Development and Assessment of a Meal Assistance and Oral Care Module for Care Workers in Asian Countries

Edited by

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List of Abbreviations and Acronyms

CW	Care Worker
EAT-10	Eating Assessment Tool-10
ERIA	Economic Research Institute for ASEAN and East Asia
G20	Group of Twenty
HVLT	Hopkins Verbal Learning Test
JICWELS	Japan International Corporation of Welfare Services
LTCIA	Long-term Care Insurance Act
MMSE	Mini-mental State Examination
NS	Nurse
OT	Occupational Therapist
QOL	Quality of Life
SD	Standard Deviation
VNA	Vietnam Nurses Association

Introduction

Yuko O. Hirano

Ageing is a global trend. The percentage of Japan's population aged 65+ years reached 29.1% in 2021, and Japan now has one of the oldest populations worldwide. Coping with the problems caused by an ageing society, including how to develop high-quality care for older adults and obtain a sufficient workforce to care for the aged population, is an imminent issue for Japan.

Japan enacted the Long-term Care Insurance Act (LTCIA) in 2000, under which older adults are provided both home-based and institution-based care. The unique feature of Japan's care approach is that it is conducted by a team of professionals comprising not only care workers but also nurses, doctors, and physical and occupational therapists. This multidisciplinary approach enables the accumulation of experience in care, particularly regarding disease prevention, for older adults with frailty. Therefore, Japan can act as a model for geriatric care practice using multidisciplinary methods worldwide.

Japan has opened its domestic market to care workers from other Asian countries, including Indonesia and Viet Nam. Today, there are 41,189 migrant care workers in Japan (Ministry of Health, Labour and Welfare, 2022). Migrant workers are appreciated for their attentive, hard-working, and friendly behaviour towards older Japanese people (Ogawa et al., 2010). However, according to an unpublished document by the Japan International Corporation of Welfare Services (JICWELS), nearly half of the care workers that entered Japan under the Economic Partnership Agreement, under which Japan has officially accepted foreign care workers to work in the country since 2008, have returned to their country of origin. Our previous study (Study 1) indicated that returning migrants may help cope with the ageing society in Asian countries, particularly concerning meal assistance and oral care. The empirical data derived from Study 1 showed that Indonesian care workers who engaged in care in Japan under the regulations of the LTCIA are more likely to provide diverse and safe meal assistance and oral care practices to older adults than Indonesian care workers in Indonesia (Hirano and Komazawa, 2022).

In the current Economic Research Institute for ASEAN and East Asia (ERIA) project (Study 2), we conducted an intervention study to examine the efficacy of the meal assistance and oral care checklists developed in Study 1. ERIA Study 2 was implemented using the following process.

In the first stage, field data collection of older adults in Indonesia was conducted to measure their physical and mental condition to assess the oral and swallowing functions of the target population to help researchers develop the oral care module. Eleven older adults from private and public nursing homes in Indonesia participated in this study. In the field, physical and mental conditions were assessed using a standardised test, and footage was recorded of each participant whilst they dined. The footage was used for further analysis by multiple professionals (i.e. nurses, care workers, and occupational therapists) of the research team to develop an outline of the oral care module. Discussions were held in Japan with Indonesian research members invited to Japan. A test was implemented to compare the likelihood of attentiveness

to oral care needs according to the professions of the research members. The field data collection process is described in Chapter 1 of this report.

In the second stage, an oral care module was developed in Indonesia based on the outline of the oral care module developed in the previous stage. The module was printed in a handbook format and distributed to the participants in the intervention study. A two-day intervention study was conducted in Indonesia. The intervention study process and results are described in Chapter 2 of this report.

In Study 2, researchers prepared for further collaboration with Viet Nam. As an intervention study in Indonesia indicated the efficiency of the module, researchers planned to develop an extensive module in Viet Nam. Viet Nam sends the biggest number of foreign worker groups to Japan and also faces imminent challenges in coping with the rapid growth of the ageing population. Therefore, it is important to develop an oral care module that fits Viet Nam's culture. The researchers made an initial visit to Viet Nam for discussions with researchers from Duy Tan University in Danang City, which began in 2019, when the principal investigator invited the former director of the nursing department, Dr. Ngoc Nguyen Huynh, to Japan to attend a Group of Twenty (G20) side event in Tokyo.

The researchers also visited the Vietnam Nurses Association (VNA) to cooperate with researchers because the association is a nationwide organisation and, thus, an influential health policy advocate in the country. A visit to a Vietnamese care institution is also detailed in Chapter 3 of this report.

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Chapter 1

Development of a Meal Assistance and Oral Care Module for Indonesian Care Workers: A Clinical Study

Misako Higashijima and Hiroyasu Shiozu

Eating is a physical activity that is indispensable to human life. From a medical perspective, nutritional management is the basis of medical practices common to all treatments. Furthermore, eating often provides enjoyment and a high quality of life (QOL). Unlike other animals, humans enjoy cooking and tasting food. Additionally, dining with important people, such as family and friends, creates human relationships throughout the world. Therefore, 'oral intake' is considered the best nutritional method in terms of both physical and social aspects globally.

To help maintain oral intake abilities until later in life, care workers who assist in the daily living of older adults with food intake difficulties are required to obtain special knowledge and skills in assisting with meals. This is because assisting with meals requires one of the most invasive types of care, and it may cause some medical risks, such as aspiration pneumonia and suffocation, which may cause death.

In Japan, knowledge and skills have been accumulated for safety and quality of care by various occupations, such as doctors, nurses, therapists, nutritionists, and care workers. Therefore, in the ERIA project, we aimed to develop a standardised meal assistance and oral care training module by careful examination through a multi-professional approach.

In Study 2, we targeted Indonesia to collect basic clinical data on the physical and mental condition of older adults in the country, and further developed a tentative meal assistance and oral care checklist to be implemented in the intervention study shown in Chapter 2 of this report.

1. Field Data Collection

1.1. Aim of the Field Data Collection

To develop a good module in a certain cultural context, it is essential to carefully observe the clinical and mental conditions of the care settings of older adults. Therefore, the Indonesian researchers took footage of the older adults whilst they were dining in care facilities in Indonesia to share it with the Japanese researchers for further discussion.

1.2. Methods

1.2.1. Footage Taking

Eleven older adults, including four older adults with dementia and seven with strokes, were selected as participants in the study. Footage of them eating meals was recorded.

The footage was analysed by researchers from various types of healthcare professions, including three care workers, four nurses (one Japanese nurse and three Indonesian nurses), and four occupational therapists. A meal assistance and oral care checklist comprised of 42 items (Appendix 1.1) that was developed in a previous study (Study 1) was used. Each professional checked the items they thought were important for meal assistance and oral care for each footage case (a total of 11 cases). In calculating the attentiveness of each researcher, 1 point was given to items that were answered 'yes', and 0 points were given to items that were answered 'no'. The points were accumulated to calculate the total score for each profession. Tukey's multiple-comparison test was performed for the groups for each profession to identify significant differences in the variance of the scores for each group. This is to identify the likelihood of attentiveness to meal assistance and oral care by profession so that the results can be applied when training care workers in following studies.

The physical and mental condition of the older adults in Indonesia was assessed using seven scales, as indicated in Section 1.2.2. of this report. The assessment sheet is shown in Appendix 1.2.

1.2.2. Functional Test of the Indonesian Older Adults

1.2.2.1. Hoffer's test (revised by Higashijima)

Hoffer's test was used to measure the older adults' ability to maintain proper posture whilst eating. The study participants were asked by the researchers to maintain a square position for 3 minutes. The test was assessed from 1 point (cannot keep sitting squarely even supported with hands) to 3 points (can keep sitting square without hand support).

1.2.2.2. Hopkins Verbal Learning Test (Indonesian version)

The Hopkins Verbal Learning Test (HVLT) was used to assess verbal learning and memory. The test comprises three trials of free recall of a 12-item semantically categorised list. The performance of the older adults with Alzheimer's disease and chronic amnesia was described. The test is likely to be useful in older adults who are impaired with more comprehensive memory loss and where repeated testing is necessary.

1.2.2.3. Eating Assessment Tool test (Belafsky et al., 2008) (Indonesian version)

The Eating Assessment Tool (EAT-10) test comprises 10 questions to screen for dysphagia. Participants answer self-rated questions (from 0 points for 'no problems at all' to 4 points for 'many problems'). The total score was calculated by adding up the scores for each question.

1.2.2.4. Barthel Index (Mahoney and Barthel, 1965) (Indonesian version)

The Barthel Index measures 10 functions that are important for independent living: feeding, bathing, grooming, dressing, bowel and bladder continence, toileting, transferring, mobility, and

stairs use. Items were weighted and scored according to their perceived importance. Higher scores indicated better performance.

1.2.2.5. Party-horn blowing test

The study participants blew a party horn for as long as possible. The party horn used in this study was specially invented by Higashijima. It was 80 cm long to measure the blowing ability of each participant. The researchers measured the length of time in seconds for each participant's continuous blowing of the party horn.

1.2.2.6. Phonatory test

The study participants vocalised 'aaa…' for as long as possible. The duration was measured in seconds. The longer they were able to vocalise, the fewer swallowing problems they have.

1.2.2.7. Motor function test 1: Upper limbs (revised by Higashijima)

This test assesses the ability to move the arms and hands when drinking liquids. The study participants picked up a cup of water and drank when the researchers gave a signal. The researchers observed the behaviour of the motions and judged them according to the following criteria:

> 3 points: Able to pick up a cup to drink water.
>
> 2 points: Able to grab a cup but not able to convey it to the mouth.
>
> 1 point: Not able to grab a cup.

1.2.2.8. Motor function test 2: Lower limbs (revised by Higashijima)

This test assesses the ability to move one's lower limbs. The study participants stood up from a chair when the researchers gave a signal. The researchers observed the behaviour of the motions and judged them according to the following criteria:

> 3 points: Able to stand up without any support and stand on the spot.
>
> 2 points: Able to stand up.
>
> 1 point: Unable to stand up even with support.

2. Results

2.1. Functional Test of the Indonesian Older Adults

The results of the functional tests of the Indonesian older adults are shown in Table 1.1.

Table 1.1. Functional Tests of the Indonesian Older Adults by Type of Disease

	Dementia (n=4)	Stroke (n=7)	p-value
Age	79.0±505	71.0±7.4	0.104
Hoffer test	2.75±0.4	2.4±0.7	0.506
HVLT	6.3±3.6	17.0±4.0	0.008
EAT-10	10.0±10.0	7.1±12.0	0.628
Barthel Index	12.8±5.6	14.6±4.4	0.633
Party horn	5.5±4.8	9.2±9.3	0.567
Phonatory test	6.3±4.5	7.0±3.1	0.85
Motor function test Upper limbs	2.5±0.9	2.7±0.7	0.673
Motor function test Lower limbs	2.5±0.5	2.1±0.8	0.541

Source: Authors.

The assessment of 11 Indonesian older adults was performed and only HVLT was found to be significantly different between the dementia and stroke groups. The HVLT score was 6.3 (SD=3.6), which was significantly lower than that of stroke 17.0 (SD=4.0).

2.2. Statistical Analysis of the Assessment of the Footage by Professions

Table 1.2. Statistical Analysis of the Assessment Scores by Healthcare Professional Group

Item	Nurses (NS) (n=4)	Care workers (CW) (n=3)	Occupational therapists (OT) (n=4)	p-value	Tucky's multiple comparison test
Refuses to be helped when eating (does not want to open their mouth or feed themselves).	0.15±0.42	0.17±0.49	0.59±0.89	0.005	NS<OT** CW<OT**
Older adult hoards food in their mouth (e.g. stores food in their mouth but does not swallow).	0.02±0.15	0.21±0.42	0.11±0.32	0.037	NS<CW*
There is a sound of fluid in the oesophagus.	0.45±0.84	0.52±0.89	1.00±1.01	0.017	NS<OT*
Older adult looked weak when eating and could not maintain proper posture.	0.09±0.42	0.69±0.97	0.09±0.42	0.001	NS<CW** OT<CW**

*: p<0.05, **: p<0.01

Source: Authors.

Four nurses, three care workers, and four occupational therapists watched the footage of 11 Indonesian older adults and scored the results for each case.

Amongst the 42 items included in the meal assistance and oral care checklist, only four were found to be significantly different amongst the groups of healthcare professionals. These were: 'older adult refuses to be helped when eating' (e.g. does not want to open their mouth or feed themselves) (Item no. II-C-8), 'older adult hoards food in their mouth (e.g. stores food in their mouth but does not swallow)' (Item no. II-D-4), 'there is a sound of fluid in the oesophagus' (Item no. II-D-7), and 'older adult looks weak when eating and cannot maintain proper posture (e.g. the body position is always slumped)' (Item no. II-D-12) (Table 1.2).

3.   Discussion

3.1.   Swallowing Function Test of the Older Adults

This study aimed to identify HVLT scores that were significantly different between the dementia and stroke groups. The HVLT includes four items of motion assessment used in the Mini-mental State Examination (MMSE) (Folstein et al., 1975). The MMSE is a screening test for dementia that is widely used in the study of health assessment and was developed by Folstein et al. with a Japanese version developed by Sugishita (Sugishita, 2012). However, there are certain problems, such as: (a) the reliability of the translated versions of the 'attention and calculation' questions, (b) gender, age, and educational considerations, (c) the rationale of the cut-off points, and (d) the quality of the screening test. As the current study focused on assessing cognitive function rather than screening older adults with dementia, we applied HVLT. Even so, we cannot be too careful in interpreting the study results, as the HVLT Indonesian version is yet to be standardised.

The study results indicate that the HVLT was higher in the stroke group than in the dementia group. This may be interpreted as HVLT being a language test based on short-term memory screening. Older adults with stroke are less influenced by short-term memory loss, whereas those with dementia are strongly influenced. However, no other test indicated significant differences between the two groups. This may be caused by: (a) uneven distribution of age and the number of study participants per group and (b) intentional sampling, which is subject to sampling bias of the study participants. In this study, it can be said that mild cases of dementia and stroke are prone to be selected; therefore, the typical functional characteristics (Higashijima, 2013) (Nishio, 2004) of each disease were less likely to emerge.

3.2.   Assessment Made by Healthcare Professionals

In this study, four items were found to be statistically different between the groups of professions, namely: 'older adult refuses to be helped when eating (e.g. does not want to open their mouth or feed themselves)'; 'older adult hoards food in their mouth (e.g. stores food in their mouth but does not swallow)'; 'there is a sound of fluid in the oesophagus'; and 'older adult looks weak when eating and cannot maintain proper posture (e.g. the body position is always slumped)'. These items are categorised in the II-C and II-D fields of the checklist, which are based on the individual care settings rather than an assessment of the environmental conditions or the regulations on meal assistance in the care institutions, such as items categorised in I-A or II-A and B. Naturally, significant differences between the groups of professions were observed in fields II-C and II-D because these fields are likely to evoke differences in the characteristics of each healthcare profession.

For example, occupational therapists are more attentive than nurses and care workers in answering 'older adult refuses to be helped when eating (e.g. does not want to open their mouth or feed themselves)'. This can be influenced by the job characteristics of occupational therapists (Ministry of Health, Labour and Welfare, 1965), as they are used to considering the physical and mental condition of older adults. They are also more attentive than care workers in answering 'there is a sound of fluid in the oesophagus'. The sound of fluid may indicate sputum production, which may be a risk factor for inflammation in the respiratory tract and lungs. This may reflect the characteristics of occupational therapists, who engage in eating training for patients and/or

older adults and are therefore familiar with observing the risk of aspiration pneumonia (Higashijima, 2005).

Care workers are more attentive than nurses for 'older adult hoards food in their mouth (e.g. stores food in their mouth but does not swallow)'. They are also more attentive than nurses and occupational therapists in terms of 'older adult looks weak when eating and cannot maintain proper posture (e.g. the body position is always slumped)'. This may reflect the characteristics of care workers who engage in meal assistance three times a day throughout the year. Care workers are keen to avoid the risk of swallowing problems amongst patients. Hoarding food is a symptom that the swallowing function of a patient is getting weak. They are also attentive to older adults' body positions as they may be prone to slumping, which may lead to a risk of aspiration when eating and a loss of pleasure when eating.   However, the characteristics of the nurses were not statistically identified in this study. One of the reasons for this may be the nationality of the nurses, which influences the cultural context of care; three out of four were Indonesian.

The current study will be followed by the development of a universal model for meal assistance and oral care training modules. Therefore, researchers must be careful to control the diversity of care settings and the role of the healthcare professionals by country.

4.   Conclusion

This study aimed to analyse the clinical data and footage of four older adults with dementia and seven older adults with stroke. The researchers, who were nurses, care workers, and occupational therapists, analysed the data using the checklist developed in our previous study. The results indicated that each healthcare profession reflects its own characteristics in terms of attentiveness to the need for care for each older person filmed in the footage. Further studies are needed to develop a universal model of meal assistance and oral care training modules.

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Appendices

1.1. Meal Assistance and Oral Care Check List

Please check 'yes' for each item when you see the case is needed to be cared for, otherwise check 'no'.

Footage case no. (   )

Name of the researcher (   )

Profession of the researcher (   )

Item no.	Observation item	Yes	No
I A	ENVIRONMENTAL OBSERVATION		
1.	There is a separation between the dining room and the bedroom.		
2.	Adjustable dining tables or special chairs that can be used according to needs are available for personal use.		
3.	There are applicable utensils (e.g. spoons and chopsticks) that can be used in accordance with the impairment of the individual user.		
4.	There are variations in the form of food (e.g. porridge cut into bite-size pieces and soft chopped food).		
5.	There is portable mucus suction.		
6.	There is a tool that can be used by care workers or patients to notify other care workers if there is an emergency (e.g. a bell).		
7.	The numbers of care workers and older adults are balanced when conducting meal supervision.		
8.	There is an allocation of one care worker for every care receiver who requires total care.		
9.	The care workers understand the dietary needs of each receiver.		
II	OBSERVATION OF PHYSIOLOGICAL FUNCTIONS AND EATING CAPABILITIES Do you observe the following conditions in the older adults?		
A	Overall condition before eating		
1.	Older adult moves differently than usual.		
2.	Older adult is in a poor condition or has sleep deprivation.		
3.	Older adult has a fever.		
4.	Older adult is in a state of coughing.		
5.	Older adult has a different blood pressure (higher or lower) and pulse (bradycardia, tachycardia) than usual.		
B	Meal preparation period: Waiting time before arrival of food and serving of food		
1.	Older adult cannot sit in a stable position.		
2.	Older adult is not fully conscious.		
3.	Older adult appears calm.		

C		Feeding period		
	1.	The dining table cannot be set up in accordance with the bodily position of the older adult.		
	2.	There are difficulties when eating (e.g. cannot use a spoon for food or hold food).		
	3.	There are problems in paying attention to food and the environment.		
	4.	There is a problem when placing food into the mouth (e.g. hand shakes or food falls).		
	5.	There is a speed problem when placing food into the mouth.		
	6.	There is a problem with the amount of food that is placed into the mouth.		
	7.	Older adult cannot ask for help when having difficulties during the eating process.		
	8.	Older adult refuses to be helped when eating (e.g. does not want to open their mouth or feed themselves).		
D		Swallowing period		
	1.	Older adult cannot take in food smoothly (e.g. lips cannot close or food falls out of the mouth).		
	2.	There are problems with chewing (e.g. lack of chewing, removing, or leaving hard food, very fond of eating soft food only, or chewing for a long time).		
	3.	Older adult cannot chew food into appropriate shapes or size to be swallowed.		
	4.	Older adult hoards food in their mouth (e.g. stores food in their mouth but does not swallow).		
	5.	There are problems in the process of swallowing food (e.g. cannot swallow food or takes time to swallow food).		
	6.	There is a swallowing disorder (e.g. food cannot be channelled into the oesophagus).		
	7.	There is a sound of fluid in the oesophagus.		
	8.	Older adult chokes when eating.		
	9.	Older adult does not exhibit coughing when choking.		
	10.	Older adult takes a lot of time from start to finish when eating.		
	11.	Older adult looks tired when eating.		
	12.	Older adult looks weak when eating and cannot maintain proper posture (e.g. the body position is always slumped).		
	13.	Older adult does not finish one portion of the provided food.		
E		Post-meal period		
	1.	Older adult does not brush their teeth after meals.		
	2.	There is shortness of breath after meals.		
	3.	Older adult cannot use a toothbrush.		
	4.	There is leftover food after brushing teeth.		

1.2. Assessment Sheet

ID No.	
Gender	
Age	
1. Seating ability test [　] points	**3 points**: Was able to sit upright without needing to support their body with their hands. The older adult can maintain an upright position for at least three minutes without supporting their body with their hands. **2 points**: Can hold a seated position if supporting their body with their hands. The older adult can maintain an upright position for at least three minutes by holding onto the seat with one or both hands. **1 point**: Cannot sit up even when supporting their body with their hands. The older adult is unable to maintain an upright position or falls even when holding onto the seat with one or both hands.
2. Hopkins Verbal Learning Test	Total correct words: [　] words
3. EAT-10	Total score: [　/40]
4. Barthel Index	Total score: [　/100]
5. Party-horn blowing test	1st trial:　seconds　　2nd trial:　seconds Mean:　seconds
	Note (if any):
6. Phonatory test	1st trial:　seconds　　2nd trial:　seconds Mean:　seconds
	Note (if any):
7-1. Motor function test (arms/hands) [　] points	**3 points:** Can hold the cup with the (paralysed) hand and bring it to their mouth. **2 points:** Can hold the cup with the (paralysed) hand but cannot bring it to their mouth. **1 point:** Cannot hold the cup with the (paralysed) hand.
7-2. Motor function test (lower limbs) [　] points	**3 points:** Can stand up without holding onto anything and can stand on each foot alternatively in place. **2 points:** Can stand up from the chair with/without holding onto anything. **1 point:** Cannot stand up from the chair even if they hold onto something.

Chapter 2

Development and Evaluation of a Meal Assistance and Oral Care Training Module for Aspiration Pneumonia Prevention

Susiana Nugraha

Introduction

This chapter reports the process of developing the meal assistance and oral care training module.

Indonesian researchers were invited to Osaka, Japan, during 23–27 January 2020 to attend a workshop with Japanese researchers. As explained in Chapter 1, during the workshop, Indonesian and Japanese researchers who were either nurses, care workers, or occupational therapists, analysed the footage of 11 cases, including four dementia cases and seven stroke cases filmed in Indonesia. By checking the lists of meal assistance and oral care (Higashijima and Watanabe, 2018), the researchers identified the pros and cons for each healthcare profession in being attentive to meal assistance and oral care so that we can list the most appropriate items that are required regardless of the type of profession.

1.   Workshop on Module Development

1.1.   Making Matrices for Outlining the Content of the Module

The workshop aimed to develop an appropriate module that met the conditions of care settings in Indonesia. This workshop succeeded in identifying several items in oral care, which are a concern in the development of oral care modules for long-term care facilities in Indonesia. After the two-day intense discussions, we developed two types of matrices: (a) assistance according to the time of care and (b) assistance according to the type of disease (dementia or stroke). Each matrix comprised items, significance, purpose of care, and focal points (Table 2.1 and Table 2.2).

Table 2.1. Responses According to Time

	Item	Significance/Purpose	Point
Before meals	Frailty prevention: ・Balloon volleyball ・Party horn ・Exercise ・Singing, etc.	A decrease in physical strength leads to pneumonia, so physical and oral functions need to be maintained. Further, this will also help in maintaining cognitive and social functions, which will encourage independence during meals. Moreover, this will also reduce the level of assistance.	・Assessment Using the meal checklist, identify at an early stage people who have problems before meals. ・Method A) Securing satisfactory nutrition from oral intake B) Adequate exercise C) Participation in leisure activities

During food preparation	Eating posture	The muscles involved in breathing, posturing, and swallowing are complementary and overlap to perform muscle activity. Therefore, the deterioration of posture heavily affects breathing and swallowing.	・Assessment
			Check for improper eating posture.
			  [Points to check]
			Check whether:
			    A) the chair sitting position is centred
			    B) both soles are on the floor
			    C) the head is centred
			    D) both shoulders are not raised
			
			・Method
			Adjust posture to meet points A to D.

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	Item	Significance/Purpose	Point
During meals	Appropriate table and chair height	To safely and efficiently* carry food to the oral cavity * Efficiently: Without fatigue in the upper limbs	・Assessment A) Difference: Distance from the table top to the chair seat B) Table width ・ Method A) Appropriate difference: Sitting height (length from the head to top of the chair seat) ×1/3 - 1 to 2 cm Adjust table or chair height B) Prepare a table wide enough for both elbows (i.e. lapboard) P66, 67
	Spoon size	Reduces the risk of aspiration and choking due to improper bite size and pace	・ Assessment A) Select a spoon based on lightness, ease of holding, taking in, and operation. ・ Method P65 to 66
	Position of meal assistance Assistance from the front	Eye contact Inside of the mouth can be observed Timing can be easily measured	Assistance from the front 1. The size of a teaspoon is the basic size of a spoon for assistance. 2. Insert the spoon into the centre of the mouth. 3. Try to bring the spoon to the sulcus of the tongue. 4. Lightly press the tongue. 5. When using a large spoon, do not insert the entire spoon into the mouth. Adjust the amount and support

	Item	Significance/Purpose	Point
			the spoon with the lower lip. 6. Ensure that the person's face is not raised when pulling out the spoon. 7. Do not pull out the spoon until the person closes their mouth (it is important for the person's upper lip to take in the food).
	Position of meal assistance Assistance from the side	When assistance cannot be provided from the front	Same as above. Assume a position where the mouth can be seen well and provide assistance.
	Assistance for hydration Assistance when using a cup		1. Place the cup on the lower lip. 2. Tilt the cup so that the upper lip is on top of the water. 3. Prevent the neck from tilting backwards. 4. Let the person sip. 5. Pull back the cup.
	Assistance for hydration Straw	Ease of drinking Suitable for people who do not want to use cups	1. Let hot drinks moderately cool off. 2. Fix the straw in place by making a hole in the PET bottle, etc. 3. Encourage or assist the person to close their lips. If the upper lip is not closed, negative pressure will not occur, and liquids cannot be swallowed.

	Item	Significance/Purpose	Point
Swallowing	Breathing assistance	During pulmonary aspiration, the foreign object (saliva, food, etc.) must be expectorated. Therefore, it is necessary to increase the expiratory (expectoration) flow rate. Respiratory assistance is performed for the purpose of increasing the expiratory flow rate.	・ Implementation conditions A) When choking B) When a grumbling sound (p19) was confirmed before, during, and after the meal C) When disordered breathing (rhythm, number of times) occurs before the meal ・ Assessment A) Check quality of voice and breathing before the meal Specific example (p118) ・ Hoarse voice (rattled voice or grumbling sound) Cause: Food is stuck in the vocal cords or pharynx. Response: Have the person drink water or clear their throat. Once their voice clears up, let them have another bite of food. (Redacted) B) Apart from whether the person is choking, also check when, what kind, and how food was ingested. Also check the condition that led to choking. ・ Method A) Lightly press the upper part of the chest according to the cough (expiration). * In some cases, coughing is encouraged.

	Item	Significance/Purpose	Point
			* Older adults are at risk of breaking their ribs, so adjust the force accordingly. B) In case of asphyxiation, perform the back tapping method (p11).
	Modifying the food form	In order to reduce the risk of aspiration and asphyxiation, food must be modified according to the swallowing or masticatory function.	Refer to the Indonesian guidelines ・ Increase thickness: Reduces food inflow rate ・ Bite-size/Mixer: For tooth loss and reduced masticatory function
	Reclining	Facilitates the delivery of food. *Effective for people who store food in the oral cavity, are unable to send food to pharynx, or expel food from the mouth.	・ Assessment A) Are they able to close their mouth? B) Is food stored in the mouth? ・ Method A) Use a reclining bed or a wheelchair with an adjustable backrest. B) Roll a futon, etc. to recline the person at an angle. Caution ①: Gradually decrease the angle from 90° to find an angle where improvement of assessments A and B is observed. ②: Reclining can only be applied if the person's disorder is mainly in the oral cavity. Reclining may cause aspiration when the disorder is in the pharynx (delay or disappearance of swallowing reflex).

	Item	Significance/Purpose	Point
After meals	Oral care	Most aspiration pneumonia is often caused by 'silent aspiration'. This condition often occurs during the night-time or during sleep. Therefore, although oral care after meals is important, oral care before bedtime is extremely important.	

Source: Authors.

Table 2.2. Responses According to Disease

Item		Significance/Purpose	Methods	Point
Hemiplegia	Accumulation in the paralysed side of the mouth	Remove food residue		Perform oral care
	People who are unable to eat by themselves	Assist in chewing or passing food	Place food on top of the molar on the healthy side	Place food on top of teeth opposite to the paralysed side
		Prevent aspiration	When gulping down a drink	Face the paralysed side and help the choking person drink
Alzheimer's dementia	'I haven't eaten yet'		Give a small amount of sweets	Do not say that they have already eaten. Instead, give food with low calories.
		Change of mood	Hobbies, strolls	Aim to change their mood
			Food partitions	Do not change total amount
	Pica	This may become an obsession when repeated	Do not place anything nearby that might be placed inside the mouth	Must be addressed immediately
		Desire for stronger stimulus	Have the person eat dried squid and kelp	Give when hungry

Item		Significance/Purpose	Methods	Point
		Encourage the use of the five senses and divert attention away from the mouth	Move the body	Change the mood (standing, sitting, and walking are large stimuli)
Lewy body-type dementia	Visual hallucination	Clear up confusions	Process what they saw	Divert attention using a poster or furniture, etc.
		Clear up confusions	Replace objects being used	Replace plates with ones without patterns
Frontotemporal dementia	Overeating	Prevent obesity	Replace food with low-calorie food	Symptoms will recede in about six months
	Standing up during the meal	Prevent distraction	1. Have them eat alone 2. Have them face the wall whilst eating	Adjust the environment
	Eating quickly with the plate near their mouth	Prevent this from happening	1. Use heavy tableware 2. Fix tableware to the table with suction cups	Relax
	Eating quickly	Prevent aspiration	1. Serve the food one dish at a time 2. Use a small spoon	
End-stage dementia	Mouth does not open	Open mouth	Press K point	When mouth opens, use a thin spoon to deliver food

Item		Significance/Purpose	Methods	Point
	Passing down food is weak	Increase oral pressure	Massage cheeks	
		Swallowing reflex is difficult to induce when the temperature is the same as the body temperature	Cool the food	Serve food that the person has eaten before
		Deliver directly to the back of the tongue	Use tools (syringe, or easy-gulp [Rakuraku Gokkun], etc.)	Check the volume and place where food will be injected

Source: Authors.

1.2.   Development of the Training Module in Indonesia

The module was developed through a scientific process and is in accordance with the current condition of care workers in long-term care facilities in Indonesia. The Indonesian researchers combined the matrices developed during the workshop, with several adjustments based on the culture and customs of the older adults in their country. This process was supported by the results of interviews with long-term care managers regarding oral care knowledge and previous studies (Hirano et al., 2021). A training module was developed based on the checklist.

1.3.   Development of Training Materials in Indonesia

Training materials were also developed for use in the intervention study. These were based on the translation of the text written by Higashijima and Watanabe (2018) by Susiana Nugraha and Lisna Augsutina, separately from the current study. The content of the training materials in the chapters is as follows:

(1) Ageing process:

Basic knowledge of the ageing process.

(2) Anatomy and physiology:

Anatomy and physiology of the digestive system.

(3) Swallowing ageing effect:

The ageing effect on sensory afferent/efferent nerves.

(4) Swallowing process problems:

Dysphagia, aspiration, and chocking.

(5) Assessment and treatment of swallowing disorders:

Choking and dysphagia assessments.

(6) Position provides feeding assistance:

The opponent and side positions were explained. The incorrect position when providing feeding assistance was also given to make a comparison with the correct position.

(7) Provision of appropriate and safe feeding assistance:

Providing food assistance, drink assistance, key points when feeding older adults, checking leftover food in the mouth, maintaining a correct position for the older adults when eating, and adjusting the wheelchair whilst eating.

(8) Introduction of eating and drinking utensils in Japan:

Eating and drinking using utensils used in Japan, adjusting hand positions when eating, and choosing the dining table appropriately.

(9) Exercises to maintain swallowing function:

Mouth and face exercise, PATAKARA mouth exercise, exercise to maintain and strengthen the swallowing muscles, and exercise to strengthen the hand and finger muscles.

1.4. Development of Assessment Tools for Use in the Intervention Study

An assessment tool was developed comprising 25 questions derived from the module. It contains four general knowledge questions on long-term care, one question based on the pre-meal period, six questions on food preparation, eight questions on the period during the meal, five questions on assisting and safe swallowing, and one question on the post-meal period (Appendix 2.1).

2. Intervention Study

The pandemic postponed this study for 2 years. An intervention study was conducted in Indonesia in June 2022. Sixty caregivers in long-term care facilities in West Java and Jakarta provinces were invited as study participants. Due to the limited time for conducting an intervention study to meet the deadline of the study, a cross-over design was not applied. Nonetheless, the intervention study was carefully conducted using the following procedures.

2.1. Recruiting Study Participants

There are two types of care facilities for older adults in Indonesia: private care facilities and public care facilities. The two are diverse in terms of management; therefore, we recruited groups separately.

2.1.1. Study participants from private care institutions

Seventeen care workers who worked in private long-term care institutions were recruited.

2.1.2. Study participants from public care institutions

Twenty-two care workers working in government-owned long-term care institutions were recruited.

2.2. Data Analysis

The intervention study was conducted such that both groups received the same treatment before and after training; therefore, some bias in the intervention can be ruled out. Accordingly, the assessment tool was distributed to each trainee prior to training (pre-test) and after training (post-test). Pre-test and post-test assessments were conducted to identify the success of the training intervention in implementing meal assistance and oral care. The pre-test and post-test results by cross-sectional analysis are shown in Table 2.3. There were no differences in terms of the distribution of pre-test and post-test results by Group 1 conducted in Jakarta, Group 2 conducted in West Java, gender, educational background, or type of nursing home. It can be assumed that the trainees in this study were homogeneous, regardless of the workplace, type of institution, and socio-demographic characteristics.

2.2.1. Cross-sectional analysis of the distribution of pre-and post-test scores

Table 2.3. Independent Sample T-test for Each Group

Group Category	Pre-test		Post-test		Changes	
	Mean	p-value	Mean	p-value	Mean	p-value
Training Group						
Group 1 (Jakarta)	18.47	0.228	20.35	0.455	1.88	0.695
Group 2 (West Java)	19.18		20.77		1.59	
Gender						
Female	18.92	0.806	20.88	0.130	1.96	0.348
Male	18.77		20.00		1.23	
Education						
College degree	18.56	0.380	21.00	0.217	2.44	0.098
Non-college degree	19.09		20.30		1.22	
Type of Nursing Home						
Private	19.10	0.426	20.55	0.884	1.45	0.455
Public	18.63		20.63		2.00	

Source: Authors.

2.2.2. Cross-sectional analysis of the distribution of pre-test and post-test scores

Changes in the pre-test and post-test scores were analysed using a matched-pair t-test (Table 2.4). The results indicated that the knowledge scores of the trainees increased significantly before and after training in each group. This demonstrates the efficacy of the training module.

Table 2.4. Changes in Knowledge of Meal Assistance and Oral Care Before and After the Training

Group	Knowledge Score	Mean	SD	N	Δ (difference)	p-value
All	Pre-test	18.87	1.809	39	1.72	<0.0001
	Post-test	20.59	1.712			
Group 1	Pre-test	18.47	1.375	17	1.88	0.007
	Post-test	20.35	1.656			
Group 2	Pre-test	19.18	2.062	22	1.59	0.002
	Post-test	20.77	1.771			

Source: Authors.

3.   Monitoring of Meal Assistance and Oral Care Practices

Approximately three months after the training programme, a field observation study was conducted to assess the implementation of meal assistance and oral care in long-term care facilities.

The observations and interview findings demonstrated the following:

1. Caregivers who attended oral care training shared the information obtained from the training results with the staff at the long-term care facilities. They conducted small talks to deliver new knowledge to other staff members.

2. The caregivers emphasised that appropriate knowledge is important in taking care of the older adults, especially in preventing aspiration during meals.

3. There are some limitations in applying feeding support guidelines, such as the shortage of utensils that should be used for the older adults in special conditions.

4. The long-term care facility manager is very supportive in allowing the study participants to continue to make efforts to help feed properly and safely, even though the ratio between caregivers and the number of older adults is still very low.

5. Several skills and knowledge gained from the training cannot be implemented in long-term care facilities because of the limited tools and facilities in the nursing home. For example, eating utensils are limited to conventional spoons and forks, and limitations in providing food in homes that are not based on the condition of the older adults.

6. The caregivers were expected to have further training programmes to increase their knowledge and skills, especially in caring techniques in Japan.

4.   Conclusion

Oral care is new knowledge for older adults' caregivers in long-term care facilities in Indonesia. Training programmes effectively increased caregivers' knowledge before and after the training programme. The trainees implemented the knowledge and skills acquired during training in their respective workplaces. However, the limitations of long-term care facilities make it difficult for caregivers to fully implement their knowledge. Fundamental changes are needed in nursing home care to avoid the risk of aspiration pneumonia.

The results of this study are expected to be developed into a policy brief so that the government and long-term care providers can make changes in providing appropriate care for older adults, especially in efforts to prevent aspiration pneumonia.

Considering that 95% of Indonesian long-term care systems are based in the community, it is necessary to develop a new model that is applicable to family caregivers or community caregivers using the media and simple language that can be easily understood by people from all educational backgrounds.

References

Higashijima, M. and N. Watanabe (2018), *Aspiration Pneumonitis Prevention for Older People Starting Today*. Tokyo: Ishiyaku Shuppan.

Hirano, Y., S. Nugraha, H. Shiozu, M. Higashijima, and T.W. Rahardjo (2021), 'Measuring Attentiveness toward Oral Care Needs: A Comparative Study of Indonesian Care Workers in Japan and Indonesia', *Human Resources for Health*, 19, p.71. doi.org/10.1186/s12960-021-00614-y

Appendices

2.1. Oral Care Training Evaluation

ORAL CARE TRAINING EVALUATION

NAME   : _____

INSTITUTION   : _____

AGE   : _____

EDUCATION   : _____

Instructions: Choose the correct answer by marking (v) in the 'true' or 'false' column.

No.	Questions	True	False
General knowledge			
1	The movement of the swallowing muscles only works with conscious movement		
2	Decreasing visual function can decrease the eating ability		
3	Basically, all people have a swallowing reflex		
4	Decreased olfactory function due to ageing will not reduce salivary gland production		
Before meals			
5	One of the goals of mouth and facial exercises is to maintain and increase the strength of the tongue, lips, and cheek muscles.		
During food preparation			
6	The right dining table is one that cannot be adjusted in height		
7	A proper position when providing feeding assistance can prevent aspiration		
8	The right position in providing feeding assistance to older adults should be in the position of the neck upturned and leaning forward		
9	A spoon with a flat surface is suitable for clients who have difficulty moving their wrists		
10	When choosing eating utensils, the most important thing to consider is their strength/durability, cleanliness, and safety		

No.	Questions	True	False
11	A good eating utensil is one that can make it easier for older adults to eat independently		
During meals			
12	The readiness of older adults to receive food can be seen when it is time to insert the food, the mouth opens, and the tongue is on the back of the teeth		
13	For older adults who use dentures, if the dentures are not installed, the spoon must be placed at the base of the rounded tongue		
14	If the food to be given is in the form of porridge, do not put the whole spoon into the mouth but place the spoon on the lower lip		
15	The right time to take out/remove the spoon is when the upper and lower lips are closing		
16	For older adults who become easily tired and have difficulty opening their mouths, it is better when eating to use a small teaspoon/spoon		
17	When helping to feed older adults with severe dementia or dysphagia, it is better to use the position on the left/right side of the older adult when feeding		
18	Due to a decrease in finger and hand muscles, many older adults are not able to be independent and hold a spoon or chopsticks properly		
19	In older adults with upper body muscle decline from the elbow to the forearm, it is best to support the hand position		
Swallowing			
20	Cutting food into smaller pieces will help prevent choking		
21	Older adults with dysphagia (impaired swallowing) are not at risk of choking		
22	People who are choking but do not have a cough reflex are at less risk of aspiration than people who have a cough		
23	Choking occurs due to the inability to breathe caused by a blockage in the throat or airways		
24	Eating in a flexed neck position will increase the risk of choking		
After meals			
24	Cleaning up the mouth cavity after meals can prevent the remaining food/foreign objects from entering the respiratory tract		

Chapter 3

Feasibility Study for Developing a Meal Assistance and Oral Care Module for Vietnamese Care Workers: An Observation of a Care Institution in Danang, Viet Nam

Youichi Hiruma

Background of The Study

Chapters 1 and 2 indicated the process of the development and evaluation of the meal assistance and oral care modules in Indonesia. The final goal of this study is to develop a universal module for the field of care. To do so, we must run the module in a different country under different care contexts to evaluate its reliability and validity.

The next target population was care workers in Viet Nam. Due to the rapidly ageing population growth of the country, which was explained in the introduction of this research report, we have been seeking collaboration with Duy Tan University in Danang City and the Vietnam Nurses Association for joint research in Viet Nam since 2018. Feasibility studies are required to develop the most suitable modules in Viet Nam.

In Chapter 3, we report on the observation of care facilities for older adults based in Danang City, Viet Nam, as a first step to launching a collaboration with Viet Nam's research counterparts.

1.   Visit to a Care Facility in Danang City

Name of the facility   : Thien Tam An Nursing Home

Website   : http://thientaman.com/

Address   : Lo01-B3-36, Khu do thi cong nghe FPT Danang, Phuong Hoa Hai, Quan Ngu Hanh Son, Thanh pho Da Nang

Date of visit   : 11 September 2022, 10:30 a.m.–12:30 p.m.

Person to meet   : Ms. Vo Thi Ha (President of the nursing home)

Research members   : Yuko Hirano (PI: Nagasaki University), Moemi Matsuo (Nishikyhushu University), Youichi Hiruma (Shizuoka University), Susiana Nugraha, Lisna Augustina, Biben Fikriana, Ashifa (University of Respati Indonesia), Nguyen Dieu Hang, Pham Thi Ngoc An (Duy Tan University)

1.1. Observation of the Care Facility

1.1.1. Facility

The facility is three storeys high. On the first floor, there is a reception for incoming guests, a dining room for the residents, and a kitchen. The second and third floors are residential areas. On the second floor, there are sauna and foot massage rooms for residents. The offices of the owners and full-time doctors are located on the second floor. Those who have trouble using stairs can use the elevator. A small garden with gymnastics apparatus and an indoor pool is also attached to the facility. The third floor has an open-air terrace, where residents can grow vegetables and enjoy birthday or barbecue parties. Residents practice yoga and exercise on the terrace in the evening. Currently, six residents live at this facility, which as per Ms. Ha, is a good business size.

1.1.2. Location

The facility is located in the middle of FPT Corporation, one of the largest IT companies in the country. Ms. Ha chose this place because she expected the growth of green technology to be supported by FPT Corporation. Also, the surroundings are green and good for older adults to walk.

1.1.3. Profile of Ms. Ha

Ms. Ha completed her bachelor's degree at a nursing college in Hue. She received a scholarship from the Government of Viet Nam to go to France to study non-communicable chronic disease management. She was the first nurse sent to France. She obtained a master's degree in public health at a university in Toulouse, France. She was also the first nurse to establish a nursing home for older persons (vien duong lao) in the country.

1.1.4. Reason for establishing the care facility

Ms. Ha is passionate and benevolent towards older adults. She felt that many older adults suffered (such as bedsores) owing to not receiving good care. She recalled that her late father, who despite being financially affluent, was not able to receive good care in a rural residential area in his final days fighting cancer as no care services were available at that time. This experience motivated her to build a home for older adults to provide appropriate care. She also planned to build a system to dispatch medical staff (doctors and nurses) to home-based older adults. Capital and passion are essential for building a care facility for older adults.

1.1.5. Advantages of being a nurse as a president of the care facility

The advantages of being a nurse who takes on the role of the president of the facility are that: (a) she can provide person-centred care and (b) she can wholly observe the business from the nursing perspective; therefore, she can train medical staff on her own. Ms. Ha stressed that the following three points are indispensable in running the care facilities to meet the high performance standards: (1) be in a managerial position, (2) have a professional capacity, and (3) have the ability to instruct or train staff.

1.1.6. Concept of the care facility

The name of the facility, Thien Tam An, originally from the Vietnamese language, comprises three concepts: Thien (goodwill), Tam (heart, person-centred), and An (secureness).

The core of the care concept of the facility is based on nursing theory, but Ms. Ha added her own original concept of care. She has learned many care models from other countries, such as France, Japan, and Germany. She is also flexible in running the facility and accommodates requests to maximise the satisfaction of the older adults.

1.1.7. Level of care of the residents

Currently, there are six residents in this facility. They have their own families, most of whom are wealthy. The family members of the residents visited the facility several times to obtain detailed information before finalising admission.

With regard to the care level of the residents, four people were in level 3 (independent), two in level 2 (partly dependent), and none of the residents ranked level 1 (totally dependent). In the future, care levels should be re-categorised into more detailed classifications.

The oldest resident is 92 years old (male), yet he is categorised as level 3 and is able to manage everything on his own.

1.1.8. Daily activities of the residents

In the dining room, the following information was provided on a bulletin board to remind the residents:

(1) Telephone number of the reception of the facility and the nearest local public security office

(2) Daily schedule, such as room cleaning and laundry, changing of linens, mealtimes (breakfast, lunch, evening, and supper), and exercise

Activities:

1) Morning exercise (daily)

2) Shopping at the market (weekly)

3) Swimming in the sea (monthly)

4) Visiting temples (monthly: optional)

5) Inviting locals to socialise (on national holidays or mid-autumn festivals)

Family reunions are also available upon prior request.

Residents go back to their houses to hold memorial services, but most of them wish to return to the facility rather than stay in their own house. Ms. Ha assumed that the residents were using the facility as their own house (nhà). She and her staff tried to make them feel at home at the facility.

1.1.9. Services of the care facility

Currently, seven nurses work in shifts. Home-visiting nurses are also available. A full-time doctor resides in the facility and offers medical check-ups every morning.

Whist recruiting staff nurses, Ms. Ha carefully observed candidates' attitudes during their job interviews. The most crucial factor was to check whether the candidates could get along with her. She also stressed that the attitude of the candidates towards the care receivers is important. She screens the candidates who are eager to provide care for older adults in the care institution or in home care settings, not with patients in the hospital or as an instructor.

To recruit highly qualified nurses, she pays a good salary and persuades the nurses that helping others is a noble job worth dedicating themselves to.

The feature of the care facility is holistic care based on: (1) provisions and facilities, (2) providing company for hospital visits, and (3) the provision of at-home care by nurses. Older adults worry about who will take care of them if they need to visit a hospital; the facility sends nurses along to accompany them so that they are comfortable.

1.1.10. Meal services and nutritional considerations

The institution provides meals depending on the health conditions of its individual residents. This is important because: (1) every resident has a different type of disease, (2) every resident has a different swallowing capacity and dental health condition, and (3) every person has their own taste preferences.

Therefore, the institution cares about the variety of meals whilst providing familiar food that the older adults are used to eating. The foods to be provided must be varied, cleaned, and served with pleasure. Therefore, when recruiting a cook, Ms. Ha chooses a person who loves and cares about older adults.

1.1.11. Potential of returning nurses from Japan

Six alumni members of Ms. Ha at Danang Medical University left Japan as nurses. However, after returning from Japan, nobody was in charge of nursing in Viet Nam. They worked as Japanese-Vietnamese interpreters or recruiters for sending Vietnamese people to Japan.

Currently, Ms. Ha does not consider recruiting nurses who have returned from Japan. This is because the institution is small, and there is no need to recruit many nurses.

The nurses who head for Japan are younger people between 22 and 26 years old because (Ms. Ha considers) Japan needs a young workforce. Vietnamese hospitals need experienced nurses between 26 and 35 years old, and these nurses are suitable to care for older adults. Therefore, Ms. Ha suggested that nursing colleges should provide courses to Japan-bound nurses from the freshmen year and let them go to Japan to work for 3–5 years so that they can learn not only about the nursing profession but also other aspects with which they can further profoundly understand Viet Nam. She stated: 'These people are suitable for working in this care institution. If a nurse is highly qualified, we can pay a higher salary. The recruitment of nurses in Viet Nam is difficult.'

2.   Conclusion

Of the 12.58 million older persons in Viet Nam, 4.43 million either live alone, live with other older persons, or live in a household with only older persons and children under 15 (35.21%) (General Statistics Office of Viet Nam, 2021). The more the ageing population increases, the more health care personnel will be needed in Viet Nam to provide care to the older adults, especially those who live alone.

Thien Tam Nursing Home is one of the latest nursing homes in Viet Nam. The institution provides professional care by nurses; thus, it may become a model for qualified care in Viet Nam. However, its business model is still under trial, so further study is needed to establish an appropriate model of care for older adults in Viet Nam.

Reference

General Statistics Office of Viet Nam (2021), *Older Persons in Viet Nam: An Analysis of the Population Change and Family Planning Survey 2021*. https://vietnam.unfpa.org/en/publications/older-persons-viet-nam-analysis-population-change-and-family-planning-survey-2021