



BMJ Open Pilot cross-sectional study of foreign domestic workers supporting the basic healthcare needs of older persons in the community

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ABSTRACT

Objective This pilot study aimed to determine the proportions, level of knowledge, anxiety and confidence of foreign domestic workers (FDWs) who were involved in supporting the healthcare needs of older persons with long-term non-communicable diseases.

Design The pilot study used a cross-sectional and descriptive design.

FDWs who accompanied the older adults attending a primary healthcare setting in Singapore. 100 eligible FDWs' demographic data, knowledge and confidence level of caregiving in food preparation, medication supervision, exercise, blood pressure (BP), blood glucose (BG) monitoring and anxiety level assessed by the Generalised Anxiety Disorder-7 scale were recorded. Descriptive statistics were performed and presented. Items on confidence were regrouped into two groups of 'very' versus 'no/a little/moderate'. Knowledge scores and caregiving tasks were assessed with items on confidence using Mann-Whitney U test and χ^2 test, respectively.

Results The FDWs were from Indonesia (60%), Philippines (23%) and Myanmar (14%). Their mean age was 33 years with an average of 5.8 years working experience; 62% self-reported previous caregiver training for elderly. The mean age of care-recipients was 81 years. Knowledge of FDWs on BP and BG monitoring was low (<50% answered correctly). Among the 55 FDWs who were required to perform BP monitoring, 45.5% lack confidence. Similarly, 40% of the 30 FDWs were not confident in performing BG monitoring. Those with very high confidence levels had higher knowledge on BP and BG monitoring. Of those who were involved in medication supervision (n=86), 36% lacked confidence. The majority of the FDWs (96%) were not affected by anxiety in managing these healthcare tasks for older persons.

Conclusion More than half of the FDWs supported healthcare needs of older persons but they had inadequate knowledge and lacked confidence in performing the healthcare-related tasks.

BACKGROUND

Populations are rapidly ageing in Asia. United Nations (2015) estimated that up to 60% of the world's older adults aged 60 years and above will reside in Asia by 2030.¹ Among

Strengths and limitations of this study

- This study was likely the first to specifically assess the knowledge, confidence level and anxiety of foreign domestic workers (FDWs) in supporting geriatric healthcare in the local community.
- Only FDWs who spoke and understood English were recruited, and thus the results are not generalisable to the rest of the local FDW population who are less proficient in English.
- The questionnaire was developed by the investigators, as such instrument is not available due to scarce studies on FDWs, the validity and reliability could be disputed.

Asian countries, Singapore experiences the highest growth rate of the older population. The proportion of residents aged 65 years and above has increased from 8.8% in 2009 to 14.4% in 2019.²

Many older Asian adults prefer home-based care which means family members will take up caregiving roles.^{3 4} However, the traditional reliance on Asian family caregivers to care for the frail older persons in the household has evolved due to increasing numbers of women in the workforce, expansion of nuclear families and socioeconomic shift in the community.^{3 5} Most adult family members hold full-time jobs or have other caregiving roles. Foreign domestic workers (FDWs) are hired as additional family caregivers in many communities in East and South-East Asia (Hong Kong, Taiwan, China, Singapore, Malaysia). FDWs are also common in Northern, Southern, Western Europe, but not as common in Eastern Europe and America.⁶ An FDW is usually a stay-in waged, migrant woman attached to one employer to work in the respective household⁷ but studies on them are limited.

Singapore as a case study

In Singapore, the vast majority of the FDWs originate from the neighbouring South-East Asian countries, including Indonesia, Philippines and Myanmar. They have to be aged 23 to below 50 years during their permit application to work in Singapore. Those who are 50 years and older need to renew their work permits until they reach 60 years of age. They require 8 years of formal education with a recognised certificate. These FDWs have been allowed to work in Singapore since the 1990s, when there were only 50 000 FDWs. By December 2019, there were over 260,000 FDWs in Singapore.⁸

These FDWs are often employed to look after the older family members, aside from managing other household chores.⁹ Almost half of the families hired FDWs for this primary purpose.^{10,11} Non-communicable diseases (NCDs) are prevalent in older adults aged 65 and above.¹⁰ More than 80% have one or more NCDs, such as type-2 diabetes mellitus (T2DM), hypertension or dyslipidaemia.³ The duties of looking after an older adult can be divided into cleaning, cooking and caring.¹² The boundary between care work and domestic tasks is usually blurred.¹³ Most FDWs are involved in looking after the older adults in the household. However, over half of them do not have geriatric care experience or formal training.¹⁴ Families hire FDWs despite concerns that the latter lack proper training in caring for frail older adults.¹⁵ The selection of FDWs often relies solely on their profiles provided by commercial hiring agencies, including nationality, age and previous working experience. This is followed by brief assessment over short telephonic interviews or conversation over social media platforms. Objective evaluation of their competency in providing geriatric care is lacking.⁵

Older care recipients with NCDs require regular monitoring of disease status such as blood pressure, capillary glucose for those with diabetes mellitus, medication adherence, diet and physical activity supervision.¹⁰ Poorly managed NCDs can lead to complications and morbidity. Studies had reported low level of knowledge in managing NCDs among family caregivers.^{16–18} Behaviour change theories and a study by Zeng *et al* suggest that individuals with sufficient knowledge, specifically caregiver knowledge regarding elder care, could positively impact the care quality of the elderly.^{19,20} The organising framework for caregiver intervention led by Van Houtven *et al* further demonstrates that caregiver's knowledge, confidence of performing care tasks and coping affect care recipients' outcomes.²¹ However, the level of basic knowledge, confidence and anxiety levels of FDWs in managing older persons with NCDs in the community remain unknown.

The expanded job scope may also affect the psychological health of these FDWs. FDWs may experience distress and burnout due to unrealistic expectation of their employers to accomplish both the caregiving and domestic tasks.¹¹ FDWs are also at risk of developing mental health problems such as depression, anxiety,²² which can potentially erode the quality and confidence in care delivery to their wards, including older persons.

Confidence is the quality of being certain of a person's abilities.²³ This attribute is a surrogate indicator of the capability of the FDWs in executing their caregiving duties and coping with these tasks over extended period of time.^{11,24} Their level of confidence is postulated to rise with time due to their induction by healthcare professionals when they accompany the latter to healthcare facilities for their NCD management. Their willingness to participate in a survey-based in English language is also postulated to reflect their confidence in managing the healthcare needs of older persons. Relevant training and resources to upskill these FDWs at public healthcare facilities are planned in the future which will further boost their confidence in their caregiver role for older persons.

AIMS

Among these FDWs who were managing older persons with NCDs in the same household, the primary aim of this pilot cross-sectional study was to assess the proportion of them who could complete an English-based survey. The secondary aims were to determine their knowledge, skills and confidence in supporting the healthcare needs of older persons, the proportions of those with suspected anxiety, as screened by the 7-item Generalised Anxiety Disorder (GAD-7) scale, and its association with their healthcare-related tasks.

The FDWs were postulated to be willing to participate in the English-based questionnaire due to adequacy of knowledge, skills and confidence level in managing older persons in domiciliary setting and corresponding low level of anxiety.

METHODS

Study design

This pilot study used a cross-sectional, descriptive design. An interviewer-administered questionnaire survey was conducted using a novel questionnaire on FDWs, who accompanied their older wards for their medical review at selected public primary care clinics in eastern Singapore.

Setting and participants

Recruitment was carried out at SingHealth Polyclinics (SHP) between May and June 2018. SHP comprising eight public primary care clinics (polyclinics) in eastern Singapore, serve ambulatory patients in the community. The four selected study sites (Bedok, Bukit Merah, Tampines and Outram Polyclinics) are located in mature housing estates with large numbers of senior residents.²

Nursing students from the School of Health Sciences in Ngee Ann Polytechnic served as research assistants to screen FDWs and recruited them into the study after obtaining their written informed consent. The latter translated and explained the terms in the questionnaire, when doubts from the FDWs arose. The questionnaire survey was administered in a separate room away from the care recipients to ensure privacy and autonomy for the

FDWs to provide their responses. Demographic data was also obtained from the care-recipients, including their sex, age and medical conditions.

Data were then double checked by a site-investigator to ensure completeness of responses. Each participant received a copy of the consent form and an SGD5 (US\$3.80) grocery voucher at the end of the interview.

Inclusion and exclusion criteria

FDWs were recruited if they were (1) between 23 and 55 years old, (2) able to speak and understand basic English, (3) caring for an older person, aged 60 years and older, who were managed in polyclinics for any one or more of these conditions (T2DM, hypertension, dyslipidaemia) and (4) involved in at least one care aspect of healthcare provision such as diet, medication management and monitoring devices.

T2DM, hypertension and dyslipidaemia are among the top four medical conditions accounted by the 2.5 million attendances in the institution.²⁵ Care-recipients with other co-morbidities were also included.

We excluded FDWs who reported (1) no involvement in the care of older persons, or (2) those older persons without any medical conditions, or (3) those looking after older persons only on selected days of the week. These FDWs were not regarded as their primary caregivers, as they usually performed housework without the need to look after older persons.

Questionnaire

The questionnaire sought information on the demographic characteristics of the FDWs and their care-recipients, FDWs' knowledge and confidence level on caregiving tasks and the GAD-7 scale. As no questionnaire has been developed to assess basic healthcare-related literacy of FDWs, the investigators created a scale comprising twelve true/false questions to cover their knowledge on managing the diet, exercise, medication and clinical monitoring. The questions were adapted from the local official Health Promotion Board health education brochure on the management of T2DM, hypertension and dyslipidaemia. The confidence level in managing the healthcare tasks in these domains was self-rated on a 4-point Likert scale, categorised into 'no', 'a little', 'moderate' and 'very' confident.

The GAD-7 scale is a valid tool to screen for generalised anxiety disorder in clinical practice and research. It has a good internal consistency (Cronbach $\alpha=0.92$) and test-retest reliability (intraclass correlation=0.83).²⁶ It is brief, easy to understand and has been shown to be reliable and valid in the Filipina population²⁷ and Indonesian college students.²⁸ Proficiency in English and a minimum of 8 years of formal education are criteria for a work permit in Singapore, and thus the participants were postulated to have adequate understanding to fill the questionnaires. The participants appraised the seven questions using scores ranging from 0 to 3, corresponding to the respective frequencies of 'not at all', 'several days', 'more than

half a days' and 'nearly every day'. The scores for the individual questions were added up to a total score. The total scores of 5, 10, 15 are taken as cut-offs for mild, moderate and severe anxiety. A cut-off score of 10 or more indicates a need for further anxiety assessment by a healthcare professional.

A multidisciplinary primary healthcare professional team comprising a doctor, a senior nurse, a medical social worker, a pharmacist and a dietitian reviewed and refined the entire questionnaire. It was piloted with several FDWs who were assessed if they understood each of the questions, before it was finalised for use in the main study.

Sample size

Based on the recommendation of Viechtbauer *et al*²⁹ for pilot studies, the minimum sample size required was 59. To buffer for incomplete data entry by the FDWs in view of uncertainty and possible variability of their English literacy, 100 subjects were recruited.

Data analysis

Descriptive statistics of training needs and baseline characteristics of the study subjects were presented in frequency and percentages. The association between their required caregiving tasks and confidence in their tasks were performed using χ^2 test while association between knowledge and confidence of respective tasks were assessed using Mann-Whitney U test. Items on confidence level were regrouped into two groups of 'very' versus 'no/a little/moderate'.

The score for the three knowledge-related questions in each of the four domains was summed up for the correct answers. The score for each question ranged from 1 to 3, resulting in a maximal total knowledge score of 12. The confidence level was scored 1 for 'no', 2 for 'a little', 3 for 'moderate' and 4 for 'very' confident. The overall confidence level was the sum of the four confidence-related questions. A p value of <0.05 was considered statistically significant.

Patient and public involvement

No patient was involved in the design of the study protocol. The participants were not included in the conceptualisation and design of the study because they have to accompany their care recipients for their NCD management and their employers may not agree due to time constraint, although we had several FDWs to assess if they understood each of the questions before the questionnaire was finalised for use in the main study.

RESULTS

Response rate

A total of 104 FDWs were enrolled but 100 completed questionnaires were analysed. Four FDWs were excluded because of language difficulty and incomplete administration questionnaire due to time constraint. The

recruitment was completed over 8 weeks, suggesting feasibility of this pilot study.

Demographics of FDWs and care-recipients

Table 1: the mean age of the FDWs was 33.0 years (SD=6.3). The majority of them (n=60; 60%) were from Indonesia, while the rest were from Philippines (n=23; 23%), Myanmar (n=14; 14%), and 1% each from Cambodia, India and Malaysia, respectively. The FDWs had worked in Singapore as domestic helpers for a mean of 5.8 years (SD=5.1); 55% (n=55) of them had experience caring for older persons. 60% (n=60) of them had looked after the care-recipients for 1–2 years and their main language used to communicate with care-recipients was English. Overall, 4% (n=4) of them scored 10 or more based on the GAD-7 scale, indicating minimally moderate anxiety level.

The majority (n=74; 74%) of the care-recipients were females, with mean age of 81.3 years (SD=8.4). They were mostly Chinese.

FDWs' caregiving and domestic tasks

Table 2: the majority of the FDWs needed to prepare meals (n=90; 90%), ensure safety of care-recipients during exercise (n=89; 89%), prepare and supervise medication intake (n=86; 86%). Slightly more than half (n=55; 55%) of FDWs were required to perform home blood pressure (BP) monitoring and about one-third (n=30; 30%) were required to perform blood glucose (BG) monitoring. Bringing care recipients for medical follow-up (n=83; 83%) and doing other household chores (n=96; 96%) were also part of their tasks. However, more than half (n=59; 59%) of family members shared caregiving tasks with the FDWs. Only 39% (n=39) were hired specifically to care for the care-recipients.

FDWs' knowledge and confidence level on caregiving tasks

Table 3: the FDWs scored a mean of 8.2 (SD=2.4) out of 12 for knowledge pertaining to meal preparation and dietary requirements, preparation and supervision of medication intake, exercise supervision, BP and BG monitoring. They scored higher on meal preparation (mean=2.3, SD=0.8), exercise (mean=2.5, SD=0.9) and medication (mean=2.0, SD 0.9) as compared with BP and BG monitoring (mean=1.3, SD=1.0).

The FDWs scored a mean of 1.9 (SD=1.4) out of 4 for their confidence in the caregiving tasks. They were least confident in BP and BG monitoring. Only one-third of them were very confident in using devices to monitor BP and BG.

Association between FDWs' caregiving tasks and confidence in their tasks

Table 4: there was a significant association between confidence level, clinical monitoring and medication supervision, respectively. The FDWs were significantly less confident in measuring BP (p<0.001) and BG (p<0.002). More than half (64%) of them were very confident in medication supervision (p<0.001).

Table 1 Baseline characteristics of FDWs and care-recipients (N=100)

FDW	Frequency N (%)
Total	100 (100.0)
Nationality	
Indonesia	60 (60.0)
Philippines	23 (23.0)
Myanmar	14 (14.0)
Malaysia	1 (1.0)
India	1 (1.0)
Cambodia	1 (1.0)
Age, mean (SD)	33 (6.3)
Age 30 and below	42 (42.0)
Age above 30	58 (58.0)
Number of years as domestic helper, mean (SD)	5.8 (5.1)
Previous experience as caregiver for elderly	
Yes	55 (55.0)
No	45 (45.0)
Received caregiver training for elderly	
Yes	62 (62.0)
No	38 (38.0)
Duration looking after the care recipient	
Less than 1 year	11 (11.0)
1–2 years	60 (60.0)
>2 years	29 (29.0)
Main language used to care for recipients*	
English	48 (48.0)
Chinese/Chinese dialects	38 (38.0)
Malay	36 (36.0)
Anxiety and depression score	
GAD-7	
Normal (less than 10)	96 (96.0)
Requires further evaluation (10 or more)	4 (4.0)
Care recipients	
Total	100 (100.0)
Sex	
Male	26 (26.0)
Female	74 (74.0)
Age, mean (SD)	81.3 (8.4)
80 and below	43 (43.0)
Above 80	57 (57.0)
Ethnicity	
Chinese	91 (91.0)
Malay	4 (4.0)

Continued

Table 1 Continued

FDW	Frequency N (%)
Indian	4 (4.0)
Others	1 (1.0)
Marital status	
Married	37 (37.0)
Single/separated/divorced/widowed	63 (63.0)

*Some FDWs are able to speak more than one languages. FDWs, foreign domestic workers; GAD-7, 7-item Generalised Anxiety Disorder.

Association between FDWs' knowledge and confidence of caregiving tasks

Table 5: associations between levels of confidence and knowledge on medication supervision ($p=0.049$), exercise supervision ($p=0.012$) and clinical monitoring ($p=0.011$), respectively were statistically significant. Those with very high level of knowledge were significantly confident in managing the respective tasks.

Association between FDWs' knowledge and confidence with demographic

Table 6: there was a significant association between age and duration of employment with knowledge ($p=0.015$; $p=0.005$). The duration of employment ($p=0.043$), but not age ($p=0.076$), was significantly associated with total confidence score in the care task.

DISCUSSION

A pilot study to assess the knowledge and level of confidence of FDWs in supporting the health of older persons was successfully completed within 2 months, attesting to the feasibility of conducting research on a potentially at-risk subset of the population.

The study has furnished important data for sample size estimates and design of a future randomised controlled interventional trial to upskill the FDWs to better manage the healthcare of the geriatric population. It has provided an opportunity to examine the training and basic healthcare delivery of these FDWs.

The FDWs in this study appear to be aware of healthy lifestyle practices, such as cutting down on salt and oil during meal preparation. They were aware of healthier options such as whole grains, the role of exercise and importance of medication adherence in the management of NCDs. They assisted their care-recipients in activities of daily living and also performed healthcare-related tasks like medication supervision and clinical monitoring of BP or BG.

The results revealed that older FDWs and those with longer length of employment were more knowledgeable in catering to the healthcare needs of older persons. The FDWS in this study were older and had worked as domestic helpers for an average of 5.8 years. Older FDWs

Table 2 Foreign domestic workers' (FDWs') caregiving and other non-caregiving domestic tasks (N=100)

Care giving tasks for care recipient	Frequency N (%)
Meal preparation	90 (90.0)
Ensure safety during exercise	89 (89.0)
Medication preparation/supervision	86 (86.0)
Measure home blood pressure	55 (55.0)
Measure home blood glucose	30 (30.0)
Assist the care recipient	
Eating (eg, cut food into small pieces)	56 (56.0)
Bathing (eg, dress/undress, prepare cloth)	71 (71.0)
Dressing (eg, undress or put on clothes, buttoning)	72 (72.0)
Toileting (eg, bring to toilet, undress or wipe)	70 (70.0)
Transferring (eg, from bed to chair and back)	63 (63.0)
Contenance/diaper (eg, change diaper)	45 (45.0)
Time spent on caregiving tasks	
A little	10 (10.0)
Moderate	16 (16.0)
Most of the time	74 (74.0)
In charge of bringing care recipient for medical follow-up	
Yes	83 (83.0)
No	17 (17.0)
Family members share caregiving tasks with you	
Yes	59 (59.0)
No	41 (41.0)
Other non-caregiving domestic tasks*	
Any household chores	96 (96.0)
Taking care of children	7 (7.0)
Taking care of another elderly person	20 (20.0)
Taking care of pet	11 (11.0)
Wash car	10 (10.0)
No need to do other domestic tasks	39 (39.0)
Time spent on domestic task	
None	10 (10.0)
A little	28 (28.0)
Moderate	32 (32.0)
Most of the time	30 (30.0)

*Some FWDs may do more than one type of other non-caregiving domestic tasks.

are generally more matured, experienced and better equipped with knowledge to provide care compared with the younger domestic helpers.¹⁰ Due to their length of employment, these FDWs have more time and

Table 3 Foreign domestic workers' knowledge and confidence level on caregiving tasks (N=100)

Questions on knowledge	Frequency N (%)
Meal preparation and dietary requirement, mean score (SD)	2.3 (0.8)
Healthier cooking method include cutting down on oils, fats and salts	
True	93 (93.0)
False/do not know	7 (7.0)
I should choose product with healthier choice symbol	
True	52 (52.0)
False/do not know	48 (48.0)
Whole grain foods such as brown rice, wholemeal bread, oats are healthier choice	
True	87 (87.0)
False/do not know	3 (13.0)
Medication preparation/supervision, mean score (SD)	2 (0.9)
Taking medication daily can better manage chronic disease	
True	86 (86.0)
False/do not know	14 (14.0)
Medications for high blood pressure may cause giddiness	
True	56 (56.0)
False/do not know	44 (44.0)
Medications can be taken at any time you want	
False	62 (62.0)
True/do not know	38 (38.0)
Exercise, mean score (SD)	2.5 (0.9)
Exercise can help to lose weight and improve sugar/blood pressure control	
True	88 (88.0)
False/do not know	12 (12.0)
It is important to check with doctor/nurse to decide what exercise is suitable	
True	79 (79.0)
False/do not know	21 (21.0)
Exercise is not important to elderly	
False	80 (80.0)
True/do not know	20 (20.0)
Blood pressure and blood glucose monitoring, mean score (SD)	1.3 (1.0)
Home blood pressure should be checked in the morning only	
False	36 (36.0)
True/do not know	63 (63.0)
Blood pressure may be higher at the clinic than at home due to factors such as lack of sleep or anxious at the clinic	
True	49 (49.0)
False/do not know	50 (50.0)

Continued

Table 3 Continued

Questions on knowledge	Frequency N (%)
Checking blood sugar at home tell you if the blood sugar level is too high or too low	
True	47 (47.0)
False/do not know	52 (52.0)
Knowledge mean score (SD)	8.2 (2.4)
Questions on confidence	Frequency (%)
How confident are you in preparation of special diet for care recipient?	
No/a little/moderate	52 (52.0)
Very	48 (48.0)
How confident are you in preparation/supervision of medications for care recipients?	
No/a little/moderate	44 (44.0)
Very	56 (56.0)
How confident are you in supervision of suitable exercise for care recipient?	
No/a little/moderate	48 (48.0)
Very	52 (52.0)
How confident are you in using monitoring devices (blood pressure, glucometer set) for care recipient?	
No/a little/moderate	63 (63.0)
Very	37 (37.0)
Confidence mean score (SD)	1.9 (1.4)

*Maximum score is 3.

†Maximum score is 3.

opportunities to interact, communicate, bond and build rapport with their family members and care-recipients.³⁰

Studies have also alluded to the literacy on disease management as a predictor of higher caregiver confidence.^{31 32} This study has shown that the more knowledgeable FDWs were more confident in accomplishing the healthcare-related tasks. It also reveals significant association between duration of employment and confidence in delivering caregiving tasks.

Nonetheless, more than half of the FDWs were unaware of the healthier choice labelling on food products on sale locally. This healthier choice symbol is unique in Singapore. The FDWs could not recognise and understand the label without prior induction. Their employers may not require the FDWs to carry out marketing or buy food products. Such a knowledge gap can be addressed in their pre-employment training conducted by the FDW hiring agencies.

The FDWs were less cognizant of the side effects of common therapeutics for NCD treatment. Almost half of them were not aware that medications for high BP might cause giddiness. This finding is consistent with studies which reported caregivers' insufficient skills and

Table 4 Association between foreign domestic workers' required caregiving tasks and confidence in their tasks (N=100)

	Confidence level		P value
	Very	No/a little/moderate	
Required to prepare meals as caregiving task			
Yes	44 (48.9)	46 (51.1)	0.594
No	4 (40.0)	6 (60.0)	
Require to prepare/supervise medications			
Yes	55 (64.0)	31 (36.0)	<0.001
No	1 (7.1)	13 (92.9)	
Required to ensure safety during exercise as caregiving task			
Yes	49 (55.1)	40 (44.9)	0.082
No	3 (27.3)	8 (72.7)	
Required to measure BP			
Yes	30 (54.5)	25 (45.5)	<0.001
No	7 (15.6)	38 (84.4)	
Required to measure blood glucose			
Yes	18 (60.0)	12 (40.0)	0.002
No	19 (27.1)	51 (72.9)	

BP, blood pressure.

recognition of symptoms in managing more complex patients with NCDs.^{17 18 33} The FDWs' knowledge in monitoring clinical parameters such as BP and BG were also inadequate. They were unfamiliar with the use of measurement devices, possibly due to the lack of related training. Home BP monitoring is common in Singapore due to the wide availability and affordability of digital sphygmomanometer.^{34 35} BP measurement is non-invasive

Table 5 Association between foreign domestic workers' knowledge and confidence of caregiving tasks (N=100)

Confidence level	Knowledge scores on (max 3)	P value
Meal preparation and dietary requirement		0.680
No/ A little/ Moderate	2.3 (0.9)	
Very	2.4 (0.7)	
Medication preparation/ supervision		0.049
No/ A little/ Moderate	1.8 (1.0)	
Very	2.2 (0.8)	
Supervision of suitable exercise		0.012
No/a little/moderate	2.2 (1.1)	
Very	2.7 (0.7)	
Using blood pressure, glucometer set		0.011
No/a little/moderate	1.1 (1.0)	
Very	1.6 (0.9)	

and safe to perform using these electronic devices. The FDWs can further assist in documenting the BP readings on paper or electronically on smart mobile phones and to show them to their care recipients' physicians.

Whether the FDWs should perform home BG monitoring is controversial. It involves finger pricks of the care-recipients. Safety is a concern due to risks of infection of blood-borne diseases such as hepatitis B, which is prevalent in Asians, especially among the Chinese ethnic groups.^{36 37} There is a need to review if the FDWs are required to be vaccinated against hepatitis B if such a task is deemed necessary. The willingness of the employer to bear the cost for such vaccination is unknown.

Communication is a significant determinant of quality caregiving,³⁸ of which language competency is an essential skill. Aside from English, almost 40% of the study population were able to converse in Chinese and dialects and one-third in Malay with their care recipients. About one in five FDWs could speak two languages. In contrast, language barrier can lead to misunderstanding, and feeling of social isolation according to Liu *et al.*¹⁷ Caregivers with language barriers have limited access to health information, often feel anxious and insecure when their care-recipient is being seen by a medical practitioner, which potentially also applies to the FDWs. In contrast, their ability to communicate well with their care-recipients and family members minimises conflicts and stress, resulting in a better and conducive home environment to facilitate learning.¹¹

Caregiving may be associated with higher level of anxiety, stress reaction and lower level of well-being.^{39 40} However, the GAD-7 scores of most FDWs in this study suggest low prevalence of anxiety. Their increased coping capacity due to their seniority and caregiving experience could have mitigated their anxiety. A local study by Anjara *et al* has revealed that the age and working experience of the FDWs were positively associated with better quality of life, psychological health and social connectedness.⁴¹ The authors reported that older FDWs with working experience were more acculturated and better adjusted to the host country, resulting in reduced encounters with stressful situations. Furthermore, more than half of the family members shared caregiving responsibilities with the FDWs in this study. The lower care burden could also reduce their stress and anxiety, as alluded by Tam *et al.*¹¹

In Singapore, first-time FDWs are mandated to attend a 1 day orientation programme to educate them on personal safety measures and induct them to living in local environment.⁴² Formal training courses which cover some aspect of eldercare for FDWs are available. However, Yeoh and Huang found that such courses were broad and optional prior to their employment.⁵ They also reported that most hiring agencies did not send their FDWs for specific eldercare training, assuming that their employers would carry out such on-the-job training if required. The paucity of structured training resulted in significant variations in the quality of eldercare provided by FDWs and dysfunctional relationship with their care

**Table 6** Association between foreign domestic workers' knowledge and confidence with demographic (N=100)

	Knowledge (r)	P value	Confidence (r)	P value
Age	0.243	0.015	0.178	0.076
Duration looking after care recipients	0.282	0.005	0.202	0.043

recipients. The need to implement basic healthcare-related training to empower the FDWs with the necessary skills in order to deliver competent eldercare seems imperative in a rapidly ageing population, such as those in Singapore.

Caregiver education has been reported to be effective in raising their awareness of the common medical conditions, reducing caregiver burden, alleviating anxiety and increase their confidence. A randomised controlled trial on caregivers for older patients with cancer found that individualised caregiver training led to significant increase in caregiver self-efficacy and knowledge in the treatment group, as compared with the control group.²⁴ Another study showed that a community-based caregiver training programme focusing on their roles, knowledge and skills in managing persons with dementia demonstrated positive outcomes. Those who completed the training had scores showing significantly reduced depression, burden and stress reaction to their care recipients' deviant behaviours when compared with those in the control group.⁴³ Extending caregiver education to the FDWs seems to be a logical approach based on the results of these studies.

The local polyclinic is often the first contact point of FDWs taking care of patients with NCDs. Hence the polyclinics seem to be ideal sites to engage and train the subset of the FDWs who are comanaging older persons with their employers. The polyclinic nurses are already training patients and their families in managing their NCDs in regular workshops. What is needed is for the nurses to expand the scope and tailor the workshop curriculum to cater to the FDWs.

Currently, FDWs only receive ad-hoc individual counselling when they accompany their care-recipients for medical review at the polyclinics. This study has identified specific training needs of FDWs to optimise their geriatric care delivery to older persons. The key training curriculum should cover basic knowledge of clinical monitoring of older persons and to supervise their medications intake.

Primary care nurses are the preferred facilitators for such workshops as they are trained in health promotion and disease prevention. They comanage geriatric patients with the physicians in multidisciplinary care teams. They spend significant time interacting with patients and their caregivers to understand their healthcare needs during their medical review at the polyclinics.⁴⁴ Hence, they can impart care tips to the FDWs at the interactive workshop, and to respond to specific queries from the FDWs themselves.

Strengths and limitations

This study was likely the first to specifically assess the knowledge, confidence level and anxiety of FDWs in supporting geriatric healthcare in the local community. The results highlighted deficiencies in their employment system and processes which limit their capacity to optimise care for their employers' older family members.

However, the study has its limitations. Only FDWs who spoke and understood English were recruited. Hence, the results may not be generalizable to the rest of the local FDW population, who are less proficient in English. Nonetheless, the latter are likely to represent a minority of FDWs due to the English language proficiency requirement to work in Singapore. As this sample includes FDWs who accompany their care-recipient to the clinic, the proportion of FDWs who are involved in healthcare as part of their caregiving tasks is likely to be higher than the general pool of FDWs in Singapore.

The questionnaire was developed by the investigators, as such instrument is not available due to scarce studies on FDWs. Although the questionnaire was reviewed by multidisciplinary primary healthcare professionals and piloted with FDWs, the validity and reliability could be disputed.

Ideally, the questionnaires should be available in the FDWs' native languages such as Tagalog and Bahasa Indonesia. Nonetheless, most Filipino FDWs were conversant in English. The local site investigators served as backup translators to assist the questionnaire administration in Malay, which most Indonesian FDWs could understand. However, future research may consider allowing participants to choose to answer the questionnaire in either their native language (eg, Tagalog) or English.

CONCLUSIONS

The successful recruitment of participants within 8 weeks and completion of the English-based survey by majority of FDWs reflect feasibility of the study on this potentially vulnerable population. The FDWs had variable level of knowledge to cater to a range of healthcare needs of older persons but most would require specific training in performing the health-related tasks such as clinical monitoring.

In the next phase, a tailored polyclinic-based training workshop will be developed to empower the FDWs with knowledge and skills to perform geriatric care tasks. This will be followed by an adequately powered randomised controlled trial to determine its effectiveness in improving

geriatric care and its impact on raising their satisfaction and that of their employers.

The findings will need to be evaluated and interpreted in the light of the limitations due to the study design. However, the measures taken to address the potential limitations would have strengthened the approach in testing the novel hypotheses. This pilot study provides sufficient data to develop future interventional trial in empowering the FDWs to provide quality geriatric healthcare.

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