

Chapter 1

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

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Chapter 1

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

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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±5.05	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 HVLТ scores that were significantly different between the dementia and stroke groups. The HVLТ 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 HVLТ. Even so, we cannot be too careful in interpreting the study results, as the HVLТ Indonesian version is yet to be standardised.

The study results indicate that the HVLТ was higher in the stroke group than in the dementia group. This may be interpreted as HVLТ 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 <input type="text"/> points	<p>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.</p> <p>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.</p> <p>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.</p>
2. Hopkins Verbal Learning Test	Total correct words: <input type="text"/> words
3. EAT-10	Total score: <input type="text"/> /40
4. Barthel Index	Total score: <input type="text"/> /100
5. Party-horn blowing test	1st trial: seconds 2 nd trial: seconds Mean: seconds
	Note (if any):
6. Phonatory test	1st trial: seconds 2 nd trial: seconds Mean: seconds
	Note (if any):
7-1. Motor function test (arms/hands) <input type="text"/> points	<p>3 points: Can hold the cup with the (paralysed) hand and bring it to their mouth.</p> <p>2 points: Can hold the cup with the (paralysed) hand but cannot bring it to their mouth.</p> <p>1 point: Cannot hold the cup with the (paralysed) hand.</p>
7-2. Motor function test (lower limbs) <input type="text"/> points	<p>3 points: Can stand up without holding onto anything and can stand on each foot alternatively in place.</p> <p>2 points: Can stand up from the chair with/without holding onto anything.</p> <p>1 point: Cannot stand up from the chair even if they hold onto something.</p>