Unlock the doors

Aggressive behaviour and seclusion on closed psychiatric wards

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CHAPTER 1

General introduction

Life of patients in closed mental health institutions generally takes place outside the line of sight of the public and media. Nevertheless, occasionally patients' stories do receive a fair amount of attention. An example is the story of Wim, who died from suffocation after vomiting in the seclusion room of a mental health institution in Amsterdam (1). Another example is the story of Roelie, who died in the seclusion room of an institution for people with intellectual disabilities (2). Shocking footage of the fatal incident of Roelie (filmed with security cameras) were shown on national television in the Netherlands (3). Due to these and other incidents, public, policy makers and professionals agreed that coercive interventions, such as seclusion, are dangerous and inhumane and should be abandoned, or at least administered with the greatest possible caution. Mental health institutions acknowledged this already in 2004, which resulted in the ambition to lower the rate of seclusions with 10% each year (4). However, coercive measures have proven to be persistent and to abstain from coercion is challenging.

Internationally, the use of coercive interventions is also surrounded with controversy (5). In every country, several psychiatric inpatients died after the use of coercive measures, mostly resulting in widespread public indignation. Coercive measures have many forms, from close observation in an open area to seclusion and mechanical restraint (6). Several treatments options (i.e. admission, pharmacological treatment) are potentially coercive, but mostly used voluntary. Seclusion and restraint are, however, coercive almost by definition. We define seclusion as "the isolation of patients in a locked room, with tamper-proof decoration and without other people present in the room" (6, 7). We define restraint as "the restriction of patients' movement with straps, belts and other equipment or by physically holding the patient" (6, 7). The use of seclusion and restraint contradicts with several international conventions such the *Universal Declaration of Human Rights* (8), the *European Convention of Human Right*s (9) and the *Principles for the protection of persons with mental illness and the improvement of mental health care (10)*.

Besides international conventions, patients and professionals share the wish to abolish seclusion and restraint from mental health care. The wish of mental health professionals to stop using seclusion and restraint goes back to the 19th century. The Lincoln Lunatic Asylum was allegedly the first to stop using seclusion and restraint in daily practice (11). Their publications were the start of a polemic debate among physicians about the efficacy, safety

and necessity of seclusion and restraint, as both interventions had fierce advocates and opponents (12). More than a century later, Italy was one of the first countries to de-institutionalise mental health care by the Basaglia Law, thereby decreasing seclusion and restraint immensely (13). Today, there is still an ongoing debate around the use of seclusion and restraint, although the content has changed. Extensive scientific research that did not find any therapeutic effect of seclusion and restraint numbed the debate around efficacy almost completely (14). In addition, patients and professionals reached consensus on the threats that seclusion and restraint impose for patient safety. Several studies reported adverse events related to seclusion and restraint, ranging from patients' stress and traumatic experience to severe injuries and death (10, 15, 16). Due to these safety issues and the lack of evidence for therapeutic value, seclusion and restraint are only suitable to serve as intervention of last resort in case of immediate hazardous patient situations (16). The ambition to stop using seclusion and restraint in the Netherlands led in 2016 to the "Dolhuys-manifest", a national announcement of more than fifteen mental health institutions to ban the seclusion room before the start of 2020 (17). However, clinical practice turned out to be stubborn and this ambition was not yet met to this day (18).

Despite consensus on absence of efficacy and safety issues, seclusion and restraint are deemed as necessary to protect the safety of patients and staff members in case of dangerous behaviour of patients, especially in case of patients' aggressive behaviour (19). Aggressive behaviour is an adverse event and is the most prevalent indication for seclusion and restraint (20). Morrison (21) defined aggressive behaviour as "any verbal, nonverbal or physical behaviour that was threatening (to self, others, or property), or physical behaviour that actually did harm (to self, others, or property)". Staff members and patients of psychiatric wards are at high risk to be the victim of aggressive behaviour (22). This leads to work-related stress and burnout for staff members, traumatic experiences and deteriorated psychiatric condition for patients and financial burdens for mental health institutions (23, 24). Therefore, clinical practice faces a Catch-22 situation. Aggressive behaviour can result in dangerous situations for patients and staff members and ultimately, this can lead to the use of seclusion and restraint. However, by keeping others safe, patients who get secluded or retrained endure a harmful (and sometimes lethal) intervention.

International perspective and developments

Aggressive behaviour in the workplace (or workplace violence) is a major challenge for professionals, employers and governments globally. The Netherlands are no exception to this phenomenon; almost half of the Dutch workforce have experience with aggressive behaviour (25). Professionals in the health care sector are especially at high risk of aggressive behaviour (26). Nurses working in nursing homes, emergency departments and mental health institutions are relatively at highest risk of experiencing aggressive behaviour (27, 28). Ultimately, aggressive behaviour may lead to the use of seclusion and restraint, especially on acute psychiatric wards (29, 30). There are major differences between European countries in the frequency of application of seclusion and restraint. In addition, some countries use primarily seclusion in case of aggressive behaviour and others use restraint (31, 32). The reason for these differences are unknown, but place-bound historical reasons seem more likely than informed professional consideration. Mental health services in the Netherlands uses seclusion most of the time, while (mechanical) restraint is rare (33, 34). Therefore, we limit our research on the use of seclusion after aggressive behaviour on acute psychiatric wards.

The ambition to abolish the use seclusion from mental health care led to several quality improvement models, such as *Safewards*. Safewards is a model that consists of several interventions for prevention of conflict (e.g. aggressive behaviour) and containment (e.g. seclusion) (35). Personal contact and mutual understanding between nurses and patients are the key elements for most of the interventions, with names such as "Clear Mutual Expectations", "Positive Words" and "Know Each Other" (36). After the development of Safewards in the United Kingdom, researchers from all over Europe translated the website into (currently) nine languages (36). Another example, developed in the United States, is the *Six Core Strategies* model (37, 38). These six strategies guide institutions to shape their policy for the reduction of seclusion and restraint, by for example leadership towards organisational change, workforce development and debriefing of coercive measures (38). Third example is a national program from the Netherlands named *High Intensive Care* (39, 40). High Intensive Care focusses on enhancing care for patients in crisis instead of using coercion, again based on personal contact between patients and nurses (39, 40). By

enhancing the level of care, staff members aim to prevent aggressive escalation and thereby, prevent the use of (solitary) seclusion.

Subsequently, quality of nurses and other frontline staff members, especially their ability to connect and interact with patients play a major role in the prevention of aggressive behaviour and reduction of seclusion (41). The use of seclusion is a clinical decision of the multidisciplinary team, but nursing staff are as frontline workers the main factor in the decision-making process (19). If we could improve our knowledge on the influence of nurses the incidence of aggression and the use of seclusion, we might be able to develop strategies to prevent these events from happening.

Risk of aggressive behaviour & other adverse events

The main reason for using seclusion or other coercive measures is aggressive behaviour (42-44). Aggressive behaviours on acute psychiatric wards occurs mostly during patient-staff interaction (42, 43, 45). As a result, nurses and other frontline staff members are more often victim of aggression than other healthcare staff members (43, 44). Based on the frustration-aggression theory, this seems obvious, because nurses will frequently prevent the patient from achieving its personal goal (i.e. going home or decline psychiatric treatment) (45, 46). This raises the question to which extent patients and nurses agree upon their reflection and analysis of aggressive incidents. Consequently, patients who show aggressive behaviour because of the decline of their needs might see their actions as justified, contrary to the nurses' view (47, 48). In order to investigate this phenomenon, we performed a grounded theory study on the perspectives of patients and nurses, very soon after aggressive events and their advice to prevent aggression in the future (**chapter 2**).

We consider aggressive behaviour as an adverse event in the context of psychiatric inpatient care. Aggressive behaviour and other adverse events impose a threat to the safety of patients on psychiatric wards. Though there is some research on adverse events on psychiatric wards (i.e. aggression to self or others or falls) (49, 50), most studies use small datasets or investigated a narrow range of adverse events. In order to give a broad perspective on patient safety events, we investigated predictors for adverse patient events and medical errors in a large dataset of 14 hospitals from the Pennsylvania Health Care Cost

Containment Council (**chapter 3**). Subsequently, we focussed specifically on aggressive behaviour. Because of the importance of patient-staff interaction in the incidence of aggressive behaviour, the influence of the nurse as professional and as a person cannot be underestimated. Scientific literature primarily focusses on the influence of patient characteristics on aggressive behaviour. Examples of patient characteristics frequently mentioned as predictors for aggression are young age, male gender, involuntary admission and psychotic disorders (51, 52). Scientific literature is far less conclusive about the influence of nursing team characteristics and the incidence of aggressive behaviour (53). In addition, previous studies give reason to believe that the influence of patients and nurses differ between verbal and physical aggressive behaviour (54, 55). To gain more knowledge on this subject, we analysed all verbal and physical aggressive events during two years of data collection on an acute psychiatric ward. We focussed on patient, nursing staff and shift variables, with special attention for the influence of nurses' personality traits on the incidence of aggressive behaviour (**chapter 4**).

Risk of seclusion

Seclusion is an intervention without therapeutic effect and only used as intervention of last resort in case of highly dangerous situations. However, assessment of dangerous situations is a highly subjective phenomenon. Obviously, the majority of nurses will consider situations where patients threaten people with weapons or use physical violence as dangerous. Situations with verbal aggression or violence against goods yield more discussion about the "dangerousness". Thereby, the subjective assessment of nurses influences the appraisal of the appropriateness of seclusion as intervention (56). The attitude of the nurse towards seclusion is one of the factors that influence the nurses' judgement. The extent to which nurses view seclusion as therapeutic, necessary, acceptable or harmful has major impact on their decision-making process. Laukkanen, Vehvilainen-Julkunen (19) showed that the majority nurses consider seclusion a necessary and acceptable intervention in case of dangerous events, despite the fact that the general attitude of nurses towards seclusion is increasingly negative. However, attitude may not fully explain the nurses' judgement of the appropriateness of seclusion. Characteristics of the nurse may influence their judgement and thereby, influence the risk of seclusion for their patients (19, 57-61). Several studies are available in literature, both on the attitude of nurses towards seclusion (62, 63) and on the

influence on nursing staff characteristics on seclusion (41). However, a systematic review that integrates both the theme of attitude and the theme of other characteristics is lacking in scientific literature. To assess the current state of knowledge on these topics, we describe a systematic review on the attitudes towards coercive measures and the influence of characteristics of nurses on coercive measures (**chapter 5**).

Several authors investigated the influence of nursing staff factors on the use of seclusion. These studies show many differences in study design, analysis, variables and level of detail. For instance, Bowers, Van der Merwe (56) performed a large cross-sectional study in the United Kingdom and investigated coercive measures (self-reported by the wards' nurses) and the influence of patient and staff characteristics by comparing wards. Vollema, Hollants (61) compared seclusion events with a sample of patients without seclusion during the admission. Cowman, Bjorkdahl (29) measured the use of seclusion and nursing staff characteristics every day to get a detailed picture of their influence. However, to collect data on day-to-day level imposes a serious limitation. Nurses typically work in eight or nine hour shifts on clinical wards. The composition of a nursing shift team varies every other shift, and thereby, the influence of the team on nurses differs every other shift. When investigating the influence of nursing teams on patient endpoints, it is crucial to address nursing shift teams to achieve valid outcomes. Therefore, we performed a prospective observational study on the influence of nursing shift teams on the incidence of seclusion on an acute psychiatric ward (**chapters 6 & 7**).

In scientific literature, nursing staff characteristics mostly refer to demographic characteristics (e.g. gender, age, ethnicity) and professional characteristics (e.g. level of education, work experience). However, these features might have compromised validity concerning the influence of nurses on the use of seclusion. Even though demographic and professional characteristics might be important, other variables might have greater influence on the behaviour of the nurse when interacting with other nurses and with patients. Variables such as work stress, attitude, feeling of safety or personality traits are at face value better candidates for factors that possibly influence seclusion. To measure personality traits, several models are common in clinical practice and scientific research. One of the most popular models is the Five-Factor Model (64). The Five-Factor Model consists of five basic personality traits, namely openness to experience, conscientiousness, extraversion,

agreeableness and neuroticism. To this date, no previous studies investigated personality of nurses using the Five-Factor Model for this specific purpose. Thereby, we studied personality traits of nurses in relation to seclusion, in addition to demographic and professional characteristics (**chapter 7**).

Advanced methodology in aggression research

In general, there are few studies available with detailed measurement on the use of coercive measures or the incidence of aggressive behaviour. Besides dilemma's concerning ethics and privacy when performing research with patients of which the mental competence is questionable, methodological difficulties play an important role. Research of risk factors of adverse events typically use regression techniques to estimate the influence of individual variables. Mostly, multilevel analysis (or repeated measures analysis) is necessary because of lack of independent observations. However, some research investigates the influence of nursing staff on the incidence of adverse events does not meet the minimal assumptions for multilevel regression analysis. One of the assumptions for multilevel analysis is that data has a hierarchical structure. An example of such structure is the combination of hospitals and wards. The wards of a single hospital have less mutual variance than if they were in different hospitals and thereby form a cluster. However, standard multilevel techniques cannot cope with non-hierarchical data structures. An example of a non-hierarchical data structure is cross-classification (65). Cross-classification occurs when a participant or observation is part of more than one hierarchical structure. For instance, a child is a student of a school, but also lives in a neighbourhood. Because children are not by definition in school in their own neighbourhood, there is no hierarchical structure between schools and neighbourhoods. Instead, there are two multilevel models, children-schools and children-neighbourhoods. This structure results in a phenomenon called the "school-neighbourhood effect" (66). When investigating the influence of nurses on patient endpoints, the data structure introduces a similar (although more complicated) problem. Patients deal with more than one nurse and with more than one nursing shift team, because shift team composition is variable. Thereby, nursing shift teams are clusters within the patient level. Nursing shift teams (and individual nurses) also care for more than one patient at the same time. These patients are thereby clusters within nursing shift team level. Several studies ignore these complex statistical problems in clinical research, which imposes a risk of overestimating the treatment effects

due to incorrect inference on statistical significance. Using these complex statistical techniques can result in estimates that are more accurate. To improve knowledge, decision-making and performance of this specific statistical technique, we performed a simulation study of the cross-classified multilevel model (**chapter 8**) and intended to publish the STATA code of our clinical studies in the public domain (**chapters 4 & 7**).

Outline of the thesis

In **chapter 2**, we describe the results of a qualitative study about the perspectives of patients and nurses on the cause of aggressive incidents and their suggestions towards prevention of aggressive behaviour in the future. In this study, we addressed the following research questions: 1) What is the underlying theory on the differences and similarities of patients' and nurses' view on aggressive incidents? 2) Which recommendations are provided to prevent aggressive incidents in the future?

In **chapter 3**, we describe the results of a multivariable analysis of a large, diverse sample of hospitals in Pennsylvania, USA, on predictors that influence the occurrence of adverse events and medical errors on psychiatric inpatient wards. In this study, we addressed the following research question: Which patient and hospital characteristics have influence on the occurrence of adverse events (e.g. aggressive behaviour, suicide attempts) and medical errors (e.g. medication flaws) on inpatient psychiatric wards?

In **chapter 4**, we describe the results of the analysis of the influence of patient, nursing team and shift characteristics on the incidence of aggressive events in our two-year prospective cohort study. This study addressed to following research questions: 1) Which nursing team (e.g. personality traits, gender, education), shift (e.g. patient-staff ratio) and patient characteristics (e.g. gender, diagnosis) are associated with the incidence of aggressive patient behaviour on acute psychiatric wards? 2) Do these associations differ for verbal aggression and physical aggression?

In **chapter 5,** we describe the results of a systematic review concerning attitude of nurses towards coercive measures and the influence of staff characteristics on the use of coercive measures, which addressed the following research questions: 1) What are the attitudes of psychiatric nurses towards use of coercive measures? 2) Which individual or team nursing

staff characteristics are associated with the use of coercive measures and with the attitude of nurses towards coercive measures in acute mental health services?

In **chapter 6**, we describe the results of the first five months of data collection of a prospective cohort study on the influence of nursing teams on the use of seclusion, which addressed the following research question: Which nursing staff characteristics are associated with seclusion of adult inpatients admitted to a closed psychiatric ward?

In **chapter 7**, we describe the results of the full two years of data collection of a prospective cohort study on the influence of nursing teams on the use of seclusion. This study addressed the following research question: What is the influence of nursing team characteristics (demographic, professional or psychological) and shift characteristics on the occurrence of seclusion on an acute mental health ward, while controlling for patient characteristics?

In **chapter 8**, we describe the results of a simulation study to familiarize clinical researchers with cross-classification and assist them in the decision whether the added complexity of cross-classified multilevel models (CCMM) is a price worth paying. We addressed the following research question: Given that, theoretically CCMM is the correct model to analyse cross-classified data, what is the effect of using different statistical techniques on data with a cross-classified structure due to patient and shift effects?

1

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