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Manual restraint of adult psychiatric inpatients: a literature review

Abstract

Relatively little is known about the prevalence of manual restraint to manage violent or challenging behaviour in hospital psychiatric services or the circumstances of its use. This review identified 45 empirical studies of manual restraint of adult psychiatric inpatients, mostly from the UK. On average, up to five episodes per month of manual restraint might be expected on an average 20 bed ward. Episodes last around ten minutes, with about half involving the restraint of patients on the floor, usually in the prone position. Manually restrained patients tend to be younger, male and detained under mental health legislation. Staff value restraint related training but its impact on nursing practice has not been evaluated. Research has tended to focus on official reports of violent incidents rather than manual restraint per se. Larger and more complex studies are needed to examine how manual restraint is used in response to different types of incident and in different service settings.

Accessible summary

Information about the use of manual restraint to manage violent or challenging behaviour in psychiatric hospitals is relatively scarce. This review includes 45 studies of manual restraint of adult psychiatric inpatients, mostly from the UK. Overall, the research suggests that:

- Up to five episodes of manual restraint per month might be expected on an average 20 bed ward
- Manual restraint lasts for about ten minutes
- Patients tend to be restrained face down on the floor
- Manually restrained patients are young, male and detained under mental health legislation.

We conclude that more and better quality research is needed to improve knowledge of how manual restraint is used in response to different types of incident and in different types of ward/hospital.

Introduction

Levels of patient violence on psychiatric wards are high. It has been estimated that almost half of nursing staff and one in seven patients are subject to a physical assaults per year (Royal College of Psychiatrists 2007). Although the majority of such attacks result in little or no physical injury, psychological responses can be significant, with reports of consequent anger, anxiety, post-traumatic stress disorder symptoms, guilt, self-blame and shame (Needham et al. 2005). Manual restraint is recommended only as a method of last resort for the management of violent or challenging behaviour (Department of Health, 2008), not least because of concerns for patient safety (Blofeld et al. 2003; Paterson et al. 2003). Training courses on the prevention and management of violence and aggression are recommended for all nursing staff who may be exposed to aggression or violence or involved in the restraint of patients (National Institute for Mental Health in England 2004). Yet, there is a notable absence of any controlled studies to support the effectiveness of manual restraint techniques (Sailas and Fenton 2000). This review aims to examine the prevalence, duration, antecedents, and outcomes of manual restraint in adult psychiatric inpatient services. The characteristics of restrained patients, staff and patient experiences of manual restraint and staff training in restraint techniques are also explored. Manual restraint is defined as physically holding the patient to prevent or restrict movement. The term has been increasingly adopted in the literature because it offers a clear distinction to mechanical restraint (use of belts or other devices) and to physical contact during the process of putting patients into mechanical restraint or seclusion. Much of the literature included in the review comes from the UK, where mechanical restraint is rarely used. Only published studies reporting empirical findings on manual restraint were included in the review.

Method

Electronic searches of the main databases were conducted to locate empirical studies of restraint in English published from 1960. The databases searched were: PsycInfo, Cochrane, Medline, EMBASE Psychiatry, CINAHL and the British Nursing Index. Consistent with the aims of the review, studies of children, eating disorders, diet, dementia and the elderly were excluded. Key words utilised were ‘restraint’, ‘psychiatric’, ‘inpatient’, ‘mental’, ‘training’ ‘injuries’ and ‘attitudes’. Resulting titles and abstracts were inspected for relevance. Evaluations of aggression management techniques and staff training were included if they included empirical data on manual restraint, but studies of breakaway or self-defence techniques were excluded. As the literature accumulated, further references were obtained by following up citations. The final number of identified empirical studies of manual restraint was 45.

A structured matrix was created with various headings including sample, methodology, admission status, age, gender, ethnicity, ward type, service setting, risk status, time spent on ward, rates of restraint, antecedents/causes, patients’ views, staff views, etc. Each study was reviewed and relevant empirical evidence entered on the matrix. A hierarchy of evidence was established to rate the weight of each study in relation to the project aims. The most weight was given to studies conducted in the UK, on acute wards and/or PICUs, studies with large samples and to findings replicated across studies.

Findings

All but five studies were from the UK. The others were from Australia (three), Canada and New Zealand. Half (n=22) were retrospective analyses of official incident records, although this was sometimes supplemented with descriptive data from other sources. Ten studies used questionnaires or devised non-routine incident forms to collect data from nurses on aggressive incidents on wards and outcomes in terms of the use of restraint and other forms of containment. Four studies used a repeated measures design to measure the effectiveness of various aggression management training programmes. Nine studies were qualitative or focused on staff/patient attitudes. The studies were conducted in various types of ward, ranging from acute wards (n=17), secure units (n=9), both acute wards and secure units (n=4), general adult wards (n=2), to a mix of wards (including several categories; n=10). Three studies did not specify the type of ward.

Incidence

Most studies were small scale and local (based in specific hospitals), making it difficult to draw any firm conclusions about the general extent of restraint use. Twenty-two studies reported the incidence of manual restraint either as the number of episodes over a given time period (n=10) or as the proportion of responses to violent incidents on the ward (n=12). For the former group, standardised rates were calculated where possible to aid comparisons. The rate of restraint per 100 beds per

month ranged from: 9.3 (Ryan and Bowers 2006), 12.9 (Southcott et al. 2002), 17.9 (Leggett and Silvester 2003) to 25.8 (Parkes 1996). The latter two studies were both from medium secure units. It was not possible to calculate a standardised rate for five studies. The first reported an average of 18.9 restraint episodes per month across a mental health trust over a three year period (Lancaster et al. 2008). The second asked nurses to estimate the frequency of restraint use on their wards, providing an average of 3.1 per month (Wright et al. 2005). A census of inpatients in England and Wales found that 8% had at least one episode of restraint during their current stay (Healthcare Commission 2005). Subsequent reports in 2006, 2007 and 2008 showed rates of 8%, 11% and 12% respectively. A higher rate (18%) was reported by a study of 12 acute wards, although the sample was restricted to patients admitted for at least two weeks (Bowers et al. 2003).

Incidence rates varied greatly among studies using violent or aggressive incident reports as the basis for analysis, with some studies in forensic settings reporting very high levels of restraint. The proportion of incidents resulting in restraint varied from: 4% (Cheung et al. 1997); 12% (Torpy and Hall 1993), 23% (Parkes 2003; Southcott and Howard 2007), 26% (Tobin et al. 1991), 36% (Duff et al. 1996; Kennedy et al. 1995), 37% (Smith and Humphreys 1997), 38% (Shepherd and Lavender 1999), 57% (Dowson et al. 1999) to 67% in a medium secure unit (Gudjonsson et al. 2000) and 76% in a Special Hospital for dangerous offenders (Larkin et al. 1988).

Interpretation of these studies is complicated by the lack of information on multiple restraint episodes for individual patients, perhaps because the main focus of the research was usually aggressive or violent behaviour rather than its management. It is

not at all clear how these individuals skew the available incidence data or how the circumstances of their restraint episodes differ from other patients. It is possible that particular sub-groups of patients are more likely to be repeatedly restrained, but this was not examined by any study. In only two cases was it possible to extract or calculate a mean rate of restraint use per patient. A study of 680 restraint episodes reported an average of 2.6 per restrained patient (with a maximum of 33 for a single patient; Lancaster et al. 2008). Data from a medium secure unit suggest a mean of 4.9 separate incidents of restraint per restrained patient (Leggett and Silvester 2003). Another study reported that 15% of restrained patients had been subject to more than one episode of restraint (Smith and Humphreys 1997).

Restraint techniques

Two national surveys specified aspects of restraint which may be taught or used in practice and asked psychiatric nurses to record which they used most frequently. The first (Lee et al. 2001) found that around half of nurses personally used restraining holds (undefined) and the three-person team. In the second, 31% of nurses reported that restraining holds (including wrist locks) were used on their ward, 24% three-person teams and 21% taking the patient to the floor in the prone position (Wright et al. 2005). Another study found that over half of restraint episodes involved restraining patients on the floor (Lancaster et al. 2008), more usually in the prone position (on the front) as apposed to the supine position (on the back). A much smaller study found that restraining a patient on a bed, face down on the floor or standing to be the most the most common restraint positions (Southcott and Howard 2007).

The frequency of restraining patients on the floor, particularly in the prone position, raises questions about patient safety. Two case studies (Morrison and Sadler, 2001; Paterson et al. 1998) describe the circumstances of deaths resulting from positional asphyxia during manual restraint. Patterson et al (2003) identified 12 cases of patient deaths during restraint between 1979 and 2000 across a range of UK health and social care settings and concluded that downwards pressure on the chest to hold a patient in the prone position should be avoided. The data reported by the studies reviewed here were collected before National Institute for Mental Health in England guidance recommended confining the use of the prone position to exceptional situations (NIMHE, 2004), so it is possible that the practice is now less prevalent. Even so, continued vigilance or efforts to reduce the practice would appear to be desirable.

Duration

Information on the duration of restraint episodes was sparse: only three studies reported an average duration of restraint. A study of 557 restraint incident forms over a four year period showed an average duration of 12 minutes (Leggett and Silvester 2003). A comparison of restraint in the supine and prone position found both to have an average duration of 10 minutes (Riley et al. 2006), whilst restraint in a standing, sitting or kneeling position lasted for an average of five minutes (Whittington et al. 2006).

Antecedents

As might be expected, a commonly cited reason for restraint was violence or aggression particularly if serious or involving injury (Gudjonsson et al. 2000, 2004;

Shepherd and Lavender 1999). Assaults on staff were more likely to result in restraint than other forms of violence (Parkes 2003; Tobin et al. 1991). However, it was more usual for studies to report a variety of antecedents including: attempts to abscond (Bowers et al. 2003; Gudjonsson et al. 2004; Ryan and Bowers 2006; Smith and Humphreys 1997; Southcott et al. 2002), disruptive behaviour (Lee et al. 2003; Ryan and Bowers 2006; Smith and Humphreys 1997), agitation (Gudjonsson et al. 2004), verbal assault/threat (Duff et al. 1996; Southcott et al. 2002; Smith and Humphreys 1997), refusal of medication (Bowers et al. 2003; Gudjonsson et al. 2004; Lee et al. 2003; Ryan and Bowers 2006; Southcott et al. 2002), self-harm (Lee et al. 2003; Smith and Humphreys 1997; Southcott et al. 2002), and property damage (Ryan and Bowers 2006; Smith and Humphreys 1997). A study of restraint request classified around half as an emergency response (e.g. to an attempted abscond) while the other half were planned following patients' refusal to comply with instructions (Ryan and Bowers, 2006). Qualitative interviews with staff have identified a poor ward atmosphere and failed communication between staff and patients as reasons for restraint (Bonner et al. 2002).

Despite the diversity of antecedents identified in the literature, very few studies have assessed their relative contribution to restraint episodes. The most rigorous analysis involved 1,515 violent incidents on general psychiatric wards recorded over a three year period (Gudjonsson et al. 2004). When other variables (e.g. patient characteristics) were controlled for, the use of manual restraint to manage incidents was predicted by attempts to abscond, staff denying a request and the patient being rated as agitated. Consistent with other studies (Cheung et al. 1997; Parks, 2003; Tobin et al. 1991), a nurse being the target of assault was also associated with an

increased likelihood of restraint. Future studies should use multivariate analysis wherever possible in order to avoid potentially misleading conclusions based upon simple counts of events or antecedents.

Outcomes

Two main (non-fatal) outcomes are identified in the review: injuries (to staff or patients) and use of other containment methods.

Injuries

Manual restraint carries a risk of injury for all those involved, and in some circumstances can provoke aggressive behaviour (Powell et al. 1994), but injuries are generally more common among staff than patients. The proportion of restraint episodes resulting in staff injuries ranged from 12% (Southcott and Howard, 2007), 17% (Riley et al. 2006; Lancaster et al. 2008), 19% (Parkes, 1996; Leggett and Silvester, 2003; Parkes, 2003), to 40% (Dowson et al. 1999). In contrast, restraint episodes leading to patient injuries ranged from 5% (Southcott and Howard, 2007), 6% (Riley et al. 2006; Lancaster et al. 2008), 7% (Dowson et al. 1999), 10% (Parkes, 1996) to 18% (Leggett and Silvester, 2003). A survey of nurses also reported more injuries among staff and that injuries sustained by staff were generally more serious than those of patients (Lee et al. 2003). Indeed, Harris and Rice (1986) found that staff lost more days on average for injuries that occurred during restraints than for injuries that occurred during assaults. The nature of the incident may be a factor, with the risk of staff injury increasing for restraint following an assault. Greater risk of patient injury increased if the patients' self-harm, use substances or a weapon prior to restraint (Lancaster et al. 2008).

Other containment methods

Restraint is often followed by the use of other containment methods, usually medication and less frequently seclusion. There is some consistency between studies that between 40-50% of restraint episodes also involve the use of medication (Gudjonsson et al. 2000; Ryan and Bowers, 2006; Shepherd and Lavender, 1999).

The proportion of restrained patients being secluded ranged from 4% (Shepherd and Lavender, 1999), 10% (Leggett and Silvester 2003) and 13% (Parkes, 1996). Riley et al (2006) found that patients restrained in the prone position were more likely to be subject to high intensity observation after restraint than those in the supine position, perhaps because staff find it more difficult to judge patients' reactions to verbal interventions whilst face down. Although not directly comparable to these studies, 12% of nurses surveyed from regional secure and psychiatric intensive care units reported that the restraint incident in which they were last involved required additional measures such as seclusion and medication (Lee et al. 2003).

Characteristics of restrained patients

The characteristics of patients subject to restraint are generally poorly reported. Given the diversity of settings, it is likely that patient populations varied greatly between studies. It is particularly difficult to interpret studies which report the characteristics of restrained patients only, as it is not known how these patients' characteristics differ from those who were not restrained.

Age

Three studies of restrained patients report an average age of 31 (Leggett and Silvester 2003), 33 (Smith and Humphreys 1997) and 37 (Lancaster et al 2008), while another suggests that older patients are less likely to be restrained in a horizontal position (Whittington et al. 2006).

Gender

Two studies reporting the gender of restrained patients found a greater proportion to be male: 94% male (Duff et al. 1996) and 55% male (Lancaster et al. 2008). Males also comprised the majority (65%) of restraint requests (Ryan and Bowers 2006). In one study, 77% of restrained patients were male, but comparatively more females (43%) than males (31%) admitted during the study period were subject to restraint, although this difference did not achieve statistical significance (Leggett and Silvester 2003). On balance, therefore, more males than females may be subject to restraint, although the quality of the evidence is weak.

The influence of gender on staff-patient interactions during restraint has also been reported. Harris and Rice (1986) found that restraint episodes resulting in staff absence were more likely to involve male staff and patients. Others have reported male nurses to be more willing to restrain an aggressive patient (Martin and Daffern, 2006), staff unable to explain restraint of female patients (Leggett and Silvester, 2003) and female staff to feel that restraint conflicts with their role as a nurse (Sequeira and Halstead, 2004). These findings require cautious interpretation, since the larger quantitative studies in this review show no association between gender and restraint. This may reflect obvious differences in research questions (prevalence vs staff-patient

interactions), but also that when a range of possible factors are considered together gender is of much less importance.

Ethnicity

There is no consistent evidence that particular ethnic groups are more likely to be restrained. Three studies found no association between ethnicity and restraint (Gudjonsson et al. 2000, 2004; Duff et al. 1996). The latter study reported that 64% of restraint episodes involved Afro-Caribbean patients, but the same proportion of patients from this ethnic group comprised the study sample of serious violent incidents. Another study reported that 22% of restraint episodes involved patients from an ethnic minority group and that this proportion was similar for men and women (Lancaster et al. 2008). The 'Count Me In' census reports provide conflicting evidence of ethnic differences. In 2005, control and restraint among Black Caribbean men was higher than the average rate for all inpatients. In 2006, inpatients from the White/Black Caribbean Mixed group were more likely than average to experience restraint, but there were no ethnic differences among either men or women reported in 2007. In 2008, patients in the Other White and White/Black Caribbean Mixed groups had a higher than average rate of restraint (29% and 34% respectively).

Legal

There was a consistent finding that restrained patients were usually formally detained. The proportion ranged from 82% (Duff et al. 1996; Lancaster et al. 2008) to 94% (Smith and Humphreys 1997). Ryan and Bowers (2006) reported a lower rate (65%) for restraint requests, but did not provide data for patients who were actually restrained. There is also evidence that involuntary patients are significantly more

likely to be restrained if on a civil rather than criminal section (Gudjonsson et al. 2000, 2004).

Diagnosis

Two studies report schizophrenia to be the most common diagnosis for restrained patients (57%, Duff et al. 1996; 60% Smith and Humphreys 1997). Lancaster et al.'s (2008) study provides a more diverse range of diagnoses: schizophrenia (33%), mania and excited psychosis (20%), paranoia and acute psychotic reaction (17%), acute reaction and personality disorder (11%) and substance related or other (18%). Statistical analyses have found no association between diagnosis and restraint (Gudjonsson et al. 2004; Tobin et al. 1991).

Length of stay

Only one study reported the length of stay for restrained patients (Smith and Humphreys 1997). Half of restraint episodes involved patients who had been on the wards for at least 3 weeks but half of the remaining episodes were for patients who had been in hospital for less than 24 hours.

Other

Information on restrained patients' marital status, employment, living arrangements, educational qualifications and forensic history was not reported by any study.

Staff and patient experiences of manual restraint

The most comprehensive study of staff attitudes involved a postal questionnaire survey of 269 nurses in regional secure and psychiatric intensive care units (Lee et al

2003). Almost all reported positive outcomes of restraint, but a quarter expressed concerns about the impact on patients (e.g. relationships with nursing staff), while some found the experience of restraint demeaning and stressful. There were also doubts about some of the techniques used (e.g. joint locks which induce pain to gain compliance).

These findings are consistent with qualitative studies which suggest that nurses view restraint as a necessary part of their job, but one they would like to minimise (Bigwood and Crowe 2008; Bonner et al. 2002). Anxiety about getting hurt and distress in implementing restraint were common themes (Bigwood and Crowe 2008; Bonner et al. 2002; Sequira and Halstead 2004). One study found nurses reluctant or unable to express their feelings following an episode of restraint, but that these emotional responses diminished with greater experience of implementing restraint (Sequira and Halstead 2004). The positive benefits of debriefing after restraint episodes have also been acknowledged (Bonner et al. 2002). Duxbury (1999) found psychiatric nurses to be more willing than their general nursing counterparts to intervene with physical restraint and/or seclusion for aggressive patients. The use of seclusion after restraint has been linked to staff perceiving patients to have control over the cause of the incident (Leggett and Silvester 2003).

Less research is available about patients' experiences of restraint. Two small qualitative studies report on a total of 20 patients (Bonner et al 2002; Sequeira and Halstead 2002). Both found predominantly negative experiences including feelings of anger, fear and panic. Patients said they felt ignored prior to the incident and that their behaviour had not warranted the use of restraint. There was also a consensus

that restraint risked reawakening memories of previous distressing or abusive events. In contrast, female patients have expressed feelings of comfort or safety associated with restraint when female staff members restrain them, to the extent that they deliberately behave in ways which provoked its use (Sequeira and Halstead, 2002). Another study reported agreement between patients and staff that restraint is necessary to maintain safety and is not used excessively (Duxbury and Whittington, 2005).

Staff training in restraint techniques

Surveys of psychiatric nurses suggest gaps in training provision and that conflict management skills are not updated regularly enough. One reported that three-quarters of nurses had been trained in restraint techniques during their current post, but many had waited several months before receiving it (Wright et al. 2005). Delays in training were also reported by a survey of PICU and secure unit staff as well as wide variations in the range of techniques taught to nurses and a lack of training in safety and ethical issues (Lee et al. 2001). Another survey of PICU staff identified broad training needs, including restraint but also areas such as de-escalation and debriefing (Clinton et al. 2001). These shortcomings are reflected in Trust violence management policies which are ambiguous about when restraint is justified, the role of untrained staff and the level of force permissible, acceptable methods of restraint and the dignity of the patient during restraint (Wright et al. 2000).

The need for timely and comprehensive staff training in violence and aggression management is often stated. Increasing the numbers of staff trained in C&R techniques has been associated with a reduction in the number and severity of violent

incidents, particularly against nurses (Mortimer, 1995), although one study found that raising the number of staff required to undertake restraints from two to three led to increased staff injuries during restraint (Parkes, 1996). However, the impact of training on the use of restraint and other forms of containment has not been assessed. Instead, studies have relied upon measuring the confidence and skills of staff following training. Staff confidence and skills are important, but the literature does not offer much information about how these translate into nursing practice. Aggression management training has been identified as the most commonly reported factor giving staff the confidence to deal with patient aggression (Martin and Daffern 2006). A small scale evaluation of a ten day violence management course found significant improvements in knowledge, stress, role ambiguity, and de-escalation and control and restraint skills, but not job satisfaction (Paterson et al. 1992). It is to be expected that staff feel more confident after recent training. It is much less clear how long this confidence or improved competence lasts, although a study of Australian PICUs found an increase in staff confidence six months after completing a safe physical restraint training module (McGowan et al. 1999).

Discussion

Despite a large literature on the nature of violent and disturbed behaviour among psychiatric inpatient populations, there is little published data on the frequency of manual restraint or the circumstances of its use. The empirical studies reviewed here suggest that on an average 20 bed ward there might be between two and five restraint episodes per month, with forensic services at the higher end of this range. As some patients are restrained repeatedly, these figures are difficult to interpret, although it

would appear that in cross sectional national surveys the proportion of patients experiencing restraint at some point during their hospitalisation has increased slightly over recent years to around one in eight. About half of episodes involve restraining patients on the floor, with most of these utilising the prone position which has been linked to the risk of positional asphyxia. However the mean duration of restraint appears to be short (about 10 minutes). Excluding the extremely rare and tragic occurrence of patient deaths, staff are more likely to be injured during restraint than patients. There is not a great deal of evidence on the profile of patients who are subject to restraint, however they might be younger, they are more likely to be male and more likely to be detained under mental health legislation. There is no clear evidence that ethnic minority patients are more likely to be restrained. Staff are positive about the outcomes of restraint, with a minority expressing concerns about the impact on nurse-patients relationships, or finding the process demeaning and stressful. Patients express predominantly negative judgements, reporting feelings of anger, fear and panic.

Many of the studies in the review used official records of untoward incidents and the use of restraint. One study found that the recording of basic information about incidents was often omitted or inadequate (Dowson et al. 1999). This can have a detrimental effect on the management of violence as failure to record incidents thoroughly means that information needed to review processes and resources and assess high risk situations will be missed. The potential for missing data and under-reporting means that results based upon officially recorded data should be treated with caution. Other influences such as the concerns of managers and changes in national and local policy may also undermine the reliability and validity of official data.

Greater consideration of the limitations of officially recorded episodes of restraint is needed, accompanied by strategies to standardise and improve the quality of information available.

Another reason for approaching the manual restraint literature with caution is the sometimes implicit assumption that restraint is used primarily to manage violent incidents. Some of the more robust studies point to a range of behaviours and factors associated with the use of restraint such as attempts to abscond, agitation and refusal to comply with instructions. The range of antecedents to restraint lead one study to conclude that manual restraint is not primarily associated with violence, but the enforcement of detention and treatment of patients (Ryan and Bowers, 2006). From the evidence available, it is fair to conclude that the reasons why some patients and not others are subject to manual restraint are still not understood fully. Larger studies with more sophisticated designs (such as case control studies) are required to enable more systematic examination of current restraint practices.

Surveys show that training in restraint techniques is widespread in the UK, but evidence on outcomes in terms of restraint usage is absent. Now that prevention and management of violence and aggression training is mandatory, there is a need for it to be properly evaluated. This means measuring the impact of training on patient behaviour and nursing responses to it, rather than nurses' confidence or skills. Whilst there is some tentative evidence of a relationship between control and restraint training and reduced violence (Mortimer 1995), more research is required to conclusively demonstrate such a link. It is likely that organisational factors such as improved supervision and management support would be required in addition to staff

training for there to be a significant impact on nursing practice (Brooker and Brabban, 2006). In the absence of supporting data, it cannot be assumed that improved training would reduce the incidence of restraint. It is equally plausible that better trained staff would simply be more confident and able to restrain patients safely.

Conclusions

Given the prevalence of manual restraint use across adult inpatient psychiatric services the lack of data on this practice is striking. Research relating to manual restraint use is sparse, small scale, and overly dependent upon retrospective analyses of officially collected data. Relatively few studies were specifically focused on restraint; most concerned topics such as violent incidents or staff training. The need for further research on the effectiveness and safety of manual restraint is widely acknowledged (Sailas and Fenton, 2000; NICE, 2005), but there is a pressing need to improve the range and quality of basic information on the use of restraint and the characteristics of patients subject to it. This requires better recording of restraint episodes (through official and other means) across different service settings and a more rigorous, comparative approach to research design and analysis.

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