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Original Study

Factors Associated With the Trend of Physical and Chemical Restraint Use Among Long-Term Care Facility Residents in Hong Kong: Data From an 11-Year Observational Study



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A B S T R A C T

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Background: Negative effects of restraint use have been well-documented. However, the prevalence of restraints use has been high in long-term care facilities in Hong Kong compared with other countries and this goes against the basic principles of ethical and compassionate care for older people. The present study aimed to review the change in the prevalence of physical and chemical restraint use in long-term care facilities (LTCFs) over a period of 11 years in Hong Kong and to identify the major factors associated with their use.

Methods: This is an observational study with data obtained from the Hong Kong Longitudinal Study on LTCF Residents between 2005 and 2015. Trained assessors (nurses, social workers, and therapists) used the Minimum Data Set Resident Assessment Instrument to collect the data from 10 residential LTCFs. Physical restraint was defined as the use of any of the following: full bedside rails on all open sides of bed, other types of bedside rails used, trunk restraint, limb restraint, or the use of chair to prevent rising during the past 7 days. Chemical restraint was defined as the use of any of the following medications: antipsychotic, anti-anxiety, or hypnotic agents during past 7 days, excluding elder residents with a diagnosis of psychiatric illness.

Outcomes: Annual prevalence of restraint use over 11 years and factors that were associated with the use of physical and chemical restraints.

Results: We analyzed the data for 2896 older people (978 male individuals, mean age = 83.3 years). Between 2005 and 2015, the prevalence of restraint use was as follows: physical restraint use increased from 52.7% to 70.2%; chemical restraint use increased from 15.9% to 21.78%; and either physical or chemical restraint use increased from 57.9% to 75.7%. Physical restraint use was independently associated with older age, impaired activities of daily living or cognitive function, bowel and bladder incontinence, dementia, and negative mood. Chemical restraint use was independently associated with older age, falls, bladder incontinence, use of feeding tube, dementia, poor cognitive function, delirium, behavioral problems, and negative mood. The increasing time-trend of physical but not chemical restraint use remained significant after adjusting for other factors as mentioned above (coefficient = 0.092, $P < .001$).

Conclusions: Use of physical and chemical restraint was highly prevalent among LTCF residents in Hong Kong, with an increasing trend over a period of 11 years, especially targeting the most physically and

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cognitively frail older people. Appropriate healthcare staff education and policy change are urgently needed to ensure personal care that is characterized by respect, dignity, empathy, and compassion for the older generation.

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Physical restraints are mechanical devices, materials, or equipment which restrict the freedom of movement or normal access to one's body. Chemical restraints refer to the use of psychotropics, hypnotics, or anxiolytics to control the behavior of nursing home residents. In daily practice, the common cited reasons for healthcare workers in nursing home to impose restraints to residents include (1) to ensure the safety of residents and staff; (2) to facilitate treatment; and (3) to compensate for understaffing.^{1–4} Nevertheless, current research evidence does not support that restraints can prevent harm⁵; on the contrary, negative effects of restraints have been well-documented including a decline in physical functioning and increased risks of falls, contractures, pressure ulcers, delirium, pain, mental health problems, and even death.^{6–12}

As a universal rule, caregivers and healthcare staff should give priority to ensuring the autonomy, dignity, and comfort for older persons at all times. The use of physical and chemical restraint goes against this basic principle of medical ethics.^{7–9} Regarding beneficence and nonmaleficence, there is limited evidence supporting the use of physical restraints to reduce harm and a growing set of evidence that physical restraints are harmful.^{7–9} Restraint use should, therefore, be considered the very last resort as it presents a significant threat to human rights, dignity, autonomy, and well-being.

The prevalence of restraints use has been shown to be high in nursing homes in Hong Kong compared with other countries.^{6,13} Since the publication of previous studies showing a high prevalence of the use of physical or chemical restraints in Long-Term Care Facilities (LTCFs) in Hong Kong,^{6,13} there have been local education programs implemented over the past decade to reduce the use of restraints in the hospital as well as nursing home.^{1,3,14–16} The present study aims to examine the change in the prevalence for the use of physical and chemical restraints in the LTCFs in Hong Kong, and to determine the independent risk factors and function parameters associated with the use of restraints in this frail population.

Methods

Design

This study used data between 2005 and 2015 obtained from the Hong Kong Longitudinal Study on LTCF Residents, which is an observational study with 10 government-subsidized LTCFs operated by one of the largest nonprofit organizations in Hong Kong.

Trained assessors (nurses, social workers and therapists) performed annual clinical assessments of the residents by using the Minimum Data Set (MDS) Resident Assessment Instrument (MDS RAI-2.0).

Participants

All the nursing home residents ($n = 2896$) who were 65 years or older were included in our study, and all the annual assessments of the residents between 2005 and 2015 in the facilities were used in the data analyses. A subsample ($n = 2564$) was used in the chemical restraints data analysis by excluding residents with a diagnosis of learning disability or psychiatric illness as the use of psychotropic drugs (including those considered to be chemical restraint agents) and the exclusion might be justified for medical reasons in these residents.

Measurements

We identified the use of restraint from the MDS-RAI using the following definitions.¹⁷ Physical restraint was defined as the use of any of the 5 restraining interventions including full bedside rails on all open sides of the bed, other types of bedside rails used, trunk restraint, limb restraint, and the use of a chair to prevent rising during the past 7 days. Chemical restraint was defined as the use of any of the 3 medications including antipsychotic, antianxiety, and hypnotic agents during the past 7 days.

We collected data on the potential risk factors for the use of restraints and classified them into 4 categories. (1) Demographic factors including age, sex, education level (primary or below, secondary school, and tertiary), marital status, and the year of the assessments. (2) Physical factors including activities of daily life (ADL) Hierarchy Scale that assesses the following 4 items in the MDS database: personal hygiene, toilet use, locomotion, and eating (the scale ranged from 0 = independent to 6 = dependent)¹⁸; urinary and bowel continence (the scale ranged from 0 = continent to 4 = incontinent), presence of an enteral feeding tube or an indwelling urinary catheter, any fall during the past 180 days, and whether the resident was receiving end-of-life care during the past 14 days. (3) Cognitive factors including a known diagnosis of dementia, delirium, or behavioral problems. Cognitive function was also measured using the Cognitive Performance Scale consisting of 5 items: short-term memory, cognitive skills for daily decision making, ability to make oneself understood, comatose status, and dependence on feeding (the scale ranged from 0 = cognitively intact to 6 = very severe impairment).¹⁹ (4) Psychiatric factors including a known psychiatric diagnosis (eg, anxiety disorder, depression, manic depression, or schizophrenia), and whether the residents experienced any delusion or hallucination during the past 7 days.

Moreover, we included 2 clinical parameters that might potentially be adverse outcomes related to the use of restraints, viz pain and negative mood in our study. Pain was measured by both the frequency and intensity in the MDS (the scale ranged from 0 = no pain to 4 = severe pain).²⁰ Negative mood consisted of the following 9 items from the MDS: (1) feelings of sadness or depression, (2) persistent anger with oneself or others, (3) expression of what appears to be unrealistic fears, (4) repetitive health complaints, (5) repetitive anxious complaints and concerns, (6) display of sad, pained, or worried facial expressions, (7) recurrent episodes of crying or tearfulness, (8) withdrawal from activities of interest, and (9) reduced social interaction; the negative mood scale ranged from 0 = no mood problems to 18 = severe mood problems.²¹

Approval of using the data to write this article has been obtained from the Institutional Review Board of the University of Hong Kong.

Data Analysis

Descriptive statistics including frequency counts, percentages, means, and standard deviations were used to summarize the variables. The annual prevalence of the use of restraints from the year 2005 to 2015 were analyzed to see the trend by using generalized estimating equation (GEE) models. GEE model is a statistical method to fit a model for longitudinal data analysis, and it is popularly applied to clinical trials and biomedical studies.²² In a GEE model, the

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