

SUPPLEMENTARY FILE 1

Procedure to assess for eligibility for participation in the cluster randomised controlled trial 'Self-management for dual sensory impaired older adults'.

To detect eligible older adults among the long-term care residents, three consecutive assessments were performed: two assessments to detect dual sensory impairment, and one assessment to detect severe problems in cognitive functioning.

Supplement S1 A. Assessment for dual sensory impairment

1. First, the residents of the LTC homes were assessed for dual sensory impairment (DSI) using the Severe Dual Sensory Loss screening tool (SDSL).¹

2. Of those who were suspected of having DSI and who had given written consent was assessed:

- hearing impairment: pure-tone audiometry was screened by a speech language specialist
- visual impairment: distance and near visual acuity, visual field, and contrast sensitivity were screened by an optician.

Both audiometry and vision screening were performed at the LTC setting, in a quiet, uniformly brightly illuminated room of at least 5 meters long.

SDSL SCREENING TOOL

Instruction: The screen should be administered by a professional nurse familiar with the older person. Put a mark on all of the statements in the screen, which coincide with observed problems.

Scores per item are 0 (no) or 1 (yes). For each subscale, the sum-score ranges from 0 to 6.

Individuals who score ≥ 1 on both subscales may have clinically significant DSI.

Criterion assessment for both hearing and visual impairment is advised.

Hearing Subscale

H1. He/she does not hear you when you knock on the door or ring the doorbell.

H2. You have to speak very loudly, clearly and/or slowly for him/her to be able to understand what you are saying (although it is quiet around you).

H3. He/she has problems understanding what you are saying when there is noise in the room (e.g. sound from a radio, vacuum cleaner, traffic, etc.).

H4. He/she has problems following a conversation when there are several people present.

H5. He/she has problems understanding what is being said on television, on the radio or other amplified source (e.g. sits very close to the source of the sound or/and turns the volume very high).

H6. He/she has complained about reduced hearing.

Visual Subscale

V1. You are not recognized when you visit unexpectedly

V2. He/she has problems reading the newspaper and watching television (e.g. sits very close to the screen).

V3. He/she needs help to find objects that have been mislaid.

V4. He/she has problems knowing what the time is because he/she cannot see the clock face or watch.

V5. He/she needs a companion or is afraid when moving about out of doors and/or indoors in unfamiliar places (except when this is due to difficulties in walking or other physical impairment).

V6. He/she complains about worsening vision.

Supplement S1 B. Assessment of cognitive functioning

An interview protocol based on DSM IV criteria was used to exclude older adults unable to complete interviews due to an advanced stage of cognitive problems.² To assess cognitive functioning, we used the DSM IV criteria for capacities in executive functioning: planning, organizing, sequencing and abstracting. These criteria have been selected for their relevance when performing self-management strategies. The interview protocol shows how the DSM IV criteria are used. To this protocol, we have added instructions how to create valid communication conditions in order to be able to observe cognitive functioning, considering the communication barriers associated with dual sensory impairment.

Interview protocol for the assessment of cognitive functioning

- ***Step 1. Create valid communication conditions***

1. *a.* Adapt your output to the auditory and visual needs of the DSI person
 - Adapt your articulation, face orientation, rhythm and tempo of your speech, and adapt conditions such as lighting, distance, height, and exclude glare and environment noise. If provided, ask the older adult to use his/her familiar (hearing) devices
2. *b.* If the person does not understand your speech, switch to writing
 - Adapt size, colour and contrast of your writing, adapt paper and pencil type
3. *c.* Structure your information
 - Divide your information into clear parts, avoid sentences with multiple clauses, and pause between each sentence to give the older person time to absorb and comprehend the information

- ***Step 2. Observe cognitive functioning***

1. *a.* Find proof that the person comprehends your introduction
 - Is he aware who you are?
Does he comprehend that you want to provide information about a research project?
Does he concentrate on you or your information?
Is he trying to understand and comprehend?

Or does he repeatedly ask who you are, and what you want? Does he persist in talking about his/her own issues or in continuing with own activities?

2. *b.* Induce the older adult in cognitive planning and reasoning

- Ask the persons' help or preference in planning your next visit; invite him to choose between two or three alternatives (planning)

Invite the person to talk about his experiences with his hearing and vision, and the adaptations he has already established (abstracting, organizing)

Invite the person to tell you what a normal day looks like (sequencing, organizing)

Invite the person to tell you what a weekend day looks like (abstracting, sequencing)

Observe the contribution of the older adult during this conversation: are his reactions adequate answers to your questions? Are his answers coherent?

References

- [1] Roets-Merken LM, Zuidema SU, Vernooij-Dassen MJ, Kempen GI. Screening for hearing, visual and dual sensory impairment in older adults using behavioural cues: a validation study. *Int J Nurs Stud.* 2014;**51**: 1434-1440.
- [2] Association AP. Diagnostic and statistical manual of mental disorders: text Revision DSM-IV-TR. Fourth ed: American Psychiatric Association; Arlington, USA.
- [3] Roets-Merken LM, Graff MJ, Zuidema SU, *et al.* Effectiveness of a self-management program for dual sensory impaired seniors in aged care settings: study protocol for a cluster randomized controlled trial. *Trials.* 2013;**14**: 321.