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ORIGINAL ARTICLE

Effectiveness of an educational intervention to increase professional nurses' person-centred care competence in long-term care of older people—Quasi-experimental study

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Abstract

Background: Based on previous evidence person-centred care (PCC) as a quality indicator is important in long-term care (LTC) settings for older people. Effective ways to increase nurses' person-centred care competence are missing.

Aim: To evaluate the effectiveness of a continuing education (CE) intervention named 'Person First—Please' (PFP) for improving nurses' PPC competence and its connection to PPC climate.

Methods: Quasi-experimental cluster design with intervention and control groups was carried out in LTC settings for older people. The intervention group ($n = 77$) received a 10-week CE intervention, with control group ($n = 123$) working as usual. The primary outcome was professional nurses' PCC competence. Secondary outcome was the PCC climate as perceived by nurses and, residents with their next of kin. Measurements were conducted pre−/post-intervention and after 6 weeks using the validated, Person-centred Care Competence scale and the Person-centred Care Climate questionnaire, staff and patient versions. Data was analysed with descriptive and inferential statistics.

Results: PCC competence was significantly increased in the intervention group and remained after 6 weeks of follow-up. PCC climate increased in the intervention group in total score and also in all sub-scales, across residents with their next of kin. The control group did not show any significant change. Comparisons of PCC competence and PCC climate in time between intervention and control groups confirmed that changes seen between groups were statistically significant in intervention group.

Limitations: Measurements were self-assessments, which may have been affected by bias, especially in context of competence assessment.

Conclusion: The intervention was effective in increasing professional nurses' PCC competence and on person-centred care climate in long-term care settings for older people.

KEYWORDS

climate, competence, continuing education, intervention, long-term care, older people, person-centred care

INTRODUCTION

Older people in long-term care (LTC) settings lives their everyday life. They are not visitors or patients, but persons with their needs, capacities and vulnerabilities. Earlier literature on LTC settings provides evidence of missed nursing care or even neglect of care [1, 2], and nurses' lower level of education [1] which may indicate a lack of Person-Centred Care (PCC) competence. PCC requires competence, including skills, knowledge, positive attitude and the ability to use PCC competence in practice [3]. Nurses' competence is a prerequisite for working according to PCC, which is used as a quality indicator and ethical value [4–6].

The concepts of person-centred, resident-centred, client-centred and individualised care have sometimes been used as synonyms in the literature [7]. The core of these related concepts are humans, understanding of individual autonomy and respect for their dignity [8, 9]. The concept of PCC fits especially in LTC settings for older people and is important to accomplish in practical care for reasons. First, it respects a person's individual context, history and family circumstances and plays an active role in care and decision-making [3]. Second, it is important to understand the goal of PCC, which is meaningful life [8]. Evidence-based results are needed to motivate adoption of PCC in nursing practice, which requires a systematic approach at all levels in organisations and health care [10].

Continuing education (CE) interventions of PCC have been implemented in LTC settings for older people and can be divided into five themes: focusing on medication, interaction and caring culture, nurses' job satisfaction, nursing activities and older people's quality of life [11]. However, CE interventions especially about nurse's PCC competence, which can promote interaction and caring culture are lacking. Evidence about effectiveness of CE in nurses' PCC competence and its connection to PCC climate is still missing. There is also a lack of evidence on how CE intervention, which aims to improve nurses' competence in PCC, is perceived by nurses, residents and their next of kin in a PCC climate, which is part of interaction and caring culture.

Developing an effective complex intervention needs attention to ensure that the importance of interventions and specific contexts required by interventions are considered in the development phase [12]. First, content, length, drop-out rate and follow-up time seem to be factors that limit evaluations of effectiveness of PCC interventions [13]. Second, PCC interventions targeted at nurses in LTC of older people exist but are not theory-based, or outcome measures focus on variables other than PCC and related measures [11]. However, theory-based educational interventions are effective [14]; therefore, the Person-centred Practice Framework [3] could be a suitable theory for CE intervention of PCC targeted at nurses in LTC of older people. Lastly, factors that impact CE are self-motivation, positive culture, relevance to practice, strong leadership and workplace learning with collective aim [15]. To summarise, the evidence supports using collective competence theory [16] as a pedagogical guide. There are no previous studies with this kind of theory base to investigate effectiveness of PCC interventions in supporting nurses' PCC competence in LTC settings for older people.

A new CE intervention named 'Person First—Please' (PFP) targeted at professional nurses was developed following the international CReDECI 2 guidelines [17] to ensure the quality of the development and evaluation of complex interventions. The aim of this study was to evaluate effectiveness of the PFP on nurses' self-assessed PCC competence and perceptions of PCC climate in intervention and control groups before, after and at 6 weeks of follow-up. Further, older people in long-term care with their next of kin's assessments of PCC climate were obtained by structured interviews. We hypothesised that: (1) intervention group nurses, compared to control group, have higher levels of individual competence in PCC; (2) PCC climate is better in intervention institutions than in controls from the point of view of the nurses, residents and their next of kin and (3) higher individual competence of nurses relate to higher levels of PCC climate from nurses' point of view.

METHODS

A quasi-experimental study design with intervention and control groups [18] was used with cluster sampling involving a total sample of six LTC settings for older people with baseline (M0), post-intervention (M1) and 6-week

follow-up (M2) measurements. This study is registered on ClinicalTrials.gov, identifier NCT04833153. Study reporting follows the TREND Statement [19].

Sampling and setting

This study took place in 24/7 LTC settings for older people in two middle-sized cities in western Finland. These cities were recruited through discussions with the managers responsible for the operation and development of LTC services for older people. A total of six LTC settings for older people in these cities recruited in the study for intervention or control groups have similar organisational structures, working conditions, nurses' educational levels and a comparable number of nurses per older person. Units that provided interval or short-term care to older people were excluded. LTC settings for older people in both cities were willing to participate in the study. The city to serve as the intervention group was decided by simple random allocation. The remaining city was designated as the control group, which received the same CE intervention after the study. There were three LTC settings for older people in the intervention group and three in the control group.

Professional nurses with all levels of education—registered nurses (RN), elderly care professionals (ECP), licensed practical nurses (LPN) and nursing assistants (NA)—from both groups were recruited help of nursing managers who provided written information for potential participants. Inclusion criteria for nurses were that they worked permanently or as long-term locums (at least 6 months) in units. During the study, there were 94 professional nurses working in the intervention group and 174 in the control group who met the inclusion criteria; all were eligible, invited, and included in the study. Sample size calculations for nurses were based on 0.8 effect size, power of 0.8 and statistical significance of 0.05, including three hypotheses; the sample size needed for the intervention group was 68 nurses, and the control group needed 128 nurses. An ICC of 0.1 was used based on a previous sample of the Finnish version Person-centred Care Competence Scale [20].

In the intervention group, 30-min information meetings were organised for eligible nurses to inform them orally about the study, the structure of the PFP and the informed consent form. They created a code and saved it that allowed their answers to be combined at different measurement time points without identifying them. In the control group, eligible nurses were informed of the written materials. Those who took part signed a written informed consent form. Nurses in the control group worked as usual without the intervention. Intervention and control groups were in different cities. Nurses, nursing managers or representatives of organisations that gave permission to conduct the study did not know in which cities the study was conducted. This was done to prevent contamination between groups.

Residents from these same units participated with their next of kin as dyads. Inclusion criteria for residents participating were that they had assessed cognitive function at a minimum of 12 points in the Mini-Mental State Examination (MMSE) found from the patients' records and were able to provide informed consent themselves. Nurse managers confirmed MMSE scores from patient records. If MMSE was unavailable or measured a long time ago, MMSE was measured by nurses. The criterion for next-of-kin participants was that they visited at least weekly. The involvement of next of kin was considered a safe alternative for vulnerable older people. In addition, participation of the next of kin supported the older individuals' responses to interviews, as many older people had memory disorders.

First, in both groups, the information posters were sent to the units, for information to next of kin and residents. Second, nursing managers identified eligible residents and their next of kin, informed them about the study (with written material), and asked about their willingness to participate in the study. Those who participated gave their preliminary consent orally for researcher contact. The researchers contacted them and informed them about the study, informed consent and self-created code. Both residents and next of kin signed a written informed consent form. They were given a memory card for the code they created as a dyad to make sure the code was available and the same every time.

The educational intervention

The intervention implemented the PFP. The structure of PFP is based on a systematic review [11] and two theoretical frameworks [3, 16]. The PFP has been developed and co-created in collaboration with researchers and managers of LTC settings for older people, considering, for example, feasibility by time and implementation fitting in with the management philosophy of the units as well as strategic objectives. The content and usability of PFP have been analysed by an expert panel of doctoral researchers in the gerontological research group in the Department of Nursing Science at the University of Turku.

The content of the 10-week-long PFP is first based on the concept of PCC, with an understanding of humans' autonomy and respect for their dignity [8]. Second, it is based on the Person-centred Practice Framework which consists of themes including PCC prerequisites, the care environment, person-centred processes and person-centred

outcomes. This framework is suitable for teamwork in practice and is used directly in practical nursing, ensuring that all aspects of PCC are considered. [3] Third, it is based on the theory of collective competence, which contains three steps that are included in the modules of the PFP: making collective sense of events in the workplace, developing and using a collective knowledge base, and developing a sense of interdependency [16]. Fourth, it is based on earlier literature on changes in task-orientation working cultures to PCC in LTC settings for older people [11].

The pedagogical methods of PFP were first the lectures. All these three 1-h lectures were video-recorded in advance, and only one of the three lectures was shown in modules two, three and four. The reason for using recorded videos was to ensure that all LCT settings in the intervention group received the same lectures. PowerPoint slides presented in videos were available to participants when their own activities started. The second pedagogical method in learning process was a jigsaw teaching strategy (JTS) consisting of brainstorming, expert and collaborative home groups. Home groups are based on units of participating nurses. It enabled active participation in the learning process and dependence on each other [21] in accordance with the theory of collective competence [16]. All used theories, pedagogical methods, modules with learning objectives and timetables of the PFP are shown in Table 1.

The role of the researcher in PFP was to instruct nurses on the stages of the JTS. If nurses had any questions, the researcher answered them using the content of the lecture and supervised them to set goals that fit the content of the modules. The researcher provided online support via email or phone between modules.

Data collection

Nurses' data were collected by paper-pencil questionnaires and older people with their next of kin as a dyad by structured interview (by first author and research assistant) between September 2021 and January 2022 at three timepoints (Figure 1). Nurses' background information included age, education, working experience in social and health care, and working experience in the current unit. Older people's background information included older people's age and length of living in LTC, relationship to the next of kin, and number of next of kin visits per week in LTC. Data were collected from residents supported by their next of kin as dyads using validated instrument in structured interviews at the same timepoints as nurses' data. In the structured interview, next of kin were asked to reflect on the answers from the resident's perspective together with the resident.

Effectiveness of the intervention was measured using validated and widely used instruments. The primary outcome of nurses' individual competence in PCC was measured using the Patient-centred Care Competency Scale (PCC-S) [22] consisting of 17 items using a 5-point Likert-type scale (1 = minimal competence to 5 = excellent competence), and divided into four subscales: respecting patients' perspectives, promoting patient involvement in care processes, providing for patient comfort and advocating for patients. Higher mean scores indicate higher levels of competence. The PCC-S was developed and tested in hospital contexts with proven good psychometric properties [22, 23] and validated in Finnish [20].

The PCC climate as a secondary outcome was measured with the Person-Centred Climate Questionnaire (PCQ-S) staff version [24] and patient version [25]. The PCQ-S consists of 14 items using a 6-point Likert scale (0 = No, I disagree completely to 5 = Yes, I agree completely), divided into three subscales: a climate of safety, a climate of everydayness and a climate of community. The PCQ-S was translated into Finnish according to standard forward-back translation procedures [26] following the process of the previously adapted patient version. The PCQ-P was previously adapted into Finnish [27] and consists of 17 items with a 6-point Likert scale (0 = No, I disagree completely to 5 = Yes, I agree completely), divided into three subscales: hospitality, safety and everydayness. In both PCQ versions, higher mean scores, indicate a more person-centred climate. The PCQ versions have also been tested and validated in LTC contexts: PCQ-S [28, 29] and PCQ-P [25, 30].

Data analysis

Data were analysed statistically using R version 4.0.2. Participants' background characteristics and main variables were summarised using descriptive statistics. Sum variables for both the PCC-S total and its four subscales and the PCQ-S and the PCQ-P total and its three subscales were formed according to the theoretical framework provided by the original references and authors [22, 24, 25], summed together and divided by the number of items. Internal consistency reliability of scales was examined using omega (Ω) [31]. Changes within intervention and control groups and difference of the change between groups at the three timepoints were analysed by linear mixed model. Correlations of changes between three timepoints of the intervention and control groups were analysed using Spearman's rank correlation coefficient. In all analyses, the clustered unit was used as the random effect. Statistical significance of the results was evaluated using 95% confidence intervals

TABLE 1 Content, objectives and timetable of the 'Person First—Please' intervention.

Module 1/orientation (1. week)	Timing/1 h	Module 2/person (CE in weeks 2., week 3. and 4. Time to work according to the goals)	Timing/4 h	Module 3/autonomy (CE in weeks 5., 6. and 7. Time to work according to the goals)	Timing/4 h	Module 4/dignity (CE in week 8., weeks 9. and 10. Time to work according to the goals)	Timing/4 h
Objectives: to understand the aim and content of the intervention; to obtain knowledge and prerequisites of PCC; get knowledge about effectiveness of PCC by earlier studies.		Objectives: to learn the importance of older peoples' individuality and knowledge of their personal history; to learn how the care environment can support and enable work in accordance with the PCC		Objectives: to learn the process of the PCC; to learn the importance of older peoples' autonomy and ethical considerations; to learn how facilitate the older peoples' autonomy in LTC		Objectives: to learn how to improve older people dignity in LTC; to learn about PCC outcomes and how to improve it.	
What is the PCC?	12 min	A short video to evoke thoughts and short discussion	30 min	A short video (Compare module 2)	30 min	A short video (Compare module 2)	30 min
What is the aim of the intervention? What is the timetable and content of the intervention?	12 min 12 min	Themes for evidence-based lecture: • How can we understand older people as persons? • The care environment, the personality of older people, competence and personality of the nurse	60 min (+15 min break)	Themes for evidence-based lecture: • Person-centred processes. What does it include? • How can we understand and support older people's autonomy, shared decision-making, beliefs and values?	60 min (+ 15 min break)	Themes for evidence-based lecture: • Dignity of older people and communication that supports human dignity. • How can we improve person-centred care outcomes?	60 min (+ 15 min break)
What are the prerequisites for PCC?	12 min	Making collective sense of events in the workplace by brainstorming with post-it notes.	30 min	Making collective sense of events (compare module 2)	30 min	Making collective sense of events (compare module 2)	30 min
What are the effects of PCC in the care of older people according to earlier studies?	12 min	Developing and using a collective knowledge base by JTS. Themes in expert groups: a. Collecting information about the person b. Using the information c. Power and support d. Ethical questions	45 min + (+ 15 min break)	Developing and using a collective knowledge base by JTS. Themes in expert groups: a. Decision-making b. Attendance c. Autonomy d. Interpersonal relationships	45 min + (+ 15 min break)	Developing and using a collective knowledge base by JTS. Themes in expert groups: a. Good care experience b. Welfare c. Dignity d. Valuable encounter	45 min + (+ 15 min break)
		Develop a sense of interdependence by agreeing on concrete and achievable goals together in homegroups.	45 min	Develop a sense of interdependence (Compare module 2)	45 min	Develop a sense of interdependence (Compare module 2)	45 min
Online support by email or phone between the modules							

Abbreviations: CE, Continuing Education; JTS, Jigsaw Teaching Strategy; LTC, Long-Term Care; PCC, Person-Centred Care.

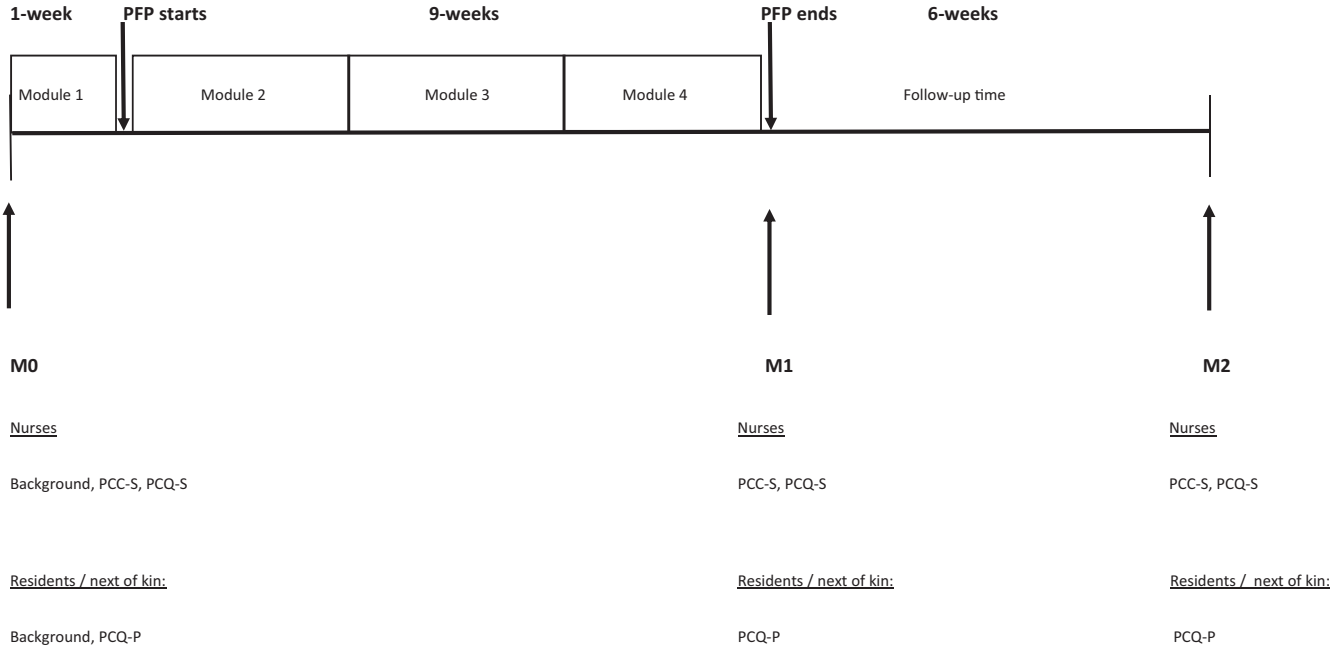

FIGURE 1 Timetable, measurements and informants. PCC-S, Person-Centred Care Scale; PCQ-P, Person-centered Climate Questionnaire Patient version; PCQ-S, Person-centered Climate Questionnaire Staff version; PFP, 'Person First—Please' intervention.

in analysis on the linear mixed model and *p*-values on Spearman's rank correlation coefficient.

Ethical considerations

The study was conducted according to good scientific principles, standards and guidelines [32, 33]. Permissions for instrument use were granted by email by the developers Jee-In Hwang, Elsevier (reprint of the items) and David Edvardsson. Ethical approval was obtained from the University Ethics Committee on 7 June 2021. Permissions to conduct the study were obtained from both participating cities according to their standard procedures. Respondents were fully informed about the purpose of the study, anonymity, issues related to research ethics, reporting of the findings and the possibility of withdrawing at any point. Participants signed an informed consent form. Since the study involved research participants who were vulnerable due to cognitive impairment, a clear protocol was used and special attention was paid to ethical issues as capacity to write informed consent by themselves. The older people responded together with their next of kin to a structured interview. The next of kin was asked to evaluate the responses together with the older people specifically from the older people's perspective for the greater confidence in the answers and also for the support the older people. Participant burden was observed during the study. After the intervention and data collection, the control group also had the opportunity to obtain the PFP educational intervention.

RESULTS

Respondents

Respondents comprised of different levels of professional nurses who worked in sampled LTC settings for older people, and most of them were LPNs typical in the Finnish LTC context (totally 84%; in intervention group 83%, in control group 85%). Educational levels were categorised into vocational (NA) and polytechnic levels (RN and ECP). Polytechnic-level qualifications were combined due to the small number of ECPs. There were no NAs (Table 2). At baseline, 77 (82%) nurses in the intervention group and 123 (71%) in the control group participated in the study. During the study, 24 (31%) participants in the intervention group and 53 (43%) dropped out of the last follow-up measurement (M2). The reason for dropping out was not requested. The number of residents and their next of kin in both groups was small. Only one resident from each group withdrew from the study of their own volition; other dropouts were due to death (Figure 2).

Nurses' self-assessed person-centred care competence

The mean score for nurses' self-assessed PCC competence (total PCC-S) was lower at M0 within the intervention group (mean 3.64, SD 0.43) than within the control group (mean 3.90, SD 0.42), but the linear mixed model showed that changes within the intervention group between

TABLE 2 Characteristics of the participants.

	Intervention	Control
	(*n* = 77)	**(*n* = 123)**
Nurses		
Age (mean, SD)	47.06 (10.21)	44.76 (11.12)
Registered nurses or elderly care professionals	13	18
Licensed practical nurses	64	105
Working experience in social and health care (mean, SD)	17.47 (9.73)	16.38 (10.06)
Working experience in current unit (mean, SD)	8.45 (8.44)	5.38 (4.35)
	Intervention	**Control**
	(*n* = 18)	**(*n* = 21)**
Residents		
Age (mean, SD)	86.89 (7.68)	86.43 (7.68)
Living time in current institution (mean, SD)	1.79 (3.27)	2.62 (2.44)
Next of kin		
Visit per week (mean, SD)	1.50 (0.86)	2.19 (2.04)

M0–M1 and between M0–-M2 was statistically significant. Within the intervention group, statistically significant changes between M0–M2 in all subscales were found when REML estimates of the change were from −0.29 (SE 0.05, Cl −0.42, −0.17) to −0.36 (SE 0.07, Cl −0.52, −0.20). No statistically significant changes were detected within the control group between M0-M2. Changes between groups showed that PFP intervention was effective in increasing nurses' individual PCC competence on PCC-S total and in all subscales except for the subscale 'providing for patient comfort' (Table 3).

Nurses' self-assessed person-centred care climate

The mean score for nurses' self-assessed PCC climate on total PCQ-S was lower at M0 within the intervention group (mean 3.82, SD 0.51) compared to controls (mean 3.91, SD 0.54). Linear mixed model showed statistically significant change within the intervention group between M0–M1 when REML estimates of the change were −0.26 (SE 0.07, Cl −0.43, −0.09) and between M0–M2 REML estimates of the change were −0.30 for M0–M2 (SE 0.06, Cl −0.45, −0.15), and change is showed in every subscale on this instrument. REML estimates of the change between M0–M2 were from −0.48 (SE 0.08, Cl −0.36, −0.01) to 0.48 (SE 0.09, Cl −0.67, −0.29). No statistically significant changes were detected within the control group between M0 and M2. Changes between groups confirm the hypothesis that PFP has been effective in promoting PCC climate assessed by nurses (Table 3).

Correlations of changes at the time within the intervention and control groups

Correlations of changes between nurses' assessed PCC competence and climate were higher within the intervention group (0.63 in M0–M2) than within controls (0.45 in M0–M2). At M0–M2, correlations were statistically significant in total scores and all subscales within the intervention group, when within the control group, it was statistically significant only on total score and in subscales of PCC-S (respecting patients' perspective, promoting patient involvement in care processes). This result confirms the hypothesis that higher individual competence of nurses correlate with higher levels of person-centred climate from the perspective of nurses (Table 4).

Residents' and their next of kin's assessment of a person-centred care climate

The total PCQ-P scale data of residents' and their next of kin showed statistical significance between M0 and M2 when REML estimates of the change were − 0.35 (SE 0.13, Cl −0.66, −0.03) within the intervention group. Within the control group, there were no significant changes in the total PCQ-P. A comparison of the changes between groups confirms the hypothesis that a PCC climate is better in intervention LTC settings from residents' point of view and their next of kin in total score and other subscales than a climate of everydayness (Table 5).

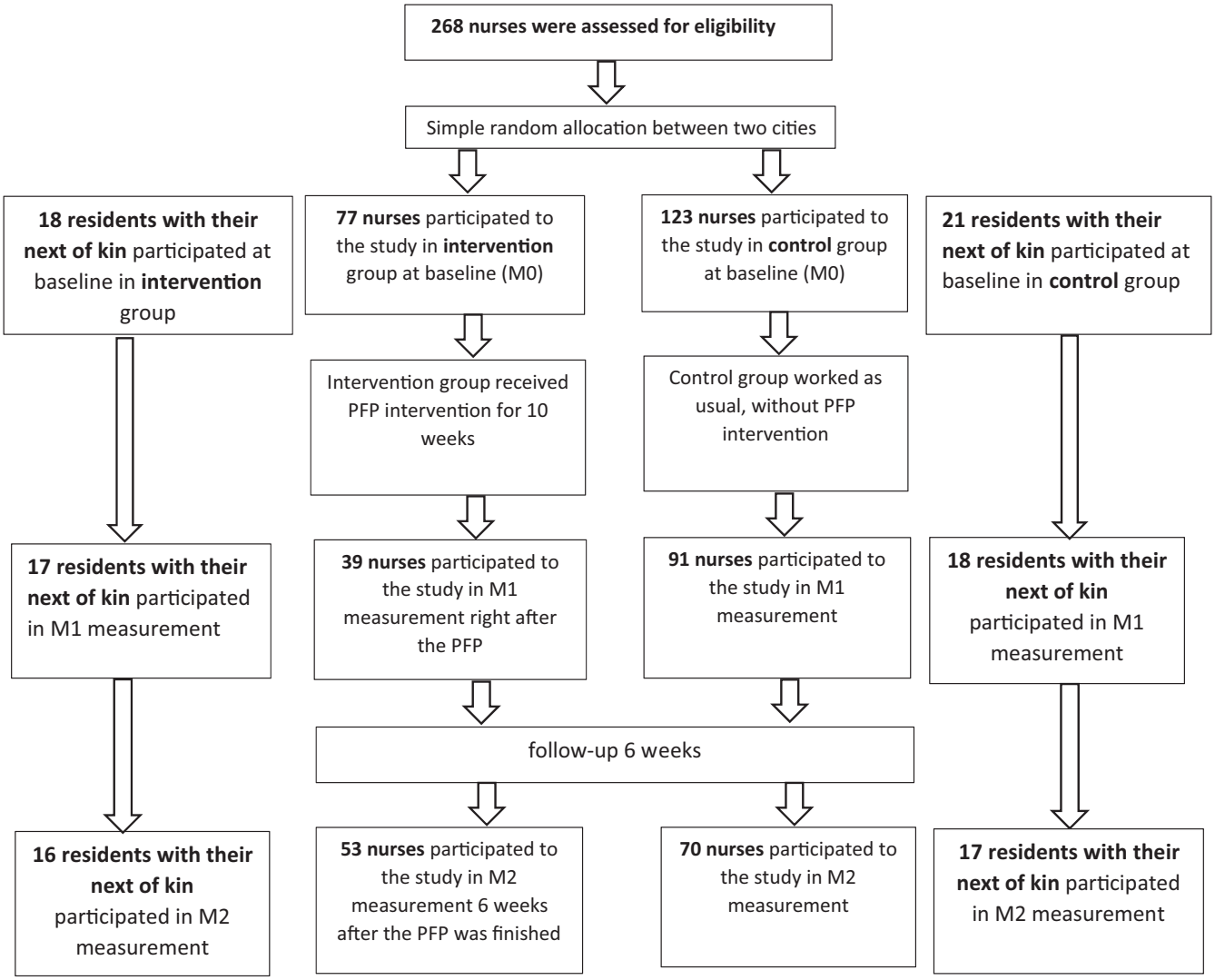

FIGURE 2 Flowchart of participants through the study.

DISCUSSION

This study aimed to evaluate effectiveness of a CE intervention named 'Person First—Please' for improving professional nurses' PCC competence and its influence on PCC climate. The results provide preliminary evidence on effectiveness of a CE intervention named PFP to increase nurses' competence in PCC. PFP was effective in increasing nurses' self-assessed PCC competence and PCC climate. The residents and their next-of-kin assessments of the PCC climate also changed. Earlier CE interventions of PCC can be divided into five themes: focusing on medication, interaction and caring culture, nurses' job satisfaction, nursing activities and older people's quality of life [11]. The PFP is not limited to one of these themes but covers a wide range of PCC, which promotes nurses' competence to use it in everyday practice.

This study demonstrated several novel results compared to previous educational interventions. First, nurses' PCC competence increased in total score and all subscales without the 'providing for patient comfort' subscale after the PFP intervention and continued to increase in total score and all subscales during the follow-up period. Compared to educational interventions of PCC, PFP was found to be more effective. Typically, effectiveness of educational interventions is not so congruent with all variables, there is often a lack of control groups and follow-up measurements, and increasing scores after intervention to follow-up measurements are not typical of educational interventions [34]. The development of PCC competence of the intervention group has been demonstrated, and the results seem to be maintained when comparing the groups. Only in one subscale, 'providing for patient comfort', was not a statistically significant result demonstrated in the intervention group at follow-up, and a comparison of the groups revealed no significant change. The subscale was assessed as the highest at baseline in both groups, which is comparable

TABLE 3 Changes at the time within and between the intervention and control groups assessed by nurses.

	Changes within intervention group					Changes within control group					Changes on between the groups	
	M0	M0–M1		M0–M2		M0	M0–M1		M0–M2			
	n = 77	*n* = 39		*n* = 53		*n* = 123	*n* = 91		*n* = 70		M0-M1	M0-M2
	Mean	Mean	REML-estimate	Mean	REML-estimate	Mean	Mean	REML-estimate	Mean	REML-estimate	REML-estimate	REML-estimate
			(SE)		(SE)			(SE)		(SE)	(SE)	(SE)
	(SD)	(SD)	[95% CI]	(SD)	[95% CI]	(SD)	(SD)	[95% CI]	(SD)	[95% CI]	[95% CI]	[95% CI]
PCC-S total	3.64 (0.43)	3.86 (0.41)	−0.21 (0.06) **[−0.35, −0.08]**	3.94 (0.47)	−0.30 (0.05) **[−0.42, −0.18]**	3.90 (0.42)	3.94 (0.38)	−0.04 (0.04) [−0.13, 0.05]	3.97 (0.37)	−0.09 (0.04) [−0.19, 0.01]	−0.18 (0.07) **[−0.31, −0.04]**	−0.22 (0.07) **[−0.34, −0.09]**
Respecting patients' perspectives	3.77 (0.38)	3.96 (0.37)	−0.22 (0.06) **[−0.35, −0.08]**	4.04 (0.42)	−0.29 (0.05) **[−0.42, −0.17]**	3.99 (0.45)	4.06 (0.42)	−0.05 (0.04) [−0.15, 0.04]	4.06 (0.38)	0.00 (0.05) [−0.16, 0.05]	−0.16 (0.07) **[−0.30, −0.02]**	−0.24 (0.07) **[−0.37, −0.11]**
Promoting patient involvement in care processes	3.38 (0.54)	3.66 (0.52)	−0.28 (0.08) **[−0.46, −0.10]**	3.75 (0.56)	−0.36 (0.07) **[−0.52, −0.20]**	3.73 (0.51)	3.74 (0.44)	−0.01 (0.05) [−0.13, 0.11]	3.84 (0.47)	−0.13 (0.06) [−0.26, 0.00]	−0.27 (0.09) **[−0.45, −0.09]**	−0.23 (0.09) **[−0.40, −0.06]**
Providing for patient comfort	3.95 (0.59)	4.01 (0.51)	−0.07 (0.08) [−0.25, 0.12]	4.19 (0.53)	−0.25 (0.07) **[−0.41, −0.09]**	4.09 (0.56)	4.21 (0.44)	−0.10 (0.05) [−0.22, 0.02]	4.20 (0.46)	−0.10 (0.0) [−0.24, 0.03]	0.04 (0.09) [−0.14, 0.22]	−0.14 (0.09) [−0.33, 0.02]
Advocating for patients	3.49 (0.60)	3.68 (0.62)	−0.24 (0.09) **-[0.44, −0.04]**	3.80 (0.60)	−0.35 (0.08) **[−0.53, −0.17]**	3.76 (0.61)	3.74 (0.55)	0.02 (0.06) [−0.11, 0.15]	3.81 (0.48)	−0.06 (0.06) [−0.21, 0.09]	−0.26 (0.10) **[−0.46, −0.06]**	−0.29 (0.10) **[−0.49, −0.10]**
PCQ-S total	3.82 (0.51)	4.12 (0.46)	−0.26 (0.07) **[−0.43, −0.09]**	4.12 (0.52)	−0.30 (0.06) **[−0.45, −0.15]**	3.91 (0.54)	3.91 (0.56)	−0.01 (0.05) [−0.12, 0.11]	3.95 (0.55)	−0.02 (0.05) [−0.15, 0.11]	−0.26 (0.09) **[−0.43, −0.09]**	−0.28 (0.08) **[−0.44, −0.12]**
A climate of safety	4.05 (0.56)	4.33 (0.53)	−0.32 (0.09) **[−0.41, −0.02]**	4.25 (0.61)	−0.48 (0.08) **[−0.36, −0.01]**	4.11 (0.56)	4.04 (0.61)	−0.06 (0.06) [−0.07, 0.19]	4.04 (0.66)	−0.15 (0.07) [−0.08, 0.21]	−0.27 (0.10) **[−0.47, −0.08]**	−0.25 (0.10) **[−0.44, −0.07]**
A climate of everydayness	3.44 (0.64)	3.78 (0.73)	0.31 (0.09) **[−0.53, −0.09]**	3.92 (0.67)	0.48 (0.09) **[−0.67, −0.29]**	3.39 (0.75)	3.44 (0.78)	0.06 (0.06) [−0.21, 0.09]	3.54 (0.72)	0.15 (0.07) [−0.32, 0.01]	−0.25 (0.11) **[−0.47, −0.03]**	−0.33 (0.11) **[−0.54, −0.11]**
A climate of community	3.85 (0.70)	4.15 (0.51)	−0.31 (0.09) **[−0.51, −0.10]**	4.14 (0.62)	−0.28 (0.08) **[−0.47, −0.09]**	4.14 (0.66)	4.21 (0.60)	−0.06 (0.06) [−0.20, 0.09]	4.23 (0.60)	−0.01 (0.07) [−0.17, 0.15]	−0.25 (0.11) **[−0.46, −0.04]**	−0.27 (0.10) **[−0.48, −0.08]**

Abbreviations: 95% CI, 95% Confidence level; PCC-S, Person-Centred Care Scale; PCQ-S, Person-centered Climate Questionnaire staff version; REML-estimate, REML-estimates of the change at the time; SD, Standard deviation; SE, Standard Error.

Note: Statistically significant bolded.

TABLE 4 Correlations of changes at the time within the intervention and control groups (number of participants varies, due to missing values).

		PCC-S total			Respecting patients' perspectives			Promoting patient involvement in care processes			Providing for patient comfort			Advocating for patients		
Intervention group		***n***	***r***	***p***	***n***	***r***	***p***	***n***	***r***	***p***	***n***	***r***	***p***	***n***	***r***	***p***
PCQ-S total	M0-M1	32	0.57	**0.001**	38	0.47	**0.003**	35	0.41	**0.014**	36	0.49	**0.003**	36	0.58	**<0.001**
	M0-M2	43	0.63	**<0.001**	52	0.54	**<0.001**	46	0.57	**<0.001**	51	0.54	**<0.001**	50	0.57	**<0.001**
A climate of safety	M0-M1	32	0.58	**0.001**	38	0.41	**0.011**	35	0.46	**0.005**	36	0.55	**0.001**	36	0.59	**<0.001**
	M0-M2	43	0.63	**<0.001**	52	0.54	**<0.001**	46	0.61	**<0.001**	51	0.49	**<0.001**	50	0.51	**<0.001**
A climate of everydayness	M0-M1	32	0.54	**0.002**	38	0.41	**0.011**	35	0.39	**0.022**	36	0.41	**0.014**	36	0.46	**0.005**
	M0-M2	43	0.37	**0.016**	52	0.28	**0.041**	46	0.37	**0.011**	51	0.42	**0.002**	50	0.31	**0.027**
A climate of community	M0-M1	32	0.43	**0.013**	38	0.41	**0.011**	35	0.36	**0.036**	36	0.26	0.125	36	0.49	**0.003**
	M0-M2	43	0.54	**<0.001**	52	0.48	**<0.001**	46	0.45	**0.002**	51	0.41	**0.003**	50	0.58	**<0.001**
Control group																
PCQ-S total	M0-M1	80	0.24	**0.033**	86	0.24	**0.029**	81	0.14	0.209	87	0.09	0.418	87	0.18	0.092
	M0-M2	60	0.45	**<0.001**	65	0.46	**<0.001**	62	0.26	**0.040**	66	−0.03	0.809	65	0.24	0.049
A climate of safety	M0-M1	83	0.26	**0.016**	89	0.22	**0.043**	84	0.20	0.069	90	0.15	0.169	90	0.15	0.168
	M0-M2	63	0.28	**0.025**	68	0.36	**0.002**	65	0.11	0.386	69	0.06	0.614	68	0.20	0.105
A climate of everydayness	M0-M1	81	0.28	**0.011**	87	0.24	**0.024**	82	0.18	0.104	88	0.20	0.062	88	0.07	0.498
	M0-M2	62	0.42	**0.001**	67	0.40	**0.001**	64	0.20	0.119	68	0.07	0.577	67	0.20	0.101
A climate of community	M0-M1	84	0.03	0.754	90	0.15	0.168	85	−0.06	0.571	91	−0.14	0.196	91	0.15	0.147
	M0-M2	63	0.44	**<0.001**	68	0.39	**0.001**	65	0.39	**0.001**	69	−0.11	0.381	68	0.25	**0.043**

Abbreviations: PCC-S, Person-Centred Care Scale; PCQ-S, Person-centered Climate Questionnaire Staff version; *r*, Spearman's rank correlation coefficient.

Note: *p*-value, Statistically significant level <0.05 bolded.

TABLE 5 Changes at the time within and between the intervention and control groups assessed by residents with their next of kin.

	Changes within intervention group					Changes within control group					Changes on between the groups	
	M0	M0–M1		M0–M2		M0	M0–M1		M0–M2			
	n = 18 dyads	*n* = 17 dyads		*n* = 16 dyads		*n* = 21 dyads	*n* = 18 dyads		*n* = 17 dyads		M0–M1	M0–M2
	Mean (SD)	Mean (SD)	REML-estimate (SE) [95% CI]	Mean (SD)	REML-estimate (SE) [95% CI]	Mean (SD)	Mean (SD)	REML-estimate (SE) [95% CI]	Mean (SD)	REML-estimate (SE) [95% CI]	REML-estimate (SE) [95% CI]	REML-estimate (SE) [95% CI]
PCQ-P total	3.57 (0.69)	3.83 (0.63)	−0.23 (0.13) [−0.55,0.09]	3.93 (0.67)	−0.35 (0.13) **[−0.66, −0.03]**	3.86 (0.63)	3.75 (0.66)	0.10 (0.13) [−0.22, 0.40]	3.75 (0.68)	0.05 (0.13) [−0.27, 0.37]	−0.32 (0.18) [−0.68, 0.03]	−0.40 (0.19) **[−0.77, −0.04]**
A climate of safety	3.59 (0.74)	3.88 (0.63)	−0.29 (0.15) [−0.64, 0.07]	4.04 (0.69)	−0.43 (0.15) **[−0.80, −0.07]**	4.05 (0.61)	3.85 (0.65)	0.23 (0.14) [−0.11, 0.57]	3.91 (0.62)	0.15 (0.15) [−0.20, 0.50]	−0.52 (0.21) **[−0.92, −0.12]**	−0.58 (0.21) **[−1.00, −0.18]**
A climate of everydayness	3.74 (0.66)	3.91 (0.42)	−0.18 (0.12) [−0.47, 0.11]	3.91 (0.50)	−0.17 (0.12) [−0.46, 0.13]	3.99 (0.49)	3.84 (0.69)	0.15 (0.12) [−0.13, 0.43]	3.92 (0.61)	0.06 (0.12) [−0.23, 0.35]	−0.33 (0.17) **[−0.66, 0.00]**	−0.22 (0.17) [−0.56, 0.11]
A climate of hospitality	3.17 (0.98)	3.39 (1.12)	−0.11 (0.19) [−0.56, 0.35]	3.64 (0.88)	−0.34 (0.19) [−0.07, 0.11]	3.57 (1.10)	3.44 (1.04)	0.13 (0.18) [−0.30, 0.56]	3.25 (0.97)	0.26 (0.19) [−0.18, 0.70]	−0.24 (0.26) [−0.74, 0.26]	−0.60 (0.26) **[−1.11, −0.10]**

Abbreviations: 95% CI, 95% Confidence level; PCQ-P, Person-centered Climate Questionnaire Patient version; REML-estimate, REML-estimates of the change at the time; SD, Standard Deviation; SE, Standard Error.

Note: Statistically significant bolded.

to earlier studies [20, 22]. In this subscale, the main focus is on pain management, suffering and discomfort.

Second, within the intervention group, nurses' perceptions of self-assessed care climate were higher after the intervention in total score and in all subscales. Compared to the control group, a statistically significant result was also demonstrated. This result opposes a previous educational intervention study [13]. The concept of climate or atmosphere is closely related to the service culture, and changes in care practices as part of the service culture are quite vulnerable. Promoting PCC in units usually requires a cultural change from task orientation to person-centred way of working. There can be psychosocial, environmental or monetary barriers to implementing cultural change [22]. In earlier CE interventions, it seemed that educating key nurses was not an effective way to promote PCC in LTC settings [11]. This evidence in PFP supports that pedagogy based on collective competence theory [16] can be a good choice for CE. Especially from residents' views, a PCC climate as a collective way to do PCC is needed because of the shift work. The theory of collective competence was used as a background theory in developing the PFP and used JTS as a pedagogical method, ensured nurses' active learner-centred role and a collective way to discuss how they can use their PCC competence in practice. Of course, there are more and less competent individual nurses in the units, but in the CE of PFP, they had the possibility to share and discuss the goals and try to clarify barriers together.

Third, evidence about the effectiveness of PFP demonstrated that higher individual PCC competence has a positive effect on correlations with PCC climate, which means that it is important to promote the PCC competence of nurses if we want to increase the PCC climate in LTC settings for older people. This is also the quality question of where CE can be a solution. Finally, the results regarding residents and their next of kin coincided with those of nurses, even though the sample size of the residents and their next of kin was small. Residents and their next of kin are important participants in obtaining evidence of how the concept of PCC is perceived and how it is implemented in practical nursing work. Based on previous studies, there is still a difference between perceptions of the concept and its appearance in everyday work [35]. Of course, nurses are able to evaluate this, but it is important to determine the opinions of users of the services. In many earlier educational studies of PCC, resident voices have been overlooked. Data on residents were collected from recorded patient registers or from observing their reactions [11]. In this study, data were collected through structured interviews so that residents and the next of kin could discuss and express their opinions together. Some participants experienced difficulty answering, as they perceived questions to be more about the quality of the service than PCC. Therefore, a structured interview was a good choice as a data collection method.

Given that PFP seems to be effective, the dose and timing of this CE can be used in the future to help plan to CE targeted for nurses, especially in LTC settings for older people. Educational interventions, in general, require more attention to the duration [28] and intensity of education activities [13]. In this study, CE was administered to all nurses in one LTC setting at the same time of contact. In the future, we need more studies about how we can promote collective competence if contact is not possible, such as during the COVID-19 pandemic. In addition, evidence about how nursing managers can promote collective competence in PCC among nurses is needed. As a research area, these kinds of CE interventions also need to be assessed by implementation outcome variables, such as acceptability, adoption, appropriateness, feasibility, fidelity, cost, coverage and sustainability [36]. Implementation research can provide answers to understanding what, why and how intervention works in the real world in LTC settings for older people.

Limitations and strengths

The results should be interpreted in light of some limitations. First, data were collected from two cities in one region, which could have affected the results. Second, the same person implemented, evaluated and reported the results of the intervention, which could have introduced unconscious bias. Third, the instruments may overlap in some items, which can influence correlations. To prevent these potential sources of bias, close attention was paid to the similarities between the participating organisations and units. A group of researchers critically considered and reflected on challenges related to the use of the research method and data analyses with careful research planning. Fourth, instruments were self-assessments, which may have been affected by bias. In the context of competence assessment, there is a tendency to believe that self-assessments are objective, even if self-assessments are often more positively than what is actually the case [37]. Fifth, the PCQ-S was translated into Finnish according to the recommended translation process but without pilot testing. Sixth, the drop-out between measurement timepoints was quite large, but no statistically significant difference at the timepoint M2 was detected between those who did answer at timepoint M1 and those who did not. Statistical power remained in all analyses. We believe that sources

of bias were handled appropriately and should not influence the study in a negative way. However, readers will be the ultimate assessors of this.

As a strength, the study identified differences between groups. The intervention was carefully developed based on previous research evidence; the study followed protocol, the number of missing values was low, and measurements of internal consistency were high in instruments used (PCC, Omega 0.93 and PCQ-S, Omega 0.88). The study was conducted during the COVID-19 pandemic, despite its challenges. It could be that during so-called normal situations, more residents and their next of kin would have participated in the study. The result can likely be generalised in LTC settings for older people in Finland.

CONCLUSION

This study revealed that a CE intervention about PCC named 'Person First—Please' can be an effective way to increase nurses' PCC competence in LTC settings for older people. It also shows that increased individual can be recognised by nurses, residents and their next of kin on PCC climate of the units. Based on earlier evidence about the lack of PCC competence, this result is remarkable in developing quality of care in LTC settings for older people. This study offered relevant knowledge for the educators who develop CE, importance of building theory-based CE and selecting the novel proactive teaching and learning methods for supporting effectiveness. From a clinical practice perspective, this study is relevant as it shows that nurses are able to develop the quality of care and their own working conditions and empowerment should be supported by the superiors. Furthermore, from a perspective of nursing science, there is a need for further research designs that can meet the need for knowledge in service systems to develop practice within the most realistic timeframe possible. PCC is highly recommended in national and international policy documents. This intervention may provide an approach and scalability towards more PCC. In the future, PFP could be developed more to train managers of LTC institutions, because their support for the nurses to increase PCC in units is important. In addition, different research methods are needed to strengthen implementation and effectiveness of PFP. It is important to further improve service culture and quality of care with CE in LTC settings for older people.

AUTHOR CONTRIBUTIONS

All authors have read and approved the final manuscript. MP, MS, DE, AC, MP, RS: The conception and design of the study. MP, MS, DE, AC, MP, RS: Drafting the article. MP, MS, DE, AC, MP, RS: Revising it critically for important intellectual content.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest. The funders had no role in the design of the study; in the writing of the manuscript or in the decision to publish the study.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

ETHICS STATEMENT

The Ethics Committee for Human Sciences at the University of Turku, Health Care Division. Approval number 19/2021. When considering the researcher's request, information about the research obtained from the delivered documents, and the national guidelines for the ethical principles of research with human participants and ethical review in human sciences, the Ethics Committee gives assent to the research. According to the Ethics Committee, the planned research project under the preliminary ethical review can be ethically approved. 7 June 2021. Permissions for instrument use were granted by email by the developers Jee-In Hwang (5 December 2020), Elsevier (reprint of the items) and David Edvardsson (3 December 2020).

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