keep contact to patients and thereby, making maximum effort to de-escalate aggression and subsequently prevent seclusion. Therefore, our finding that openness of nurses might be important to prevent seclusion can serve as direction to target support and training of nurses in de-escalation skills and making decisions on using coercive measures.

Concerning the influence of nursing staff on the incidence of aggressive behaviour, we found an association between high levels of personality trait extraversion and verbal aggression and a possible association between high levels of personality trait neuroticism and physical aggression. As mentioned earlier, a possible explanation is that extravert nurses search out to establish contact with their patients. Aversive stimuli, such as frustration, activity demand or physical contact precede the incidence of aggressive behaviour (42). By pushing the limits,

nurses might cross patients' personal boundaries resulting in verbal aggression. Their disease affects personal boundaries of psychiatric inpatients. For instance, earlier publications suggest that patients while being in a manic condition have an expansive personal space (and cross other people's boundaries) and psychotic patients have a small and more vulnerable personal space (43). Staff members that put more effort in making contact with patients or make contact more straightforward might interfere with the patients' *options to leave*. The option to leave unpleasant situations has proven to be an indispensable aspect of cooperative interaction in several settings for both people and other species (44). Therefore, trying too hard (or to extravert) to make contact with patients might be a risk factor for aggressive behaviour. However, avoid making contact with patients might be a risk factor for aggressive behaviour too. Anxiety during apprehensive situations by nurses could fail to de-escalate potentially dangerous situations (45). Neuroticism is associated with anxiety and the desire to control the environment (23). However, unexpected and unmanageable situations are almost inherent to acute psychiatric wards, which negatively influences nurses' sense of control (23). Patient characteristics contribute to these properties, for instance, we saw in our cohort study (**chapter 4**) that patients with bipolar disorder and psychiatric co-morbidity such as personality disorders increase the risk of aggressive behaviour. Organisational aspects can also influence the sense of control of nurses, for instance because of acute admissions outside business hours, as we observed in the Pennsylvania database (**chapter 3**). Lack of sense of control probably affects every nurse on duty, but it might affect nurses with high scores on the neuroticism scales in a way that they get too cautious to de-escalate patient behaviour effectively. Future research could focus on these (and other) organisational variables to affect the work of nurses with different personality profiles. We suggest that the sense of control and the sensitivity of nurses for lack of sense of control may be an important feature in the prevention of aggressive behaviour.

We speculate about the influence of patients, staff members and organisational issues on the sense of control of nurses on acute psychiatric wards. In order to allow nurses to prevent and de-escalate aggressive behaviour, training and organisational support are necessary. Psychiatric nursing changed during the last decades from a paternalistic model towards prevention, promoting of self-management and shared decision-making. Personal contact with patients is essential to prevent (compulsory) admission, coercive measures and adverse

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events. In recent years, this topic received increasing attention in nursing education and professional literature. The development of nursing skills to establish contact might contribute directly to the improvement of patient safety and quality of care. Further investment in this development has the potential to improve care for people with severe mental illness substantially. However, we argue that societal developments also play a role in this phenomenon. Based on several incidents, the Dutch public opinion is increasingly negative towards people with severe mental illness (46). Society views deviant behaviour in the street as dangerous and people displaying dangerous deviant behaviour should be locked away in mental health institutions (47). However, society disapproves seclusion and restraint as interventions as well. Popular media and even the Dutch parliament argue that seclusion is archaic and inhumane (48-50). These opinions hold a paradox; mental health institutions must hold dangerous patients in custody to protect society. However, when being inside, institutions cannot use seclusion, restraint or other interventions that are harmful for the patients involved, but protective for other patients and staff members in case of dangerous behaviour. These views might harm patients, but might also influence nurses and their feeling of safety. It might increase the need of nurses to control their surroundings, which could result in more coercive measures or substitution from seclusion to other coercive measures such as forced medication. Furthermore, in recent years, the Dutch government emphasizes on less formal and more informal care in the community, known as the "participation society" (51). The importance of care in the community for people with mental illness increases and the negative public opinion of the public complicate this development.

Society and care organisations cannot change the patients that need care on acute psychiatric wards. They can acknowledge the complexity of acute psychiatric nursing and provide the support nurses need to effectively do their work and make sure that acute psychiatric wards are safe places for patients and staff members.

Suggestions for future research

The findings presented in this thesis come from monocentre observational and qualitative studies. Subsequently, replication of our findings in large, multicentre studies would improve

the reliability and generalisability of our conclusions. Our findings can serve as hypotheses for future research.

However, the complexity of this research topic continues to be substantial. The risk of aggressive behaviour and subsequently, the decision of staff members to use seclusion are multifactorial processes. Researchers need to simplify these phenomena to fit it in research designs. Although we used modern research methods that consider this complexity, this project is no exception concerning the tendency to simplify clinical practice. Based on our findings and the findings of others, interaction between individual nurses and patients and between nurses in a team, together with the importance of sense of control of nurses, could be one of the blind spots in the body of knowledge around seclusion and aggression (37, 40). Ideally, researchers cover acute psychiatric wards with cameras and microphones to meticulously register and analyse every interpersonal interaction on such wards. Obviously, due to practical, clinical, ethical and many other challenges, this seems not feasible. However, mixed-method designs and implementation studies that recognise that personal, professional, psychological and clinical features of both sides of the interaction as well as attitude, group dynamics and environmental characteristics, might elucidate the complexity of this topic more than future observational studies as I describe in this thesis. However, research on aggression and coercion on psychiatric wards will still be challenging in many ways.

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Besides focus on social interaction on acute psychiatric wards, other themes from this thesis might deserve attention in future research. We argue that our findings around personality traits might indicate that making contact with patients with severe mental illness is a delicate task. To gain knowledge on this matter, we might be able to improve nurses' skills by raising awareness and training on the job. When replicated, this knowledge could also be of use in team composition and recruitment of new staff members for acute psychiatric wards.

Finally, we suggest pursuing further research on the concept *perceived severity*. Nurses and patients that disagree on the course of events of an aggressive incident can negatively influence the therapeutic relationship and thereby, the wards' treatment climate. Further exploration of this topic might improve debriefing of aggressive incidents and could restore

contact between patients and nurses. In addition, it would be interesting to see whether confronting nurses with the feedback of patients (and maybe vice versa) can help nurses to transform this into preventive interventions for the patient involved. The remarkable finding that nurses and patients frequently, soon after the incident, agreed upon the factual course of events can be helpful for this improvement. After all, the course of events might serve as common ground to restore personal contact and could inflict some contemplation about the incident.

Conclusion

The objective of this thesis was to investigate the influence of staff members on the use of seclusion and the incidence of aggressive behaviour on acute psychiatric wards. We conclude that this is a highly complex subject, which need further exploration by scientists, but also by institutions and policy makers. It is unlikely that a panacea exists that magically prevents all aggression and coercion from mental health care. Mental health care took great steps in reducing aggression and coercion, so further reduction is challenging. However, we speculate that nurses, especially their ability to making contact to patients and install, restore or maintain collaboration, together with their ability to respect patients' boundaries and autonomy, are part of most possible solutions to improve clinical practice in this field. Working as a nurse is a challenging profession and those who chose to do so deserve maximum support. If nurses feel safe to engage with patients, getting close and de-escalate, with respect to patients' personal boundaries, psychiatric nursing can take a step further in creating safe psychiatric wards. This calls not only for improving nursing skills, but also the environment of psychiatric wards should stimulate engagement of nurses with patients (13, 52). Because the vulnerable patients of acute psychiatric wards and their nurses, deserve a safe and comfortable environment. If the findings of this thesis can help to reach that goal, I have met my principal objective.

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