



The Development of the Life-worldly Communication Scale for Older Adults in Home Care

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Abstract

In an aging society, health care for older adults has been shifting from facility to home-based care, giving caregivers a larger role in older adult's everyday life. Therefore, communication plays an important role in creating, maintaining, and developing relationships between older people and caregivers. This study aims to create and verify the Life-worldly Communication Scale (LWCS), to measure the types of communication in older adults in a home care setting. Cronbach's alpha reliability coefficient was used to confirm the LWCS internal consistency and analyze stability. Validity of LWCS was assessed by principal component analysis, and by correlation with Activities of Daily Living (ADL), dementia, and depression scales. A total of 24 older adults, with an average age of 82.96 years were included. Seven participants suffered from dementia (HDSR \leq 20), and 4 were Classified with Depression (CESD Score \geq 16). The status of ADL was: 15 independent, 7 required assistance, and 2 participants needed complete support. LWCS question items had a Cronbach's alpha of 0.87. The theoretical construct of LWCS was supported by factor analysis. Criterion-related validity was confirmed by a significant correlation between LWCS and actual communication utterance duration by IC recorder. LWCS was found to be useful in assessing the amount of communication between older adults and their caregivers. Frequent communication from caregivers might positively affect mental activity in older adults.

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Received Date: 05 Jun 2018

Accepted Date: 11 Jun 2018

Published Date: 18 Jun 2018

Citation:

Wakabayashi R, Fukaya Y, Yamakuma K, Sato S, Kitamura T. The Development of the Life-worldly Communication Scale for Older Adults in Home Care. *Ann Nurs Primary Care*. 2018; 1(1): 1006.

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Introduction

The world population of older adults has been increasing steadily, with Japan ranking as the oldest population around the world [1]. Currently, the population of Japanese aged 65 or older is 34.61 million, which accounts for 27.3% of the total population [2]. This demographic is expected to reach 36.57 million Japanese by 2025 and 39.4% of the population by 2055 [2].

Required healthcare is also increasing with the aging population. From this point of view, health care for older adults has been shifting from care facilities to home care around the world [3]. This is also true for Japan, where medical health and systems are shifting from facilities to home-based care, with the aim that older people can live independently in the community with dignity for as long as possible [4].

The purpose of care for older adults is to maintain and improve QOL [3]. It has been reported that older adults want to control their own lifestyles (e.g: eating, smoking, etc.) and contribute to society [5]. However, in older people requiring nursing care, the activities and the connections with society are limited; therefore, caregivers become an important social link. It has been reported that the independence of older people is dependent upon the caregiver's attitude and efforts [6] and therefore, it is important for care providers to initiate communication, understand the individual needs, and facilitate connections with society for older people. Moreover, communication has been reported to positively affect the physical and mental well-being of older adults [7].

While communication plays an important role in creating, maintaining, and developing relationships between older people and caregivers, little research exists on the actual communication time or content between them. Therefore, we examined previous literature and found two types of verbal communication occurring between nursing care facility staff and older people. The first type, (Type I communication) is related to various nursing and care giving tasks (medical procedures, routine care) undertaken by older people, which accounted for 75.9% of all communication. The

Table 1: Total Variance Explained of LWCS.

Factor	Initial Eigen values			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	6.72	44.79	44.79	6.39	42.58	42.58	3.21	21.43	21.43
2	1.84	12.25	57.04	1.54	10.24	52.82	2.54	16.95	38.28
3	1.46	9.72	66.78	1.14	7.61	60.43	2.5	16.65	55.03
4	1.07	7.16	73.91	0.75	4.99	65.42	1.56	10.38	65.42
5	0.99	6.23	80.54						
6	0.71	4.73	85.27						
7	0.64	4.26	89.54						
8	0.46	3.08	92.62						
9	0.35	2.35	94.97						
10	0.26	1.73	96.7						
11	0.18	1.21	97.91						
12	0.14	0.93	98.85						
13	0.11	0.75	99.59						
14	0.04	0.29	99.88						
15	0.02	0.12	100						

Extraction Method: Principal Component Analysis.

LWCS: Life-Worldly (Type II) Communication Scale

second type, (Type II communication) is related to the normally occurring events of daily life in areas such as: family, employment, and society at large. Type I communication is led mainly by staff, which often restricts the speech of older adults, resulting in approximately 4 minutes per day of average speech duration [8]. However, when caregivers promote Type II communication, self-initiated speech and the speaking duration of nursing home residents increases.

Type II communication not only improves the quality of life for older adults, it might also promote mental activity, and reduce the risk of dementia. However, to date, no scale has been developed to assess Type II communication in older adults requiring home-based care. The development of a Type II communication scale would enable the assessment of Type II communications for both institutionalized and older adults undergoing treatment at home. Moreover, it might also assist in improving caregiver communication skills and the development of education.

This primary aim of this study was to develop and validate a Communication Scale (LWCS) to assess Type II communication in older adults in a home care setting. Our secondary aim was to confirm any correlations between LWCS and activities of daily living, dementia and depression scales.

Definitions

Utterance: Any verbal utterance by older adults, either self-initiated or in response to others. An utterance is categorized into the following two types:

Task-oriented communication (Type I communication): Communication between older persons and caregivers regarding various nursing or caregiver tasks to enable the activities of daily living.

Life-worldly communication (Type II communication): Communication between older persons and caregivers regarding family, work, or social events that occur in life.

Materials and Methods

The Life-worldly Communication Scale (LWCS)

A total of 16 question items were selected containing the following: 9 questions on component elements of Type II speech extracted qualitatively from our previous studies (past life experience, family topics, friend/acquaintance topics, societal matters, mental states, greetings, weather, and familiar living), and 7 questions related to interactions with staff that promote Type II speech (speech spontaneity, topic participant wanted to discuss, something the participant wanted to say, speech encouragement, active listening, providing topics, attention to the participant). The number of question items was created to be as few as possible, so as not to burden the participant. For each item, we created a 4-point Likert scale ranging from 0 (Did not speak) to 4 (Spoke a lot).

Pre study focus group assessment

We administered the LWCS to 6 older participants, to assess how easy the questions were to understand and answer. From the feedback given, some revisions were made. We also asked the participants whether the number of questions was appropriate, and they responded that they did not feel overburdened.

Data collection and measurements

Researchers analyzed medical records to gather data on sex, age, ADL state (Functional Independence Measure: FIM) [9], and degree of cognitive impairment (Hasegawa Dementia Scale: HDS-R) [10]. The reliability and validity of these scales (FIM and HDR-S) have been previously verified. The NIMH Center for Epidemiologic Studies Scale (CES-D) [11] was used to measure depression in older participants.

An IC recorder was used to record participants and home caregiver communications over 8 hours. Researchers then administered the LWCS to participants on the same day, after the recording session. The LWCS was then administered to the same participants 14 days after the initial survey.

Table 2: LWCS Construct validity factor analysis.

Question Items	Component			
	1	2	3	4
LWCS1-8 Weather	0.76	0.18	0.07	0.28
LWCS2-1 Spontaneity	0.69	0.16	0.19	0.06
LWCS1-7 Greetings	0.63	0.33	0.35	0.14
LWCS1-3 Family topic	0.59	0.25	0.16	0.33
LWCS3-1 Active listening	0.57	0.05	0.48	0.03
LWCS1-5 Recent societal event	0.53	0.35	-0.05	-0.03
LWCS2-2 Participant wanted to discuss	0.09	0.89	0.31	0.16
LWCS1-9 Immediate daily life	0.42	0.74	0.18	0.17
LWCS1-2 Meals	0.32	0.63	0.05	0.21
LWCS1-4 Friend/acquaintance	0.5	0.54	0.19	0.39
LWCS3-2 Promotion of utterances	0.37	0.1	0.81	0.03
LWCS3-3 Providing topics	-0.2	0.19	0.8	0.39
LWCS3-4 The interest in the resident	0.26	0.23	0.67	0.13
LWCS1-6 Psychological state	0.15	0.25	0.05	0.72
LWCS1-1 Past life experience	0.17	0.1	0.41	0.64

Extraction Method: Principal Factor Analysis.

Rotation Method: Varimax with Kaiser Normalization.

LWCS: Life-Worldly (Type II) Communication Scale.

Analysis methods

A verbatim record that was created from the recorded contents of the communication was differentiated into Type I and Type II utterances, using a “classification list of the speech type for older persons” as previously reported [8]. Type II utterance duration and utterance frequency were then calculated.

Three researchers categorized conversations corresponding to all communication types. When conversations were categorized differently, the appropriate category was determined by discussing the context of the conversations. To measure the number of utterance frequencies, one sentence was counted as one frequency. To enable time comparisons, utterance duration was calculated from written transcripts by counting two Japanese phonetic characters as one second.

We investigated the reliability of our LWCS by

- Establishing the questions using factor analysis.
- Investigating the scale’s internal consistency using Cronbach’s alpha (reliability coefficient).
- Investigating its stability using the test-retest correlation coefficient.

The validity of the LWCS was assessed by

- Investigating its construct validity using principal component analysis.
- Investigating its criterion-related validity using the correlation between the LWCS and Type II utterance duration/frequency.
- Investigating the LWCS concurrent validity using its correlation with FIM, HDRS and CESD. IBM SPSS Statistics 22.0 was used for the analysis.

Inclusion criteria

The inclusion criteria were as follows: people aged 65 or older requiring home care, living in Kanagawa Prefecture, and able to give personal consent. Participants were excluded with

- Severe hearing impairment
- Severe speaking disorder
- In an unstable physical condition.

Ethical considerations

This study’s objectives, methods, participation time, and anticipated benefits/drawbacks were explained to each participant and their families. We ensured that study participation was voluntary and explained that there were no disadvantages for not participating in the study. Issues such as ensuring privacy were explained using study request forms and all participants were required to submit consent forms for themselves and their families. Tokai University’s ethics review committee approved this study.

Results and Discussion

Study participants

A total of 24 older adults, 8 men (33.3%) and 16 women (66.7%), with an average age of 82.96 years (SD=5.36) were included in this study. Seven participants (29.2%) suffered from dementia (HDSR \leq 20), and 4 participants (16.7%) were classified with depression (CESD score \geq 16). The status of ADL was as follows: 15 (62.5%) were independent, 7 (29.2%) required some assistance for self-care, and 2 participants needed complete support.

Item analysis

We conducted item analyses designed to create a consistent scale with a high discriminatory power. The item analyses were: a normality test, check of response skewness, check of correlations between items, and item-total correlation test.

To analyze the question items, we used the Shapiro-Wilk normality test to confirm that the responses to all 16 questions had normal distributions. We found deviations in the response score distributions of 3 questions: ‘Friend/acquaintance topics’, ‘societal matters’, and ‘greetings’. Since our scale is designed to be applicable to both at-home and institutional care settings, these question items were not excluded since they may affect Type II communication duration in home care.

We performed a cross-correlation analysis of the question items to check their categorization, and found a fairly high correlation between the items: ‘topic participant wanted to discuss’ and ‘something participant wanted to say’ ($r=0.75$, $p=0.000$). Since these two questions are similar in nature and difficult to distinguish between, we removed the question ‘something participant wanted to say’. We used an item-total correlation test to check the correlation between each item and the total score of 15 items. We adopted all 15 items since each question item showed a significant correlation of at least $r=0.61$ or more to the total score.

Descriptive statistics of the scale

The LWCS has a possible scoring range of 0 to 60 points. The score range for the 24 study participants was 15 to 44 points, an average of 29.95 (SD=8.91).

Reliability investigation

To investigate the reliability of the LWCS, we used Cronbach's alpha reliability coefficient to check the scale's internal consistency, and the test-retest correlation coefficient to analyze stability. The 15 question items had a Cronbach's alpha of 0.87. We ascertained the reproducibility of each item

1. From the correlation between test-retest.
2. Kappa statistic of each item.

Using a two-week interval between test and retest, we obtained a result of $r=0.63$ ($p=0.006$), indicating a moderate level of stability.

Validity investigation

The construct validity of the scale was analyzed by factor analysis with the Varimax rotation of principle factor method. KMO and Bartlett's tests were conducted to examine the validity of specimens for factor analysis. As a result, since the KMO value was 0.55, it was judged that this sample could perform factor analysis without any issues.

As a result, four common factors were extracted with an Eigen value of 1 or more. Factor scores were as follows: 3.21 for the first factor, 2.54 for the second, 2.50 for the third, 1.56 for the fourth factor, and the cumulative contribution rate was 65.42% (Table 1).

The four common factors were named based on the interpretation of the question items contained in each factor. These factors were

1. Trigger conversation,
2. The topic of daily life,
3. Speech encouragements by the staff,
4. Their life story and emotions (spontaneity of the older adults) (Table 2).

The first factor (trigger conversation) had a contribution rate of 44.79%, while the second and subsequent factors had dramatically lower contribution rates between 7.16 and 12.25%. This is consistent with a previous study, which reported trigger conversations such as "weather" and "greetings" as a valuable conversation strategy [12,13].

We hypothesized that the LWCS would consist of two elements ('everyday conversational topics' and 'speech encouragement by staff'), but factor analysis indicated a four-factor structure. However, since factors 2 to 4 could be classed as a subcategory of 'everyday conversational topics', our hypothesis was not contradicted by the results, and we therefore decided to use the 15 described items for our Type II communication scale.

Criterion-related validity was examined by the correlation between LWCS, and the actual type II speech duration and speech frequency. As a result, we observed that there was a significant correlation between LWCS and type II utterance duration ($r=0.65$, $p=0.001$). We also found a significant correlation between LWCS and type II speech frequency ($r=0.51$, $p=0.019$).

The concurrent validity of LWCS was examined by observing the correlation between LWCS and CES-D ($r= -0.69$, $p=0.001$), and HDSR ($r=0.54$, $p=0.14$). There was no correlation seen between LWCS and FIM.

Study implications

Communication is an important cornerstone of health care service and may have healing effects [7]. It can be difficult to assess the amount, and the specific type of conversations older adults are engaging in, in a home setting. There is still little known regarding the communication in home care or whether the encounters can be viewed as person-centered [13]. Furthermore, the lack of assessment tools for communication between caregivers and older adults adds to the uncertainty on how to quantify communications in a home setting. In this study, we found that the LWCS was able to correlate with actual Type II communications previously recorded on IC recorder. LWCS was able to accurately reflect the type and duration of conversation in older adults. Moreover, the LWCS was correlated to depression and dementia scales. Although this study shows promising results for communication in a home care setting, further studies are need with larger populations.

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