Knowledge, Practice, and Attitude of Nursing Home Staff Toward the Use of Physical Restraint: Have They Changed Over Time?

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Abstract

Purpose: Use of physical restraints is common in nursing homes, although empirical evidence has shown it to be a hazardous measure. This article aims to understand whether there were any changes in nursing home staff's knowledge, attitudes, and practices of using physical restraints in Hong Kong, after years of deliberation on this topic.

Methods: A questionnaire about the knowledge, attitude, and practice of using physical restraint was sent to all 298 staff members in four nursing homes in Hong Kong run by a nongovernmental organization. The results were compared with previous findings from 1999 using the same questionnaire.

Results: Overall, the staff had satisfactory knowledge of the daily application of physical restraints, such as the operational procedure and daily assessment. Concerning the conceptual knowledge of minimizing physical restraint use, their performance in the survey was less satisfactory. For example, only 6.6% of respondents were aware that residents had a right to reject the use of physical restraints, and 70% believed that there were no good alternatives to restraints. They showed appropriate attitudes in their practice of daily use of physical restraints. Compared with the previous study in 1999, a significant improvement was found in the attitudes ($p = .0014$) and practice ($p = .0002$) of using restraints, but there was no difference in their knowledge test results ($p = .29$).

Conclusions: The results of this study show a significant improvement among the nursing home staff in terms of their attitudes and practice of using restraints. In-service training for nursing staff should focus more on their knowledge of ethical

considerations and the hands-on practice of using alternative devices (e.g., motion detectors or anti-slip pads).

Clinical Relevance: The findings of this study suggest that in-service training for nursing staff should focus more on their knowledge of ethical considerations, the principles of using physical restraint, and the alternatives to restraint in order to fill the knowledge gaps of staff and improve the quality of care in nursing homes.

Introduction

For the past two decades, many negative consequences associated with physical restraint use have been documented, including both physical and psychological harm, such as increased level of walking dependence and poor performance in activities of daily living (ADLs) (Engberg, Castle, & McCaffrey, 2008; Lai, 2007). Other negative outcomes include increased incidence of falls, contractures, injury ulcers (Castle & Engberg, 2009), mental health problems (Feng et al., 2009), aggressive behavior, and mortality (Voyer, Richard, Doucet, Cyr, & Carmichael, 2011), yet restraint use is still prevalent in long-term care (Foebel et al., 2014).

Several studies published after the implementation of The Omnibus Budget Reconciliation Act (in the United States) in 1987 showed a decrease in the use of restraints in nursing homes. The U.S. Department of Health and Human Services (2012) reported that physical restraint use decreased from 35% (1991) to 3.3% (2010). Similar decreases were found in other countries (Huizing, Hamers, Gulpers, & Berger, 2009). Several studies indicated decreases in prevalence ranging from 6% to 64% (Feng et al. 2009; Hofmann & Hahn, 2014). However, Hofmann and Hahn (2014) argued that some studies reported a decrease in using restraints nowadays because they did not include bed rails and sleep suits as instruments of restraint. In fact, bed rails have a dual purpose. For example, they can be used as a form of physical restraint, preventing a patient from getting out of bed when he or she wants to, or facilitating and assisting the voluntary movement of a patient in bed (Capezuti et al., 2007). Regrettably, it is commonly used as a physical restraint in geriatric settings (Capezuti et al., 2007).

The knowledge and attitudes of nursing home staff are the major factors influencing the decision to use restraints (Eskandari, Abdullah, Zainal, & Wong, 2017). Misconceptions and misunderstandings regarding the use of physical restraints are common in nursing home staff (Eskandari, Abdullah, Zainal, & Wong, 2017; Saarnio & Isola, 2010; Suen et al., 2006). The previous survey of nursing home staff conducted by Suen (1999) in Hong Kong and Werner and Mendelsson (2001) in Israel found that most underestimated the physical and psychological impacts of restraints. Nursing home staff are usually involved in the decision making and daily operation of applying physical restraint. They need to determine the use of alternatives to restraints, and the duration and type of physical restraint to be used, based on their observations, assessment, and experience. Although some may fully understand the guidelines, they also feel some doubt when they apply physical restraints, as the condition of some clients can change rapidly, making the judgment more challenging. Möhler and Meyer (2014) found that when in doubt, nurses often decided in favor of restraints instead of using alternatives.

In the past few decades, a wide range of restraint reduction policies and interventions have been implemented in long-term care settings to minimize the use of restraint by improving the knowledge and attitudes of the staff (Gulpers et al., 2011; Neufeld et al., 1999; Testad et al., 2016). For example, in Norway, Testad et al. (2016) initiated a" Trust Before Restraint" program that educated nursing staff to understand and identify the unmet needs of older people in order to reduce the use of restraint and improve care. The program not only improved the nursing staff's knowledge, but also their practice in using physical restraint. In Hong Kong, Lai, Chow, Suen, and Wong (2011) implemented a restraint reduction program in two rehabilitation settings. This included staff education and setting up a restraint

reduction committee to review the use of restraints. The study showed a significant decrease in the use of continuous restraint. Better knowledge and practice about the use of restraints were also found in the nurses after participation in the program.

Several “least restraint” programs (Gulpers et al., 2011; Neufeld et al., 1999; Testad et al., 2016) had a significant effect both on restraint reduction and on improving nursing practice, such as decreases in the use of continuous restraint and fulfilling the unmet needs of older people to minimize the need for physical restraint. However, several previous studies found unsatisfactory results among nursing home staff knowledge and attitudes (Janelli, Scherer, Kanski, & Neary, 1991; Suen, 1999; Suen et al., 2006; Werner & Mendelsson, 2001). In the past 10 years, no similar studies have been published in Hong Kong investigating nursing home staff attitudes, knowledge, and practice of using restraints, the last study having been conducted 20 years ago by Suen (1999). She recruited 253 nursing home staff (including registered nurses, enrolled nurses, and personal care workers) in five subsidized nursing homes in Hong Kong through convenience sampling and distributed the Use of Physical Restraints in Rehabilitation Settings: Staff Knowledge, Attitudes, and Predictors Questionnaire (Janelli et al., 1991), which staff completed on a voluntary basis. The results indicated several misconceptions among staff. For example, most nurses either believed that there were no good alternatives to restraints or underestimated the physical and psychological effects of applying restraints to their clients.

The existing evidence and ongoing research on restraint reduction interventions and staff training are increasing rapidly. In the past 20 years, the Social Welfare Department (Hong Kong) has also updated the code of practice for residential care homes several times to govern the use of restraint (such as adopting the” least restraint” principle and requiring staff training on restraint use). After years of deliberation on

reducing the use of physical restraint, to what extent there have been changes in the attitude, knowledge, and practice of using restraints among nursing home staff is unknown.

Aims

Table 1. Staff Demographics

	Home A (n = 60), frequency (%)	Home B (n = 20), frequency (%)	Home C (n = 61), frequency (%)	Home D (n = 86), frequency (%)	All homes (n = 227), frequency (%)
Gender					
Male	1 (1.7)	0	6 (9.8)	3 (3.5)	10 (4.4)
Female	58 (96.7)	20 (100.0)	52 (85.2)	78 (90.7)	208 (91.6)
Missing	1 (1.7)	0	3 (4.9)	5 (5.8)	9 (4.0)
Age (years)					
<24	1 (176)	2 (10.0)	5 (8.2)	2 (2.3)	10 (4.4)
25–29	4 (6.7)	1 (5.0)	9 (14.8)	7 (8.1)	21 (9.3)
30–34	0	1 (5.0)	1 (1.6)	0	2 (0.9)
35–39	4 (6.7)	5 (25.0)	7 (11.5)	6 (7.0)	22 (9.7)
40–44	7 (11.7)	3 (15.0)	15 (24.6)	18 (20.9)	43 (18.9)
45–49	9 (15.0)	4 (20.0)	7 (11.5)	10 (11.6)	30 (13.2)
50–54	18 (30.0)	1 (5.0)	6 (9.8)	19 (22.1)	44 (19.4)
55–59	12 (20.0)	2 (10.0)	7 (11.5)	11 (12.8)	32 (14.1)
60–64	4 (6.7)	1 (5.0)	1 (1.6)	7 (8.1)	13 (5.7)
≥65	0	0	1 (1.6)	1 (1.2)	2 (0.9)
Missing	1 (1.7)	0	2 (3.3)	5 (5.8)	8 (3.5)
Professional work experience in nursing care (years)					
<1	4 (6.7)	2 (10.0)	3 (4.9)	6 (6.7)	14 (6.2)
1–2	8 (13.3)	2 (10.0)	11 (18.0)	6 (6.7)	27 (11.9)
2–3	4 (6.7)	6 (30.0)	6 (9.8)	4 (4.5)	20 (8.8)
3–4	2 (3.3)	3 (15.0)	2 (3.3)	5 (5.6)	12 (5.3)
4–5	4 (6.7)	0	5 (8.2)	8 (9)	17 (7.5)
>6	37 (61.7)	7 (35.0)	33 (54.1)	55 (61.8)	130 (57.3)
Missing	1 (1.7)	0	1 (1.6)	5 (5.6)	7 (3.1)
Educational level					
Primary school	7 (11.7)	2 (10.0)	5 (8.2)	13 (15.1)	27 (11.9)
Secondary school	43 (71.7)	13 (65.0)	35 (57.4)	51 (59.3)	142 (62.6)
Associate/higher diploma level	7 (11.7)	4 (20.0)	16 (26.2)	12 (14.0)	39 (17.2)
Other	2 (3.3)	1 (5.0)	4 (6.6)	5 (5.8)	12 (5.3)
Missing	1 (1.7)		1 (1.6%)	5 (5.8)	7 (3.1)
Job title					
Registered nurse	5 (8.3)	1 (5.0)	8 (13.1)	20 (23.3)	34 (15.0)
Enrolled nurse	4 (6.7)	2 (10.0)	4 (6.6)	7 (8.1)	17 (7.5)
Personal care worker	51 (85.0)	17 (85.0)	49 (80.3)	59 (68.6)	176 (74)
Missing	1 (1.7)	0	2 (3.3)	5 (5.8)	8 (3.5)
Latest education in the use of PR					
Never	0	2 (10.0)	2 (3.3)	0	4 (1.8)
>6 months	53 (88.3)	6 (30.0)	39 (63.9)	62 (72.1)	160 (70.5)
6–12 months	4 (6.7)	9 (45.0)	14 (23.0)	15 (17.4)	43 (18.1)
13–24 months	0	3 (15.0)	2 (3.3)	3 (3.5)	8 (3.5)
25–36 months	1 (1.7)	0	0	1 (1.2)	2 (0.9)
≥37 months	0	0	3 (4.9)	0	4 (1.8)
Missing	1 (1.7)	0	1 (1.6)	5 (5.8)	7 (3.1)

This study aims to (a) review nursing home staff's attitude, knowledge, and practice toward the use of physical restraint, and (b) compare the findings with Table

1. Staff Demographics the previous local study conducted by Suen (1999) 20 years ago.

Participants

Convenience sampling was used, drawn from four nursing homes in Hong Kong. There was a total of 461 beds in the four nursing homes, which were run by the same nongovernmental organization (NGO). Staff were recruited from among the different ranks in the homes, including superintendents, nurses, healthcare workers, personal care workers, and allied health professionals (i.e., physiotherapists, social workers). The number of staff of all grades in the nursing homes ranged from 35 to 109 (Table 1).

Questionnaire

The Use of Physical Restraints in Rehabilitation Settings: Staff Knowledge, Attitudes, and Predictors Questionnaire was developed by Janelli et al. (1991). This instrument aims to assess and determine the knowledge level of nursing home staff regarding the proper use and application of physical restraints, examining nursing practice and staff attitudes towards restraints. The Chinese version of the questionnaire was validated by Suen (1999), and a content validity index of 86% was achieved after a minor adjustment was made. The test-retest reliability coefficients using the intraclass correlation coefficient (ICC) for the knowledge, attitudes, and practice scales adopted in this study were 0.65, 0.61, and 0.94, respectively (Suen, 1999). The instrument is divided into three sections: Part 1: knowledge test; Part 2: attitude; and Part 3: nursing practice. Part 1 contains 11 items to assess healthcare workers' knowledge about the use of restraints. Correct responses are given a score of 1 and incorrect responses a score of 0. The total knowledge scores range from 0 to 11; the higher the score obtained, the stronger the correct concepts of the respondents

towards physical restraints for older people. Part 2 contains items measuring the attitude of staff toward the use of restraints. The maximum score is 48 and the minimum is 12. Each item is rated on a four-item Likert scale (i.e., 1–4) from *strongly disagree* to *strongly agree*. Higher scores indicate a more positive attitude. Part 3 addresses practice issues in restraint use, such as issues relating to the use of alternative measures before restraining, and how to care for a client in restraints. Each item is rated on a three-item Likert scale (i.e., 1–3) from *never* to *always*. Higher scores indicate more positive practices. The highest possible score on this scale is 42 and the lowest is 14.

Procedures

This article is part of the Enhance Quality Residential Care Study funded by a local NGO, and the study was conducted between May 2015 and August 2016. All the nursing home staff from the four elderly care homes in the NGO (n = 298) were invited to join on a voluntary basis. The questionnaires were distributed and collected by two research assistants after the informed consents of the participants were obtained. The questionnaires were coded to maintain the anonymity of the staff and the confidentiality of the survey. Ethical approval was granted by the Human Subjects Ethics Sub-committee of The Hong Kong Polytechnic University.

Data Analysis

The data collected from the survey questionnaires were analyzed using descriptive statistics through the IBM SPSS statistics software, version 23.0 (IBM Corp., Armonk, NY, USA). A one-way between-group analysis of variance was used to test if there were any differences among participants from the four different nursing

homes. Comparisons between studies were tested using the *t*-test; all statistical tests were two tailed, and a probability of .05 was considered significant.

Results

Demographics

All 298 staff in the four nursing homes were invited to join the study, and 238 returned the questionnaire, giving a response rate of 79.9% (see Table 1). After excluding the non-nursing staff (e.g., occupational therapists, social workers, and superintendents) a total of 227 colleagues were included in the study. Of the participants, 91.6% were female and 75% were between 35 and 59 years of age. Of all the respondents, 74% were personal care workers.

Knowledge (Part 1)

Table 2. Physical Restraint Knowledge Test, Part 1 (Knowledge)

	Frequency (%)			
Questions	Correct	Wrong	Not sure	Missing
1. Physical restraints are safety vests or garments designed to prevent injury.	12 (5.3)	199 (87.7)	8 (3.5)	7 (3.1)
2. Restraints should be used when one cannot watch the resident closely.	155 (68.3)	45 (19.8)	20 (8.8)	6 (2.6)
3. Patients are allowed to refuse to be placed in a restraint.	15 (6.6)	195 (85.9)	8 (3.8)	9 (4.0)
4. A physical restraint (safety vest, garments) requires a consent form from the family member.	218 (96.0)	0 (0)	1 (0.4)	7 (3.1)
5a. A restraint should be released every 2 hours, if the patient is awake.	204 (89.9)	6 (2.6)	9 (4.0)	8 (3.5)
5b. How often do you remove their PR clothing? Once every __ hours.	2 hr 122 (53.7)	3 hr 3 (1.3)	Missing 101 (44.5)	
6. Restraints should be put on snugly, so that there is no space between the restraint and the patient's skin.	181 (79.7)	33 (14.5)	7 (3.1)	6 (2.6)
7. When a patient is restrained, skin breakdown may increase.	61 (26.9)	132 (58.1)	27 (11.9)	7 (3.1)
8. When a patient is restrained in bed, the restraint should not be attached to the side rail.	185 (81.5)	19 (8.4)	16 (7.0)	7 (3.1)
9. A patient should never be restrained while lying flat in bed, because of the danger of choking.	54 (23.8)	136 (59.9)	31 (13.7)	6 (2.6)
10. Good alternatives to restraints do not exist.	68 (30.0)	87 (38.3)	65 (28.6)	7 (3.1)
11. Deaths have been linked to the use of vest restraints.	88 (38.8)	71 (31.3)	62 (27.3)	6 (2.6)

Note. Scoring: correct = 1 point; wrong/not sure = 0 points.

Table 2 shows the overall results of the knowledge test in all four nursing homes. The mean total score of the knowledge test in all nursing homes was 5.46 (*SD* = 1.66). There was no statistically significant difference in the total score among the four nursing homes, F (3, 226) = 0.33, p = .80. More than 50% of participants gave wrong answers to six questions (Q1, Q3, Q7, Q9, Q10, Q11) related to the concept and principles of using restraints. The participants demonstrated better performance in their answers to questions regarding the daily application, with over 70% of them answering the related items correctly (Q4, Q5, Q6, Q8).

Attitudes (Part 2)

Table 3. Physical Restraint Knowledge Test, Part 2 (Attitude)

Questions	Mean score (*SD*)
1. I feel that family members have the right to refuse the use of restraints.	3.18 (0.45)
2. If I were the patient, I feel I should have the right to refuse or resist when restraints are placed on me.	3.05 (0.57)
3. I feel guilty placing a patient in restraints.	2.16 (0.50)
4. I feel that the main reason that restraints are used is that the facility is short-staffed.	2.77 (0.58)
5. I feel embarrassed when the family enters the room of a patient who is restrained.	2.0 (0.44)
6. It makes me feel bad if the patient gets more upset after restraints are applied.	2.58 (0.65)
7. It makes me feel bad when a patient becomes more disoriented after the restraint has been applied.	2.63 (0.64)
8. A patient suffers a loss of dignity when placed in restraints.	2.65 (0.65)
9. It is important to apply restraints to assure legal protection for myself and my facility.	2.93 (0.80)
10. I feel that placing a patient in restraints can decrease nursing care time.	3.14 (0.66)
11. I believe that restraints increase the risk of strangulation.	2.30 (0.74)
12. I believe that restraints decrease the number of patients who fall.	1.90 (0.56)

Table 3 shows the overall results of attitude tests in all four nursing homes. The mean total core of the attitude tests was 31.75 (*SD* = 3.26). No statistically significant difference can be identified, F (3, 223) = 0.78, p = .51, in the attitude towards physical restraints among the four homes. The mean score of all other items was 3 or above, indicating that they had an appropriate attitude towards physical restraint use. Most of the participants agreed with

the statement" I feel that family members have the right to refuse the use of restraints" (Question 1, mean score 3.18).

Nursing Practice (Part 3)

Table 4. Physical Restraint Knowledge Test, Part 3 (Practice)

Questions	Mean score (*SD*)
1. I try alternative nursing measures before restraining a resident.	2.80 (0.47)
2. When I restrain a resident, I make this decision only on a physician's order.	2.88 (0.44)
3. When I feel that a patient does not need to be restrained, I make this suggestion to the doctor.	2.78 (0.56)
4. I answer calls from patients who are restrained as soon as possible.	2.91 (0.29)
5. I check the restraints at least every two hours to make sure they are in the proper position.	2.91 (0.29)
6. I inspect the skin of the patient for abrasion or skin tears when I bathe a patient who is restrained.	2.98 (0.16)
7. I tell family members why the patient is restrained.	2.90 (0.43)
8. I explain to the patient why the restraint is being applied.	2.93 (0.31)
9. I tell the patient when the restraint(s) will be removed.	2.76 (0.48)
10. More patients are restrained when we are short of staff than we have a full staff.	2.70 (0.60)
11. In our facility, staff members work together to discover ways to control patients' behavior other than the use of physical restraints.	2.72 (0.57)
12. I frequently assess when the restraints should be removed.	2.76 (0.56)
13. When a physical restraint is applied, I record the type of restraint used, the reason for adopting it, the time when the application commences, and the related nursing care required on the kardex.	2.97 (0.22)
14. I frequently evaluate and record the effect of a physical restraint when it is applied to a patient.	2.86 (0.41)

Table 4 shows the overall results of nursing practice issues in all four homes. The mean total score of the test items on nursing practice was 39.86 (*SD* = 3.16). There was a statistically significant difference in the nursing practice regarding physical restraints among the four nursing homes, F (3, 219) = 5.56, p = .001. A post-hoc analysis was performed, and the only significant difference found was between Homes C and D (p = .00039, mean difference = 2.80). The responses showed that the participants have some good nursing practice in the use of physical restraints. Most under stood that, "When physical restraint is applied, I record the type of restraint used, the reason for using it, the time the application commences, and the related nursing care required on the kardex" (Q12, mean score = 2.76); and "I inspect the skin of the patient for abrasion or skin tears when I am bathing a patient who is restrained" (Q6, mean score = 2.98). The mean score of each of the items was 2.8 or above, indicating that,

generally speaking, the participants practiced according to the guidelines in terms of physical restraint use.

Comparison With the Study Conducted by Suen (1999)

A similar study was performed by Suen (1999) 20 years ago, with 253 respondents from five nursing homes in Hong Kong, using the same set of questionnaires. It included 68% primary care workers and 32.4% nurses. The nursing homes in Suen (1999) and our studies shared several similarities. First, both homes are located in the two major districts in Hong Kong, namely Kowloon and New Territories. Second, they are subsidized by the Hong Kong government and follow the guidelines and care standards set by the Hong Kong government. In addition, both homes admit older people within a similar range of levels of functioning or dependence. The independent *t* test was used to investigate whether there were significant changes between the two studies. Our studies found a significant improvement in the attitude ($p = .0014$, *SD* of difference = 0.26) and practice ($p = .0002$, *SD* of difference = 0.31) toward the use of restraint among the nursing home staff. However, there were no significant changes in the knowledge ($p = .294$, *SD* of difference = 0.15; Table 5).

Table 5. Comparison With Previous Study

	Means (*SD*)				
	This study (2017) *N* = 227	Suen (1999) *N* = 253	*p* value	95% confidence interval of the difference	Standard deviation of the difference
Part 1 (Knowledge)	5.46 (1.66)	5.30 (1.67)	.294	−0.14, 0.46	0.15
Part 2 (Attitude)	31.75 (3.26)	29.70 (3.11)	.0014	1.50, 2.52	0.26
Part 3 (Practice)	39.86 (3.16)	38.7 (3.68)	.0002	0.55, 1.77	0.31

Discussion

Compared with the previous study by Suen (1999), significant improvements were found in the attitude and practice toward the use of restraints among the nursing home staff, but there were no significant changes in the knowledge test results (Part 1) in the survey. The questions frequently answered either wrongly or correctly (positively or negatively in Likert scale questions) are discussed in this section. In this study, a majority of the staff demonstrated good knowledge on the question items related to the daily application of physical restraints. For example, they understood the need to release the restraint every 2 hr to assess the patient's circulation. They were also familiar with the procedure for obtaining consent before applying restraints. The physical restraints commonly used included limb holders, safety vests, and seat belts. However, their performance was less satisfactory in answering the items related to the concept and principles of using physical restraint. For example, over 87.7% of them reported that physical restraint could protect residents from injury, which is incorrect. Regarding knowledge of the principles and concepts of using restraints, about 90% of the respondents replied that" a physical restraint tool is a type of security vest or clothing which can prevent residents from getting hurt," and also" residents are not allowed to refuse to be placed in a restraint." This response shows that staff did not fully understand the principles of restraint use. In fact, the physical restraints do not only involve security vests or clothing. The nursing progress notes from Homes A and B showed that the frequently employed restraints included not only safety vests (66.7% in Home A; 48.4% in Home B) but also seat belts (50% in Home A; 74.2% in Home B), mitts (16.7% in Home A; 19.4% in Home B), and limb holders (16.7% in Home A; 12.9% in Home B). Moreover, several negative outcomes, such as increased incidence of falls, injury, and ulcers, are related to

physical restraint as reported in the literature (Castle & Engberg, 2009). In addition, a resident has every right to refuse physical restraint. This misconception was also found in other previous local (Suen, 1999) and international studies (Eskandari et al., 2017; Karagozoglu, Ozden, & Yildiz, 2013). Most of the studies indicated that the rights of the resident are often neglected in the use of restraints. Respecting residents' rights is an ethical consideration and is important in enhancing human dignity and quality of life (Cheung & Yam, 2005). Regrettably, the findings from our sur vey show that nursing staff's awareness of residents' rights remains low, which is similar to the previous findings (Eskandari et al., 2017; Karagozoglu et al., 2013; Suen, 1999). Promotion of ethical considerations in the nursing home should be further enhanced regarding the use of physical restraint.

The mean score for the questions about staff attitudes (Part 2) was 32/48, indicating that most of the staff had better attitudes than those (30/48) in the study of Suen (1999). Suen (1999) conducted a subgroup analysis on attitude scores between staff who had and those who had not received training on the use of restraints and found a significant difference in the score using a *t* test. By comparison, a majority of the staff (more than 97%) in our study had received training on physical restraint, which may explain our improved result. However, some misconceptions were

also found. About half of the staff reported that the main reason for using restraints was related to the shortage of manpower. A previous study has already indicated that nursing staff need to spend much more time when caring for restrained residents, as they need to remove the restraints for every nursing procedure (Fixsen, Scott, Blase, Naoom, & Wagar, 2011). This misconception may increase the use of physical restraints on residents, as shortages of nursing staff are common (Hayes et al.,

2012). The increased workload of handling the restraints in terms of assessment and paperwork (filling in the assessment form) may result in negative consequences such as decreased interaction and communication between the nurses and residents (Munyisia, Yu, & Hailey, 2011), which may further worsen the behavioral problems of the residents. Another finding is that more than 50% of staff reported that they did not feel guilty or embarrassed when relatives saw them applying physical restraints to a resident. In a previous study, a number of nurses reported in the interview that they felt guilty when applying restraints to older people, because of taking away their freedom (Chuang & Huang, 2007). For example, a nurse in the study by Chuang and Huang (2007) said that" The lady lying next to the patient begged me 'don't tie her please.' It made me feel so guilty. I felt I was doing something wrong." In fact, this question assesses their awareness of the psycho logical impact of physical restraint use on residents and their relatives. The application of physical restraints creates a negative feeling in residents, as their personal freedom is being taken away. This guilty feeling may prompt nurses to think twice about the use of physical restraint, or to remove the restraint as soon as possible. If the nurses regard the application of physical restraint as a routine practice without any guilty feeling, it may prolong the use of restraint and trigger more agitation behavior, especially in people with dementia (Hofmann & Hahn, 2014). Like the previous studies by Suen (1999) and Karagozoglu et al. (2013), our study found that more than half of the staff reported that they did not feel guilty when they applied restraints to older people. Regrettably, the staff's awareness of the psychological impact remained low even 20 years after Suen's study. This suggests that most of the nursing staff appeared to place more importance on physical protection than on the possible negative psychological effects on residents and their families.

Part 3 of the survey questionnaire is related to nursing practice, and this was where the staff per formed the best among the three parts of the questionnaire. One hundred percent of the staff reported that they would inspect residents' skin for abrasions or skin tears when bathing a patient who was restrained. The mean total score in Part 3 was 39.86/42 (*SD* = 3.14). Our findings were also consistent with those in the studies of Karagozoglu et al. (2013) and Suen (1999). In both of these studies, similarly, respondents performed best on the nursing practice part of the questionnaire. Nowadays, there are different assessment forms and checklists guiding nursing staff in applying physical restraints (Hofmann, Schorro, Haastert, & Meyer, 2015), and staff need to follow these checklists in performing this routine assessment. Since this checking and operation are adopted as a routine practice, it may explain why the staff performed very well in this part.

Another study in Turkey (Karagozoglu et al., 2013) found that the nursing staff was especially good at the daily operation of physical restraint, and this finding is similar to ours. In both studies, the nursing staff understood the importance of releasing the physical restraint every 2 hr. About 90% of respondents answered this item correctly. On the other hand, in a previous study in the United States, conducted by Janelli et al. (1991), only 66% (*n* = 79) of respondents answered it correctly. It was good to see the improvement in nursing staff's knowledge after nearly three decades. Nowadays, there are various clinical protocols for caring for a restrained client. The use of a restraint protocol in the four nursing homes in our study provided guidance for nurses in their daily operation of physical restraints and may be why most of the respondents could remember the daily operations regarding physical restraint.

In the past few decades, an increasing number of restraint reduction training programs have been implemented in different healthcare facilities (Lai et al., 2011;

Testad et al., 2016), representing a possible method of improving the knowledge, attitudes, and practice of nursing home staff in the use of restraints. The nursing homes in our study have also developed guidelines for their staff to manage the behavioral problems of residents, in order to reduce the use of restraints. In the studies of Suen (1999) and Eskandari et al. (2017), about 70% of respondents reported that they had participated in an in-service training program about using physical restraints. However, from our latest findings, 97% of respondents had received training regarding the use of physical restraints. The increase in training may have contributed to the improvements in their practice and attitudes toward the use of restraints in the nursing homes.

Regrettably, there was no significant improvement in the knowledge test between Suen's (1999) study, which was conducted almost 20 years ago, and ours. Several misconceptions about using restraints were found. For example, over 80% of respondents in both studies believed that there was no good alternative to using restraints. In the previous survey studies conducted by Suen (1999) and Eskandari et al. (2017), only 9% (n = 22) and 28.8% (n = 89), respectively, of nursing home staff disagreed that" there is no good alternative to restraints." Twenty years later, 30% of respondents (n = 68) in our study disagreed with the statement and answered it correctly, which is a higher number, but still the percentage needs to be improved. Most nurses thought that no alternative method was" powerful" enough for patients who are critically ill. Nowadays, reduced use of restraints is advocated in different guidelines, and the use of restraints should be a last resort. There is a wide range of alternative methods to physical restraint, such as environment modification, adjusting the use of medications, and proactively addressing elimination needs (Lach, Leach, & Butcher, 2016). Both surveys indicated that nursing home staff are poor at applying alternative

methods to replace the use of physical restraints. Further in service training should focus on educating staff in the use of different kinds of devices (e.g., motion detectors or anti-slip pads) and methods (e.g., organizing exercise groups and assisted walking activities). Compared with previous training, more hands-on practice of using alternatives to restraints is needed to improve nursing staff's knowledge.

Limitations

A survey collects self-reported information and may not reflect real practice. Such is the limitation of a survey. This study recruited nursing home staff on a voluntary basis. Since the response rate was close to 80%, those who chose to respond may have had some kind of interest in or knowledge about the use of physical restraints. In addition, the study venues were settings run by one NGO, which may limit the generalizability of the results. Due to the lack compare the demographic data (such as education level, working experience) and the specific items in the questionnaires statistically between the two studies.

Implications for Practice

The nursing staff's knowledge of the conceptual principle of least use of physical restraints (such as the use of alternatives) and their awareness of the psychological impact of physical restraint are still weak. Managers in long-term residential care settings need to allocate resources to bring more restraint alternatives into the care environment. More hands-on practice training of using alternatives to restraints can then be provided. In-service education should also focus more on staff's misconceptions in terms of the ethical considerations, the principles of using physical restraint, and the alternatives to restraint, in order to fill the knowledge gaps of staff and improve the quality of care in nursing homes.

Conclusions

After years of deliberation on reducing the use of physical restraint, this study indicated that nursing home staff had satisfactory knowledge in the daily application of physical restraints, such as knowing about the operational procedure and daily assessment. Nursing practice (Part 3) was the part in which the staff performed best in the survey questionnaire, attaining the highest score among the three parts. Concerning the conceptual knowledge of least use of physical restraints, their performance was less satisfactory, and some misconceptions (e.g., principles of using physical restraint and the alternatives to restraint) should be rectified. Compared with the similar study conducted almost two decades ago, the majority of the nursing staff improved their attitude toward the use of restraints, but there was only slight improvement in knowledge and practice. Although the existing evidence and ongoing research on restraint reduction interventions and staff training are increasing rapidly, much more needs to be done by frontline healthcare providers and professionals in order to provide minimal-restraint care.

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