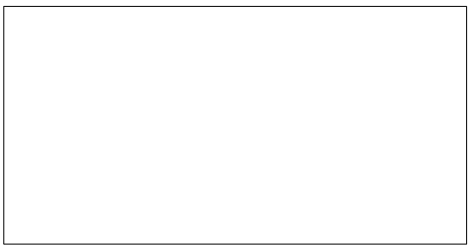

Disease – specific training in Parkinson's disease for care assistants: a comparison of interactive and self study methods

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Abstract

Objective: To compare two approaches to providing training to care assistants in Parkinson's disease.

Design: Pragmatic parallel arm controlled trial

Setting: Training either by an interactive training day at a local medical education establishment, or self study

Subjects: Care assistants recruited from local health and social care providers

Interventions: The content of both interventions was similar, covering causes, symptoms, diagnosis of Parkinson's disease, multidisciplinary management, mobility, communication, swallowing, and involving five hours of study time.

Main measures: Knowledge about Parkinson's (assessed by true/ false quizzes and identifying 'four facts' about Parkinson's) immediately post training and six weeks later; views on training methods of care assistants and employers / managers.

Results: 37 employers nominated 100 care staff who were allocated to interactive training (49) and self study (51). Training completion rates (retained to 6 week follow-up) were lower for self study (42.1% *vs.* 83.7% training day). There were no significant differences between groups on quiz or 'four facts' scores at baseline or 6 week follow-up. Immediately post training the self study group (with access to written materials) had significantly higher quiz scores than training day group (no access to materials at test). Within group comparisons showed improvements post training. Although interactive training may be preferred, obtaining release from duties can be problematic.

Conclusions: Both approaches have similar effects on knowledge of care assistants without prior specific training. Providing a variety of approaches will cater for all preferences. The findings may be generalisable to training the care workforce for other specific roles.

250 words

Key words Care assistants Parkinson's disease Training

Clinical message

- Interactive training and self study have a similar effect on the knowledge and understanding of Parkinson's disease of care assistants with no prior specific training in the condition
- Interactive training is more costly to provide and may create backfill problems for managers, but has higher completion rates than self study
- Providing training by various methods will cater for all learning styles

Introduction

It is estimated that some 1.25 million people are providing direct care to adults in the social care sector in England [1]. Most are involved in the care of older people, either through the delivery of domiciliary packages or in care homes. Despite the introduction of new training requirements and minimum standards for the carer workforce [2], concerns continue about quality assurance and skill levels [3,4]. There is also growing recognition that generic skill training of the care workforce may not be sufficient, and that frontline workers need to be aware of the particular problems of people with different conditions, and the best ways of helping them. This paper reports findings of a trial that compared two different approaches for providing training to care assistants in Parkinson's disease.

The mainstay of management of Parkinson's disease is a medical regimen which becomes increasingly less effective and more complicated as the condition progresses. This is supported by multidisciplinary rehabilitative therapies, assistive technologies and occasionally surgery. In the later stages, people with Parkinson's become increasingly dependent, and community-based care packages may be required to relieve the burden carried by family carers, and to avert entry to a long term care facility. Many care assistants who provide frontline services in the community or residential settings encounter relatively small numbers of people with Parkinson's, and have had no formal training in the particular issues associated with the condition.

The aims of the study were to compare the learning outcomes of care assistants undertaking training on Parkinson's disease through interactive methods, with those

following self study, and to explore the preferences and views of care assistants and their managers about these two approaches to training. With increasing emphasis on training for care staff it is important to identify cost-effective methods of delivery, that work well for both care assistants and their employers. The evaluation was based on Kirkpatrick's theoretical model [5] that identifies four levels for investigating the effect of training: (1) students' views about the training itself sought by means of a feedback form, (2) learning assessed by means of pre and post training tests of knowledge or capabilities, (3) evidence of transfer of learning to practice through observation, (4) the effects of the training on the business environment. For practical reasons, the study concentrated mainly on the first two levels.

Methods

The local NHS research ethics committee confirmed that an opinion was not required, but the study was approved by the University authorities. In October 2006, employers of care assistants in one county in the south of England were contacted by the Joint Health and Social Care Training Office and invited to nominate volunteers from amongst their care staff for Parkinson's training. Volunteers were alternately assigned to either attend either an interactive training day or to undertake self study in the order in which their expressions of interest were received. In the later stages of recruitment, this process was varied to ensure there was an even split between groups of people employed in health *vs.* social care settings, and of different seniority (junior *vs*. team leaders / managers. Participants were informed of their group allocation, and sent a short form to collect background information (age, first language, education and

training, years in caring, experience of care of people with Parkinson's), and a baseline Parkinson's knowledge assessment. Care assistants were also asked whether they would have preferred to attend a training day or undertake self study, if they had been given a choice.

Training interventions

The training interventions were based on materials about Parkinson's disease prepared previously by the study team for use by family carers or care assistants. The materials comprised 25 illustrated fact sheets, each with a reflective exercise, in five modules: causes, symptoms, diagnosis of Parkinson's disease; multidisciplinary management; mobility; communication, swallowing and nutrition; non – motor symptoms [6]. Each module is a stand – alone booklet, introduced by a list of aims and learning objectives. In line with best practice guidance for training materials [7-9], the reading age was set to around 12 years, (checked using Flesch-Kincaid scale [10]), so that booklets would be accessible to all care staff, including those with lower literacy skills or English as a second language. The materials were prepared in consultation with specialist Parkinson's nurses and doctors, and other members of a neurology multidisciplinary team. Thirteen external experts, including nurse trainers, provided feedback on the draft materials by means of a questionnaire derived from existing instruments that assess the quality of written information [4,11].

Both training methods involved five hours of study time. Participants in the self study group were sent 20 fact sheets (the first four training modules) by mail. Each fact sheet (including reflective exercise) was designed to take about 15 minutes of study time, suitable for reading in a 'coffee break'. Participants in the interactive training group

were allocated to one of two training days, planned for up to 25 participants each, to run from 9.30am to 3.30pm, (including one hour for lunch). The days were coordinated by a professional trainer, and comprised four interactive sessions presented by a specialist Parkinson's nurse, physiotherapist and speech and language therapist, and included a short video about Parkinson's, talks from a person with Parkinson's and a family carer, and reflective exercises to encourage group discussion. The content was based closely on that in the modules used in the self study group, which members of the training day group were given at the end of their interactive sessions.

Post training assessments for both groups of care assistants took place at two points: immediately after completion of training (end of training day, or 4 weeks after mailing of self study materials), to assess Parkinson's knowledge and gather feedback on the training experience; six weeks after the end of training, for a further knowledge test and to obtain reflections on the training, and how it had affected them in their work as carers. Employers were asked for their views at the end of the programme. Apart from the post training assessment for the interactive training group which took place at the end of the training day, all other assessments were conducted by mail (using freepost envelopes for responses). Care assistants completing all assessments could claim a certificate to record their participation, and their employers were reimbursed £50 (for the five hours of study time spent by their staff). Care assistants attending interactive training had travel expenses paid and lunch and other refreshments provided.

Knowledge assessment

Care assistant's knowledge of Parkinson's was tested in two ways at each assessment point: a true / false quiz and an open question asking respondents to write down four

facts they knew about Parkinson's disease (Appendix). These tasks were considered to be relatively simple and appropriate for the background education and language skills of care assistants. Both tasks were pilot tested on groups of student nurses.

A two stage procedure was used to design and validate three separate true / false Parkinson's quizzes for use at different assessment points in the trial. An initial bank of 100 true / false statements based on the material in the modules was created and presented to a group of 23 final year nursing students. Questions which were consistently answered correctly or wrongly were judged to be too easy or too difficult / unclear, and were discarded. The remaining 72 statements were organised into three quizzes (24 items each). Each quiz contained a range of simple and more challenging questions (i.e. items with relatively high and low scores at initial testing), and covered material from each of the four training modules. In the second round of testing, a class of first year nursing students (n=102) were asked to complete all three tests, (order randomised using Latin squares). One way ANOVA confirmed there were no significant differences between scores achieved across the three tests.

All care assistants completed the same test (#1) at baseline, immediately before training. To reduce the possible effect of collaboration amongst participants, tests #2 and #3 were randomly allocated at the end of training, and care assistants were then sent the test (#3 or #2) that they had not already done for their six week follow-up assessment. One mark was awarded for each correct answer, and zero for a wrong answer, 'don't know' or nil response, giving a range of scores for each quiz of 0 - 24.

The ‘four facts about Parkinson’s exercise was scored out of eight by a member of the research team (HG), blinded to group allocation. Two points were awarded for each correct fact (i.e. a fact contained in the modules), one point if it was partly correct, and zero if it was wrong or nothing was written. Where uncertainty about scoring arose, the response was referred to another team member and resolved by discussion.

At the end of training, participants were asked an open question on what they liked and disliked about the training they had received, and if they would recommend it to others (yes / no / don’t know). The six week follow-up questionnaire asked respondents to comment on how the training had affected their daily work (open question), and to reflect on their preferred method on training (training day / self study / both / don’t know). A feedback questionnaire was also sent to managers asking about their preferred method for care assistant training, the advantages and disadvantages of each approach from their perspectives, and views of how training had affected practice.

Data were entered into Access and Excel data bases and transferred to SPSS version14 (SPSS Inc., Chicago, IL, USA) for analysis. Comparisons between groups were undertaken using Chi-square, Mann Whitney U and one-way ANOVA tests, as appropriate. Correlations between baseline performance in knowledge quiz and characteristics of participants were conducted using Spearman’s rho and Mann Whitney U tests. Open questions were analysed using thematic analysis [12], separately according to training group. Data were coded into categories through an iterative process of reading and re- reading responses, and themes which integrated substantial sets of codes were then identified.

Results

Thirty seven employers from a range of health and social care settings (acute, primary care trusts, residential homes, social services and independent providers) nominated care staff to take part in the study. One hundred applications were received within the time frame set, and 49 care assistants were assigned to attend a training day, and 51 to undertake self study. Six care assistants in the training day group could not get release from duties and, on their request, were reallocated to self study. Hence the final groups comprised 43 care assistants in the interactive training group (attended two separate training days) and 57 in self study. Progress through the trial is shown in Figure 1.

Figure 1 goes here

Information was not provided at baseline by some participants, particularly in the self study group. A comparison using available data found no significant differences between groups with respect to age or general education of care assistants, but those in the interactive training group reported fewer years in caring professions, and were more likely to not have English as their first language. Few participants reported prior training in Parkinson's disease (Table 1).

Table 1 goes here

Training completion rates (measured by the numbers of care assistants completing the post training knowledge quiz) were higher in the training day group (collected at

completion of the training day) than with self study (collected by mail): 100% *vs.* 59.6% (Figure 1). Completion rates of the six week follow up questionnaires (collected by mail for both groups) were 83.7% and 42.1% respectively. Drop out between baseline and six week follow up was not statistically associated with age, general education, caring experience, first language, the self reported preferred method of training at baseline or performance on the baseline knowledge quiz, although drop outs had a significantly lower score on the 'four facts' exercise at baseline than those retained throughout the study (data not shown).

Learning outcomes

There was no significant difference between groups in the mean quiz scores at baseline, or after the six week follow up, although immediately after training the mean score of the self study group (who had access to the written materials) was significantly higher than that of the interactive training group (took test with no access to written materials). On the 'four facts' exercise, there was no difference between the groups at any time point. Within group comparisons show significant improvements on quiz scores in both groups immediately after training, which were largely maintained at six week follow up. 'Four facts' scores also improved significantly in the interactive training group, and showed a non significant trend towards improvement amongst participants retained in the self study group (Table 2).

Table 2 goes here

Tests for ordering effects (participants were randomly assigned to complete quiz #2 and quiz #3 at post training and received the test they had not taken at six week) showed no

significant difference between groups for either the quiz #2 or quiz #3 scores, and no significant interaction effect between group and assessment time point when quiz #2 was taken. However, the training day group mean was higher when quiz #3 was taken at six week follow up than immediately post training (ANOVA:20.06 *vs.* 18.91: $p = 0.044$).

Taking all care assistants together, a higher score in the knowledge quiz at baseline was significantly correlated with number of years in caring occupations ($p = 0.031$), number of people with Parkinson's ever cared for ($p < 0.001$), and currently caring for someone with Parkinson's ($p = 0.028$). Age and education were not significant. A higher 'four facts' score at baseline was significantly associated with having English as a first language ($p = 0.006$), and positively with age ($p = 0.032$). Caring experience and education did not predict baseline 'four facts' scores. Comparison of care assistant knowledge scores with those of first year student nurses (collected during the quiz development stage) revealed that the care assistants performed significantly better on knowledge quiz #1 (13.31 *vs.* 15.54, $p = .003$), and the 'four facts' exercise (4.47 *vs.* 5.31, $p = 0.039$).

Preferences for type of training

Six care assistants allocated to attend a training day stated that they could not get release from duties and requested a transfer to self study, and a further two stated they would have preferred self study (but attended training according to their group allocation). Ten care assistants allocated to self study stated they would have preferred the training day (Table 3). Hence, of the participants who responded to the question about their preferred method of training at baseline, a slightly lower proportion of those assigned to

the training day than those in self study expressed disappointment at their allocation (17.4% *vs.* 23.3%).

Table 3 goes here

Responding participants in the training day group were more likely than those in self study to state they would recommend their training method to others (97.6% *vs.* 78.8%) and to favour a combination of both methods (91.4% *vs.* 43.5%), commenting that the booklets (that they had been given at the end of the training day) were good 'for reference', 'to refresh my knowledge', 'understand some bits I missed on the training day' and 'to share with other staff' (Table 3). The likes and dislikes of the training methods highlighted by care assistance related to study / learning techniques, convenience (when, and where to undertake the training) and social aspects. The features liked about the training day were similar to the dislikes expressed about self study (Table 4).

Table 4 goes here

Managers' perspective

Twenty five (67.6%) of the 37 managers nominating care assistants returned a feedback questionnaire at the end of the study, of which 13 (52%) thought a dedicated training day was better than self study. Reasons cited were that care staff had 'busy lives' and were not all sufficiently self motivated to study alone, that it was good for staff to 'get out for the day', and meet others. They also felt that interactive training was better for learning because staff could ask questions, and would be more likely to retain

information. Only two managers favoured self study, stating it could be fitted in around family and work commitments, and that it enabled a more gradual build up of knowledge. The rest (n=10, 40%) thought a mix of both methods was best. Managers admitted that organising staff release for a training day could cause problems, and required forward planning, but had been facilitated in the context of the trial by the reimbursement for backfill that had been provided. In-house training was mentioned by several managers as a possible compromise.

Effect on practice

Over 80% of responding care assistants reported that they had altered their practice as a result of the training. Explanations fell into three themes, (occurring in the ratio 5:3:2 - details of data not shown):

(ii) Improved understanding and awareness of Parkinson's in general,

(ii) They had learnt not to hurry patients, and to allow more time for communication and movement,

(iii) They felt more informed and confident, and able to give better advice.

Managers mentioned that after training, care assistants showed a more holistic approach, and greater awareness of therapeutic interventions. Training was also reported to have had a 'knock on' effect because staff who had attended were sharing their enhanced knowledge with colleagues who had not.

Discussion

The findings suggest that both interactive and self study training methods have a similar effect on the knowledge and understanding of Parkinson's disease of care assistants who report no prior training specific to the condition. Provision of an interactive training day is more expensive (about £100 per attendee for room hire, speakers, materials, refreshments, participant travel costs in the current study, 2006) than equivalent self study (less than £2 per participant for printing and mailing costs). However, more care assistants stated a preference for interactive training (both at baseline and post training), and completion rates were higher than in the self study group. From the manager perspective, organising backfill so that care assistants could attend the training day was shown to be problematic, but was facilitated in the trial by the reimbursement that was provided.

The reasons offered by care assistants for preferring training reflect perceptions that interaction improves learning, and the social aspects of engaging with others. The advantages of self study are largely convenience (the ability to study at a time that fits with other commitments, at a pace set by the individual, and in the location of their choice). However, self study requires self discipline, can be isolating and does not enable interaction with the instructor or other students. Use of modern web based approaches may be helpful in overcoming this drawback.

Others have also shown that training of care assistants can significantly improve their knowledge and confidence in general [13,14], and abilities in specific areas [15,16]. Training the care assistant workforce can be a challenge, and innovative methods are recommended [17]. Providing training by a variety of methods will cater for all learning styles and allow students to mix and match to meet their requirements.

Problems of conducting evaluations of education and training interventions, and a lack of rigorous studies in the area of health care, are well documented [18,19]. Strengths of this study are that it evaluated two practical approaches to training care assistants in a comparative framework. However, the study has several limitations. All participants were volunteers and this may have affected their attitudes to training, and outcomes. Although few had previously received specific training in Parkinson's, over one third of those providing baseline information held degrees or diplomas, and this may not be representative of the general population of care assistants. Favourable recommendations for the interactive training day could have reflected the particular features of the intervention in this study, which may not be repeated in other courses.

Group allocation was pragmatic, and an initial randomisation process was violated to ensure similarity in the employment background and seniority of participants in each group. The transfer of six participants (at their own request) from the training day group to self study, and the level of missing data, both add to the limitations of the study. Of the six who moved groups, five failed to complete self study. Whilst an intention-to-treat analysis would have still shown better completion rates amongst the training day group, the extent of the difference would have been reduced (21% *vs.* 40% difference between groups post training; 27% *vs.* 40% at six week follow up). Non-response to questionnaires occurred at baseline (mainly amongst participants in self study who had no direct contact with the research team), and throughout the study, and resulted in missing data that hindered the analysis. Post training non-response was interpreted as non-completion of training, but it is possible that some care assistants who failed to complete mailed questionnaires were continuing to study. Finally, it could be argued

that the knowledge quizzes used to evaluate learning were not fully tested. They were, however, developed through a careful multi level testing process, and were relatively simple (true / false) instruments, appropriate for the educational level of the target audience. We therefore consider them to be sufficiently valid and sensitive to allow a firm conclusion to be reached.

Although Kirkpatrick's first two levels of training evaluation (feedback on the training experience and knowledge gain) were addressed in the study, it was not possible to capture evidence of transfer of learning to practice and effect on the business environment (levels three and four) [5]. Self report from participants suggested that the training had impacted positively on their practice, but this finding needs to be validated. Improvements in knowledge and awareness may not always translate into changes in behaviour, and practical experience within the context of multi-disciplinary team service delivery is required to improve care assistant understanding and skills beyond that gained from classroom-based teaching and self study [20].

An enhanced role for care assistants is an important theme within the workforce strategy of the British National Health Service [21,22], and is seen as a way of providing a more flexible and cost-effective service [23-26]. Issues of education and training are central to extending involvement and responsibility of care assistants [27 -30]. Although many care assistants receive generic training, relatively few receive disease-specific instruction and effective approaches that improve their knowledge, skills and competencies are required, so that they can work, according to national recommendations, within multidisciplinary teams of health professionals in the delivery

of services to the increasing numbers of people with complex long term conditions [31,32].

This study shows that care assistants are willing and able to improve their understanding of Parkinson's disease in order to improve the standards of care they provide. Relatively short periods of interactive training and self study were effective at improving knowledge, but provision of a variety of approaches may be desirable to cater for all learning and life styles. Although this study focused on training in Parkinson's disease, there are many other conditions were specific training for care assistants is warranted, and the findings offer generalisable lessons for commissioners and providers.

3852 words

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Table 1 – Baseline characteristics of participants; comparison between interactive training day and self study groups

Characteristics of care assistants		Interactive Training Day, n=43*		Self study, n= 57*		Significant difference
		n	%	n	%	
Gender	Male	1	2.3	Not known		
	Female	42	97.7			
Age (years)	21-35	13	31.7	10	23.3	ns (p = .455) (Mann Whitney U)
	36-50	18	43.9	21	48.8	
	51-65	10	24.4	12	27.9	
	Total	*41*	*100*	*15*		
Highest level of education (general)	15/16 years	16	39.0	22	51.2	ns (p = .284) (Mann Whitney U)
	17/18 years	8	19.5	7	16.3	
	Diploma /degree	17	41.5	14	32.2	
	Total	*41*	*100*	*43*	*100*	
English is first language	Yes	29	72.5	38	90.5	p = 0.035 (Chi square)
	No	11	27.5	4	9.5	
	Total	*40*	*100*	*42*	100	
Training received in caring	None / Basic	14	35.9	16	38.1	ns (p = 0.838) (Chi square)
	NVQ2-4, other	25	64.1	26	61.9	
	Total	*39*	*100*	*42*	*100*	
Parkinson's training	Yes	2	5.4	0	0	ns (p = 0.493) (Fisher's Exact)
	No	35	94.6	36	100	
	Total	*37*	*100*	*36*	*100*	
Number of people with Parkinson's ever cared for	0	8	20.5	2	4.9	ns (p = 0.517) (Mann Whitney U)
	1	4	10.3	7	17.1	
	Several (2-10)	19	48.7	25	59.9	
	Many (11-30)	8	20.5	7	17.1	
	Total	*39*	*100*	*41*	*100*	
Now caring for person with Parkinson's	Yes	26	63.4	28	71.8	ns (p = 0.424) (Chi square)
	No	15	36.6	11	28.2	
	Total	*41*	*100*	*39*	*100*	
Number of years in caring	Mean	41	6.83	43	10.79	p = 0.029 (Unpaired t test)
	Sd		6.78		9.29	
	95% CI		4.69 to 8.97		7.93 to 13.65	
	Range		0-30		1-43	

Key: NVQ: National Vocational Qualifications
ns: Not Significant
* After transfer of 6 participants from training day to self study

Table 2 – Learning outcomes: comparisons of interactive training day and self study groups at each assessment point

Assessment type	Assessment point	Interactive Training Day (n=43)				Self Study (n=57)				Significant difference between groups*
		N	Mean (SD)	95% CIs	Range	N	Mean (SD)	95% CIs	Range	
True/False Quiz. Score 0-24	**Pre training**	41	15.39 (4.23)	14.06 to 16.73	0-23	41	15.68 (4.38)	14.30 to 17.06	1-24	ns (p= .759)
	Post training	43	19.30 (2.45)	18.55 to 20.06	13-23	34	20.74 (2.57)	19.84 to 21.63	13-24	p = 0.015
	6 week follow up	36	19.67 (2.52)	18.81 to 20.52	13-24	23	19.91 (2.97)	18.63 to 21.20	14-24	ns (p= .734)
	Significant difference within groups*	41 34 36	Pre – post (+ 3.78); p < .001 Pre – 6 week follow up (+4.21); p < .001 Post – 6 week follow up (+0.25); ns(p=.614)			31 21 23	Pre – post (+ 5.16); p < .001 Pre – 6 week follow up (+3.86); p < .001 Post – 6 week follow up (-1.30); p=.042)			
Four facts. Score 0-8	**Pre training**	43	5.60 (2.44)	5.02 to 6.46	0-8	44	4.91 (3.60)	3.82 to 6.00	0-8	ns (p= .293)
	Post training	43	6.84 (1.46)	6.39 to 7.29	1-8	34	6.09 (2.84)	5.10 to 7.08	0-8	ns (p= .169)
	6 week follow up	36	7.14 (2.03)	6.45 to 7.83	0-8	25	6.46 (2.75)	5.22 to 7.50	0-8	ns (p= .208)
	Significant difference within groups*	43 36 36	Pre – post (+ 1.23); p < .001 Pre – 6 week follow up (+1.58); p < .001 Post – 6 week follow up (+0.28); ns p=.402)			34 25 25	Pre – post (+ 3.5); ns (p=.576)[#] Pre – 6 week follow up (+0.04); ns (p=.959) Post – 6 week follow up (-0.24); ns (p=.606)			

*Group comparisons using unpaired t tests; Pre – post comparisons within groups using paired t test

Drop outs were low scorers at baseline (n=7 scored zero)

ns: Not Significant

Table 3 – Care assistant stated preferences for type of training, *n* (%)

Assigned Group at baseline		Baseline / pre training preference for:				Immediate post training, willing to recommend method to others:				6 week post training follow up, reflection on preferred training type:				
		Training day	Self study	Don't know	Total	Yes	No	Don't know	Total	Self study only	Training day only	Both	Don't know	Total
Interactive Training Day (n=49)	Remained in group	38 (82.6)	2 (4.3)	0	46 (Missing, n=3)	41 (97.4)	0	1 (2.4)	42 (100)	0	3 (8.6)	32 (91.4)	0	35 (100)
	Moved to self study*	N/A	6 (13.1)	N/A		1	0	0	1	0	0	0	1	1
Self Study (n=51)		10 (23.3)	32 74.4)	1 (2.3)	43 (Missing, n=8)	26 (78.8)	6 (18.2)	1 (3.0)	33 (100)	8 (34.8)	2 (8.7)	10 (43.5)	3 (3.0)	23 (100)

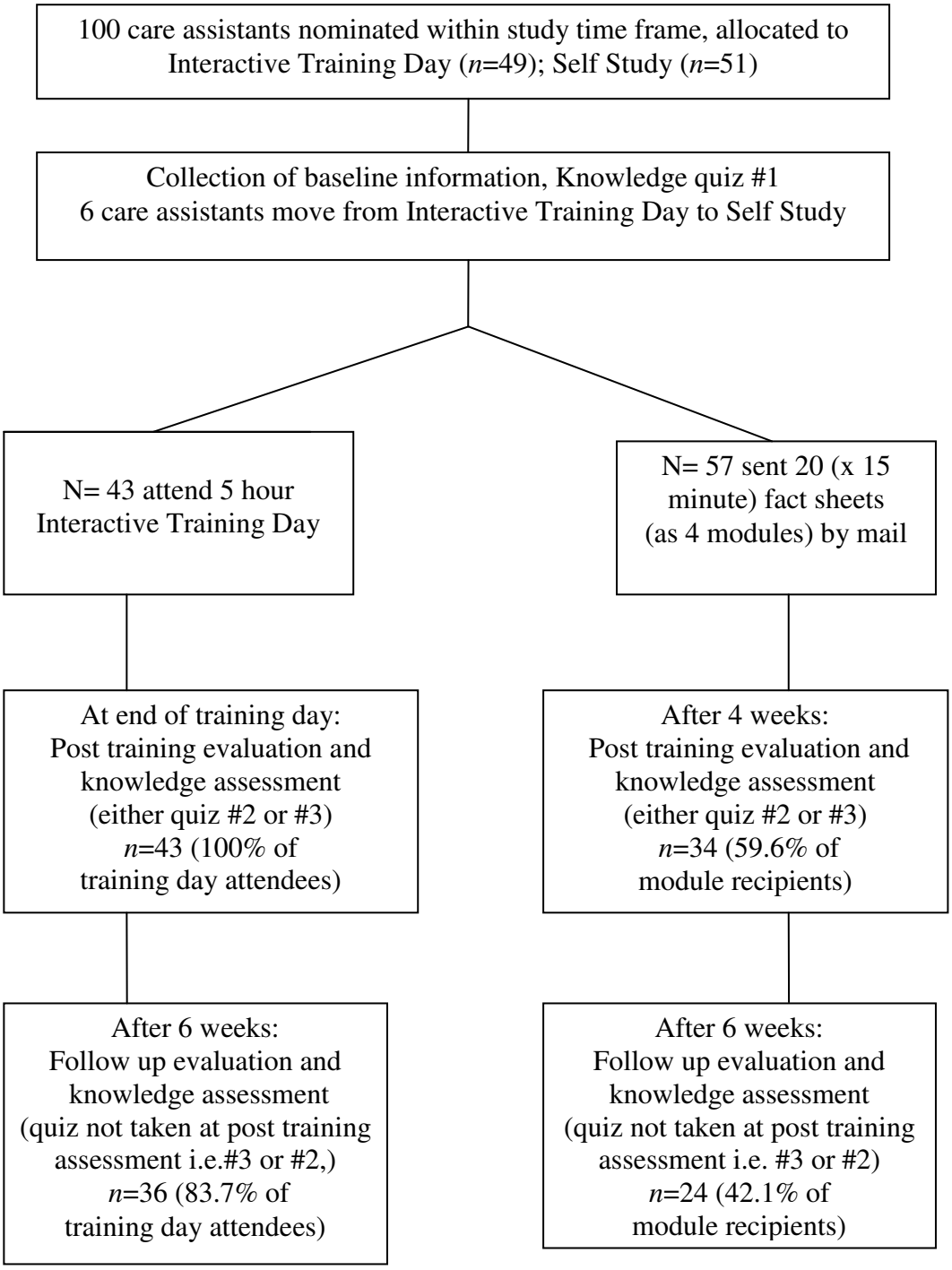
* Switched to the self study because they could not attend the training day

N/A Not applicable

Table 4 – Participants' stated Likes and Dislikes (main themes) of the training they received

Group	Likes	Dislikes
Interactive Training Day	• Easier to learn by listening • Can ask questions if don't understand / want more information • Contact with experienced people • Group learning preferred to studying alone • Discipline of a fixed day	• Journey / travel to the course
Selected comments	• *'I like to ask questions to experienced people'* • *'Listening to specialist people and learning in a group'* • *'I prefer training day with interaction. I absorb more. I like to work in a group. Learn off each other'*	
Self Study	• Prefer to study alone: can set own pace, go over things don't understand, have longer to digest material; can only take in information in small chunks • Convenience: choice of when and where to study; fit studying around work and family commitments • No travelling • No pressure in front of others; study days intimidating	• Can't ask questions if don't understand • No discussion • Easier to learn face-to-face • Difficult to discipline one's self to study • Spread over a long time, rather than all done in a day • Impersonal, isolating, no interaction with others
Selected comments	• *'Less information to take in at one time'* • *'Uncomfortable in a classroom situation'* • *I liked doing it in my own time, thinking about it, going back over it, re- reading it at leisure when I had forgotten'* • *No extra travelling. No necessity to miss a days work. Able to digest material at one's own pace*	• *'No one to ask questions of, i.e. understanding how some medicines work, who can have a why the brain operation and is the improvement permanent'* • *'The problem is finding the time to do it'* • *'No opportunity to discuss with others or ask questions'*

Figure 1: Study flow chart



Care assistant employers/managers completed separate end-of-study evaluations.

Appendix: Parkinson's knowledge assessments - quizzes (#1, #2, #3) and 'four facts'

Baseline quiz (Quiz #1) about Parkinson's disease

We want to see how much you know about Parkinson's disease before you start the training. Please answer as best you can. Do not look anything up or ask anyone else for the answers. If you do not know much at this stage – that is quite OK. We don't expect you to !!!

Please read each statement and tick to show if you think it is true or false or that you do not know. Parkinson's disease is called 'PD' for short.

No.	Statement	True	False	Don't know
1	PD makes people loose control of their muscles and joints.			
2	PD means that fine movements (like doing up buttons) are easy.			
3	PD is caused by too much dopamine in the brain.			
4	PD is diagnosed by the presence of dementia and depression			
5	Mostly younger people are affected by PD.			
6	People can die from complications of PD such as falls and pneumonia.			
7	All people with PD have tremor (shaking).			
8	People with PD often have sleeping disorders.			
9	Medicines are the main way to control PD symptoms.			
10	PD medicines are only available as tablets.			
11	An 'on' period is when medicines are working.			
12	Dopamine agonists act like dopamine in the brain.			
13	Medicines have to be constantly reviewed and adjusted.			
14	PD medicines can make people feel sick.			
15	PD can cause constipation because bowel muscles move slowly.			
16	All people with advanced PD should have brain surgery.			
17	Physiotherapists only treat arms and legs.			
18	People with PD tend to walk with long strides.			
19	People with PD use body language a lot.			
20	PD is a progressive disease which means that it gets better over time.			
21	Speech and language therapists advise on eating and drinking problems.			
22	Rigid muscles cause communication problems.			
23	Communication problems in PD cause problems with social life.			
24	Swallowing medicines is easy for people with advanced PD.			

Participant code						

Quiz #2 – Participants completed this either immediately post training, or at 6 week follow up (if had completed Quiz #3 post training)

No.	Statement	True	False	Don't know
1	There is a cure for PD.			
2	PD is a disease you can catch.			
3	PD can affect all types of movement.			
4	People with early stage PD can live normal lives without assistance.			
5	PD can damage relationships and make people lonely and isolated.			
6	PD is always easy to diagnose.			
7	Most people with PD lose control of their bladder and wear incontinence pads.			
8	As PD worsens more medicines are needed to deal with complications.			
9	PD medicines can give people vivid dreams and hallucinations.			
10	Levodopa medicines work well for ever.			
11	There are a lot of different medicines for PD.			
12	PD is a movement disorder.			
13	Relaxation may help with symptoms of PD.			
14	Exercising is easier for people with PD during 'off' periods.			
15	When dopamine levels in the brain are low, movement improves.			
16	People with PD have large handwriting.			
17	Tremor happens least when an arm or leg is at rest.			
18	People with PD may have trouble starting to move (they 'freeze').			
19	All people with PD have communication problems.			
20	PD often makes talking slow, quiet and hesitant.			
21	A physiotherapist advises on diet and nutrition			
22	PD can affect lung function and breathing.			
23	If you raise your voice, people with PD understand you better.			
24	A multidisciplinary team working together gives best care for PD.			

Participant code					

Quiz #3 – Participants completed this either immediately post training, or at 6 week follow up (if had completed Quiz #2 post training)

No.	Statement	True	False	Don't know
1	PD is always inherited from family members.			
2	The symptoms of PD are always the same throughout the day.			
3	PD affects different people in different ways.			
4	Some people with PD get forgetful and confused.			
5	PD makes arms and legs feel rigid (like lead pipes).			
6	The causes of PD are fully understood.			
7	Medicines are required for all stages of PD.			
8	It is very important that PD medicines are taken on time.			
9	If people forget to take a dose of PD medicine, they should take double next time.			
10	Even with medicines symptoms of PD worsen over time.			
11	Levodopa medicines replace dopamine in the brain.			
12	Doctors may delay prescribing levodopa medicines.			
13	People with PD always have movement problems on both sides of their body.			
14	People with PD tend to lean backwards when they walk.			
15	People with PD find it easy to control the speed of movement			
16	An occupational therapist can suggest aids to help people with PD stay independent.			
17	PD means it can take longer to do everything, including walking.			
18	People with PD tend to make small movements.			
19	People with PD tend to have a varied tone of voice.			
20	PD nurse specialists work with patients, but never with carers.			
21	People with PD can get pneumonia because they find coughing difficult.			
22	People with advanced PD tend to have lively facial expressions.			
23	For people with PD, all foods have to be pureed.			
24	PD is a disorder of the brain and nervous system.			

Participant code					

Four facts about Parkinson's

(Completed at baseline, immediately post training and at 6 week follow-up)

Please write down the four most important things you know about Parkinson's disease.

Fact 1. …….

Fact 2. …….

Fact 3. …….

Fact 4. …….

Participant code					