

The Effects of Involvement in Training And Volunteering with Families of People With Dementia on The Knowledge and Attitudes of Volunteers Towards Dementia

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Research Article

Keywords: volunteer, dementia knowledge, dementia attitudes, motivation to volunteer, training, service, public health

Posted Date: May 14th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-476556/v1>

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Version of Record: A version of this preprint was published at BMC Public Health on February 8th, 2022. See the published version at <https://doi.org/10.1186/s12889-022-12687-y>.

Abstract

Background: Volunteers have been a valuable resource in supporting people with dementia and their caregivers in the community. However, factors such as misconceptions, negative attitudes towards dementia, and a lack of motivation might impact the quality of volunteer care. The aim of the present paper is to examine the effect of training and service provision on the knowledge and attitudes of volunteers towards dementia, as well as the association between such knowledge and attitudes and the motivation to volunteer.

Methods: The present study is part of an effectiveness-implementation cluster randomized clinical hybrid trial using a music-with-movement intervention to promote the well-being of people with dementia and their informal caregivers. Volunteers were recruited to receive training to support the delivery of the intervention. Training and enrichment workshops were offered to volunteers during the one-year project. Before and after their volunteer training and service, the recruited volunteers were asked to complete the following assessments: The Volunteer Functions Inventory, Dementia Attitudes Scale, and the Alzheimer's Disease Knowledge Scale. Wilcoxon signed-rank test and multiple regression test were applied for statistical analyses.

Results: A total of 127 volunteers were recruited and 81 of them completed a mean period of 47.32 weeks of training and service. Significant improvements in their total score on the Alzheimer's Disease Knowledge Scale ($p=.009$) and Dementia Attitudes Scale ($p<.001$) were found. Dementia knowledge ($\beta=.57, p<.001$) and attitudes ($\beta=-.18, p=.038$) were found to have the most significant association with the motivation to be a volunteer at baseline.

Conclusions: The present study illustrated the importance of quality volunteer training and voluntary service in improving the dementia knowledge and attitudes of volunteers. It also shed light on the association between knowledge and attitudes with the motivation to volunteer. Accordingly, future research and public health policymakers should address more efforts to amplify the advantage of volunteers as a vital asset in dementia care.

Trial Registration: NCT03575026 (ClinicalTrials.gov), First registration on 02/07/2018.

Background

Volunteering, which is a helping behavior, refers to the provision of free services to benefit other people or organizations (1). Volunteers are important additions to dementia care. Currently, there are about 50 million people in the world have dementia, and a proliferating number of nearly 10 million new cases can be expected each year, which will squarely challenge the planning framework for community healthcare practice and implementation (2). Policymakers will unavoidably have to develop strategies and improve capacity to address these current and future impacts of dementia as an increasing threat to global public health. One of the approaches is to increase the number of volunteers and their involvement. They are

valued as extra resources to providing many aspects of care services and serve as adjunct manpower to supplement the work of regular healthcare providers (3).

Volunteers have been mobilized to serve in various assistive roles in dementia care with positive outcomes. For instance, shorter lengths of stay in acute hospitals were found among patients with dementia who received person-centered care from volunteers that focused on nutrition and hydration support, help with hearing and visual aids, activities, and orientation (4). In the community and long-term care settings, people with dementia were also found to have benefited from volunteer-administered non-pharmacological interventions (5, 6). The benefits of including volunteers in the care team are not limited to people with dementia but also extended to their caregivers. Family caregivers and hospital staff reported reduced stress and burden when volunteers were integrated into the care team providing person-centered care, and stated the contribution of volunteers to their quality of care (7). A systematic review also found that the depression levels of informal caregivers were significantly reduced after they were befriended by volunteers (8). Apparently, volunteers can improve the outcomes of both people with dementia and their caregivers, especially in systems with scarce resources.

The main reason to engage in volunteering in the community tends to be altruistic (9), and yet volunteers benefitted from their role in a reciprocal manner. According to Dr. Riessman's The Helper Therapy Principle (also called the Helper Theory)(10), volunteers would learn the knowledge through cognitive mechanisms for having a sense of being the peer teacher and correct their negative attitudes or misconception towards people with dementia. The Helper Therapy Principle suggested the belief of doing something worthwhile in helping someone in need improved their self-image. Previous studies have found that volunteering is associated with improved functioning (11), better self-reported health (12), greater feelings of purpose in life (13), higher levels of life satisfaction (14), and decreased risk of mortality (15). Evidence has also shown that volunteers acquired relevant knowledge after providing voluntary services (16). However, there is relatively less discussion in the literature about the benefits of volunteering in the area of dementia care services, with quantitative studies exceptionally scarce (17). In qualitative studies, volunteers for caregivers of people with dementia verbally expressed their enjoyment and satisfaction from their role, increased awareness of the challenges faced by the families, and enhancement in self-understanding (8, 18).

Little is known about or quantifying their gains in knowledge and changes in attitudes towards dementia after training and providing services to families of people with dementia. Except that, volunteers improve their knowledge and attitudes towards other diseases after training and/or service provision informed by the literature. For example, Kilkenny et al. (19) found that participants of the National Stroke Foundation Ambassadors Programme significantly improved knowledge of risk factors and signs of a stroke, after training and providing public education. Fort et al. (20) revealed that adolescent volunteers had significantly improved their attitudes towards disability after services. They thought that the services allowed them to develop relationships with peers who have disabilities, framing their understanding of their difficulties.

Improving the knowledge and attitudes of the volunteers towards dementia can contribute to several demonstrable benefits to the general population. With a poor level of knowledge and many fallacies against those with dementia (21, 22), the increasing dementia knowledge and correcting misconceptions may help to overcoming the stigma and creating a dementia-friendly environment, which is one of the important strategic directions initiated by the World Health Organization (23). Limited knowledge and poor awareness may also lead to significant delays in the help-seeking process (24). Heger et al. (25) found that the majority of middle-aged and older individuals in the sample were unaware of the relationship between a healthy lifestyle and modifiable dementia risk, resulting in major gaps for the general population. Increased levels of social, physical, and intellectual engagement were linked to increased cognitive ability and decreased risk of dementia (26). While many perceive dementia as inevitable and non-preventable (27), trained volunteers can be at the forefront of the preventative measures to bring their knowledge and experiences back to their local communities and to improve public awareness about the range of management associated with dementia. This will be a convincing and effective case for informing the public about the risk and protective factors for dementia. Therefore, it is important to identify an effective way to enhance knowledge and attitudes towards dementia, particularly among volunteers.

Traditional didactic teaching methods that offer “one-off” training for volunteers before sending them off to serve might not be effective at improving their knowledge and attitudes. This is because such an approach does not offer opportunities for “real learning” to take place, as learning is a continuous process of reflective observation, abstract conceptualization, active experimentation, and the acquisition of concrete experiences (28). Furthermore, issues such as a decline in motivation and dropping out from volunteering are also encountered in “one-off” training. A recent study found that people could feel more negatively about people with dementia after exposure to alarming symptoms (22). Moreover, volunteers have often been found to be struggling to manage the discrepancy between their expectations of volunteering and their “actual” experience of it (29). Therefore, the research team designed a training program that incorporated elements of continuous learning, where volunteers were allowed to reinforce their knowledge and skill by having contact and interacting with people with dementia and their family members. Hence, the research problem that we investigated was whether a special training program for volunteers such as the one we used in our study, would be effective to enhance their knowledge and attitudes towards dementia. An attempt is also made to investigate the association between dementia knowledge and attitudes and the motivation to volunteer.

Objectives and hypotheses

The objectives and the related hypothesis of this project were:

Objective 1: To examine the effect of training and service provision on the knowledge and attitudes of volunteers towards dementia.

The null hypothesis to be tested to address objective #1 was that the volunteers did not have significant improvement in the knowledge and attitudes towards dementia after training and service provision.

Objective 2: To identify the association between dementia knowledge and attitudes and the motivation to volunteer.

The null hypothesis to be tested to address objective #2 was that there was no association between dementia knowledge and attitudes and the motivation to volunteer.

Methods

Design

This study was a part of an effectiveness-implementation cluster randomized clinical hybrid trial (ClinicalTrials.gov Identifier: NCT03575026) to evaluate the effectiveness and implementation of a music-with-movement intervention for enhancing the well-being of both people with dementia and their informal caregivers. The data collected from the volunteers were analyzed to address the research objectives. This study is reported according to the Transparent Reporting of Evaluations with Nonrandomized Designs (TREND) guideline (30).

Participants and setting

This study was conducted in the community in Hong Kong. Participants were recruited through convenience sampling by the seven partner organizations and through an institute of the University that consists of 4,000 senior members. The seven partner organizations provide elderly services (n = 4), women's services (n = 1), mental health services (n = 1), or general social services (n = 1).

The criteria for the inclusion of participants were (1) aged 18 and above; (2) physically stable to pay home visits; (3) able to speak Cantonese (a major dialect in Hong Kong) and write Chinese; and (4) without cognitive impairment or psychiatric illness. Those who could not commit to volunteering for families of people with dementia without pay for at least six months were excluded.

Training and enrichment workshops

Five 2-hour mandatory workshops and ten enrichment workshops were arranged for all the recruited participants and were conducted in the University. Each session had around 15 – 20 participants, and they were provided with the intervention manual and teaching handouts. The first workshop was provided by the first author. That included an orientation of the parent study (i.e., the effectiveness-implementation cluster randomized clinical hybrid trial using a music-with-movement intervention to promote the well-being of people with dementia and their informal caregivers), knowing one's peers, and general knowledge about dementia. The volunteers learned to identify the symptoms of cognitive impairment, to differentiate between normal aging and cognitive impairment, communication skills and activity leading skills, and to provide initial management when there were behavioral and psychological symptoms of dementia. In particular, building rapport with clientele was emphasized. Because the volunteers were required to provide both a center-based and a home-based music-with-movement intervention, the project team discussed with the volunteers the possible problems that they might encounter, such as a refusal on

the part of the client to open the door for the participants to enter because the client might have forgotten the appointment or be afraid of strangers, the inability of clients with cognitive impairment to follow the conversation, poor home hygiene, and other problems. Case scenarios were shared and discussed to facilitate reflection and problem solving among the participants.

Because the volunteers were required to provide music-with-movement interventions to people with dementia (protocol modified from (31)), they received training in the relevant practical skills. In the other four workshops conducted by a registered music therapist, the first hour was conducted with around 3 – 5 staff working in the partner organization. The participants played a role similar to that of the clients, in that they received music-with-movement interventions led by the staff. The second hour focused on the theoretical and practical knowledge related to music-with-movement interventions, and the skills required to lead the activities. Two music-with-movement activities were taught in each workshop. It covered the choice of music genres, safety measures, movement, props to be used, etc.). The details can be found in the published E-book: <https://lihi.cc/XItEY>, which introduced music-with-movement activities suitable to people with dementia. Throughout the sessions, the registered music therapist integrated the skills involved in communicating and empathizing with people with dementia and regularly reinforced them. For example, if the client did not respond to the instructions that were given, this might be an indication of limited verbal comprehension, or of a need for more time to respond, but not of poor attitude; the participant might then need to rephrase the instruction. This kind of information may help the participants to understand the symptoms of cognitive impairment and may lead them to adjust their preconceptions.

At the end of the five sessions, volunteers were assessed by the music therapist and research team through return demonstration to ensure they were competent. The assessment components consisted of skills in delivering music-with-intervention to people with cognitive impairment (for example, choosing music genre, matching movement to the music, and safety measures); and communication skills (such as speaking speed, clarity of instruction, friendliness, and techniques to lead activities). Those who attended at least 80% of the training sessions and who passed the assessments were recognized as qualified.

Apart from the mandatory training workshops, 10 enrichment workshops were held for all volunteers during the one-year period of the project. No additional assessment after these ten workshops were deemed necessary, as this was the strategy for engaging the volunteers to support the project continuously. The topics of these enrichment workshops were suggested by the volunteers and partner organizations (see Appendix I for workshop details), and were held as listed below:

1. Neuropsychiatric symptoms of dementia and the sharing of volunteer experiences
2. Interior design principles of a home for people with dementia
3. A mindfulness-based intervention for caregivers
4. Stretching exercises
5. Reminiscence for older people with dementia

6. Emotional support to caregivers
7. Zen drawing for stress reduction
8. Site walk: Technology for older people with dementia
9. Breathing exercise
10. Mental health

Instant messaging had been proved to empower the team and facilitate knowledge sharing in a workplace that heightened team performance (32). We anticipated volunteers might share a commonality of interest. Therefore, instant messaging groups (using WhatsApp) were formed to facilitate support by the project team (including the music therapist) and center staff to volunteers. Each partner organization was a unit of the chat group.

Voluntary services to families with people with dementia

After the volunteers had received the five sessions of training and satisfying the assessment criteria (i.e. the skills in delivering music-with-intervention to people with cognitive impairment; and communication skills), arrangements were made for them to meet in the center the families that they were to serve. There were no restrictions on how frequently they should contact the families, but it was recommended that they visit the home of the families at least once a month during the 24 weeks of the intervention program. Two volunteers were paired up and assigned to serve one or two families. During the home visits, the two volunteers were expected to deliver the 30 – 45 minutes music-with-movement intervention to the clients with cognitive impairment, and to communicate with the family member to solve problems related to the intervention. The music-with-movement intervention consisted of four to five designed music activities, such as tapping the feet with music and singing (31). During these visits, the volunteer also observed the people with dementia and the family's interaction, and helped to address questions from the families, if any, on the areas that they had been trained to address.

The volunteers were also required to assist the staff members in providing four center-based music-with-movement interventions in the first 12 weeks, for three purposes: (1) to assist the staff in the activities; (2) to observe the professional interaction between the staff members and people with cognitive impairment and their family members; and (3) to practice the skills under the supervision of the trained staff and project team. The matching was carried out by the staff of the center, who was familiar with the background of both the clients and the volunteers. The principles in conducting the matching were the geographical proximity of the homes of the client and the volunteer, and the characters of the client and volunteer.

During this period of the project, apart from the communication via the instant messaging group, the volunteers were required to record their experiences within one week after each visit. The project team reviewed the volunteers' electronic records and swiftly answered any queries that they made regarding the visits. The volunteers also shared their experiences during the enrichment workshops, where questions

were also answered by the professional speakers. The quality of the volunteers' services was ensured in the abovementioned ways.

Outcome Measures

The survey was designed to allow for self-administration. However, a research assistant was trained to assist those who might need assistance. Information on demographic characteristics (including age, gender, level of education, employment status, and dementia caregiving experience) was collected at baseline.

To address Objective 1, knowledge and attitudes were assessed using the Alzheimer's Disease Knowledge Scale (Chinese version) and the Dementia Attitudes Scale (Chinese version) respectively at baseline (i.e., before joining any workshops) and after the completion of the training and voluntary service provision. The Alzheimer's Disease Knowledge Scale (33) consists of 30 true/false items covering the life impact, risk factors, symptoms, treatment and management, assessment, caregiving, and course of the disease. Higher scores indicate more correctly answered items. The test takes approximately 5 – 10 minutes to complete. The internal consistency (Cronbach α = 0.71) and test-retest reliability (r = .81) of the scale were acceptable and good, respectively (33). The Dementia Attitudes Scale (34, 35) consists of 20 items rated on a 7-point Likert scale (ranging from 1 to 7) that reflect the affective, behavioral, and cognitive components of attitudes towards individuals with Alzheimer's and related forms of dementia. Two factors were identified, namely, dementia knowledge and social comfort. The internal consistency was good (Cronbach α = 0.83 – 0.85) (34).

To understand the motivation to be a volunteer and explore the relationship between motivation and dementia knowledge and attitudes (Objective 2), the participants were asked to fill in the Volunteer Functions Inventory (Chinese version, (36) at baseline. The inventory contains 30 items and six subscales rated on a 7-point Likert scale (ranging from 1 – 7), with higher scores indicating the greater importance of that motive. The subscales measure six major functions potentially served by volunteerism: reducing one's negative feelings (protective), expressing a generous concern towards others (values), gaining career-related experience (career), strengthening one's social relationships (social), learning through hands-on experience (understanding), and promoting better feelings towards oneself (enhancement). The internal consistency of each subscale was found to be good to excellent (Cronbach's α = 0.70 – 0.91), with the test-retest reliability over an 8-month interval ranging from r = 0.56 to 0.73 (36).

Sample size

As this was part of a larger-scale implementation study, a formal estimation of sample size was not performed.

Ethical considerations

Approval for the study was obtained from the University (HSEARS20180319002). Written consent was obtained from all participants. To compensate them for their transportation costs, the participants

received the equivalent of about US\$7.7 in cash per trip at the end of the program. The conduct of the study was consistent with the requirements of the National Statement on Ethical Conduct in Human Research.

Statistical analysis

Data were analyzed using SPSS software version 25.0. A Wilcoxon signed-rank test was used to examine the change in dementia knowledge and attitudes towards dementia after training and voluntary service provision. Hierarchical multiple regression was used to assess whether dementia knowledge and attitudes could predict an individual's motivation to volunteer (total score in the Volunteer Functions Inventory), after controlling for possible confounders (i.e., age, gender, level of education, employment status, and dementia caregiving experience). The level of significance was set at $p < .05$ (two-tailed) in all statistical analyses.

Results

A total of 107 volunteers were recruited in this study in the period of March – August 2018, and 81 of them completed the training and voluntary services by October 2019 (see Table 1 for details). The majority were female (90.65%) and unemployed or retired (73.83%). Around half of the sample were older than 60 (48.60%), with a mean age of 58.07. One hundred participants (93.46%) attended over 80% of the workshops and were eligible to provide voluntary services. Around 70% of the volunteers did not have any experience in caring for people with dementia before the training. The mean period between the baseline assessment and the follow-up was 47.32 weeks (SD = 6.40).

Table 1. Characteristics of the participants	
Participants (n = 107)	Mean (S.D.)
Age	58.07 (9.21)
Years of education	12.42 (4.39)
Number of visits provided	5.04 (4.94)
Volunteer Functions Inventory (range)	
Protective (5-35)	21.76 (6.52)
Values (5-35)	27.46 (4.92)
Career (5-35)	22.67 (7.06)
Social (5-35)	24.60 (6.18)
Understanding (5-35)	26.69 (5.18)
Enhancement (5-35)	23.97 (6.54)
Total score (30-210)	147.56 (32.81)
	Count (%)
Sex	
Male	10 (9.35)
Female	97 (90.65)
Age >=60	
No	55 (51.40)
Yes	52 (48.60)
Employment status	
Unemployed/retired	79 (73.83)
Part-time/temporary	2 (1.87)
Full-time	26 (24.30)
Attended over 80% of the training workshops	
No	7 (6.54)
Yes	100 (93.46)

Experience in caring for people with dementia	
No	74 (69.16)
Yes	33 (30.84)

Effects on dementia knowledge

The results of the Wilcoxon signed-rank test indicated that there was a significant improvement after the provision of training and voluntary services in the total score of the Alzheimer’s Disease Knowledge Scale ($p = .009$), and of the Risk factor ($p = .001$) and Caregiving ($p = .032$) subscales. The changes in the other subscales did not reach the level of statistical significance (see Table 2 for details).

Effects on attitudes towards dementia

The results of the Wilcoxon signed-rank test showed that after the provision of training and voluntary services, there was a significant improvement in the total score of the Dementia Attitudes Scale ($p < .001$), and of the Social comfort ($p = .003$) and Knowledge ($p = .034$) subscales (see Table 2 for details).

Table 2. Dementia attitudes and knowledge pre- and post-test			
	Baseline (n=107)	Post-test (n=81)	<i>p</i> -value ^a
	Mean (S.D.)		
Dementia Attitudes Scale (range)			
Comfort sub-score (10-70)	40.06 (5.29)	41.69 (6.65)	.003
Knowledge sub-score (10-70)	53.90 (7.17)	54.58 (6.63)	.034
Total score (20-140)	94.05 (10.28)	96.27 (10.70)	<.001
Alzheimer's Disease Knowledge Scale (range)			
Life impact sub-score (0-3)	2.26 (0.79)	2.47 (0.74)	.102
Risk factor sub-score (0-6)	2.80 (1.31)	3.47 (1.28)	.001
Symptom sub-score (0-4)	2.71 (1.18)	3.01 (1.14)	.092
Treatment and management sub-score (0-4)	2.93 (1.02)	3.14 (0.95)	.141
Assessment and diagnosis (0-4)	2.52 (0.88)	2.47 (0.98)	.591
Caregiving sub-score (0-5)	2.44 (1.10)	2.84 (1.12)	.032
Course sub-score (0-4)	2.26 (0.99)	2.26 (0.96)	.350
Total score (0-30)	17.93 (4.44)	19.44 (4.56)	.009
<i>Remarks:</i> ^a Wilcoxon signed-rank test			

Changes of dementia knowledge and attitudes towards dementia between those provided and did not provide services

The Independent t-test showed significant differences in the changes score of Alzheimer's Disease Knowledge Scale ($p = .011$) and Dementia Attitudes Scale ($p = .031$) between those provided and did not offer volunteering services after training (See Table 3 for details).

Table 3. Independent t-test comparing the change of attitudes towards dementia and dementia knowledge				
	Did not provide services (n = 30)	Provided services (n = 77)	Mean difference [95% C.I.]	<i>p</i> -value ^a
	Mean (S.D.)			
Dementia Attitudes Scale				
Comfort sub-score	0.50 (2.66)	1.96 (5.69)	-1.46 [-3.07, .15]	.074
Knowledge sub-score	-.03 (1.92)	1.58 (7.56)	-1.62 [-3.46, .23]	.085
Total score	.47 (3.82)	3.42 (10.13)	-2.95 [-5.62, -.27]	.031
Alzheimer's Disease Knowledge Scale				
Life impact sub-score	-.07 (.64)	.23 (.93)	-.30 [-.62, .01]	.061
Risk factor sub-score	.20 (.76)	.53 (1.31)	-.33 [-.74, .07]	.107
Symptom sub-score	-.07 (.37)	.25 (1.13)	-.31 [-.60, -.03]	.032
Treatment and management sub-score	-.03 (.18)	.19 (1.06)	-.23 [-.48, .02]	.073
Assessment and diagnosis	.00 (.37)	-.06 (1.08)	.07 [-.21, .34]	.065
Caregiving sub-score	.00 (.53)	.38 (1.41)	-.38 [-.75, -.01]	.046
Course sub-score	-.17 (.46)	-.01 (1.03)	-.15 [-.44, .13]	.291
Total score	-.17 (1.18)	1.30 (4.60)	-1.47 [-2.59, -.34]	.011
<i>Remarks:</i> ^a Independent t-test				

Association between dementia knowledge and attitudes and the motivation to volunteer

The results of the hierarchical multiple regression showed that there was no violation of the assumptions of normality, linearity, multicollinearity, and homoscedasticity. Age, gender, employment status, dementia caregiving experience, and years of education were entered in Step 1, and explained 2.8% of the variance in the motivation to volunteer. After dementia knowledge and attitudes were entered in Step 2, the total variance explained by the model as a whole was 27.8%, $F(8, 98) = 6.10, p < .001$. In the final model, only dementia knowledge (total score of the Alzheimer's Disease Knowledge Scale) and attitudes (total score of the Dementia Attitudes Scale) were statistically significant, with a higher standardized beta value ($\beta =$

.57, $p < .001$) for dementia attitudes than for dementia knowledge ($\beta = -.18, p = .038$) (See Table 4 for details).

Table 4. Hierarchical multivariate regression analysis of motives for volunteering				
	Model 1	<i>p</i>-value	Model 2	<i>p</i>-value
	β [95% CI]		β [95% CI]	
Constant		<.001		.918
Age	-.01 [-.78, .72]	.936	.03 [-.54, .72]	.771
Female	.05 [-18.46, 28.70]	.667	.01 [-19.14, 20.46]	.948
Years of education	-.05 [-1.98, 1.17]	.612	.01 [-1.25, 1.42]	.896
Employment				
Retired/unemployed (reference)	1		1	
Part-time	.03 [-41.13, 54.52]	.782	-.08 [-60.37, 21.24]	.344
Full-time	-.08 [-21.61, 10.17]	.477	-.13 [-22.89, 3.85]	.161
With dementia caregiving experience	.12 [-5.92, 22.79]	.246	-.01 [-13.38, 12.17]	.925
Dementia knowledge			-.18 [-2.57, -.07]	.038
Dementia attitude			.57 [1.26, 2.38]	<.001
Adjusted R^2	-.030		.278	

Discussion

To the best of our knowledge, this is one of the first studies to evaluate the impact of volunteer training and voluntary services on the dementia knowledge and attitudes of volunteers. The results showed that the volunteers' knowledge and attitudes towards dementia had improved after the provision of training and services. These improvements can be attributed to the specially designed workshops that offered training not only on the skills required to deliver the intervention but also on effective communication and rapport-building skills that are essential in forming a relationship with the service user and carer. Besides, the Mann-Whitney U test results showed that those provided services had greater improvement in the knowledge and attitudes than those without providing volunteering services after training. The program offered a continuous learning process with various opportunities for volunteers to get in touch with families with a member who has been diagnosed with dementia. Supported by the Mann-Whitney U test results, we postulated that the volunteers might actively experiment with and consolidate what they had

learned during their visits, and yet to be confirmed in the later research. This experiential learning process might be what helps to reinforce knowledge of dementia (e.g., about the types and progression of the disease and the support needs of people with dementia and their families). This was evident in the significant changes that were observed in the caregiving subscore of the Alzheimer's Disease Knowledge Scale.

In addition, we adopted various teaching approaches in our curriculum, such as the use of a written manual; experiential learning workshops and real practices (i.e., services supported by the project team); and interaction with professional staff for modeling the skills. Our approach is similar to that taken in another study on evaluating a curriculum to prepare volunteers to support older persons living with serious illnesses, which included a learning manual, case studies, role-playing, and active engagement with the families (37). The authors of that study also found that the volunteers were satisfied with this model of training and that they experienced improvements in their self-efficacy. Therefore, we suggest that multiple approaches to volunteer training should be adopted.

Second, the attitude of the volunteers towards dementia improved in this study. The results are consistent with those of another study, which showed that participation in community activities significantly improved attitudes towards dementia (38). Those without any experience with people with dementia always underestimate the potential of such people due to the negative impressions of them that they receive from society (18). Through interactions with people with dementia during the assigned activities, the volunteers might have been able to identify and appreciate the ability of people with dementia (39, 40). They may have witnessed the hardships faced by people with dementia and learned to be more accepting and appreciative of them (40). The result was a better understanding that led to empathy and sympathy (40).

Regular enrichment workshops were also provided to retaining the volunteers, with topics suggested by the volunteers or participating organizations. An integrative review showed that continuous, ongoing educational workshops and training sessions are a useful strategy to reduce the possible stress experienced by the volunteers, particularly when serving vulnerable groups (such as elderly people and those living in a hospice) (41). Continuous support offered to the volunteers might have helped them to address the expectations and negative feelings that might arise from volunteering, which are believed to be crucial factors that influence volunteers to drop out (29). Furthermore, our study showed that the motivation in volunteering can be enhanced through proper training by improving the volunteers' knowledge and attitudes. Knowledge acquired in training and regular meetings enhanced their competence (e.g., communication skills) and confidence that may drive them to continue to volunteer, because of the increased intrinsic motivation (40, 42, 43). The finding was similar to that of a previous feasibility study, which found that people with higher dementia knowledge and dementia attitude scores were more likely to continue to volunteer (44). Motivation could be affected by knowledge about dementia (18, 42) and reflected in the extent of an individual's involvement in volunteer services (42).

Taking on the role of being a volunteer in the community not solely better the person with dementia and the caregivers in the present moment, volunteering also offered them the opportunity to contemplate and be prepared in a state of readiness as they are aging. Jenkinson et al. (45) explored the development of volunteering as a public health promotion intervention. In comparison to those who do not engage or only episodically engage in voluntary work, continuously volunteering is associated with a significantly lower risk of dementia (46). Recent research also supported that both self-oriented and other-oriented volunteering were significantly related to better health outcomes (47). In a nationally representative sample of older adults, the initiation and maintenance of volunteering decreased the risk of cognitive impairment for over 14 years and provided the time to protect against the onset of cognitive impairment (48). The knowledge and training may have sowed good seeds in the community and delicately nurtured in the process of volunteering. Thus, public health policymakers shall leverage the service of volunteers, and such efforts will potentially be returned in the long run from a public health perspective.

This study has a few limitations that deserve attention. First, as this study is a part of a larger implementation study, no control group had been designed to compare changes in dementia knowledge and attitudes. However, this is a pioneer study that evaluated the effects of training and voluntary services on the volunteers' dementia knowledge and attitudes, and the findings could provide important insights for the field of dementia care. Second, we were unable to delineate the effects of training/voluntary services because we measured knowledge and attitudes only at baseline and the end of the provision of services. It is suggested that knowledge and attitudes be assessed immediately after the training is provided, in order to track the changes more precisely. Third, we mainly relied on our partner organizations to recruit volunteers; thus, selection bias could not be eliminated. We suggest that in a future study, a more representative sample could be recruited.

Conclusions

Funding and providing health and social care for a growing aging population with an increasing number of chronic health conditions, such as dementia, are among the biggest challenges to global public health (49). In the past three decades, the voluntary sector has been promoted as a cost-effective and locally responsive solution to providing home and community care for the aging population (50). Numerous studies have been conducted to evaluate the impact of volunteer-delivered activities on people with dementia and their families, but this study is novel in that it highlights two important issues. A well-designed and continuous training program with plenty of practical experience is essential to improving the knowledge and attitudes towards dementia of volunteers. At the same time, knowledge and attitudes have been found to be related to the motivation to volunteer. Volunteers are an essential resource in the community, and they might one day become a family caregiver or themselves a patient of dementia. More efforts have to be made to engage volunteers in dementia care.

Declarations

Ethics approval and consent to participate

Approval for the study was obtained from the Human Subjects Ethics Sub-committee of the Hong Kong Polytechnic University (HSEARS20180319002). Informed written consent was obtained from all participants. The conduct of the study was consistent with the requirements of the National Statement on Ethical Conduct in Human Research.

Consent for publication:

Not applicable

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests:

The authors declare that they have no competing interests.

Funding:

This study was supported by the Ho Cheung Shuk Yuen Charitable Foundation.

Author's contribution:

DC, LH, and CL designed the study. DC conducted the data analysis. DC, LH, RK, DL wrote the manuscript and critically reviewed by CL. All the authors read and approved the final manuscript.

Acknowledgements:

We acknowledge Ms Kitty Wong (registered music therapist) for providing the training to volunteers, and the partnered organizations for their contribution in this project.

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