

**Cognitive Stimulation Therapy (CST) in practice: A service evaluation and observational study.**

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**Abstract**

**Background.** Cognitive Stimulation Therapy (CST) is a well-recognised and evidence based cognitive psychosocial intervention for people with mild to moderate dementia, and recommended in National Institute of Clinical Excellence (NICE) guidelines (2006).

Despite increased use of CST in routine care, less is known about its successful implementation in practice, and its effects for people with dementia.

**Methods.** Two CST implementation in practice exercises are reported in this article in order to look at the support required for CST implementation and the effect on positive outcome measures for group members. Study one is a service evaluation of care home staff in greater London who received CST training and on-going support (set up visit, spot visits, & telephone support) to assist in the setting up and delivery of the CST programme. Study two is an observational study measuring cognition and quality of life

of people with dementia in a variety of care settings in receipt of CST as part of usual care.

**Results.** Study one demonstrated a high number of CST and maintenance CST programmes delivered by care home staff. There was also a significant improvement in their approach to dementia and sense of competence over the study timeframe. Study two demonstrated a significant improvement in cognition for people with mild to moderate dementia as rated by the Mini Mental State Examination (MMSE; Folstein, Folstein, & McHugh., 1985), quality of life remained unchanged.

**Conclusions.** There is little research on the implementation and dissemination of psychosocial interventions, described as phase IV in the Medical Research Council (MRC) framework of complex interventions. This article reports promising findings across the CST implementation in practice exercises, with demonstrated benefits for care staff and people with dementia. Both studies strengthen the evidence base supporting its use in routine care. Further research is required to replicate both studies on a larger scale, preferably a randomised controlled trial (RCT) study design.

## **Introduction**

Evidence based psychosocial interventions for people with dementia have increased in popularity over recent years, with the acknowledgement that nonpharmacological options can be used, and have demonstrated significant benefit in cognitive symptoms for people with dementia (Ballard, Khan, Clack & Corbett., 2011). A key shift in recent years is the perspective of care having shifted to person centred care (PCC) with the use of nonpharmacological therapies. A psychosocial therapy that adheres to PCC as a key foundation is Cognitive Stimulation Therapy (CST; Spector et al., 2003). CST is a seven-week twice-weekly group programme for people with mild to moderate dementia. There is also a validated maintenance version of the programme once weekly for 24 weeks (Aguirre et al., 2011), and both programmes have demonstrated benefits across cognition and quality of life (QoL) for the person with dementia (Spector et al., 2003; Orrell et al., 2005; Orrell et al., 2014). The NICE guidelines (2006) recommend access to a cognitive stimulation programme for all people with mild to moderate dementia, and an audit of memory clinics identified that 66% of patients had access to cognitive stimulation (Hodge & Hailey, 2013). Cognitive stimulation is considered to have the 'strongest evidence by far' (World Alzheimer Report, 2011), and implementation of the programme and

effectiveness in key outcomes is key to understanding the implications of CST in practice.

It has been identified that there is less research looking at the implementation of psychosocial interventions (Boersma et al., 2015) and a gap in the literature in how the therapy is used in practice, delivery frequency, and required level of support, particularly as interventions are not necessarily implemented as intended (Boersma et al., 2015; Vernooij-Dassen & Moniz Cook, 2014), so effective implementation is not always clear and needs to be researched further. Issues related to implementation include a lack of education related to available options and the effect of interventions on the person with dementia, lack of staff time, poor staffing ratios and working environment (Staedtler & Nunez., 2015). In consideration of phase IV of the MRC framework for complex interventions (Craig et al., 2008) and the revised framework (Moore et al., 2014) it is crucial to consider process evaluation and the implementation process, including the benefits to using a multicomponent support options to tackle implementation barriers (Staedtler & Nunez., 2015) when understanding CST implementation in practice.

### **Aims**

*Study one.* To train and offer outreach support to staff members' in Redbridge care homes and successfully implement CST and maintenance CST in their care home setting.

*Study two.* To assess the effectiveness of CST and maintenance CST in practice for people with dementia.

### **Methods**

*Study one.*

This was conducted in care homes with care staff new to CST who received training and additional support to deliver the CST and maintenance CST as part of their usual caregiving duties. The Redbridge Care Directory 2013 was used to identify suitable care homes. In total 27 care homes were approached and 15 care home managers agreed to take part. Due to one care home not attending the CST training day it was carried out in fourteen care homes, between January and December 2013. Care homes were required to have over 50% of residents under the responsibility of the London Borough of Redbridge and able to provide a minimum of two staff members who were able to: (1) attend the CST training day; (2) have an adequate understanding of spoken and written English; (3) complete a questionnaire before the training day and at six months; (4) set up CST in

their care home; (5) identify five to eight people with mild to moderate dementia who were willing to take part in the groups; (6) complete attendance after each session; (7) provide qualitative feedback on the effects of the programme. After recruitment, 46 staff members across 14 care homes attended the CST training day. All staff received the training and each care home received two CST training manuals (Spector et al., 2006; Aguirre et al., 2012). All care homes had the opportunity to access the outreach support that included a set up visit, spot visits, and telephone support. The outreach support options could be used as much as required by each care home, so there was no limit set on access to these.

#### *Study two.*

This was carried out across care settings to measure minimal outcome measures (cognition and QoL) with people with dementia receiving CST and maintenance CST as part of their usual care. Study two was part of a programme of three studies looking at maintenance CST in practice (Streater et al., 2012). As it was an observational study no randomisation occurred for this part of the trial. Recruitment took place across five Trusts in 11 centres. All centres had previously run or were in the process of setting up the CST programme. The managers of the service approached the researcher (ASt) and expressed an interest in supporting staff to deliver both programmes, and allow staff time to complete screening and assessments with the people with dementia. To be eligible to participate in the study the person with dementia was required to have: (1) a formal diagnosis of dementia, (2) mild to moderate dementia as rated on the Clinical Dementia Rating scale (CDR; Hughes et al., 1982), (3) adequate written and spoken English, (4) ability to have a 'meaningful' conversation, (5) good eyesight and hearing, (6) ability to participate in a group for 45 minutes, (7) willingness to complete a cognition and QoL measure at three time points, (8) no major physical illness or disability that could affect their participation, (9) no diagnosis of a learning disability. Initially 108 people were identified, but 98 people were screened for suitability, as the remaining people declined to be screened and participate in the programme. After screening 89 people with dementia were eligible to participate in the programme across 11 centres. The centres included a care home (n=1), day centre (n=1), day hospitals (n=3), memory clinics (n=4) and Community Mental Health Teams (CMHTs)(n=2).

## **Participants**

*Study one.*

Care home managers were asked to identify a minimum of two staff members to participate in the programme. Each participant was required to complete an online survey and agree to the voluntary nature of their participation. Written informed consent was obtained prior to data collection. Forty-six staff members completed the baseline (BL) questionnaire and of these 31 completed the six-month follow up (FU) questionnaire. Five participants dropped out, three did not run the programme and so decided to withdraw, two left the centre, one did not attend the training day, one was absent at the FU time point, and no reason was given by three participants.

*Study two.*

All participants received an information sheet that explained the purposes of the study to collect cognition and QoL outcome measures at BL, six (FU1), and 12 (FU2) months to determine if the benefits in previously conducted CST research could be demonstrated in practice. Every individual gave informed consent in accordance with the provisions of the Mental Capacity Act (Department of Health, 2005), and understood their participation was voluntary and they were free to withdraw at any time. Eight-nine participants completed the BL questionnaire, 67 participants completed the FU1 questionnaire, and 56 participants completed the assessment at FU2 (Figure 1).

## **Intervention**

*Cognitive Stimulation Therapy and maintenance CST programme*

CST and the maintenance programme is a cognition based group psychosocial intervention for people with mild to moderate dementia (Spector et al., 2003). Each session lasts 45 minutes, comprising of a 10-minute introduction, offering group members the opportunity to decide on a group name and song to be used at the beginning and end of each session, softball activity, and discussion on their whereabouts and time of the year with the use of a reality orientation board. The main activity is 25 minutes in length of 19 session themes with two choices of activity (Level A and B). There is 10 minutes for the session to come to a close, with discussion on the days session and future session, to sing the group song, and thank everyone for their contribution.

## **Data collection**

*Study one.*

*Sociodemographic data.* Information gathered included staff members' gender, age, level of experience, and qualification and whether the participant worked in a specialist dementia setting.

*Attendance.* Attendance records were collected using the monitoring progress form located in the 'Making a difference 2' manual (Aguirre et al., 2012).

*Approach to dementia.* The Approaches to Dementia Questionnaire (ADQ; Lintern & Woods, 1996) including subscales for hope and person-centeredness and was used to assess the staff member's perceptions about people with dementia. The 19-item questionnaire uses statements such as 'there is no hope for people with dementia' and is rated on a five-point Likert scale from 'strongly agree' to 'strongly disagree'. Reverse scoring was applied to the necessary items and the total sum of scores ranged from 19-95. The scale has high validity and good reliability using Cronbach's  $\alpha$ , and has good retest reliability (total 0.76, hope 0.70, and person-centred 0.69).

*Dementia Knowledge.* Knowledge was measured using the Dementia Knowledge–20 questionnaire (DK-20; Shanahan et al., 2010). The DK-20 can be split into dementia core knowledge and dementia care knowledge and is used to measure participant's knowledge and approach to caring for people with dementia. The measure has a minimum score of zero and maximum score of 20, and has demonstrated sufficient reliability.

*Competence.* Competence was measured using the sense of competence in dementia care staff scale (SCIDS; Schepers et al., 2012). The measure is designed to be completed by untrained frontline dementia staff and the 17-item scale has four subscales: professionalism, building relationships, care challenges, and sustaining personhood. The measure has questions such as 'how well do you feel you can engage a person with dementia in conversation?' and responses are on a four-point Likert scale from 'not at all' (1) to 'very much'. The scale has good internal consistency and moderate test-retest reliability.

*Learning transfer.* Learning transfer was measured using the brief Learning Transfer System Inventory (brief LTSI; Spector, Orrell & Aguirre., 2011). The brief LTSI comprised on one exemplar question for each of the 16 factors devised for the original measure (Holton, Bates & Ruona., 2000). The scale is measured on a five-point Likert scale from strongly disagree (1) to strongly agree (5).

*Outreach support.* Outreach support was developed to include a set up visit, spot visits and telephone support. The purpose of the set up visit was to help the care staff identify suitable residents to participate in the programmes by using the inclusion criteria as stated

in the observational study. The spot visits were to observe the running of the groups and provide constructive feedback to the staff members and enable reflective learning. The CST researcher initiated telephone support and the purpose of this service was to provide an opportunity to regularly have contact with the care staff and discuss and problem solve any group related issues.

*Study two.*

*Sociodemographic data.* Information in relation to the centre type, whether it was a specialist dementia setting, and delivery frequency of the CST programme was gathered. For the person with dementia their gender, ethnicity, age, dementia type, and whether they were on Acetylcholinesterase inhibitors was also collected.

*Cognition.* The Mini Mental State Examination (MMSE; Folstein, Folstein & McHugh., 1975) was used to measure cognition of the people with dementia. The MMSE is a 30-point measure that looks at functioning, including registration, attention and calculation, recall, and language and visual construction. The measure has demonstrated good reliability and validity (Tombaugh & McIntyre, 1992).

*Quality of Life.* The person with dementia's QoL was measured using the Quality of Life - Alzheimers Disease (QoL-AD; Logsdon et al., 1999). The QoL-AD is a 13-item self-reporting measure related to different aspects of the person's life, on a four-point Likert scale from poor (1) to excellent (4). The measure has been recommended as easy to complete and to demonstrate sensitivity to psychosocial interventions (Moniz-Cook et al., 2008).

## **Analysis**

Sociodemographic characteristics were defined using descriptive statistics at BL. A paired sample T-test was run on the outcome measures of staff participants that had complete cases at the six month FU. For the people with dementia a paired sample T-test was run on outcome measures at the six (FU1) and 12 (FU2) month FU. A paired sample T-test was considered appropriate to determine if the means of two related observations as normally distributed interval variables differed from one another.

## **Results**

*Study one.*

*Sociodemographic data.* The majority of the participants were female (89%), with a mean age range between 35-44 years of age (30%). Staff worked in a specialist dementia setting (87%), had a mean range of experience of between three to eight years (39%), with no formal qualifications relevant to their post (43%).

*Attendance.* Seven homes (50%) delivered the full CST programme, three homes (21%) attempted, and four homes (29%) were unable to deliver the programme. Of the seven homes, four ran the programme as designed, twice weekly. The remaining three homes delivered the programme once weekly. Sixty-eight people with dementia had access to the programme and 55 people received the programme in full, with approximately 7–8 people per group. During the timeframe of the service evaluation two homes (29%) ran the complete maintenance CST programme, four homes (57%) were midway through, and one home (14%) did not run the programme.

Total number of sessions attended were calculated for each centre, and then grouped to indicate whether CST had been implemented at a low, medium, or high level. It is recommended that group size is between 5-8 participants (Spector et al., 2006; Aguirre et al., 2012) so a score of less than 41, on average less than three group members, was considered low. An attendance score between 42–69, so on average three to four attendees indicated that CST had been implemented at a medium level. An average of five or more group members as demonstrated by a score of 70 or above demonstrated that CST had been delivered at a high level (Table 1). Overall, the majority of centres were considered to have delivered CST to a high level.

#### *Staff measures*

*Approaches to dementia, dementia knowledge, competence and learning transfer.* Care staff outcomes are presented in Table 2. All measures increased in mean score at the FU time point, but only approaches to dementia and sense of competence demonstrated a significant improvement between baseline and follow up time points.

*Training, delivery of programme and use of outreach support.* Forty-six staff members received CST training, and due to four homes not delivering the programme there were 33 staff members able to deliver the programmes in their care homes. In total 25 staff members recruited for the service evaluation were involved in the delivery of the programmes, and the attendance records indicated that seven additional staff members assisted in facilitating the programme. Seven of the 14 care homes required a set up visit.

At this point two homes dropped out as they felt unable to deliver the programme. Consequently 12 care homes received the additional outreach support option for nine months. In total there were 44 spot visits, averaging 3–4 visits per home by a researcher. Over the duration of the service evaluation the researchers made 207 telephone calls, averaging 17 calls per home. In addition text and email were used 16 times for care home staff that were harder to contact. One of the care home records were missing for the CST programme, but for the remaining nine homes, four homes delivered the full programme and two homes partially delivered CST once weekly, and three homes delivered the full programme twice weekly.

*Study two.*

*Sociodemographic data.* The majority of the sample was female (57%), white (94%), living in the community (90%), with a mean age of  $80.4 \pm 7.2$  years. Just over half of the sample had a diagnosis of Alzheimer's (52%) and two thirds of participants were on dementia medication (62%). The majority of participants had mild dementia with a mean score of 21.2 (SD 4.6) on the MMSE. The majority of the sample also scored in the mid-range on the QOL-AD, with a mean score of 35.7 (SD 7.8). Seven centres ran the programme once weekly, and the remaining centres delivered the CST programme twice weekly.

*Cognition & Quality of life.* People with dementia outcomes are presented in Table 3. For the analysis of all participants cognition and QoL remained unchanged over the CST and maintenance CST programmes. However, it became apparent that high functioning individuals predominantly from day hospital, memory clinic and CMHTs were accessing the programme. To be consistent with previous CST research (Spector et al., 2003; Orrell et al., 2005; Orrell et al., 2014) these participants were excluded from the analysis ( $\geq 25$  MMSE). When the analysis was rerun cognition significantly improved at FU1 ( $p=0.04$ ) and remained unchanged at FU2 ( $p=0.68$ ), and QoL remained stable at FU1 ( $p=0.14$ ) and FU2 ( $p=0.38$ ). This positive finding in cognition was irrespective of CST frequency (once or twice weekly).

**Discussion.**

The CST implementation in practice exercises were run independently of one another, but are complimentary in building a picture in the implementation of CST and maintenance CST in practice. Importantly, both studies used staff members, as opposed to researcher

led, in the delivery of the CST programmes to replicate groups in practice. This is in line with the dissemination and implementation phase IV of the MRC framework for complex interventions (2008).

*Study one.* A promising finding from this study links in well with previous findings from the Spector et al., (2011) evaluation of CST training alone. Regular supervision and additional support was previously identified as useful in the implementation of the programme (Spector, Orrell, & Aguirre., 2011) and a high uptake of both CST programmes in study one appears to support these findings.

Another positive finding was CST being delivered at a high level, with the majority of centres running the programme with five or more group members. Attendance to the maintenance CST programme could also have been calculated, but as the programmes had not been completed at the end time point the attendance score would not be a good indication as to the level of implementation. For the two centres that had completed the programme, one centre was considered to have delivered the programme at a medium level, with on average three to four group members and the other centre delivered to a high level, with on average five or more group members over the duration of the maintenance CST programme. The high level of implementation indicates that the programme was being consistently delivered well across both programmes.

Positive benefits were also demonstrated with improvements in the staff members' approach to dementia, indicating an improvement in good dementia care practice, and sense of competence. The two CST researchers saw their role when delivering outreach support as supportive and encouraging with the opportunity to provide constructive feedback by adhering to the CST key principles (Aguirre et al., 2012), and this may have contributed to the improvement in these two outcome measures.

*Study two.* The analysis conducted on participants meeting mild to moderate on the MMSE highlights the importance on adhering to the inclusion criteria used in previous CST research (Aguirre et al., 2010; Orrell et al., 2005; Spector et al., 2003; Streater et al., 2012) to identify suitable participants that are likely to benefit most from receiving the intervention.

*Limitations.* This implementation in practice exercises presents a number of limitations. Delivery frequency was not initially accounted for in the design of the study, however as the purpose of the study was to observe groups in practice the delivery of the programme remained unaltered for the purposes of the research. As staff members' can be the gatekeepers for people with dementia in the initiation, delivery and maintenance of

activities in care settings (Lawrence, Fossey, Moniz-Cook, & Murray., 2012), it is important to focus on adaptations to the programme in practice. Previous research has indicated that once weekly CST is not an effective 'dosage' to demonstrate change (Cove et al., 2014), however due to the small sample size of this study this was not examined further and future research is required to examine the effect of CST delivery frequency. Previous research has identified a lower staff to resident ratio, more complex needs of the person with dementia, and a lack of understanding in the effectiveness of nonpharmacological interventions by the staff member as barriers to implementation (Kolanowski, Fick, Fraser, & Penrod., 2010). All these factors may have been present in both reported studies, and could not be controlled for.

Another limitation is that a number of measures were incomplete at the FU time point in both study one and study two. Study one asked staff to complete the measures online and independently of a researcher. In practice, staff completed paper versions of the questionnaire, and in some instances answered one question more than once or left it blank. Although efforts to clarify these responses were made, it was not always possible to do so, and so limited the amount of information received by care staff. Study two required the researcher or a member of staff to complete the outcome measures with the person with dementia. Staff members' were conducting the groups as usual care and if a person was unavailable at the time of FU, limited efforts were made to collect this information at a later stage. Across both studies it may have been more successful for a researcher to be present for questionnaire completion, however due to time constraints and limited resources this was not possible.

Both studies have a small sample size reducing the statistical power to determine an effect size, so a larger sample size and more diverse sample characteristics are required to determine if these positive findings can be replicated in practice. There was no control group, so no randomisation occurred. The justification for this was CST is now considered treatment as usual due to its strong evidence base, and it was important for people with dementia to not be deprived of a programme they would have received as part of their usual care. Previous CST research had a control group (Spector et al., 2003) and the findings from this observational study compared favourably to the control group as cognition remained significant ( $p=0.04$ ). This finding supports the delivery of CST in routine practice. A control group for the service evaluation would have provided a useful comparison, however the funding to support the delivery of the evaluation was to increase the delivery of CST, so it was not an option to not provide additional support for staff

members'. Both the service evaluation and observational study had a short implementation period. If the programme is delivered as intended it is a 31-week programme, excluding screening, assessments, and FU timeframe. Both studies allowed nine months for the implementation of both the CST and maintenance CST programmes, and as demonstrated in the service evaluation this was not enough time to allow for the delivery of the full length of the maintenance CST programme. However, due to funding, the time restriction could not be changed.

*Conclusion.* These CST implementation in practice exercises have attempted to report on a well evidenced psychosocial intervention for dementia, bearing in mind the need to report on the implementation of the intervention in a timely manner. The preliminary findings in study one demonstrate a positive effect of outreach support for care staff with an increased delivery of the CST and maintenance CST programme. In addition positive outcomes in approaches to dementia and sense of competence were reported for staff over the timeframe of the study. Study two demonstrates that with consistent inclusion criteria cognition can improve for the person with dementia in receipt of the CST programme and is maintained over the maintenance CST programme, and QoL remains stable. These findings currently support the strong body of evidence advocating the use of CST in routine clinical practice across a variety of care settings.

Further research is required to replicate both studies on a larger scale, paying particular attention to inclusion criteria for people with dementia and frequency of the CST programme, preferably as a randomised controlled trial (RCT) study design.

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CST implementation				
Delivery of CST	Number of programmes	CST low	CST medium	CST high
Yes n(%)	7(70)*	1(14)	1(14)	5(72)
Partially n(%)	3(30)	2(67)	1(33)	0(0)

Table 1: Delivery and level of implementation for CST programme for study one.

\*attendance records missing for one centre, entered in table as CST low

Measure	Follow up time point	n	Mean (SD)	Mean difference (95% CI)	Interaction <i>P</i> (1-tailed)
ADQ	Baseline	23	47.83 (4.65)	-2.87 (-5.18, -.56)	0.01
	Follow up		50.70 (4.52)		
DKQ	Baseline	10	4.4 (2.07)	-0.2 (-1.08, 0.68)	0.31
	Follow up		4.6 (2.07)		
SCIDS	Baseline	29	51.17 (5.53)	-8.80 (-11.53, -6.05)	0.00
	Follow up		59.97 (6.49)		
BLTSI	Baseline	23	60.26 (5.54)	-1.04 (-4.60, 2.51)	0.27
	Follow up		61.30 (9.64)		

Table 2: Results of care staff outcome measures for study one.

Measure	Follow up time points	n	Mean (SD)	Mean difference (95% CI)	Interaction <i>P</i> (1-tailed)
MMSE	Baseline	67	21.45 (4.70)	-0.37 [-1.13, 0.39]	0.17
	FU1	67	21.82 (4.88)		

	Baseline	56	21.48 (4.94)		
	FU2	56	21.50 (5.66)	-0.02 [-.80, 0.76]	0.48
MMSE	Baseline	47	19.12 (3.48)		
	FU1	47	20.11 (4.56)	-0.99 [-1.92, -0.04]	0.02
(<25 MMSE)	Baseline	40	19.30 (4.04)		
	FU2	40	19.55 (5.34)	-0.25 [-1.28, 0.78]	0.32
QoL-AD	Baseline	66	36.53 (7.32)		
	FU1	66	35.65 (8.37)	0.88 [-.64, 2.40]	0.13
QoL-AD	Baseline	56	36.34 (7.64)		
	FU2	56	36.73 (5.30)	-0.39 [-2.21, 1.43]	0.34
QoL-AD	Baseline	46	35.74 (7.54)		
	FU1	46	34.35 (9.35)	1.39 [-0.45, 3.23]	0.68
(<25 MMSE)	Baseline	40	35.25 (7.70)		
	FU2	40	36.25 (5.64)	-1.00 [-3.28, 1.28]	0.19

Table 3: Results of people with dementia outcome measures in study two. Overall analysis and sub-analysis of participants scoring <25 on MMSE.

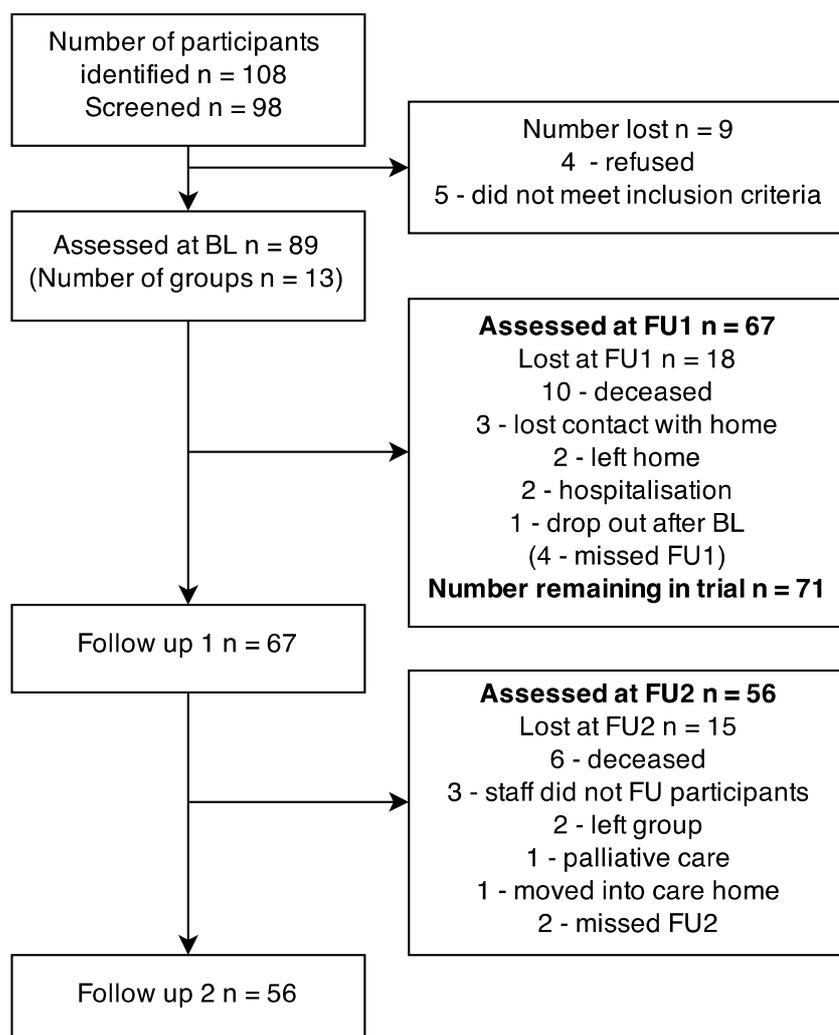


Figure 1: Observational study recruitment and retention at follow ups time points.