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Citation: Jones, J. C., Nijman, H., Ross, J., Ashman, N. and Callaghan, P. (2014). Aggression on haemodialysis units: a mixed method study. *Journal of Renal Care*, 40(3), pp. 180-193. doi: 10.1111/jorc.12068

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TITLE: Aggression on Haemodialysis Units: A Mixed Method Study

ABSTRACT

Background: Aggression on haemodialysis units is a growing problem internationally that has received little research attention to date. Aggressive behaviour by haemodialysis patients or their relatives can compromise the safety and well-being of staff and other patients sharing a haemodialysis session.

Objectives: The objectives of the study were twofold: Firstly, to identify the prevalence and nature of aggression on haemodialysis units; and secondly, to investigate factors that contribute to aggressive behaviour on haemodialysis units

Design and methods: A cross-sectional, sequential mixed method research design was adopted, with two research methods utilized. Incidents of aggressive behaviour were recorded over a 12 month period, using a renal version of the Staff Observation Aggression Scale. Six months after the incident data collection had commenced, semi-structured qualitative interviews were conducted with 29 multidisciplinary members of staff.

Results: Over 12 months, 74 aggressive incidents were recorded. The majority of incidents involved verbal aggression, and the perpetrators were a minority of patients, relatives and staff. Two patients were responsible for 38% of all incidents, both patients had mental health problems. Distinct temporal patterns to the aggressive behaviour were observed according to the day of the week and time of day.

Conclusions: This study demonstrates that aggression is a significant problem on haemodialysis units, with verbal aggression most prevalent. The temporal patterns to aggression observed are related to the uniqueness of the haemodialysis setting, with a distinctly different treatment environment compared to other healthcare settings.

Keywords: Aggression; haemodialysis; mixed method research; interviews; SOAS-R

Introduction

Haemodialysis is a treatment for end-stage renal disease (ESRD), a life threatening condition which is caused by an irreversible loss of kidney function. Hospital-based haemodialysis has been a routine outpatient treatment for patients with this disease since the 1960s (Thomas 2008) and is currently the most widely used form of renal replacement therapy (RRT) globally, compared to home haemodialysis or peritoneal dialysis treatment (Donovan et al. 2010). The number of people receiving RRT globally is estimated at more than 1.4 million, with incidence growing by approximately 8% annually (White et al 2008). A large survey of ESRD patients across 122 countries (Grassmann et al. 2005) estimated that approximately 77% of those people receiving RRT treatment were on dialysis (haemodialysis and peritoneal dialysis) with the majority of this group (89%) receiving haemodialysis, which in 2004 was estimated to be approximately 1 222 000 people. However, it is important to note that due to the expensive nature of RRT, treatment for ESRD varies greatly globally with more than 80% of all patients receiving RRT living in affluent countries across Europe and North America and Japan (White et al. 2008).

It is widely acknowledged that ESRD can have a negative impact on patients' physical, social and psychological well-being and quality of life (Cukor et al. 2007; Ginieri-Coccosis et al. 2008). Haemodialysis treatment requires patients to make significant lifestyle adjustments, including severe dietary restrictions, a complex medication regime and frequent attendance at haemodialysis sessions. Such a regime is burdensome for patients with significant restrictions to their independent living (Khalil and Frazier, 2010). The impact of this regime is further exacerbated by the long-term nature of haemodialysis treatment, with many people remaining on dialysis for a number of years, with the availability of donor

organs and rates of kidney transplantation varying greatly across different regions and countries (White et al. 2008). Therefore it is perhaps unsurprising that many haemodialysis patients experience psychological distress; depression is the most common psychological problem reported among haemodialysis patients (Rabindrahath et al. 2005) with estimates of a 20-30% prevalence of depressive disorders in this population (Chilcot et al. 2008; Cukor et al. 2006).

For those people receiving hospital-based haemodialysis treatment, the treatment regime impacts greatly on their day-to-day lives, involving frequent attendance at hospital, often up to three times a week, for approximately three to four hours each session. Due to the frequency of treatment there is recurrent contact between patients and staff who work on the haemodialysis units. However, studies of staff-patient relationships in haemodialysis settings report varying degrees of familiarity between staff and patients. Some studies have commented on the existence of formal boundaries between staff and patients, with dialysis nurses focusing on the technical aspects of the treatment, creating an emotional distance between themselves and their patients (Bevan 1998; Hagren et al. 2005). Whereas a study by Swartz et al (2008) highlighted the benefits of less formal boundaries between staff and patients, with open communication and the sharing of feelings (including open disclosure) providing social support and improving patient well-being. Polashchek (2003) recommends a 'middle way' approach of a model of 'negotiated care', with renal nurses integrating the clinical requirements of treatment with responsiveness to patients' subjective experiences of living on dialysis.

Aggression on haemodialysis settings

It is well established in the international literature that aggression towards healthcare staff is an occupational hazard (Camerino et al. 2008, Farrell et al. 2006). Previous research has explored the prevalence and nature of aggression in different general health care settings and countries (Celik et al. 2007, Hahn et al. 2012, Winstanley & Whittington 2004). A systematic review on this topic (Hahn et al. 2008) identified 31 studies on patient and visitor aggression in general hospitals. The review found that patient and visitor aggression is a significant occupational hazard for healthcare workers. Workplace and organizational characteristics, and poor interactions between patients and/or visitors with staff were reported in many of the studies as contributing towards aggressive incidents. A patient's health status was also found to be a contributing factor, for example if a patient was recovering from unconsciousness, had delirium or confusion, dementia or other mental health problems, alcohol or drug intoxication or withdrawal.

In recent years an expanding literature base has highlighted the problem of aggression in haemodialysis settings (Burns & Smyth 2011; Hashmi & Moss 2008, Sukolsky, 2004; Johnson et al. 1996). Three surveys conducted with haemodialysis clinicians in the USA (King & Moss 2004) the UK (Sedgewick 2005) and 12 countries across Europe (Zampieron et al. 2010) indicate that aggressive behaviour is a growing problem for staff on haemodialysis units. King and Moss (2004) reported that 71% of the staff surveyed were frequently engaged in attempting to resolve difficult or disruptive situations. Similarly, Sedgewick (2005) found that 79% of the surveyed staff had a personal experience of aggressive behaviour in their workplace in the previous 12 months. All three surveys reported that the majority of aggressive incidents reported by staff were perpetrated by

haemodialysis patients and also some relatives. However, a limitation of these surveys is that they are retrospective, relying on clinician's recollections of events in the past and may be affected by recall bias. Furthermore, these studies do not provide an accurate account of the nature and severity of aggressive incidents in haemodialysis units.

A study by Burns and Smyth (2011) recorded aggressive incident data over a nine week period on a single dialysis unit in Sydney, Australia to identify reasons for aggressive behaviour by haemodialysis patients. A total of 124 incidents of aggression were recorded. The most common reasons for aggressive behaviour were related to waiting times (52%), patients with mental health issues (17%), environmental factors (11%) and treatment conflicts (11%). In relation to patients becoming aggressive whilst waiting for treatment, the researchers found a greater number of aggressive incidents at the times of the day when patients were waiting to go on a dialysis machine.

It is problematic within this research area that there is no universal definition of aggression; definitions in policy documents and research studies vary widely regarding what constitutes aggression (Chappell & Di Martino 2006; Rippon 2000). However, a widely used definition from Morrison (1990), describes aggression as “any verbal, non-verbal or physical behaviour that was threatening (to self, others or property) or physical behaviour that actually did harm (to self, others or property)” (p67).

It is evident that aggression on haemodialysis units is a growing problem, yet there has been little research on this topic. To our knowledge, apart from the Burns and Smyth (2011) research, there are no other cross-sectional studies of aggression on haemodialysis units and as such, this is clearly an area worthy of further investigation. The aims of this

study were twofold: Firstly, to identify the prevalence and nature of aggression on haemodialysis units (including travel to and from the units); and secondly, to investigate factors that contribute to aggressive incidents on haemodialysis units. The research was conducted by a multidisciplinary research team, composed of a social scientist, a renal consultant, two mental health nurses and two psychologists. There was also a Project Advisory Group, composed of renal clinicians, researchers with expertise in the field of renal care, renal patients and carers, who provided advice and guidance to the research team.

Methods

Design

This study adopted an explanatory sequential mixed method research design (Cresswell & Plano Clark 2011), with the sequential collection of aggressive incidence data followed by qualitative interviews with staff. The purpose of this sequential design was to “use the qualitative strand to explain the quantitative results” (Creswell & Plano Clark, 2011, p63).

Participants and setting

The study was conducted on two outpatient haemodialysis units in two inner city London hospitals. For the purposes of anonymity, the two hospitals and units will be called Hospital 1 and Unit 1 and Hospital 2 and Unit 2. During the study period from December 2006 to November 2007, 374 different patients were treated in these two outpatient units, Unit 1 was based in Hospital 1 and was the larger unit, providing treatment for 242 of the 374 patients (65% of the sample). Unit 2 treated the remaining 35% of the sample and was located in Hospital 2. Of the total of 374 patients, 59% were males and 41% females. The average age of the 374 patients was 56 years. Regarding ethnicity, the two hospitals serve an inner city locality with an ethnically mixed population. At the time of the research, 65% of

the haemodialysis patients were identified as being non-white (combining the ethnic groups of Black, Asian, Chinese and Other). This compares to a much lower figure of 18.6% for the prevalent Renal Replacement Therapy (RRT) ethnic minority population in the UK (Farrington et al, 2008). However, this high percentage of patients from different ethnic backgrounds is in keeping with a national trend of urban, ethnically diverse populations of high social deprivation having the highest prevalence rates of RRT in the UK (Shaw et al, 2012).

Most patients attended haemodialysis sessions three times a week for three to four hours each session. Due to the high number of patients attending the units, at the time of the research the units were open between 7am and 11.30pm with patients arriving for treatment at three different times of the day, which were allocated times known as 'shifts'. The first group of patients arrived at 7am (morning shift) for their treatment, the second group arrived from 12.30pm for the afternoon shift and then the evening shift (called the 'twilight' shift) would start from 6.30pm. At the time of the research, 53% of the patients used hospital transport services (i.e. ambulances and taxis) to travel to and from the hospital from their homes; this service was provided for those patients with mobility problems or who were too unwell to travel independently. The other patients travelled independently, using private or public transport.

At the time of the study there were 121 clinical and non-clinical staff working on the two units. All staff members were asked to participate in the reporting of aggressive incidents and 29 staff members were invited to participate in the interviews. The staff interviewees were purposively selected to be representative of the different professional groups, clinical and non-clinical, who worked across the two units and the hospital transport

service. The staff who participated in the interviews included: two health care assistants, 15 nurses of various bands (grades), four doctors, two dieticians, one social worker, one counsellor, one technician, one transport manager, and two ambulance drivers. Of the staff interview participants there were 18 females and 11 males, the average age was 41 years and 38% were from non-white ethnic groups (Black, Asian and Other). The staff were initially identified from a staff list of professional groups across the two units and were approached by the research assistant regarding their participation in the interviews. They were given an information sheet in the first instance and allowed time to consider their participation.

The SOAS-R Renal Scale

The aggressive incidents were recorded using the renal version of the Revised Staff Observation Aggression Scale (SOAS-R) (Nijman et al. 1999), which is a revised version of the original SOAS scale (Palmstierna & Wistedt 1987). The SOAS and its revised version (SOAS-R) were originally designed to monitor aggressive incidents on inpatient psychiatric wards and have been used in a number of psychiatric and psychogeriatric studies (Almvik et al. 2006; Nijman et al. 2005; Pulsford et al. 2011). However, to our knowledge this instrument has not been used before in a renal setting.

The renal version of the SOAS-R (see Appendix) was developed for this study by adapting the original scale. The SOAS-R (Nijman et al. 1999) comprises five columns pertaining to specific aspects of aggressive behaviour (i.e., what triggered the aggression, the aggressive means used, the target of the aggression, the consequences of the aggression, and the measures taken to stop aggression). In order to tailor the SOAS-R for the haemodialysis setting, adjustments were made by the authors, following consultation with the project advisory group. This included adding some haemodialysis specific situations as possible

triggers for aggressive behaviour, namely: 'patient waiting for transport', 'patient waiting to get on a dialysis machine' and 'patient wanting to come off a machine early'. In the column 'consequence(s) for victim(s)' the item 'psychological/emotional distress' was added. In the column 'measure(s) to stop aggression' an item 'call security' was added. Finally, for the SOAS-R Renal version, the category "verbal aggression" that is in the original SOAS-R was categorised further by adding tick boxes for participants to identify the type of verbal aggression, as follows: offensive language (swearing), threats of violence, derogative remarks (racial, discriminatory) and sexual remarks, gestures or behaviours.

The SOAS-R has a validated, finely tuned severity scoring system, which can compare aggression rates, as well as differentiating severity. The revised SOAS-R severity score ranges from 0 to 22 points, with higher scores again indicating greater severity (Nijman et al. 1999). SOAS and SOAS-R severity assessments have been found to have fair to good interrater-reliability (i.e., Cohen's Cohen's Kappas being 0.61 and 0.74 and a Pearson's r between independent raters of 0.87), and studies addressing the concurrent validity of the SOAS and SOAS-R severity scores all yielded significant results (i.e. correlations with other methods for assessing the severity of aggressive behaviour varied from 0.38 to 0.81) (Nijman et al. 2005).

The interviews

The interviews were guided by a semi-structured interview schedule that was developed by the research team, in consultation with the project advisory group. The interview schedule asked participants about their career to date and their experience of working in haemodialysis settings, about their relationships with patients and relatives, and then more specifically about their experiences of aggressive behaviour on the haemodialysis

units and their views regarding aggression on the units. As the interviews were conducted six months after the incident data collection had commenced, the researchers were able to ask the participants for their explanations for the emerging findings from the incident data collection. The interviews were conducted in a quiet room away from the main wards and on average the interviews lasted approximately 45 minutes. All but one of the interviews were tape recorded; one participant preferred not to be recorded and notes were taken instead.

Data collection

The research team provided training to staff on how to use the SOAS-R Renal and all staff were asked to fill out a paper copy of the SOAS-R Renal form if they either witnessed or experienced aggressive behaviour during the study period. The SOAS-R Renal forms were collected by a researcher at regular intervals and checked against official records in an attempt to minimize missing data and ensure there was no duplication of recording. Six months after the incidence data collection commenced, the interviews were conducted.

Ethical considerations

The study was approved by a local research ethics committee. Staff and patients were informed about the study with posters around the units and researchers spent time on the units prior to the study commencing to explain the details of the study. All patient names initially written on the SOAS-R Renal forms by staff were then de-identified by the research team, with each patient given a code number in order to preserve the anonymity of the patients. Staff members were also provided with a unique code for use with the SOAS-R forms and the interviews. The staff interviewees were all provided with information sheets about the study and were told that they were free to withdraw from the study at any time. Written informed consent was obtained from each staff member who participated in an interview.

Data analysis

The incident data were analysed using SPSS (version 15). SOAS-R Renal severity scores were calculated for each aggressive incident. Each SOAS-R Renal column was awarded a severity score and the total severity score was achieved by summing the highest score from each of the five columns. Descriptive statistics were calculated for each of the SOAS-R Renal columns (what triggered the aggression, the aggressive means used, the target of the aggression, the consequences of the aggression, and the measures taken to stop aggression) and for aggression trends against staff, other patients, objects and the self. Descriptive and chi square statistics were calculated to determine if there were statistically significant differences in aggression according to the day and time of the day.

The interviews were analysed thematically, following the constant comparative method of qualitative analysis (Glaser & Strauss 1967). QSR N6 software (QSR International, 2002) was used to provide a systematic approach to the coding of the data into themes. From the qualitative analysis a number of themes were identified. However, only the themes that are directly related to the incidents of aggression and help explain the quantitative findings are discussed in the following results section.

Results

Prevalence of aggression

During the one year study period, 74 aggressive incidents were reported. The vast majority of the reported incidents (i.e., 68 incidents or 92%) took place on the haemodialysis units. More incidents occurred on Unit 1 (64%) compared to Unit 2 (n=28%). The remaining six incidents (8%) occurred during journeys to or from the units: four incidents occurred in an

ambulance; one in a taxi; and one incident was reported on a tube (metro) train, where a member of staff was followed onto a train and verbally threatened by a haemodialysis patient.

Of the total of 374 patients, only a small minority (26 patients or 7% of the total sample) were perpetrators in the incidents reported. In addition to the 26 haemodialysis patients, six relatives and one staff member also engaged in aggressive behaviour. Many of the perpetrators were responsible for more than one incident; two haemodialysis patients engaged in repeated aggression and were responsible for almost four out of every 10 reported incidents (38%). These two patients both had a pre-existing psychiatric disorder (schizophrenia) and were both acutely unwell during the study period.

Circumstances under which aggression occurred

In 45% of incidents the staff members reported that they did not have a clear understanding what the reasons for the aggressive behaviour were. In the remaining 55%, the triggers for the aggression were reported as: a reaction to other people's behaviour e.g., fellow-patients, visitors or staff members (n=10), waiting for transport or to get on a dialysis machine (n=6), a problem with the dialysis machine e.g. beeping (n=5), wanting to come off the dialysis machine early (n=4); the patient being denied something by staff e.g. to see a doctor right away (n=4); being annoyed by a loud TV (n=3).

Severity of the reported aggression

The vast majority of the reported incidents (i.e. 71 of the 74 incidents or 96%) exclusively involved verbal aggression. Regarding the nature of the verbal aggression, 66% of incidents reported offensive language (swearing), 32% incidents involved derogatory

remarks including racial remarks and 24% incidents reported threats of violence (some incidents involved more than one category). The remaining three incidents involved two incidents of different haemodialysis patients hitting another person (one staff member and one taxi driver) and one incident of a haemodialysis patient throwing a table across the ward. As for the reported consequences of aggressive behaviour, almost half of the incidents (45%) led to psychological/emotional distress for staff members and in 34% of incidents, staff reported feeling threatened by the aggressive behaviour. The average severity of the 74 reported incidents in terms of SOAS-R severity scores, was 9.4 (s.d. = 3.6), with a range from 0 to 15 SOAS-R severity points (the theoretical range is from 0 to 22).

Day of week

Distinct temporal patterns of the aggression were observed according to the days of the week [Chi-square (5) = 28.2, $p < 0.05$]. Figure 1 demonstrates that there were relatively more incidents occurring on the units on Mondays, Wednesdays and Fridays, with 31.1% of incidents occurred on a Wednesday, 25.7% occurred on Friday and 23% occurred on a Monday. Tuesday, Thursday and Saturday had less incidents with 5.4%, 9.5% and 5.4% respectively.

(insert Figure 1 here)

Time of day

Regarding the timing of the aggressive incidents, again very distinct temporal patterns were observed. In Figure 2, the numbers of reported incidents are plotted over the hours of the day. Not surprisingly, the incident numbers are not equally distributed over the 24 hours

of the day [Chi-square (23) = 103.1, $p < 0.05$], but neither are they equally distributed during office hours [i.e., from 9 am till 6 pm; Chi-square (8) = 23.1, $p < 0.05$].

(insert Figure 2 here)

Staff views regarding the aggression on the units

From the interviews conducted with the 29 staff members, themes emerged that help explain the distinct temporal patterns that were observed from the aggressive incident data collected and other factors that may be contributing to the aggression observed on the units. For purposes of confidentiality, staff participants are referred to by a numbered code, preceded by 'S' which represents 'staff'.

Temporal patterns to aggression

During the interviews, staff were shown graphs of the incidents according to the day and time and were asked why they thought these patterns were emerging. The staff had clear views on this, as the following quotations illustrate:

Day of week

“Obviously the Monday, Wednesday and Friday are the same group of people [patients]. But also I think we've always put people who are more difficult on the Monday, Wednesday, Friday, so that there are more people [staff] around (...) and it wasn't left to the skeleton crew on Saturday. So I suspect that may be why that is. We've engineered that one” (S35)

Time of day

“The times I’m not surprised about either (pause) in the morning people might be a bit ratty when they come in because it’s early, but they know they’re going on the machine and there’s no hold up, because staff are just like, right, let’s get you on really quickly. At lunch time patients are coming off [a dialysis machine], and patients are also coming in. At 5 o’clock you’ve got the afternoon patients coming off, but also you’ve got the twilight patients coming in, who try and get into the unit before their allotted time, and it can get a little bit feisty at that time” (S47)

Waiting

A key theme that emerged from the staff interviews was that of ‘waiting’. Staff spoke about patients often having to wait during their treatment days, and expressed understanding that this can be frustrating, as explained by participant ‘S62’:

“They’re fed up waiting (...). They’ve spent all day here, they don’t want to wait another two hours for transport. They have to come here three times a week, they have to wait for transport, they have to wait for porters and the process is just so tiresome that they get really fed up really quickly and they can fly off the handle very, very quickly.” (S62)

Waiting to either go on a dialysis machine or be taken off the machine at the end of the treatment also seem to be a triggers for some patients’ frustration or aggression, as the following quotations demonstrate:

“They’re tired, they want to go on the [dialysis] machine, everything becomes very important. It doesn’t matter that all the machines may not be ready, if they come in

first and see somebody else going on, even so much as two minutes before them, it can feel like a personal insult.” (S13)

“You might be busy taking one patient off [a dialysis machine], or other patients off, and the other patients are ready to come off. And they become annoyed, say that they’re still on the machine, and nobody’s taking them off, even if they see that you are busy. They think they should come off when it’s time for them to come off the dialysis machine.” (S24)

Burden of kidney disease & treatment regime

Staff recognised how the burden of the illness and the treatment regime can have a negative impact on patients’ psychological wellbeing and that this may affect their attitude and behaviour on the units, as the following quotations highlight:

“A lot of patients are frustrated, of course you’d be frustrated, renal failure interferes with almost every area of your life. If you’re frustrated everything’s going to annoy you, I can’t think that anyone wants to come here three times a week and takes pleasure from it. (S22)

So there’s a constant sense amongst patients of disenchantment generally, anger, frustration all kinds of things. It may be that dialysis keeps you alive (...) but they [patients] don’t have a social life. They’re very restricted in what they can eat and what they can do. Sexually things are sometimes difficult. Making relationships is a problem. Having money, retaining a job, getting housing, all of those things and they naturally become very upset.” (S45)

Relationships between staff and patients

The varying extent of familiarity and relationships between different staff members and patients was also a theme that emerged from the interviews, as the following quotations show:

You do see the same faces again and again, so sometimes it could be a good thing, you could build up some sort of relationship, but then again, if you don't get on with them or they are not interested in getting on with the staff, then it becomes harder because you've got to face them three times a week, but it just depends on the individuals really. (S5)

“I have a good personal relationship with the patients. I treat patients in the way I want to be treated myself. I will hug them and talk to them. (...) but many of the staff are task orientated - there is the technology and the patient. Many just deal with the [dialysis] machine. They walk up to the machine and switch the alarm off and then walk away. A nurse kept switching the machine off and didn't even look at the patient. I don't like the attitude of many of the other staff, I tell them to talk to the patients and find out what's happening at home. If you talk to a patient you can suss out their mood.” (S5)

Patients with mental health problems

During the interviews, staff talked about their experiences of caring for patients who were acutely mentally ill and aggressive, as this extract illustrates:

“Most recently, a gentleman, very difficult to look after, who's had to be sectioned three times in two months, he's been extremely verbally aggressive to me and non-

verbally as well, he's attempted to intimidate me and he's made threats to me ... It makes me feel incredibly vulnerable." (S13)

Staff also acknowledged that they were often unable to adequately address the mental health problems experienced by some patients, as discussed by participant 'S67':

"These patients have complex mental health needs that we're not meeting. And it breeds these problems, it breeds aggressive behaviour. And if I say, if I said there's one area that they're getting really poor care from us I would say it's in relation to their mental health. So I think that's a big issue." (S67)

Discussion

This study confirms that aggression is a significant problem on haemodialysis units. Patient aggression was most commonly reported, with a smaller number of relatives also a source of aggression which is consistent with previous studies (King & Moss 2004; Sedgewick 2005). One incident of aggression from a staff member was also reported, which is a new finding from the dialysis field, although the prevalence of 'horizontal violence' between co-workers in healthcare settings is widely reported (Almost et al. 2010). The majority of the aggressive incidents occurred on the haemodialysis units. However, 8% of the incidents occurred off the hospital site in ambulances, a taxi and on a train. The prevalence of aggression away from the main hospital site demonstrates that staff can also be at risk of aggression away from the haemodialysis unit. This finding is consistent with the ILO/ICN/WHO/PSI (2002) definition of workplace violence as "incidents where staff are abused, threatened or assaulted in circumstances related to their work, including commuting to and from work, involving an explicit or implicit challenge to their safety, well-being or health" (p.3).

Most of the incidents involved verbal aggression and this finding is consistent with previous studies of aggression in general hospitals (Hahn et al. 2008, Sofield & Salmond 2003). In our study, a high incidence of offensive language, racial derogatory remarks and threats of violence towards staff were recorded and in almost half of the incidents (45%) staff reported experiencing psychological/emotional distress as a consequence. These findings are of concern; although one may consider the impact of verbal aggression to be less than for physical aggression, previous studies of verbal abuse against healthcare personnel have shown the significant impact of verbal aggression in terms of a reduction in staff morale and job satisfaction and the intention to leave the organisation and/or profession (Sprigg et al. 2007; Sofield & Salmon, 2003). Indeed in our study the severity of the reported aggression is substantial and in line with severity scores reported in psychiatric studies. In our study the average SOAS-R severity score was 9.4, within the range of earlier SOAS-R studies conducted on (locked) psychiatric wards. On psychiatric wards the mean SOAS-R severity scores have been found to generally lie between 9.2 and 11.0 severity points (Nijman et al. 2005). The substantial severity score of 9.4 found from the current study, where the majority of incidents were verbal aggression, demonstrates the potential for psychological and emotional distress from verbal and non-physical aggression on haemodialysis units.

The main perpetrators of aggression were a minority of patients and this finding has been reported in studies conducted in psychogeriatric and psychiatric settings (Almvik et al. 2006; Bowers et al. 2011). In our study, two patients were responsible for 38% of the incidents; both were acutely mentally unwell during the study. We know from previous studies of aggression in general hospitals that patients' mental state, confusion and/or high arousal are factors that contribute to aggressive behaviour (Hahn et al. 2008). Furthermore it

is well established that haemodialysis patients have a higher prevalence of psychological and psychiatric problems than the general population (Chilcot et al. 2008, Cukor et al. 2007, Kimmel et al. 1998). Thus it is to be expected that a local population of haemodialysis patients will include patients with additional co-occurring or comorbid mental illness. As commented by Prescott (2006), a lack of training in recognising and responding to mental health issues can create real challenges for haemodialysis staff. In our study the interview data clearly demonstrated that staff were anxious and in some cases, fearful, about interacting with patients who were acutely mentally ill and aggressive. Clearly haemodialysis staff have a moral and professional obligation to promote the wellbeing of their patients (Hashmi & Moss 2008). However, this can prove problematic when staff are fearful for their own safety and that of the other haemodialysis patients.

From the interviews it was evident that staff acknowledged that the burden of kidney disease and the haemodialysis treatment regime can influence patients' behaviour on the haemodialysis units. It is also clear that different staff had varying levels of familiarity with patients. Some staff observed (and were critical) of other staff members who focused on the technical aspects of the treatment, creating an emotional distance between themselves and their patients. This has been reported by previous studies (Bevan 1998; Hagren et al. 2005). However, other staff (such as staff member S5) talked about their spatial and narrative 'proximity' to patients, with close physical contact in the form of physical touch and a narrative closeness, demonstrating their empathy and interest in the patient's story (Malone, 2003; Peter & Liaschenko, 2004). Swartz et al (2008) suggest that a greater familiarity between staff and patients can improve dialysis patients' mental health and well-being. However, whether it can also reduce incidents of aggression requires further investigation.

An important finding of this study was the distinct pattern of aggressive behaviour on certain days of the week and at particular times of the day. The interview data explain these temporal patterns, with patients perceived as being ‘difficult’ being placed on shifts on Mondays, Wednesdays and Fridays, when there were more staff on duty and also on Unit 1, where more senior staff were based. Furthermore the peaks in recorded incidents matched the times when there was a cross-over of patients either coming to the units to start their dialysis treatment or waiting to complete their treatment and leave the units. At these times there was a greater activity on the units, increased staff-patient interactions and also the potential for prolonged waiting times for treatment or transport, a prominent theme from the interview data. The relationship between aggression and the timing of haemodialysis treatment shifts is confirmed by previous research (Burns & Smyth 2011) but the temporal patterns regarding day of the week has not previously been reported.

Limitations

This was a cross-sectional study conducted in just two haemodialysis units in London, thus caution is required before generalizing the findings to other settings. A larger national or international study is required to extend the scope of this study and validate the findings. The use of the SOAS-R Renal version brought both advantages and limitations to the study. A benefit of using the SOAS-R Renal instrument in this study has been the ability to accurately record both the nature and prevalence of aggressive incidents, in preference to retrospective cross-sectional staff surveys which collect less reliable staff recollections of past experiences of aggression and other disruptive behaviors (Hahn et al. 2008). An acknowledged limitation is that the SOAS-R form is completed by a member of staff who either personally experienced or witnessed an aggressive incident, and thus their emotional response to the

incident may have affected the objectivity of their account (Foster et al. 2007). Furthermore, the SOAS-Renal is not a validated instrument and requires validation in a future study.

In our study, 74 aggressive incidents were reported over a 12 month period. It is acknowledged that this figure may seem low compared to the study by Burns & Smyth (2011) when 124 aggressive incidents were reported over a nine week period. However, caution is required with only one other cross-sectional study on this topic to compare our findings with. Any comparison is also problematic as the Burns & Smyth (2011) study used a different definition of aggression and a different data collection instrument. It is also possible that there was under-reporting of incidents, as observed in previous studies of aggression (Almvik et al. 2006; Bowers et al. 2011). Possible explanations for this are that staff may dislike the additional paperwork, as suggested by Rippon (2000), or perceive that reporting aggression won't result in any action from management, so it is a pointless exercise.

Conclusions

This study demonstrates that aggression is a significant problem on haemodialysis units. Our findings show similarities to previous research on aggression in general hospitals, with a predominance of verbal aggression reported and common factors contributing to aggressive behaviour including prolonged waiting times and patients' mental health problems (Hahn et al. 2008; Winstanley & Whittington 2002; 2004). It is considered that the distinct temporal patterns of aggressive incidents observed is specific to the dialysis setting and this is supported by previous research (Burns & Smyth 2011). This finding in particular highlights the uniqueness of the haemodialysis setting, with a distinctly different treatment environment compared to other general healthcare settings, such as emergency departments and medical wards.

Implications for practice

The substantial severity of the aggression reported and the psychological and emotional distress reported by staff is of concern and requires action in terms of providing greater support and training to haemodialysis staff. After the completion of our study, mental health lecturers at the local University provided a study day for the nurses from the two haemodialysis units where the study was conducted. The day covered a number of topics including: an overview of mental health problems, the recognition of early warning signs of aggression, methods of de-escalation and the management of aggression, and communication skills. The course was well evaluated and demonstrated how practice-focused research can be successfully implemented into post-registration education. However, this course was a one-off event; what is required is regular education and training on these topics and on-going support for dialysis staff in the form of regular supervision and de-briefing when incidents do occur.

In common with previous studies, this research has identified the importance of providing adequate psychological and psychiatric support for haemodialysis patients. The provision of specialist staff such as psychologists and counsellors to provide psychological support to haemodialysis patients is considered essential, either as dedicated staff on the units or within the wider renal service. Social workers can also provide support with the different aspects of patients' lives that may be causing psychological distress, such as financial problems, housing, and marital and familial issues. It is also recommended that haemodialysis units liaise with mental health professionals, either from psychiatric liaison teams within the general hospital or from specialist mental health organisations, in order to provide specialist support for dialysis patients who are acutely mentally unwell and attending

the unit. However, it is important to note that there remains limited evidence regarding the effectiveness of different treatment options for ESRD patients with psychological and psychiatric problems, with research in this area requiring further development (Chilcot, 2012; Chilcot et al, 2011).

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