Published in final edited form as:
Aggress Violent Behav. 2008 March 1; 13(2): 77–87. doi:10.1016/j.avb.2007.12.001.

Resident-to-Resident Aggression in Long-Term Care Facilities: An Understudied Problem

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Abstract

Resident-to-resident aggression (RRA) between long-term care residents includes negative and aggressive physical, sexual, or verbal interactions that in a community setting would likely be construed as unwelcome and have high potential to cause physical or psychological distress in the recipient. Although this problem potentially has high incidence and prevalence and serious consequences for aggressors and victims, it has received little direct attention from researchers to date. This article reviews the limited available literature on this topic as well as relevant research from related areas including: resident violence toward nursing home staff, aggressive behaviors by elderly persons, and community elder abuse. We present hypothesized risk factors for aggressor, victim, and nursing home environment, including issues surrounding cognitive impairment. We discuss methodological challenges to studying RRA and offer suggestions for future research. Finally, we describe the importance of designing effective interventions, despite the lack currently available, and suggest potential areas of future research.

Keywords

aggressive behavior; nursing homes; dementia; epidemiology

Although the idea of nursing home elder mistreatment conjures images of resident abuse by staff, aggression between residents, which has received little academic attention, may be a much more prevalent phenomenon. The public health significance of this problem was highlighted in a 2001 report of the Special Investigations Division, Committee on Government Reform of the United States House of Representatives entitled Abuse of Residents is a Major Problem in U.S. Nursing Homes (2001). An important finding from this report was the failure

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Conflict of interest: none declared.

of many nursing homes to adequately protect residents from other abusive residents. This article reviews the limited current research on resident-to-resident aggression and relevant literature on related topics. We identify methodological challenges to investigating this topic, potential solutions, and propose directions for future research.

Research Directly on RRA

We define resident-to-resident aggression (RRA) in long-term care facilities as negative and aggressive physical, sexual, or verbal interactions between long term care residents, that in a community setting would likely be construed as unwelcome and have high potential to cause physical or psychological distress in the recipient. We believe that, although contextually different from community elder abuse in many ways, RRA also includes a similar spectrum of phenomena ranging from verbal altercation to physical and sexual violence (Lachs & Pillemer, 2004).

A sizable and growing research literature exists on various types of elder abuse. Elder mistreatment in the community has been extensively studied within the last two decades. (Council on Scientific Affairs, 1987; Fulmer, 2002; Fulmer et al., 2004; Hudson & Johnson, 1986; Lachs & Pillemer, 2004; Lachs et al., 1997; Pillemer & Finkelhor, 1988). A smaller but substantial literature also has emerged examining elder mistreatment inflicted upon older people by staff in institutional settings (Hirst, 2002; Hirst, 2000; Payne & Cikovic, 1994; Pillemer & Moore, 1989). Agitated or disruptive behaviors in the nursing home or community, typically by persons with dementia, have been explored widely by researchers (Aarsland et al., 1996; Brodaty & Low, 2003; Cohen-Mansfield, Marx, & Rosenthal, 1989; Cohen-Mansfield, Marx, & Rosenthal, 1990; Gray, 2004; Marin et al., 1997; Voyer et al., 2005). Further, a body of knowledge now exists examining assaultive behaviors experienced by paid and family caregivers in rendering daily assistance to patients with dementia both at home and in institutions (Cohen-Mansfield & Parpura-Gill, 2007; Farrell Miller, 1997; Gates et al., 2004; Gates, Fitzwater, & Succop, 2005; Gates, Fitzwater, & Meyer, 1999; Hagen & Sayers, 1995; Hamel et al., 1990; Levin et al., 2003; Malone, Thompson, & Goodwin, 1993; Rovner, 1996; Shaw, 2004).

Aggression and violence among long-term care residents, however, has been largely overlooked by researchers to date, despite its potential significance as a public health problem in long-term care. We identified only two publications that have studied this issue. Shinoda-Tagawa and colleagues (2004) examined victims of RRA reported in Massachusetts to the Department of Health during 2000 and compared them to a “violence-free” control group who had not experienced RRA. Several factors were found to be more prevalent in residents experiencing RRA: male gender, behavioral disturbance (especially wandering), moderate functional dependency, and cognitive impairment. Common injuries among victims included lacerations, bruises, and fractures. The most common site of RRA was in patients' rooms, but the hallways and dining room were also common RRA venues. Further, Shinoda-Tagawa and colleagues found unexpectedly that injured residents were more physically independent than controls but also more cognitively impaired. They hypothesized that this result could be explained because residents must be physically independent to interact with other residents and create altercations. Further, cognitive impairment may lead to victimization, as demented residents may put themselves in “harm's way” by behaviors such as wandering and their impaired mental function may make it difficult for them to avoid trouble.

Lachs and colleagues (2007) examined police contact visits to nursing homes to intervene or investigate in cases of RRA. The study took place in the context of a longitudinal cohort study of crime victimization and police contact in community-dwelling older adults where the authors linked cohort information to a police records database (Lachs et al., 2004). Surprisingly, more

than 5% of older adult subject contacts with police actually occurred after subjects were placed in nursing homes. Further, although police contact was more frequent with community-dwelling residents, when police contact occurred with nursing home residents, it was much more likely to be for violent episodes than in community-dwelling subjects (90% vs. 17%). The most common reason for police to investigate an episode (89% of incidents) was for simple assault in which the subject was the perpetrator or victim of resident-to-resident violence.

Although providing important preliminary data, both of these studies are limited in their ability to offer insight into RRA. Shinoda-Tagawa and colleagues' research is a case-control study using only official reports to the State Department of Health for case finding and relying on the data in the Minimum Data Set (MDS) for background information. Thus, its findings are subject to underreporting and non-standard reporting policies and practices in different nursing homes. In addition, MDS data are not reliable and are error-prone (Bharucha, Dew, Begley, Stevens, Degenholtz & Wactlar, 2007). Further, both of the studies examined only the most egregious incidents of RRA, in which a report was filed by the facility and physical injury was visible or where the police were summoned.

For these reasons, the investigators were not able to characterize the full spectrum of RRA, which includes verbal and other abusive behaviors that, although they do not result in immediate dramatic visible injury, may have significant consequences for the victim. Additionally, although the Lachs et al. study suggests that RRA may be highly prevalent in nursing homes, neither study provides definitive evidence regarding the frequency of this phenomenon. Despite the preliminary nature of the studies, however, they provide evidence suggesting that RRA is sufficiently widespread to be of concern and that it may have serious physical and psychological consequences.

Extent of RRA in Nursing Homes

A necessary first step to accurately understand and characterize RRA is studies evaluating how common and widespread it is and how many nursing home residents are involved. Specifically, researchers need to investigate incidence and prevalence. Official reported complaints to state departments of health provide little insight into the actual prevalence of this phenomenon, as only the most egregious cases are reported. Shinoda-Tagawa and colleagues (2004) found only 294 cases of RRA reported in all nursing homes in Massachusetts during an entire year, a number of incidents is far lower than the anecdotal experience of professionals working in long-term care facilities would indicate.

Factors that limit reporting of RRA are likely similar to those cited in a 2002 General Accounting Office report on resident abuse by nursing home staff members (United States General Accounting Office, 2002). Residents and their relatives are often reluctant to report abuse because the residents fear retribution and the relatives fear the residents may be asked to leave. Nursing home administrators may be reluctant to report abuse because they fear that it will cause adverse publicity, liability, or that state regulators will impose fines and other penalties. Nursing home employees fear losing their jobs if they report mistreatment. This situation is analogous to the underreporting bias seen in all forms of community domestic violence, wherein official registries vastly underestimate prevalence (Yoshihama & Gillespie, 2002).

Given that official incident reporting systems almost certainly uncover a very small percentage of RRA cases, how can we gain insights about the possible extent of this problem? To begin to shed light on the extent of RRA, our research group conducted two pilot studies that suggest RRA may have high incidence and prevalence. The first study carried out interviews with 82 residents in a long term care facility, 2.4% of whom reported personally experiencing physical RRA and 7.3% reported personally experiencing verbal RRA over a prior two-week period.

Most respondents rated the events as moderately or extremely disruptive to daily activities. In the second study, conducted at a different facility, 12 nurse-observers using a recording instrument identified 30 episodes of RRA on a single 8-hour shift, 17 of which were physical RRA.

Indirect Evidence

Given lack of direct prevalence estimates, it is useful to turn to indirect evidence that regarding the extent of RRA. Such evidence comes from several sources including: literature on agitated or disruptive behaviors, elder abuse literature, research on violence toward nursing home and other health care staff, literature on serious mental illness in nursing homes, and evidence of convicted criminals in long-term care facilities.

Evidence from Research on Agitated or Disruptive Behaviors

From data compiled October – December 2006 by the Centers for Medicare and Medicaid Services (2007a), 17.8% of nursing home residents in the United States exhibited verbally abusive, physically abusive, or socially inappropriate behavior in the week prior to their assessment with the Minimum Data Set (MDS) (Centers for Medicare and Medicaid Service, 2007b). Cognitive impairment is present in 80-90% of nursing home residents (Teresi, Morris, Mattis, & Reisberg, 2001) and well over 50% have dementing illnesses (Magaziner et al., 2000; Rovner et al., 1990). This impairment is associated with behavioral disturbance (Patel & Hope, 1993) that may cause aggression (Smith et al., 2004). Agitation and difficult behaviors are often important reasons that families choose to place cognitively impaired older adults in long term care facilities (Steele et al., 1990). It is thus reasonable to assume that when such individuals are congregated together, it creates an environment for assaultive behavior to potentially occur.

An apparent relationship exists between level of cognitive functioning and the type of aggression in demented older adults. Verbal aggression is associated with intact cognitive function and delusions and affective disorders, whereas physical aggression associated with cognitive decline (Aarsland et al., 1996; Cohen-Mansfield, Marx, & Rosenthal, 1990; Bowie et al., 2001; Cohen-Mansfield & Marx, 1988). To be sure, this relationship is not absolute or linear, however, as the frequency and seriousness of aggressive acts declines in many patients as impairment becomes severe (Marin et al., 1997; Bowie et al., 2001).

Evidence from Elder Abuse Literature

Relevance of the general literature on community elder abuse in domestic settings to RRA in nursing homes is limited, as the contexts and circumstances are dramatically different and findings cannot be reliably extended to institutional settings (National Research Council, 2002). Nevertheless, community surveys of elder abuse have shown a prevalence rate of 3-5% (Lachs & Pillemer, 2004). Given that prevalence of many established risk factors for abuse in the community, such as dementia and frailty, is far higher in nursing homes, one would expect substantially higher prevalence of abuse in this setting.

Evidence from Research on Violence toward Nursing Home Staff

Substantial literature exists on violent behaviors against staff in nursing homes and other health care facilities by residents. These studies primarily use staff interviews for data collection. In one recent investigation, 40% of certified nursing assistants (CNAs) reported at least one episode of physical violence directed at them by residents during the course of care in the prior year (typically in the setting of providing assistance with activities of daily living, such as bathing), and 18% said they experienced it on a daily basis (Astrom et al., 2002). Pillemer and Moore (1989) found that over three-quarters of nursing home staff had experienced aggression

of some kind in the preceding year. Although contextual circumstances that lead an impaired resident to strike a paid caregiver – during daily assistance, for example – are different than the circumstances that lead to RRA, many of the "host" mechanisms, such as frontal disinhibition, are probably similar.

Evidence from Literature on Serious Mental Illness in Nursing Homes

Individuals with severe primary mental illnesses, such as schizophrenia, bipolar disorder, and other psychoses, have significant need for nursing home services and are overrepresented in long-term care facilities (Bartels, Levine, & Shea, 1999). Severe mental health problems have been shown to be a risk factor for nursing home admission (Miller & Rosenheck, 2006). Elderly patients with schizophrenia are being currently referred to nursing homes at an unprecedented rate, due to the aging baby boomer population and government efforts to deinstitutionalize psychiatric patients (Harvey & Bowie, 2005). Severe mental illness is prevalent in some nursing home settings, with 17.9% of Veteran's Affairs (VA) nursing home residents having received such a diagnosis (McCarthy, Blow, & Kales, 2004).

Research has shown that nursing home residents with severe primary mental illness exhibit greater behavior problems than those without mental illness (McCarthy, Blow, & Kales, 2004). Also, these residents have more verbally disruptive behavior and as much physically aggressive and socially inappropriate behavior as demented patients (McCarthy, Blow, & Kales, 2004). Seriously mentally ill nursing home residents may have greater impairment and more aggressive behavior than persons in community settings with similar diagnoses (Bartels, Mueser, & Miles, 1997). In fact, research has shown that severity and rate of occurrence of verbally and physically aggressive behavior among patients in Veterans Administration nursing homes is not less than patients in state psychiatric hospitals (Bowie et al., 2001).

In addition, a significant percentage of nursing home residents is younger than 65 years of age. This proportion is growing: 9.7% in 1999 (Jones, 2002) up from 8.0% in 1995 (Gabrel & Jones, 2000), according to the National Nursing Home Survey. Most of these residents are psychiatric patients, and many exhibit problem behaviors (Jervis, 2002). These younger residents may be aggressive and have the physical strength to inflict serious harm on elderly, impaired long-term care patients.

Evidence of Convicted Criminals in Nursing Homes

A recent report from the U.S. Government Accountability Office (GAO), prompted by media reports alleging abuse of nursing home residents by convicted sex offenders living in long-term care facilities, evaluated the number of convicted criminals residing in nursing homes (United States General Accounting Office, 2006). This report found 700 registered sex offenders were living in nursing homes or intermediate care facilities for people with mental retardation, with approximately 3% of all nursing homes that receive Medicare and Medicaid funds housing at least one sex offender during 2005. The report also indicated that this number was an underestimate due to state data reporting limitations, and that the actual number may be twice as large. The extent to which nursing homes are notified regarding the status of sex offenders varies significantly, as does the degree to which this information is shared by facility administrators with their staff.

The GAO also reviewed records from 8 states and determined that 204 long-term care residents were paroled non-sex offenders. Though the GAO could not determine the overall risk that registered sex offenders and parolees pose to other residents in long-term care facilities because offender status is not tracked with abuse reporting, it is not unreasonable to assume that some of these nursing home residents have higher potential to be sexually and physically abusive.

Seriousness of the Problem: Potential for Severe OutcomesIn addition to being widespread, RRA also has potentially severe consequences for victims. The 2002 Special Investigations Division, Committee on Government Reform report discussed above that found nearly 9,000 abuse violations described more than 2,500 of them as "serious enough to cause actual harm to the residents or to place them in immediate jeopardy of death or serious injury" ("Abuse of Residents," 2001). Although a small literature on post-traumatic stress disorders in older victims of sexual abuse in community and nursing home settings is emerging (Burgess et al., 2005), no longitudinal studies of health or functional outcomes have been conducted to date on perpetrators or victims of RRA in long-term care.

The community elder abuse literature may contribute to our understanding of potential outcomes of RRA. Irrespective of the locus or perpetrator of abuse, victims of RRA are likely to present with similar clinical manifestations as their community counterparts: for example, an osteoporotic fracture sustained in a physical assault will have the same radiographic appearance whether inflicted by an adult child co-residing in the community dwelling or a nursing home roommate. Thus, plausible outcomes of RRA in nursing home residents are many and similar to those experienced by community elder mistreatment victims; they range from proximal injuries and accidents such as falls, fractures, lacerations, abrasions, and other injuries that require on-site attention or hospitalization, to more distal outcomes that can include depression, anxiety, functional decline, and decrements in quality of life (Lachs & Pillemer, 2004).

Further, potentially serious outcomes also exist for RRA perpetrators. Malone and colleagues, in a 1993 retrospective study of physically aggressive behaviors in 349 residents in a long-term care facility over one year found that the behavior of the 6 residents who were most repeatedly aggressive resulted in increasing doses of psychoactive medications. These increased doses resulted in many side effects, particularly over-sedation and falls (Malone, Thompson, & Goodwin, 1993).

Toward Analytic Inquiry – RRA Risk Factors

To design effective interventions to manage and prevent RRA, we must move beyond descriptive epidemiology to explore risk factors that are associated with RRA aggression and victimization. Shinoda-Tagawa and colleagues began this investigation for victims, despite the study's methodological limitations, and identified male gender, behavioral disturbance (especially wandering), moderate functional dependency, and cognitive impairment as potential risk factors.

Although no literature directly addresses factors that characterize perpetrators of nursing home RRA, there is research that applies indirectly to this topic. A recent study, which also used data from the national Minimum Data Set for nursing homes, found that both verbally and physically aggressive behavior in nursing home residents was associated with depressive symptoms, delusions, and hallucinations, and that physically aggressive behavior was also associated with constipation (Leonard et al., 2006). Multiple studies have suggested that much physically aggressive behavior among demented residents occurs in response to intrusion into personal space (Bridges-Parlet, Knopman, & Thompson, 1994; Ryden, Bossenmaier, & McLachlan, 1991). Problems such as psychiatric illness, alcoholism, and substance abuse are known to play an important role in many forms of family violence and probably are significant risk factors for RRA.

Cognitive impairment is likely to be a significant risk factor for both being a perpetrator and a victim of RRA. In the literature on elder abuse in community settings, cognitive impairment has been posited as an important potential risk factor for being a victim of elder mistreatment (Lachs & Pillemer, 1995). In a nine-year observational cohort study of elder abuse risk factors,

Lachs and colleagues (1997) found that cognitive impairment, and worsening cognitive impairment in particular, conferred a five-fold risk of mistreatment in victims. In addition, the dementia patient's disruptive and disturbing behaviors themselves may be a trigger for abuse. Indeed, abuse by dementia caregivers appears often to occur in the context of frustration regarding care-recipient aggression (Pillemer & Suitor, 1992), and similar findings have emerged regarding staff abuse of residents in nursing homes (Pillemer & Moore, 1989). Most important, in the nursing home setting, multiple patients with dementia and dementia-related behavioral problems are usually congregated, creating frequent opportunities for impaired perpetrators and impaired victims to engage with one another and even exchange roles.

Further, characteristics of the nursing home physical plant and the residents' immediate environment may also have an effect on RRA, particularly for cognitively impaired residents, and research is needed to explore these potential risk factors in more detail. An examination of residents in Veterans Administration nursing homes found a higher frequency of aggressive behavior in larger nursing homes and hypothesized that crowding was the cause (Rudman, Bross, & Mattson, 1994). One study comparing high and low density dementia units found that the cognitively impaired residents in the unit with more residents and limited space exhibited more disruptive behavior (Morgan & Stewart, 1998). Studies in inpatient psychiatric facilities also found that the high density and crowding was correlated with violent episodes (Ng et al., 2001; Nijman & Rector, 1999). Sloane and colleagues (1998) found that, in dementia special care units, environmental factors such as maintenance of public areas and cleanliness of halls, facility policy factors like use of physical restraints, and staff treatment factors such as nurse involvement with residents had an effect on levels of resident agitation.

Studies examining commingling of demented and non-demented residents found that non-impaired residents living with or near dementia residents suffered an alteration in mental and emotional status (Wiltzius, Gambert, & Duthie, 1981) and had higher rates of dissatisfaction with their living situation (Teresi, Holmes, & Monaco, 1993). Although RRA was not investigated in these studies, features that seemed to contribute to dissatisfaction and demoralization included agitated behaviors, noise, and other disturbances reported to be caused by suite or unit mates, suggesting that these might be triggers for abuse.

In addition to these factors, staffing and levels of training once an RRA perpetrator and victim are identified, and the proficiency of staff in separating two residents who engage in RRA may influence the subsequent prevalence of repeat events. Further, institutional attentiveness to these episodes, such as the willingness to reassign roommates, floors, dining partners, or establish programs to combat RRA, will certainly affect RRA chronicity in a facility.

Methodological Challenges: Barriers to RRA Research

Many reasons have been suggested for lack of research to date on RRA in long-term care facilities. These include poor documentation of the phenomenon by nurses and care staff, the attitude that aggressive behavior is a normal and acceptable aspect of cognitive impairment, and the underestimation of the ability of elderly adults to cause injury to others (Beck, Robinson, & Baldwin, 1992). One particularly compelling reason that RRA has remained virtually unstudied, however, is the significant methodological challenges associated with designing studies to examine this phenomenon. We will comment on several of the major potential sources of data here.

Government /Official Data Sources

Shinoda-Tagawa and colleagues attempted to use official government data sources for case finding and background information. Using Department of Public Health Complaint and Incident Reporting Systems for case finding is subject to massive underreporting, as described

above, with only the most egregious incidents included. Additionally, different institutions have different reporting policies and practices, which will affect data accuracy. Using the federally mandated Minimum Data Set (MDS) database is unreliable, as reporting nurses may use non-standard criteria to assess residents and may be relying on chart reports only rather than having regular contact with the residents (Bharucha et al., 2007). In general, using government databases such as the MDS and State Long Term Care Registries for public health research raises additional methodological concerns, because these databases are not designed by investigators specifically to address scientific research hypotheses. These databases usually have a significant error rate because few quality-assurance algorithms have been employed and identical data has often been entered into several databases. Further, often potentially important risk factor or exposure information has not been captured by these data sources and, therefore, is not available for study.

Resident, Family Member and Staff Informants

Use of resident, family member, and/or staff informants to study RRA is also associated with methodological problems. Residents may have hearing or vision deficits that prevent them from witnessing RRA and/or responding to survey questions about the phenomenon. Nursing home residents, particularly those likely involved in RRA, are often cognitively impaired, making them unreliable informants, especially for events that occurred weeks or months in the past. Further, resident informants may have significant incentives not to be truthful: aggressors due to guilt, embarrassment, or fear of punishment and victims or witnesses because of fear of reprisals.

Problems exist with collecting data from other actors in the nursing home setting. Family members only witness a small portion of resident interactions and residents may behave differently when family members are present. Family members' viewpoints are also very subjective, and, therefore their utility as RRA informants is limited. Staff informants have been commonly used in studies of nursing home resident interactions and even abuse for two decades (Pillemer & Moore, 1989). Utilizing them to study RRA, however, also poses methodological problems. Staff only witness a portion of resident interactions, and absence of staff may actually precipitate incidents and allow them to escalate. Staff may actively avoid aggressive residents, who provide additional challenge to an already taxing work schedule. Filling out a measurement or incident reporting tool is cumbersome for already overworked staff, who are often inadequately trained in assessing and documenting aggressive behaviors. Also, staff may be biased respondents because they can frequently be targets of abuse themselves (Keene et al., 1999).

Researcher Observation

Due to these challenges, the gold standard for research is observation on-site in nursing homes by researchers. RRA events are high impact, but they may only last a few seconds and occur infrequently in a single location within the facility (Cohen-Mansfield, 1995). Therefore, research designs of this type require investigators to spend significant time to witness only a few events. Researchers have tried to overcome this challenge in studies of nursing home resident agitation by sampling from time. An example of this is Cohen-Mansfield and colleagues' study in which individual residents were observed for 3 minutes during each hour of a 24-hour day for 2-3 months (Cohen-Mansfield, Werner, & Marx, 1989). Encouragingly, several studies comparing direct observation to informant ratings have suggested at least moderate concordance (Bridges-Parlet, Knopman, & Thompson, 1994; Cohen-Mansfield & Libin, 2004; McCann et al., 2004). However, evidence exists that as much as 56% of RRA events occur within resident rooms (Shinoda-Tagawa et al., 2004), so studying the phenomenon completely would require the researcher to have access to these rooms – a study design option that raises both logistical and human subjects concerns.

Future Research Directions

Clearly, RRA is a phenomenon that requires more attention from public health researchers. Direct and indirect evidence exists suggest that RRA is potentially highly prevalent and may have severe consequences for those involved. Research areas that may provide insight for investigators on study design methodology as well as risk factors and outcomes include: aggression in psychiatric facilities (Myers et al., 2005; Quanbeck, 2006), prison inmate violence (Loza & Dhaliwal, 2005), intimate partner abuse (Desmarais & Reeves, 2007; Field & Caetano, 2005; McHugh & Frieze, 2006), child abuse (Dubowitz & Bennett, 2007), and bullying (Glew et al., 2005; D. Perry, Kusel, & L. Perry, 1988). Indeed, RRA appears to be an ideal area for research translation from other forms of interpersonal violence and aggression.

Much future research is needed to assist nursing and medical directors and nursing home staff members in managing RRA. Qualitative studies are required to understand and characterize the full spectrum of RRA and to develop measurement tools for use by researchers involving staff members, residents, and family members. An important near-term goal is descriptive epidemiology: preliminary data on incidence and prevalence of types of RRA to understand how common the phenomenon is and the severity of associated outcomes. Subsequent to these efforts, analytic epidemiologic studies are needed to identify risk factors for aggressive behavior towards other residents, for being victimized by other residents, and modifying factors that exist in the nursing home environment.

One innovative approach is that pioneered by CareMedia (Stevens et al., 2006), a collaborative technology effort that may be useful in the future to study RRA. CareMedia investigators have captured video and audio of the shared spaces of a nursing home dementia unit 24-hours-a-day for 25 days. Using 23 ceiling-mounted cameras, they ensured an un-occluded view of all areas of the recorded space and acquired more than 13,000 hours of video/audio. To efficiently analyze this large amount of data and identify appropriate events for evaluation by researchers, the investigators are designing machine learning algorithms.

The aforementioned methodology is promising, because it may provide the first opportunity for researchers to truly evaluate the incidence and prevalence of a hidden phenomenon such as RRA. Although this research model raises ethical and legal issues, the CareMedia investigators developed several strategies during the initial implementation phase to resolve the ethical tensions in privacy and confidentiality (Bharucha et al., 2006). This technique also creates a logistical issue because recording activities within long term care environments day and night will create an enormous amount of raw data that must be evaluated to find relevant events.

Conclusion

Our review has established that aggression among residents in nursing homes is probably both highly prevalent and has serious physical and mental health consequences. Unfortunately, no evidence-based literature currently exists on intervening to reduce or eliminate RRA. Indeed, our clinical experience and that of many long-term care professionals attests that few solutions currently exist to prevent RRA. Typical interventions in the nursing home may have deleterious consequences for residents, including the use of psychotropic medications or isolation of the resident. Encouragingly, new research is emerging examining non-pharmacologic treatment of agitated nursing home residents that may be applicable for RRA (Cohen-Mansfield, Libin, & Marx, 2007).

One barrier to conducting effective research in RRA is the ability to recruit facilities willing to participate in such research. On the one hand, it would seem in the best interest of enlightened long term care facilities to participate in such research; there is a long tradition of innovative

research in nursing homes to address problems like wandering and other dementia related behaviors. RRA would seem to fall under this rubric. On the other hand, facilities might risk adverse publicity and medico-legal consequences for participating in such studies of "resident-to-resident mistreatment." One possible solution to this problem would be to educate state departments of health responsible for nursing home oversight that this is a critical area for study, as it directly affects resident quality of life.

However it is conducted, research is greatly needed on the nature and dynamics of RRA that will ultimately contribute to the design of effective interventions to prevent or minimize this potentially dangerous behavior. We are hopeful that this article will raise awareness, spur interest, and encourage research in this much-needed area.

Acknowledgements

We are grateful to the American Federation of Aging Research (AFAR), which provided the funding for Tony Rosen's participation through its Medical Student Training in Aging Research (MSTAR) fellowship program. Karl Pillemer and Mark Lachs also acknowledge support from an Edward R. Roybal Center grant from the National Institute on Aging (1 P50 AG11711-01). Dr. Lachs is the recipient of a mentoring award in patient-oriented research from the National Institute on Aging (K24 AG022399).

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