Citation: Monnelly, K., Marshall, J., Dipper, L. & Cruice, M. (2023). Intensive and comprehensive aphasia therapy—a survey of the definitions, practices and views of speech and language therapists in the United Kingdom. International Journal of Language & Communication Disorders, 58(6), pp. 2077-2102. doi: 10.1111/1460-6984.12918

Intensive and comprehensive aphasia therapy – a survey of the definitions, practices, and views of speech and language therapists in the UK.

Structured abstract (400 words max).

Background: Research evidence suggests aphasia therapy must be delivered at high intensity to effect change. Comprehensive therapy, addressing all domains of the International Classification of Functioning, Disability, and Health (ICF), is also called for by people with aphasia and their families. However, aphasia therapy is rarely intense or comprehensive. Intensive Comprehensive Aphasia Programmes (ICAPs) were designed to address this challenge, but such programmes are not widely implemented.

Aims: This study surveyed the views of UK-based speech and language therapists (SLTs) regarding intensive and comprehensive aphasia therapy. It explored definitions of intensive and comprehensive therapy, patterns of provision, views about candidacy and barriers/facilitators. It also investigated awareness of ICAPs and perceived potential of this service model. Differences across UK regions and workplace settings were explored.

Methods & Procedures: An e-survey ran for 5 months. Quantitative data was analysed using descriptive and inferential statistics. Qualitative free text comments were analysed using content analysis.

Outcomes & Results: 227 respondents engaged in the e-survey. Definitions of intensive aphasia therapy did not reach UK clinical guideline/research-level thresholds for most of the sample. Those providing more therapy provided definitions with higher standards of intensity. Mean therapy delivered was 128 mins/week. Geographical location and workplace setting influenced the amount of therapy delivered. The most frequently delivered therapy approaches were functional language therapy and impairment-based therapy. Cognitive disability and fatigue were concerns for therapy candidacy. Barriers included lack of resources and low levels of optimism that issues could be solved. 50% of respondents were aware of ICAPs and 15 had been involved in ICAP provision. Only 16.5% felt their service could be reconfigured to deliver an ICAP.

Conclusions & Implications: This e-survey evidences a mismatch between an SLT's concept of intensity and that espoused by clinical guidelines/research. Geographical variations in intensity are concerning. Although a wide range of therapy approaches are offered, certain aphasia therapies are delivered more frequently. Awareness of ICAPs was relatively high, but few respondents had experience of this model or felt it could be executed in their context. Further initiatives are needed if services are to move from a low dose or non-comprehensive model of delivery. Such initiatives might include but not be confined to wider uptake of ICAPs. Pragmatic research might also explore which treatments are efficacious with a low dose model of delivery, given that this model is dominant in the UK. These clinical and research implications are raised in the discussion.

What this paper adds

What is already known on this subject. There is a gap between the high intensity of aphasia treatment provided in research versus mainstream clinical settings. A lower standard of 45 minutes a day set by UK clinical guidelines is also not achieved. Although SLTs provide a wide range of therapies, they typically focus on impairment-based approaches.

What this study adds. This is the first survey of UK SLTs asking about their concept of intensity in aphasia therapy and what types of aphasia therapy they provide. It explores geographical and workplace variations and barriers and facilitators to aphasia therapy provision. It investigates Intensive Comprehensive Aphasia Programmes (ICAPs) in a UK context.

Clinical implications of this study. There are barriers to the provision of intensive and comprehensive therapy in the UK and reservations about the feasibility of ICAPs in a mainstream UK context. However, there are also facilitators to aphasia therapy provision and evidence that a small proportion of UK SLTs are providing intensive/comprehensive aphasia therapy. Dissemination of good practice is necessary and suggestions for increasing intensity of service provision are listed in the discussion.

Introduction

Aphasia is an acquired disorder of language which typically occurs because of a stroke. The Cochrane review provides level 1 evidence that SLT is effective for aphasia (Brady et al., 2016). However, it is crucial that intervention be provided at adequate levels of intensity to achieve gains. But what is meant by intensity or intensive aphasia therapy (IAT)? The Cochrane review (Brady et al., 2016) used four metrics - intensity, dose, duration, and frequency. A review from Harvey et al. (2020) found that most aphasia studies use dose and intensity interchangeably and define these metrics in terms of total hours or number of sessions. Interchangeable use of terms is a challenge, as is the definition of high and low intensity. One study in the Cochrane review delivered 4 hours a week in the high intensity arm whereas another delivered 5 hours a week in the low intensity arm (Brady et al., 2016). Baker writes “there is no precise answer regarding the point at which a particular cumulative intervention intensity (or for that matter the number of teaching episodes, frequency and duration of sessions, or total number of sessions) becomes intense” (2012:482). Warren et al. produced a method for defining intensive therapy using dose “the number of properly administrated teaching episodes during a single intervention session” (2007:71). This is complex to measure given the variety of content delivered within a clinical therapy session. Although the field of aphasia is still unclear about what constitutes high intensity therapy, intensive therapy delivered in research is at higher intensity (e.g., at least 5 hours per week in 44 studies reviewed by Menahemi-Falkov et al., 2021) than the intensity delivered clinically (see below).

What does the evidence suggest for intensity and dose in aphasia therapy? A systematic review of n = 959 individual participant datasets from n = 25 trials showed the greatest gains were made when more than 20 hours of therapy was provided, at least 2 hours a week, for at least 3 days a week (RELEASE Collaborators, 2022). In terms of comparison studies, the largest aphasia randomised controlled trial (COMPARE) compared two arms of intensive aphasia intervention (n = 140) versus usual care (n = 61) (Rose et al., 2022). It found no change in the primary outcome of aphasia severity, but the intensive arms were more effective than usual care for changes in word retrieval, functional communication, and quality of life. Do therapeutic gains depend on high intensity or high dose? This question is unresolved. There are some indications that a lower intensity but high dose approach (i.e., a dispersed model of therapy) may be preferable especially for impairment-based outcomes e.g., naming – (see systematic reviews by Cherney et al. 2011, and Pierce et al. 2020).

Whether engagement in intensive regimes results in maintenance of gains at follow-up has also been challenged. A recent systematic review found only 1 in 5 who attended an intensive aphasia programme (5 hours per week minimum) maintained their gains at follow-up (Menahemi-Falkov et al, 2021). It may be that long term gains arise from more distributed practice, or that intensive doses of therapy need some form of follow up to maintain gains. The timing of high dose therapy is also a key consideration. Two randomised controlled trials (RCTs) revealed that intensive aphasia treatment in the acute stage (2 weeks post stroke) is no more effective than a) low dose/low intensity treatment (Godecke et al., 2021) or b) no more effective than no SLT at all (Nouwens et al., 2017). Godecke et al. (2021) measured outcomes using measures of language, quality of life, and depression and Nouwens et al. (2017) used a test of everyday communication.

Despite the lack of consensus on the ideal level of intensity of aphasia therapy delivery, it is evident that a high dose needs to be delivered. This is somewhat intuitive – to acquire a new language requires hours of learning, so re-acquiring language lost to brain damage requires high dose input. The UK stroke national clinical guidelines set a target of 45 minutes every day for SLT intervention for stroke survivors (Intercollegiate Stroke Working Party, 2016). The UK (excluding Scotland) has the only national healthcare system which audits the intensity of speech and language therapy provision for stroke survivors on an ongoing basis – the Sentinel Stroke National Audit Programme (SSNAP). SSNAP data from 2018 reveals 20.9 minutes was the average SLT therapy session length (SSNAP, 2018). In the April 2020-March 2021 National Clinical Report, only 21% of eligible patients were receiving 45 minutes/day x 5 days a week (SSNAP, 2021). Many reasons have been suggested. These include difficulties de-implementing past practice due to structural forces beyond a clinician's control (Montini and Graham, 2015), patient factors: women, people from non-white backgrounds, and people with milder strokes all receive less SLT in the UK (Gittins et al., 2020), differences between healthcare settings and clinicians on what qualifies as therapy for SSNAP audit e.g., direct intervention versus writing a discharge report (Taylor et al., 2018), and therapist time spent in information exchange or indirect patient activity (Clarke et al., 2018). Duration of SLT in the 2015 post-acute audit was shown to last no more than 3 months for 94% of those receiving it (SSNAP, 2015). PWA in the Northwest of England were found to receive 1 hour 23 minutes/week of SLT post discharge from acute services (Bowen et al., 2012) or up to an hour/week across all regions of the UK (Palmer et al., 2018). People with aphasia (PWA) in the UK receive far less aphasia therapy than research and clinical guidelines recommend.

The UK is not alone in falling short of recommended targets. Past international research has found provision to average 1-5 hours a week (Code and Petheram, 2011) or 1-20 sessions in the acute stage (Katz et al., 2000). Recent research from Pittsburgh found the average dose provided to 602 PWA in private healthcare was a median of 7.5 hours in 10 sessions, 1.4 times a week (Cavanaugh et al., 2021). A scoping review of 303 articles found a median of 20 hours of aphasia treatment provided in 15 sessions 2-5 times per week further evidencing a research-to-practice gap in the US (Cavanaugh et al., 2021).

But quantity is not the only concern in aphasia treatment. Of equal importance is quality, and what type of aphasia therapy is delivered. People with aphasia (Worrall et al., 2011) and their families (Howe et al., 2012) desire intervention that goes far beyond treating the impairment (e.g., naming tasks), and covers all domains of the International Classification of Functioning (WHO, 2001) particularly focusing on activities and participation. This can be termed "comprehensive" aphasia therapy (CAT) – that which addresses the comprehensive needs of PWA. Illustrating the complex needs of PWA is the incidence of mental health disorders in this population. Anxiety rates are higher for PWA (44%, Morris et al., 2017) than stroke survivors without aphasia (29%, Rafsten et al., 2018).

The prevalence of depressive disorder post stroke is 52% for those with aphasia which is twice as high as those without aphasia (Mitchell et al., 2017). There is level 1 evidence for comprehensive approaches such as communication partner training (CPT) (Simmons-Mackie et al., 2016), group therapy (Brady et al., 2016; Elman and Bernstein Ellis, 1999), and technology-based interventions (Zheng et al., 2016), all of which can confer a range of psycho-social benefits. Specific national guidelines for SLTs working in aphasia are under review both in the UK and internationally, however older Australian and UK Clinical Guidelines for SLTs emphasised the need for comprehensive therapy approaches (Australian Aphasia Rehabilitation Pathway, ND; RCSLT, 2005). Yet comprehensive approaches appear to be under-utilised in SLT with much therapy focussing on the treatment of word finding and delivered in 1:1 contexts (Brogan et al, 2020; Palmer et al, 2018). The quality and content of therapy is important both to therapists and patients (Taylor et al., 2018; Worrall et al., 2011), but is not audited.

Although there is research literature detailing the desired goals of PWA according to the ICF which evidence a desire for therapy to address more than the impairment (Wallace et al., 2017; Worrall et al., 2011), there are no clearly stated clinical or research guidelines for comprehensive therapy content. Existing guidance is dated. For example, the Royal College of Speech and Language Therapists' resource manual for commissioning and planning services for aphasia which contained detail on assessment and intervention guided by the ICF was last updated in 2014 and has been retired and replaced by shorter generic web content. The Australian Aphasia Rehabilitation Pathway provides detail on potential comprehensive approaches but has been under renovation since 2020.

A service delivery model termed ICAP (Intensive Comprehensive Aphasia Programme) offers one response to the limitations in provision outlined above. A 2021 survey paper found growth in ICAPs worldwide from 12 in 2013 to 21 in 2020 (Rose et al., 2021). The intensive component of an ICAP is defined as at least 3 hours a day of therapy, 5 days a week, for 2 weeks, a total dose of 30 hours (Rose et al., 2013). The comprehensive therapy component requires that therapy be delivered in a mixture of formats (e.g., individual and group), addressing more than just the aphasia impairment (e.g., targeting activities and participation or quality of life in therapy), education should be provided (to the PWA or other), and an ICAP should be delivered to a cohort of people starting and ending the programme together. Caregiver inclusion on an ICAP is also a suggested component. A scoping review of 17 ICAPs with peer reviewed published data found that although the basic parameters of an ICAP are defined, programmes vary widely in their interpretation and ratio of comprehensive content, and interventions are highly personalised, which brings into question the active ingredients of an ICAP (Monnelly et al., 2021). Rose et al. (2021) found most ICAPs were funded by self-pay or insurance (9/14) or research funds (3/14), and donations were required to sustain 6/14 programmes. ICAP costs have been reported to vary between $70 and $5229 per week per person (Henson, 2016). There have only been two published ICAPs run in mainstream healthcare settings with no cost implications to participants (Brindley et al., 1989; Leff et al., 2021). These ICAPs were one-off occurrences in one healthcare location and were/are time limited. There are efforts underway in Australia to implement a well-researched University based ICAP "Aphasia LIFT" (Dignam et al. 2015; Rodriguez et al. 2013) into a clinical setting (Shrubsole, 2022). Currently ICAPs are not mainstream approaches to aphasia rehabilitation, but are growing in popularity (Rose et al., 2021).

Shrubsole et al (2019a) advise that to implement an aphasia intervention in a clinical context, due consideration must be given to addressing known barriers, and that for successful implementation, solutions must match the type of barriers which present. There are known barriers and facilitators to aphasia therapy provision which have previously been explored using survey methodology. Variation in provision based on workplace setting is a key variable (Manning et al., 2020) with more intensive therapy provided in the inpatient rehabilitation setting than other settings (Verna et al., 2009) and more barriers to meeting aphasia guideline recommendations experienced by those in acute versus rehabilitation (Shrubsole et al., 2019b). A US survey of 90 SLTs found functional communication was a more common therapy target in the community setting (Tierney-Hendricks et al., 2022). Taylor et al. (2015) found that institutional goals played a role in therapy intensity (e.g., there was a focus in some settings on discharge planning and reducing length of stay rather than providing intensive rehabilitation), see also Putman et al., (2007). Lack of time for aphasia therapy provision was the main barrier identified by Young et al. (2018). An ethnographic study across 3 inpatient stroke units in the UK found that therapists wanted to provide greater intensity therapy (Taylor et al., 2018). They internalised the ‘more is better’ mantra, but this did not positively affect the quantity of their provision. “Therapists in all sites discussed having internalised the message that ‘more is better’, but this had become a voice of guilt in the backs of their minds rather than something that changed their practice.” (Taylor et al., 2018: 6). A therapist’s personal views as influenced by both their training and colleagues may shape their practice (Gabbay and Le May, 2011) and act as a barrier or facilitator. There may be client factors which act as a barrier to aphasia therapy delivery. Studies have explored the impact of cognitive ability (Dignam et al., 2017; Yeung and Law 2010) and fatigue (Pierce et al., 2022; Riley et al., 2017; Riley et al., 2022) on aphasia therapy outcomes. Finally, focus groups have gathered barriers and facilitators to implementation of intensive aphasia therapy (IAT), comprehensive aphasia therapy (CAT), and Intensive Comprehensive Aphasia Programmes (ICAPs) across international settings (Trebilcock et al., 2019). Collaboration e.g., across the continuum of care, innovation to overcome healthcare structure challenges, and changing culture to value communication intervention were amongst the themes identified by SLTs as having the potential to affect positive change in aphasia therapy provision.

The purpose of this study was to explore how UK based speech and language therapists (SLTs) working with people with aphasia define IAT and CAT, what intensity/comprehensiveness of therapy they provide, what they perceive as the barriers and facilitators to provision, and their views on service user candidacy for therapy. In terms of influences on therapy provided, we were interested in discrepancies in provision across UK geographical locations and workplace settings (e.g., acute versus community). We were also interested in relationships between answers e.g., whether respondents' definitions of intensity related to their actual levels of provision; and whether their beliefs about changing provision related to workplace setting, geographical location, or their current service levels. The study also sought to explore SLT views on the ICAP model.

Research questions

1. How do aphasia SLTs in the UK define intensive aphasia therapy (henceforth referred to as IAT)?
2. How much therapy do UK SLTs deliver to people with aphasia (PWA) and does geographical location or workplace type influence the amount delivered?
3. How do aphasia SLTs in the UK define comprehensive aphasia therapy (henceforth referred to as CAT)?
4. What CAT regimes are being provided to PWA by UK SLTs and does geographical location or workplace type influence what is delivered?
5. What are the intrinsic and extrinsic service user candidacy factors UK SLTs consider for IAT and CAT?
6. What are the barriers and facilitators to provision of IAT and CAT in a UK context and does geographical location or workplace type influence these barriers and facilitators?

7. What level and detail of awareness is there of ICAPs in the UK?
8. What are the views of SLTs about ICAPs, including those with and without experience of ICAP delivery?

Methods

Survey methodology and design

This study used e-survey methodology to ask about SLT practice in the year prior to March 2020. This was because it was anticipated that aphasia therapy delivery would be impacted by COVID-19, and indeed this has been confirmed (Chadd et al., 2021). The e-survey was created on Qualtrics. The survey was constructed following guidance on survey methodology (Dillman et al., 2014), for example with respect to question order, lay-out and, numbering. The survey and study methods received ethical approval from the Division of Language and Communication Science Proportional Review Committee at City, University of London (ETH2021-0357). There were six sections to the survey – see Appendix for the survey questions and a completed CHERRIES checklist (the Checklist for Reporting Results of Internet E-Surveys; Eysenbach, 2004). Two sections were written using the Theoretical Domains Framework (TDF; Cane et al., 2012; Michie et al., 2005). The domains of the TDF explain behaviour change and were devised by expert consensus. The domains were validated and consolidated in 2012 resulting in the following 14 domains: knowledge; skills; social/professional role and identity; beliefs about capabilities; optimism; beliefs about consequences; reinforcement; intentions; goals; memory, attention and decision processes; environmental context and resources; social influences; emotions; and behavioural regulation. The survey flow was as follows: Intensive aphasia therapy, TDF questions on intensity, comprehensive aphasia therapy, TDF questions on comprehensiveness, ICAP questions, and demographic questions. To illustrate, questions on intensity explored all domains of the TDF framework, such as knowledge ("there is an evidence base for intensive therapy"), intentions ("I always intend to provide clients with intensive aphasia therapy where possible") and environmental context and resources ("where I work, all necessary resources are available to deliver intensive aphasia therapy"). Phrasing of questions was generated from TDF questions used in other published papers (Arnold et al 2020; Chang et al 2018; Seward et al 2017; Huijg et al 2014; Cruice et al 2020). There was a 7th optional section on COVID-19 at the end.

The e-survey was disseminated via social media (Twitter) and Clinical Excellence Networks (CENs) for SLTs which related to the survey topic e.g., the Aphasia Therapy CEN. One reminder notification was sent by the CENs.

The e-survey ran from December 18th 2020 until May 18th 2021 (5 months).

Patient and public involvement

A Patient Public Involvement (PPI) approach was taken. An early version of the survey was used initially to scope SLTs' views in a PPI activity. This led to a re-drafted version which was reviewed by 6 SLTs, one manager, two family members of PWA and one PWA who provided written and oral feedback. As a result of the PPI, questions were reworded or merged, additional multiple-choice answers were provided, and an estimated time to complete survey was derived.

Definitions used in survey questions

There are many definitions of intensive aphasia therapy. This research used the lowest standard available - the 45 minutes of therapy metric used by the SSNAP in England/Wales/NI. The SSNAP metric of 45-minutes per day, 5 days a week was drawn from NICE stroke rehabilitation guidelines GC162 (NICE, 2013), NICE guidance on stroke (NICE, 2016), and The Royal College of Physicians National clinical guidelines for stroke (Intercollegiate Stroke Working Party, 2016). The sources do not explicitly state that 45 minutes is intensive. Nor do they state that it is not intensive. The professional opinion from the RCP 2016 guideline seems to have been influenced by 1) trying to find a pragmatic level of intervention intensity that would not cause drop-out reported in literature (Brady et al., 2016), 2) issues with fatigue in early stroke recovery, and 3) evidence from motor recovery that short and regular sessions in the first two weeks are preferable. It is fair for researchers and clinicians to infer that 45-minutes of SLT a day for at least 5 days a week is seen as a minimum level of intensive intervention.

In the absence of a definition of comprehensive aphasia therapy (CAT) in the wider aphasia literature, the ICAP definition of comprehensiveness was used in this study. That is: therapy delivered in multiple formats, targeting all ICF domains, providing education, and desirable involvement of family/carers (Rose et al., 2013).

Both definitions or metrics were used in creating survey questions and in analysing responses.

Analysis

Survey results were downloaded directly from Qualtrics to Excel. The data was cleaned (respondents who had not answered initial work demographic questions were removed), and the full dataset was then imported into the Statistical Package for the Social Sciences (SPSS) Version 27 (IBM) and NVivo Version 12. Most questions were addressed through descriptive statistics, such as % rate of responses. In some cases, factors influencing responses could be explored via non-parametric comparisons (Kruskal-Wallace and Chi Square statistics). Nonparametric tests were used as the data were not normally distributed. Basic and additional qualitative and quantitative analysis was conducted on NVivo e.g., word frequency counts for free text answers and creation of codes in response to free text answers.

This survey was limited to SLTs practicing in the UK as the intensity metric on which the survey was based was the 45-minute NICE guidance target which would be unfamiliar to therapists from other countries. Any SLT working in the UK with people with aphasia was eligible to take part.

See figure 1 for survey flow. 251 respondents were eligible to complete the survey and 147 completed the final section. 111 provided answers for an optional section on COVID-19 after the end of the main survey.

Figure 1 Survey Flow

Section of survey	Number of participants
Consented	n = 280
Eligible	n = 251
Answered work demographics	n = 227
Answered first 5 intensive questions	n = 197
Answered all intensive questions	n = 183
Answered TDF intensive questions	n = 178
Answered comprehensive questions	n = 163
Answered TDF comprehensive questions	n = 150
Answered ICAP questions	n = 148
Answered final demographic questions	n = 147

Insert figure 1 near here

Participants

Most respondents were speech and language therapists (90%) rather than managers and were experienced in aphasia – the most common (mode) length of work in aphasia was 5-10 years and 41% had worked for more than 10 years in aphasia – see table 1. UK geographical coverage was representative of the UK population (ONS, 2021). Greater London accounted for 17% of respondents followed by the Northwest of England (14.5%). The two most common workplace settings were acute (30%) and community (25%). The majority (86%) worked solely in the National Health Service (NHS). For 89% of respondents, their caseloads constituted more than 20% aphasia with the mode response being a caseload of 40-60% aphasia. Therefore, most respondents were basing their answers on substantial experience in the field of aphasia.

Respondents completing the survey (where final demographics were gathered), were predominantly female, mostly likely to be aged 31-40, working at band 7 or 6, based in an urban setting, and had at least a university degree – see table 2. Bands refer to seniority and skill levels within the UK NHS with newly qualified SLTs starting at band 5. Participants were almost evenly divided between full and part time work.

Insert tables 1 and 2 near here

Table 1 Workplace demographics of those who started the survey (n = 227)

Variables	n	%

Role		
SLT	204	90%
SLT Manager	4	2%
50:50 SLT and Manager	19	8%
Years working in aphasia		
1 year	14	6%
1+ to 3 years	39	17%
3+ to 5 years	36	16%
5+ to 10 years	45	20%
10+ to 15 years	33	15%
15+ to 20 years	21	9%
More than 20 years	39	17%
Workplace geographical region		
England	173	76%
Scotland	21	9%
Wales	15	7%
Northern Ireland	13	6%
More than 1 region	5	2%
Workplace type		
Acute	68	30%
Community	56	25%
In-patient rehabilitation	30	13%
More than 1 setting	24	11%
Early supported discharge (ESD)	15	7%
Private practice	14	6%
Out-patient clinic	13	6%
University clinic	5	2%
Charity group	1	<1%
Other	1	<1%
NHS or private		
NHS	196	86%
Private	27	12%
Mixed	4	2%
Percentage of caseload as aphasia		
Less than 20%	23	10%
21 to 40%	54	24%
41 to 60%	66	29%
61 to 80%	51	23%
81 to 100%	30	13%
SLT Manager (no active caseload)	3	1%

Table 2 Demographics of n = 147 who completed the entire survey

Variables	**n**	**%**
Gender identity		
Female	143	97%
Male	3	2%
Prefer not to say	1	1%
Age bracket		
20-30	38	25.9%
31-40	53	36%

41-50	42	28.6%
51-60	11	7.5%
61-70	3	2%
71+	0	-
NHS Banding (payscale)		
Band 5	12	8.2%
Band 6 (specialist)	54	36.7%
Band 7 (highly specialist)	57	38.8%
Band 8+ (principal/clinical lead/advanced practitioner/clinical specialist)	16	10.9%
I do not work in the NHS	8	5.4%
I estimate my NHS banding would be Band 7	*5*	-
I estimate my NHS banding would be Band 8+	*2*	-
I cannot estimate what my banding would be in an NHS context	*1*	-
Working schedule		
Full-time	78	53.1%
Part-time	69	46.9%
Geographical area of work		
Primarily urban setting (e.g., hospital in a city)	84	57.5%
Primarily rural setting (e.g., clinic in the countryside)	14	9.6%
Mix of urban and rural (e.g., part-time in a city, part-time visiting patients in rural settings)	48	32.9%
Highest level of education		
University degree (Bachelors)	64	43.5%
University post-graduate qualification (Post-graduate diploma)	26	17.7%
University higher degree (Masters)	56	38.1%
University advanced degree (Doctorate)	1	.7%

Results

Results have been presented to answer each of the eight research questions in order, i.e., 1a-d all refer to research question 1.

1a. How do UK SLTs define intensive aphasia therapy (IAT)?

Respondents' definition of IAT was probed first by an open text question "could you please enter a definition of intensive aphasia therapy?". Analysis of free text answers revealed 37% of SLTs defined IAT in ways that met or exceeded NICE guidelines. The other 63% provided a definition of IAT that either 1) did not meet NICE guidance, 2) the definition was not adequately specific, 3) the definition did not qualify as a definition of IAT or 4) no definition was provided – see examples in table 3.

Insert table 3 near here

Table 3 Free text definitions of intensive aphasia therapy

Category	%	n of 197	Example definition [survey participant number]
Did not meet NICE guidance	27%	54	"I class intensive as when patient is seen more than once a week" [#30]
Met NICE guidance	15%	30	"daily therapy for 45 minutes working on a specific impairment through therapy" [#97]

Exceeded NICE guidance	22%	44	"therapy of more than typical 45-60 minutes per day" [#85] "10-30 hours of therapy a week for 4-8 weeks" [#103]
Definition is inadequately specific	27%	53	"regular direct or indirect treatment targeting a person's communication potential" [#15]
Not a definition of intensive therapy	6%	11	"provision of communication, educational and psychological support to patients and their families and carers" [#25]
No definition provided	3%	5	n/a

Multiple choice options for the same question were provided and produced almost the same result as the free text answers – see table 4. Many respondents selected options that met or exceeded the 45 minute *per day* metric. However, this was not reflected in their response to the *weekly* intensity question where almost 45% of respondents left the question on weekly intensity blank. Only 70/197 (36% of the sample) selected both 45 minutes or more a day *and* 3 hours 45 minutes or more a week as their definition of intensive.

Table 4 Multiple choice definitions of intensive aphasia therapy

In your opinion, how much aphasia therapy should be given per day to count as intensive aphasia therapy?	**n**	**%**	**In your opinion, how much aphasia therapy should be given per week to count as intensive aphasia therapy?**	**n**	**%**
30 minutes per day	15	7.6%	2 hours 30 mins	11	5.6%
45 minutes per day	54	27.4%	3 hours 45 mins	22	11.2%
1 hour per day	55	27.9%	5 hours	35	17.8%
2 hours per day	19	9.6%	10 hours	23	11.7%
3 hours per day	20	10.2%	15 hours	11	5.6%
4 hours per day	5	2.5%	20 hours	4	2%
5 hours per day	1	0.5%	25 hours	3	1.5%
Blank	28	14.7%	Blank	88	44.7%
Total	**197**		**Total**	**197**	

Insert table 4 near here

Using the Rose et al. (2013) ICAP metric, 13% selected options that met or exceeded the 3 hours per day metric and 9% selected 15 hours+ per week. Only 7% (13/197) selected both 3 hours+ per day and 15 hours+ per week as their definition of intensive.

1b. What concepts do UK SLTs use in their descriptions of IAT?

Word frequency analysis in NVivo showed that some therapists used the four metrics from the Cochrane review of aphasia therapy (Brady et al., 2016) when defining IAT – 19% used the term intensity, 10% used frequency, 3% used duration, and 2% used dose.

1c. How long do UK SLTs think IAT should last?

In relation to duration of therapy, over half (almost 60%) felt therapy should last for either 4 or 6 weeks, see table 5.

Insert table 5 near here

Table 5 How long should IAT last		
In your opinion, how long should aphasia therapy last to count as intensive aphasia therapy?	**n**	**%**
1 week	4	2%
2 weeks	22	11%
3 weeks	16	8%
4 weeks	59	29.9%
5 weeks	2	1%
6 weeks	58	29.9%
More than 6 weeks	35	17.7%
Blank	1	.5%
Total	**197**	**100%**

1d. Do UK SLTs have a model of dispersed delivery of IAT?

Respondents were asked to signal daily/weekly doses of therapy and recommend a duration of therapy to meet the criteria of 'intensive'. It was hypothesised that some participants may have selected a lower dose of intensity but a longer duration of therapy – i.e., advocating a dispersed model of therapy in which a lower daily/weekly dose is administered over an extended duration, as evidence on the impact of therapy intensity versus overall dose is equivocal. However, using a chi squared test for independence (with Yates' Continuity Correction) no significant association was found between duration of therapy in weeks and minutes a day (χ^2 (1, n = 168) = .00, p = 1, phi = .001) or hours a week (χ^2 (1, n = 108) = .02, p = .9, phi = .03). This indicated respondents did not have a model of low intensity but longer duration therapy – i.e., a dispersed practice model. SLTs believed therapy should be delivered evenly across the week (44%) rather than achieving a set number of hours (14%), but many did not have a preference (30%) or were unsure (12%).

2a. How much therapy do UK SLTs deliver?

The average amount of therapy provided per PWA per week was 128.3 minutes (SD 86.5), range 20-540 (Md = 120; n = 175). An outlier response of 1800 minutes/week relating to ICAP therapy was removed from this and the following analyses. A minority, 15% of the sample (n = 26) met/exceeded weekly NICE guidance in the therapy they delivered.

2b. Was there an influence of geographical region on amount of therapy provided?

A Kruskal-Wallis Test showed a difference across UK regions, χ^2 (10, n = 175) = 22.62, p = 0.012. Median therapy delivered was highest in Northern Ireland (Md = 180 minutes/week) with the Southwest of England (Md = 60 minutes/week) at the lowest end of the scale, see table 6.

Additionally, of 15% who reported they met/exceed NICE therapy delivery, almost 6% worked in Greater London, 3% in Northeast and Yorkshire, and the rest across other regions. No one in the Midlands, Northwest, or Scotland met or exceeded NICE guidance.

Table 6 Amount of therapy by geographical region		
Geographical region	**Median minutes of therapy provided per PWA per week (range)**	**n of 175**
Northern Ireland	180 (80-300)	11
Northeast of England and Yorkshire	150 (45-540)	12
Greater London	150 (25-360)	31
East of England	127.50 (25-300)	16
More than 1 area	120 (60-300)	3
Southeast of England	110 (45-225)	19
Northwest of England	100 (30-180)	25
Scotland	90 (50-150)	15
English Midlands	85 (30-200)	14
Wales	80 (30-250)	11
Southwest of England	60 (20-450)	18

Insert table 6 near here

2c. Was there an influence of workplace type on amount of therapy provided?

A Kruskal-Wallis Test showed a difference across workplace types, χ^2 (9, n = 175) = 43.53, p = <0.00. Median therapy delivered was highest at university clinics (Md = 300 minutes/week) and lowest in community teams/outpatient clinics/charities (Md = 60 minutes/week), see table 7. Additionally, of 15% who reported they met/exceed NICE therapy delivery, almost 6% worked in inpatient rehabilitation, 4% in acute, and the rest in community/university/private/ESD/split across settings. No one in outpatients/charity/other met or exceeded NICE guidance.

Table 7 Amount of therapy by workplace type		
Workplace type	**Median minutes of therapy provided per week (range)**	**n of 175**
University clinic	300 (120-540)	4
Inpatient rehabilitation	200 (25-360)	23
Early supported discharge team	135 (45-270)	13
Acute	120 (25-300)	49
More than 1 setting	120 (60-300)	18
Private practice	105 (40-420)	10
Community team	60 (20-240)	46
Outpatient clinic	60 (30-180)	10
Charity	60	1
Other	30	1

Insert table 7 near here

2d. Did the amount of therapy provided have an influence on a respondent’s definition of intensity?

Those who earlier defined IAT in ways that met or exceeded NICE guidelines provided significantly more therapy per patient per week (Md=120 minutes) than those whose definitions did not reach NICE guidance (Md = 60 minutes). A Kruskal-Wallis test revealed a statistically significant difference in minutes of therapy delivered weekly to the average PWA across four NICE therapy categories reported earlier (Gp1, n = 47: Definition did not reach NICE Gp2, n = 68: Definition meets or exceeds NICE, Gp3, n = 49: Cannot tell (unclear definition), Gp4, n = 11: Not a definition (of IAT)/no definition), χ^2 (3, n = 175) = 13.79, p = 0.003.

3a. How do UK SLTs define comprehensive aphasia therapy (CAT)?

Respondents' definition of CAT was probed first via an open text question “could you please enter a definition of comprehensive aphasia therapy?”. There were n = 163 respondents who answered this question. Definitions varied widely. Only 4% (n = 6) provided a definition which included all three elements of the ICAP definition of CAT. 10% provided a definition which addressed ICAP criteria 1 (including different approaches and formats), 38% defined comprehensive as targeting both the impairment and activity/participation (ICAP criteria 2), and 18% included patient/family education in their definition (ICAP criteria 3).

3b. What agreement is there amongst UK SLTs on the ICAP conceptualisation of CAT?

When asked multiple choice questions about the definition of CAT (yes/no/unsure), there were high number of respondents in agreement with the definition of CAT as defined on an ICAP, see table 8.

Table 8 Agreement with ICAP concept of CAT

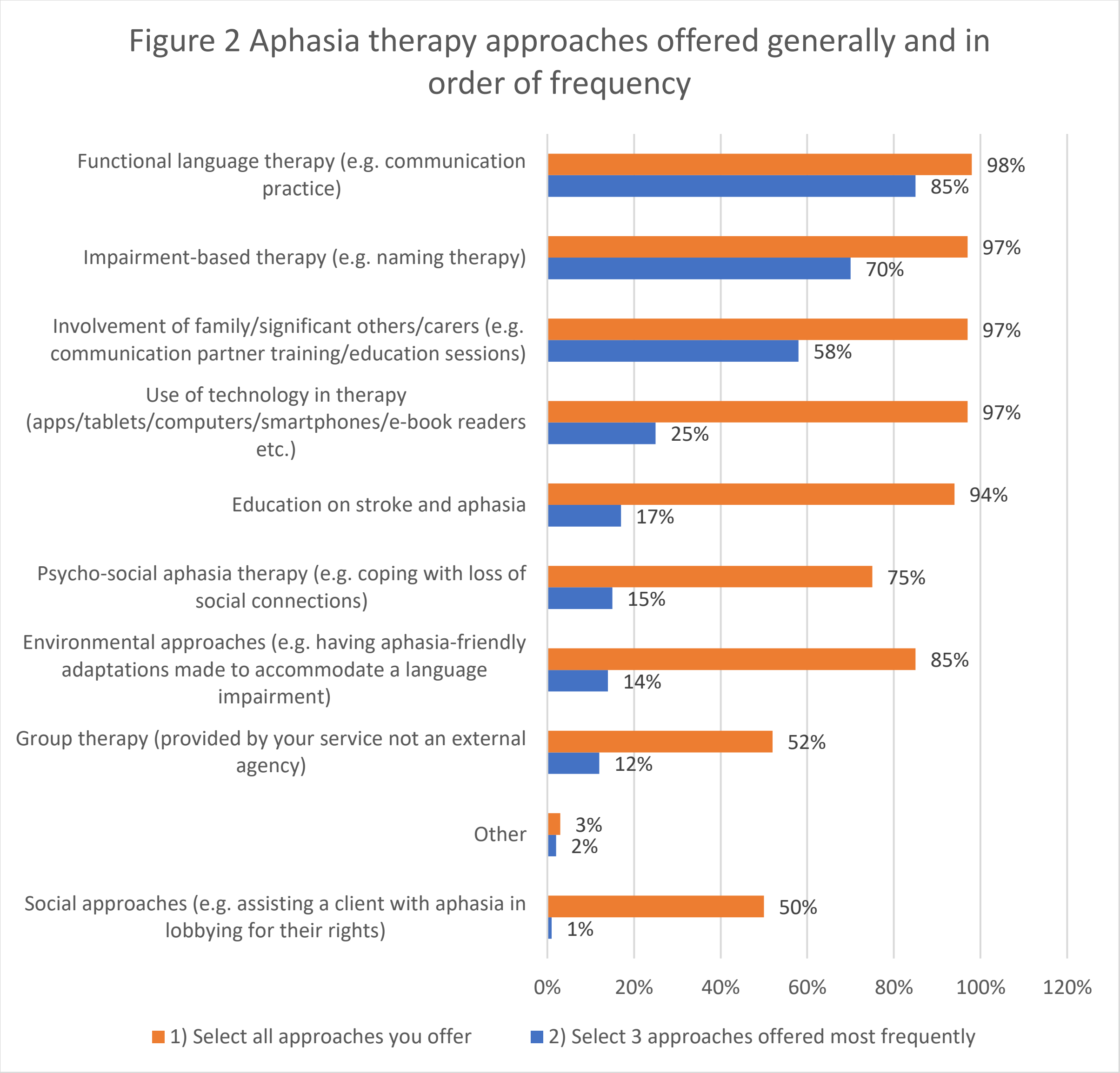
ICAP construct of comprehensiveness	**Percentage selecting “yes”**	**n of 163**
Does CAT address different levels of the ICF?	90%	146
Is CAT delivered to more than the PWA (i.e., a family member)	89%	145
Is CAT delivered in both 1:1 and group formats?	80%	131
Does CAT require use of computers?	77%	125

Insert table 8 near here

4a. What types of therapy do UK SLTs offer and how frequently?

Participants reported high use of a variety of different types of aphasia therapy, see figure 2. A subsequent question asked respondents to select “the top three aphasia therapy approaches you offer most frequently to your average client with aphasia”. Answers revealed functional language therapy, impairment-based therapy, and involvement of family were the 3 most frequently used aphasia therapy approaches, see figure 2.

Insert figure 2 near here



4b. Was there an influence of geographical region or workplace type on type of therapy provided?

Both chi squared analyses of the top three therapy approaches by geographical region and by workplace type were invalid due to the large numbers of categories involved. No other statistical analysis was possible due to the categorical nature of the data (geographical region/workplace type and type of therapy).

5a. What are the intrinsic factors UK SLTs consider for service user candidacy for IAT and CAT?

Figure 3 reports the percentage of respondents who ticked 'yes' against candidacy statements for IAT (n = 183) and CAT (n = 154), and ICAP (n = 15) which is discussed later in this paper. SLTs consider people of any age, physical ability, and expressive ability candidates for IAT and CAT, but consider having significant fatigue/cognitive impairment key inhibitory factors especially for IAT.

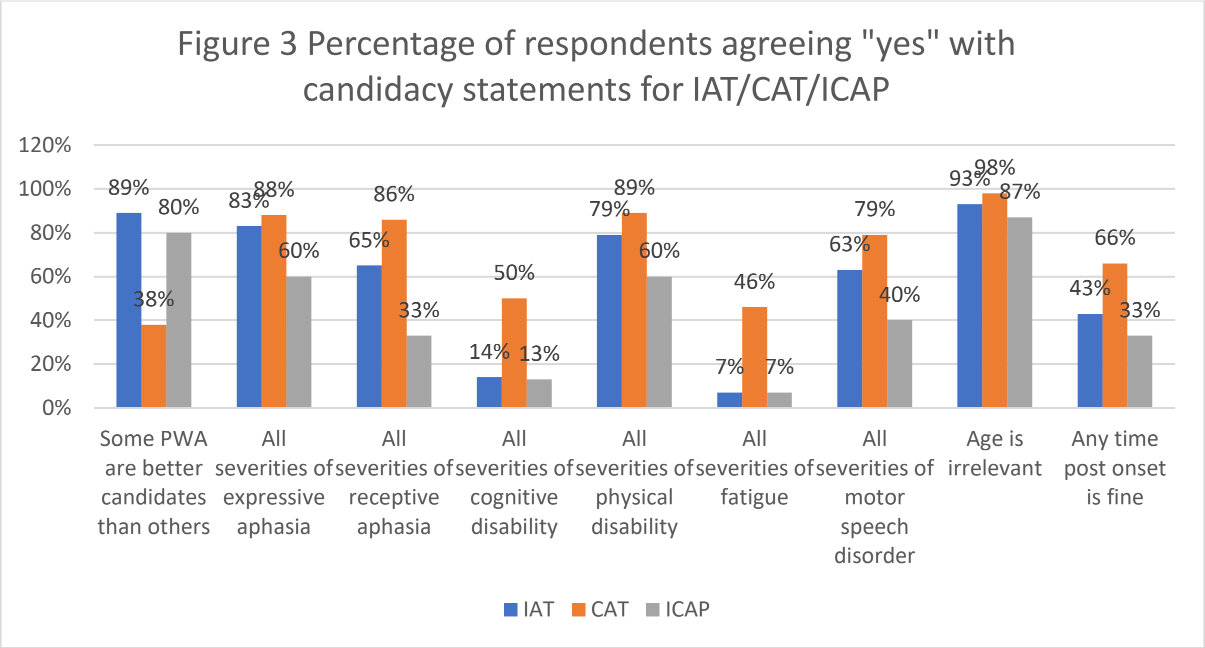


Figure 3 Percentage of respondents agreeing "yes" with candidacy statements for IAT/CAT/ICAP

Insert figure 3 near here

Additional client-related factors relevant to candidacy are noted on figure 4. Again, the standards for therapy candidacy were higher for IAT. Motivation was the highest voted criterion.

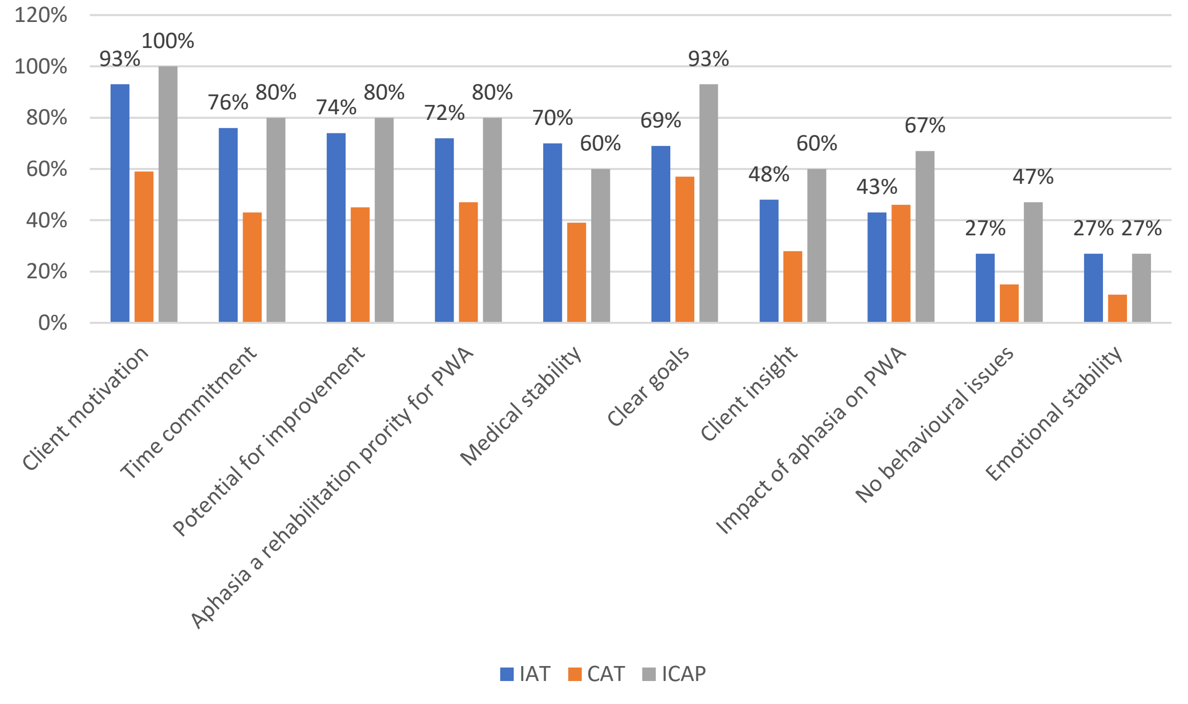


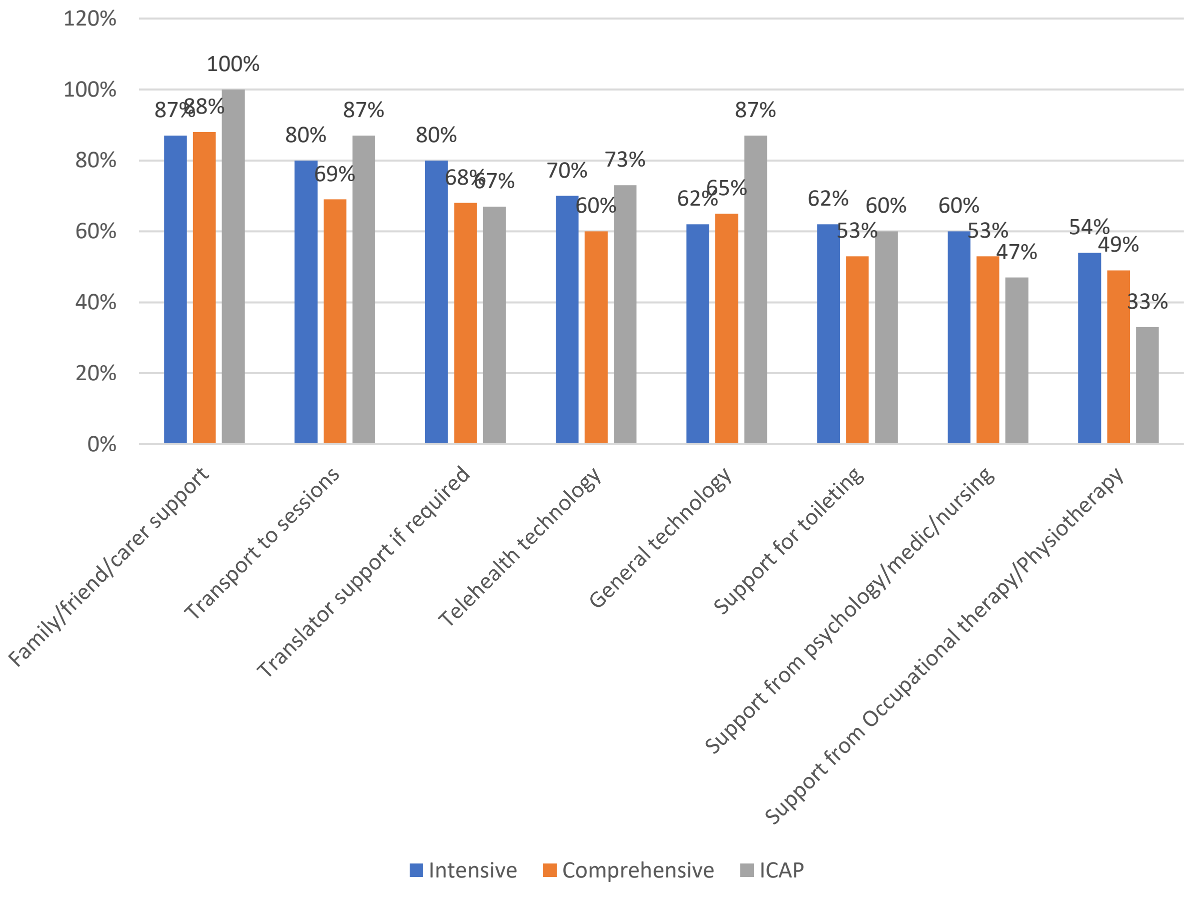
Figure 4 Percentages selecting each criterion as necessary for candidacy - a multiple choice question with top 10 answers displayed

Insert figure 4 near here

5b. What are the extrinsic factors UK SLTs consider for candidacy for IAT and CAT?

Extrinsic factors necessary for candidacy in either therapy are noted on figure 5 and reveal much closer agreement between the therapy types, with family/friend/carer support seen as important. Analysis of free text ‘other’ responses (offered by 14% of SLTs for intensive therapy) revealed 9% of respondents considered engagement from both client and family important for intensive therapy.

Figure 5 Percentage of respondents selecting extrinstic factors needed for therapy from multiple choice options



Insert figure 5 near here

6a. What are the barriers and facilitators to provision of IAT in a UK context (n = 172)?

Respondents answered 14 questions each about IAT and CAT, using a 5-point Likert scale from “strongly disagree” to “strongly agree”. These questions matched the 14 TDF domains (Cane et al., 2012). The questions asked are listed in Appendix 1 under “TDF sections”. Figure 6 shows a combination of “strongly agree” and “agree” results as a measure of “overall positivity” for each question and could thus reflect facilitators and barriers. Most SLTs agreed that: they had the skills to deliver IAT; it was part of their role; IAT would benefit clients (beliefs about consequences); and there was an evidence base (knowledge). However, only a third agreed they were resourced to deliver IAT and were optimistic that issues around IAT delivery could be solved, and half felt stressed about delivering IAT (emotion).

6b. What are the barriers and facilitators to provision of CAT in a UK context (n = 144)?

Almost all SLTs agreed CAT was part of their role and identity; was worthwhile for patients (beliefs about consequences); and was rewarding (emotion), see figure 6. Just over half of SLTs were optimistic CAT delivery issues could be resolved; agreed they were resourced to deliver CAT; and felt efforts to provide CAT were reinforced or recognised by colleagues (reinforcement). None of the domains represented a barrier as voted by more than 50% of the sample (and as such, there is no subsequent analysis of geographical variation or workplace as is now undertaken for IAT immediately below).

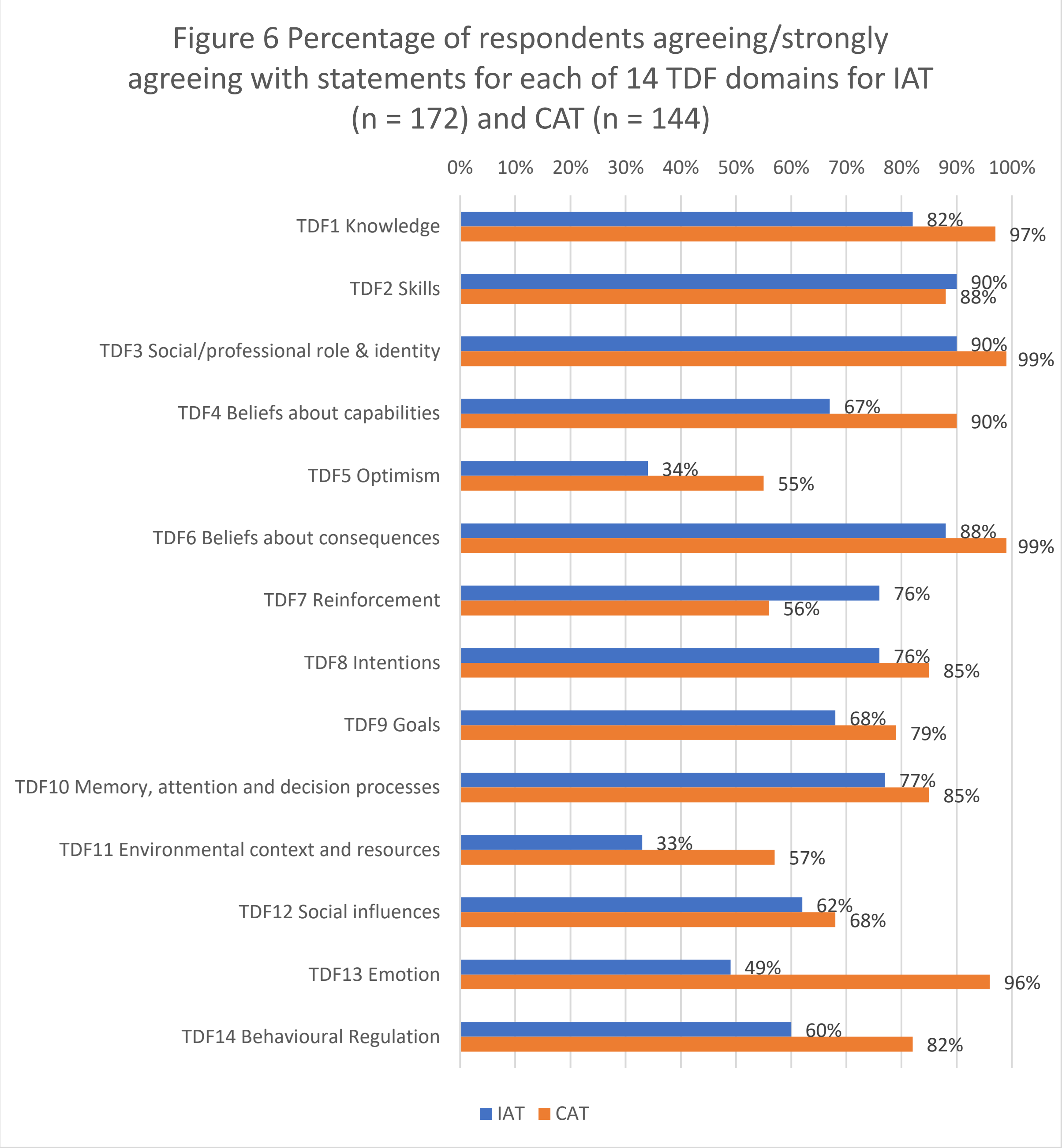


Figure 6 Percentage of respondents agreeing/strongly agreeing with statements for each of 14 TDF domains for IAT (n = 172) and CAT (n = 144)

Insert figure 6 near here

6c. What is the influence of geographical region on facilitators and barriers to IAT?

It was not possible to run statistical analysis across geographical regions as they could not meaningfully be collapsed into superordinate categories (e.g., South versus North of England). A descriptive analysis was conducted whereby answers which were “strongly agree” or “agree” were combined to represent “overall agreement” with each question, and a percentage of overall agreement was calculated from the total number of respondents. The three TDF domains with the lowest levels of agreement were identified as barriers and selected for analysis. The n = 4 who worked in “more than one area” were removed from analysis for simplification of results leaving n = 168. Descriptive results revealed regional disparities which varied for each question – see table 9. Some areas e.g., Greater London were broadly positive, compared with e.g., Northwest and Southeast of England who were in the bottom three across all domains.

Table 9 Variation in barriers to intensive therapy by geographical region.
Percentage of people in each region strongly / agreeing with the TDF questions posed.

Geographical region (n = 168)	**Strongly/ agree therapy is resourced %**	**Strongly/agree optimism intensive therapy issues can be solved %**	**Strongly/agree not stressed delivering intensive therapy %**
Northeast of England and Yorkshire (n = 12)	67%	58%	50%
Northern Ireland (n = 10)	50%	30%	60%
Greater London (n =30)	47%	40%	53%
East of England (n = 15)	40%	60%	60%
Southwest of England (n = 18)	28%	33%	50%
Wales (n = 11)	27%	36%	36%
Scotland (n = 16)	25%	25%	63%
Northwest of England (n = 24)	21%	21%	38%
Southeast of England (n = 20)	20%	25%	35%
English Midlands (n = 12)	17%	17%	42%

Insert table 9 near here

6d. What is the influence of workplace type on barriers to IAT?

The categories other (n = 1), University clinic (n = 3), and charity (n = 1) were removed from analyses as the numbers for each were small and the data were only explored descriptively. There was no clear pattern across workplace types – see table 10. There was a raw differential between Early Supported Discharge (ESD) and inpatient teams who were in the top three most positive across all domains, compared with those in community who were in the bottom three across all domains.

Table 10 Variation in barriers to intensive therapy by workplace type

Workplace type (n = 168)	**Strongly/agree therapy is resourced %**	**Strongly/agree optimism intensive therapy issues can be solved %**	**Strongly/agree not stressed delivering intensive therapy %**
Early supported discharge (n = 12)	58%	42%	58%
Inpatient rehabilitation (n =24)	54%	42%	67%
Private practice (n = 10)	40%	80%	10%

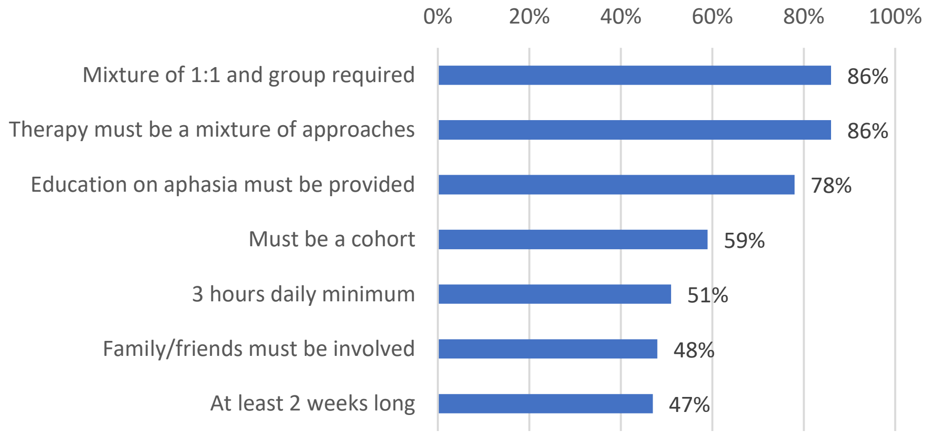
Acute (n = 49)	29%	31%	55%
More than 1 setting (n = 18)	28%	50%	56%
Community team (n = 42)	21%	21%	29%
Outpatient clinic (n = 12)	17%	17%	75%

Insert table 10 near here

7. What is the level and extent of ICAP awareness amongst UK SLTs?

When asked "ICAP stands for Intensive Comprehensive Aphasia Programme, have you heard of the ICAP model?" half of the remaining sample (76/151) answered yes – see figure 7. These respondents were asked questions on their ICAP knowledge. Most were aware that ICAPS are a mix of 1:1 and groups, that a mixture of therapy approaches must be provided, and that education on aphasia must be provided. Fewer respondents were aware of the desirability to involve family/others and the necessity that an ICAP lasts at least 2 weeks.

Figure 7 Percentage of ICAP aware SLTs agreeing on core ICAP concepts (n = 73)



Insert figure 7 near here

8a. What detail is known about ICAP provision in the UK?

Respondents were provided with the Rose et al., 2013 ICAP definition and asked, "based on this definition, have you ever been involved in providing an ICAP". 15 confirmed they had and were asked questions 8b-8d. 13 SLTs were based in England (6 in Greater London, 2 in the East of England) and 2 in Scotland. It is likely some SLTs provided intervention on the same ICAP, especially given there was an ICAP running in London at the time of writing. The answers reflect a minimum of 7 individual ICAPs throughout the UK. 14 SLTs who were ICAP experienced were based in the NHS and 1 in private practice. 68% had worked for less than 10 years. Community was the most represented setting at 40%.

8b. What were the views of ICAP-experienced SLTs on ICAP setting?

The 15 SLTs who had taken part in ICAPs were asked which setting was best for an ICAP. From multiple choice options, community was the most favoured setting for an ICAP (80%), however outpatients, inpatient rehabilitation, ESD and university clinics were also possible (53-60%).

8c. What were the intrinsic factors ICAP-experienced SLTs consider for ICAP candidacy?

Respondents' answers indicated stricter criteria for ICAP admission than for other therapies, See figure 3 for comparison. Answers to specific survey questions which can be found in the Appendix were not displayed in figure 3 but are outlined here. Of the 15 ICAP-experienced therapists, 80% felt some PWA were better candidates than others for an ICAP. The most important intrinsic factors were cognitive ability and fatigue as 40% felt the ideal ICAP candidate should have no/mild cognitive problems, and 53% felt they should have no/mild fatigue.

8d. What were the extrinsic factors ICAP-experienced SLTs consider for ICAP candidacy?

There were higher requirements for client factors and external supports required for ICAPs as compared to IAT and CAT with motivation (figure 4) and family/friend/carer support (figure 5) both rated at 100% necessary for ICAP engagement.

8e. What were the views of non-ICAP experienced SLTs on ICAPs?

133 respondents had no experience of delivering an ICAP. Of these only 16.5% felt that their service could be reconfigured to provide an ICAP. The rest answered "no" their service could not be reconfigured (45.9%) or were unsure (37.6%). Of those who felt it was not possible/were unsure about reconfiguration, the main barriers were insufficient staffing (73%) and lack of funder/ commissioner support (41%). Other barriers included unsuitable clients, lack of support from manager/colleagues, limited number of clients for cohorts, and a variety of logistical issues e.g., rural location/MDT timetabling clashes. Respondents who felt they *could* reconfigure and those who were *unsure* were additionally asked how reconfiguration might be achieved. Solutions included a service set up from scratch (58%), having students provide an ICAP in the service (53%), and to delay therapy for clients to be seen later as a cohort (35%).

Summary of results

Intensity (IAT) figure 6, tables 3-7, 9 and 10

78% of SLTs defined intensive therapy *per day* in line with the NICE minimum metric (45 mins/day), and 13.2% of SLTs defined it in line with the research ICAP daily metric of 3+ hours/day (Rose et al., 2013). 50% of SLTs defined intensive therapy *per week* in line with NICE (3hrs 45mins), and 9% of SLTs defined it in line with the Rose et al. research metric (15+ hours/week). Total dose of therapy was not investigated. Duration of therapy is not specified by NICE but 97.5% of SLTs defined intensive therapy total duration in line with the Rose et al. research metric (2 weeks or more).

Finally, when quantitative findings are combined (mins/day x days/week) and qualitative definitions also considered, 36-37% of SLTs defined intensive therapy in line with NICE (45 mins/day x 5 days/week) and 7% defined intensive therapy in line with the Rose et al. ICAP metric (3 hours/day x 5 days/week). An average of 128 minutes/week of aphasia therapy was delivered per patient. 15% reported they achieved or exceeded the weekly NICE therapy target of 3 hours 45 minutes. Amount of therapy delivered varied based on UK region and by workplace type. The amount of therapy provided was related to how SLTs defined intensity. SLTs reported they felt skilled at therapy delivery and that IAT was part of their role. These were seen as facilitators to IAT delivery in the UK. Barriers were lack of optimism that IAT delivery issues could be resolved and lack of resources for its delivery. Descriptive data suggested variations in facilitators and barriers to IAT based on geographical location and workplace type.

Comprehensiveness (CAT) figures 2 and 6, table 8

There was wide variation in definitions of comprehensive therapy with 38% reporting comprehensive therapy targeted both impairment and activity/participation levels of language/communication. There was high agreement (77-90%) from respondents when presented with statements about how comprehensive therapy is defined on an ICAP. Participants offer a wide range of aphasia therapies, but the majority delivered functional language therapy (85%), impairment-based therapy (70%), and involved family and others (58%), thereby meeting two of the four Rose et al. features of comprehensive therapy (in ICAPs). It was not possible to assess the effect of geographical region or workplace type on type of therapy delivered. SLTs felt delivering CAT was rewarding and part of their role – facilitators to CAT delivery in the UK. Relative barriers were lack of optimism that CAT delivery issues could be resolved and lack of reinforcement from colleagues for delivering CAT.

ICAPs figure 7

Half of the sample were aware of ICAPs. Those who were aware had relatively good knowledge of some ICAP requirements e.g., 86% aware that a mixture of 1:1 and group therapy was required but 51% aware of daily intensity requirement. 15 respondents had delivered ICAPs mostly in England (87%) but also Scotland and with the majority in NHS settings (93%). There were 133 who had no experience of ICAP delivery. Of these, only 16.5% felt their service could be reconfigured to provide an ICAP. The rest felt reconfiguration was “impossible” or were “unsure” about it. The main barrier cited was insufficient staffing (73%). The top solution for ICAP delivery was to set a service up from scratch (58%).

Service user candidacy for therapy figures 3-5

Respondents had a concept of the type of PWA who was suitable for the 3 therapies discussed in this paper (IAT, CAT, and ICAPs). They were most lenient on admission characteristics for those attending CAT, followed by IAT, with the most restrictive criteria reserved for those attending ICAPs. Therapists felt participants of all ages were suitable for the three therapies. However, SLTs felt the presence of cognitive disability and fatigue restricted suitability for therapy. Client motivation and support from family/other were seen as crucial for all therapies.

Discussion

Intensity

It is no wonder given the variation reported in research that survey respondents also varied in their definitions of IAT. One third conceived of intensive therapy as meeting or exceeding the minimum metric chosen in this paper (45 mins/day x 5 days/week). Whilst this is a positive finding, the remaining two thirds defined it in a manner that did not reach the minimum metric chosen. Lack of a stable and standard definition of intensity may hinder delivery of IAT. Most SLTs have a concept of intensity that is lower than both the lower standard of 45 mins/day x 5 days/week set by UK clinical guidelines/the SSNAP intensity audit target (which is mandatory for acute stroke services across England/Wales/NI), and the higher level espoused by research into IAT. This differentiates SLT opinion from researcher opinion. Why might this be the case? This may be an example of therapists operating using “mindlines” (internalised guidelines) which guide what they do (Gabbay and Le May, 2011). Work on mindlines arose from Gabby and Le May’s ethnographic exploration of the clash between scientific evidence-based practice guidelines/research and why clinicians do not always implement the evidence base in the way researchers desire. Mindlines guide how a clinician thinks. They are established during training and shaped by practice, colleagues, and trusted clinical leaders. Clinicians operate in messy complex clinical settings where delivery of 45 minutes/day of SLT is not achieved, rather than in more sanitised research contexts with the resource to deliver high intensity therapy. It is understandable that clinicians may not have time to stay on top of research evidence. Therefore, they are likely to place their trust in their own clinical judgement or that of a valued and trusted clinical leader. Taylor et al. (2018) found that UK intensity guidelines were filtered by stroke clinical leaders (often high banded NHS clinicians responsible for disseminating guidelines among their team). These leaders de-emphasised intensity for 3 key reasons: 1. They did not feel quantity reflected quality, 2. They felt 45 mins/day was unachievable, and 3. They wanted to reduce pressure on the lower-banded frontline clinicians for whom they were responsible.

Intensity also includes treatment duration, and the majority of SLTs conceived of IAT as lasting either 4 or 6+ weeks. It is possible that service delivery models influence this (i.e., Early Supported Discharge often lasts for 6 weeks), and that literature shapes this view. For example, a recent systematic review found that of 44 studies of IAT in the chronic stage, the mean duration was 4 weeks (SD 3) (Menahemi-Falkov et al., 2021).

In this survey an average of 128 minutes/week of aphasia therapy was delivered per patient. This does not meet NICE guidance (225 minutes/week) but is much higher than SSNAP data demonstrating that as little as 10 minutes/day of SLT in the acute setting focused on communication/dysphagia (Mitchell et al., 2021). The fact that 15% of SLTs in this survey achieved or surpassed 3 hours 45 minutes/week is notable. Respondents to this survey came from all clinical settings. Their report of just over 2 hours of aphasia therapy a week exceeds previous UK research with similar sample sizes (Bowen et al., 2012; Palmer et al., 2018). It matches previous international research showing therapy provision at 1-5 hours a week (Code and Petheram, 2011) or a summary of research reporting that outpatient delivery was rarely more than 2-3 hours/week (Pierce et al., 2020).

The weekly intensity of therapy delivered in this survey falls into the lower range studied in a recent review. The RELEASE Collaboration (2022) analysis of 25 clinical trials with individual participant data stated IAT must be at least 2-4 hours a week and a total dose of 20-50 hours for gains in overall language, functional communication, or comprehension. Unfortunately, total dose of therapy was not explored in this survey, but previous UK research suggests a dose of 20-50 hours is unlikely in clinical practice after discharge from acute services (Bowen et al., 2012; Palmer et al. 2018). However, the recent VERSE RCT of IAT versus usual care found that a usual care regime of 2.3 hours/week (total dose of 9.5hours) “may be a sufficient therapy regimen to support recovery in the first six months post stroke” (Godecke et al., 2021: 567) as it produced the same outcomes on a language battery, naming, quality of life, and depression as higher-intensity intervention of 5hours/week (total dose 22/hours). This study provides support to the level of intensity reported by survey respondents. Nevertheless, the evidence base for IAT is still unclear with potentially contrastive evidence produced.

Amount of therapy provided was related to definitions of intensity indicating that experience may influence thought. On the topics of entrenched practice and de-implementation, Montini and Graham question “whether worldviews/beliefs lead to practice change or whether changes in practice catalyze changes in worldviews” (2015: 3). The lowest standard of intensity in the survey was “once a week” which may reflect a constraint these therapists operate within based on their service limitations.

There was an indication in the data that geographical location had an influence on the amount of therapy that was provided. Whilst the numbers within sub-groups varied, and there were large ranges, there was some indication of regional variation in length of therapy provided which warrants further investigation in the future including further scrutiny into local factors that may be influencing service provision such as resourcing policies.

There was also an effect of workplace setting. SLTs in inpatient rehabilitation provided substantially more therapy on average than outpatient or community settings, a finding which is consistent with that of other surveys (Manning et al., 2020; Verna et al., 2009).

An analysis of the 14 TDF-framed questions revealed the domains which SLTs rated positively and the domains which were rated negatively. Answers revealed that UK SLTs have the ability/potential to deliver IAT but are constrained by barriers beyond their control. A survey of 63 Australian SLTs also found ‘skill’ and ‘role’ to be facilitators for IAT, but unlike this survey the third facilitator was ‘optimism’ (Young et al., 2018). ‘Resources’ were a barrier to IAT as in the current study, but additional barriers were “memory, attention and decision processes” and “beliefs about capabilities”. Young et al. (2018) found that “environmental context and resources” was the biggest barrier to implementation of Australian stroke recommendations. Although UK SLTs were not optimistic their service could change to deliver IAT, service-level adaptations could be made to release therapist time. For instance, Clarke et al. (2018) found the amount of time therapists engaged in information exchange (ward rounds, verbal handovers, MDT meetings) was the largest contributing factor to why the 45-minute therapy target was not achieved.

There appears to be geographical variations in facilitators and barriers of IAT depending on UK region, but the statistical significance of these variances could not be calculated. Additionally, there appear to be workplace differences in facilitators and barriers of IAT but with a less consistent pattern than regional differences. Those in Community teams experience high levels of barriers across domains, whereas those in ESD and inpatient rehabilitation report fewer issues. This aligns with previous TDF findings of fewer barriers to aphasia therapy delivery in a rehabilitation setting (Shrubsole et al., 2019b).

Comprehensiveness

SLTs were largely unable to generate features defining comprehensive therapy. As with definitions of intensive therapy this is unsurprising as there is no formal definition of comprehensive aphasia therapy in the wider aphasia literature. SLTs surveyed agreed with the ICAP definition of comprehensive therapy. It is worth noting however, that the content of comprehensive therapy varies from ICAP to ICAP (Monnelly et al., 2021). Group therapy is the first component of comprehensive therapy on an ICAP. The survey data evidenced that group therapy approaches are underused in UK clinical practice despite the psychosocial and peer support benefits which can only be achieved in a group context (Elman and Bernstein Ellis, 1999). If group therapy is underused, delivery of therapy to a cohort is also likely to be impacted. The third component of comprehensive therapy on an ICAP is education. Monnelly et al. (2021) found that "education" was too vague a term to be included in a scoping review of ICAPs and may vary from general information on stroke/aphasia to providing training in specific SLT therapy approaches (Gauvreau et al., 2019). Finally, inclusion of caregivers is essential for the delivery of certain SLT approaches e.g., conversation partner training. However, further rationales for including family members have not been developed – see below. In summary, the ICAP definition of comprehensive therapy is a good basis for discussion of what comprehensive therapy should constitute, but clear rationales are required for the inclusion of each component. An interesting avenue for future research would be the development of a definition and suggested content of CAT external to the ICAP model.

An additional issue is the lack of current clinical or research guidelines for CAT. This means that therapy content is likely to be influenced by the local service delivery context which leads to variation. Even if contemporary directive clinical guidelines were in place, their presence may have little impact on clinician behaviour because as Montini and Graham write "it may not have been the scientific evidence that established the practice nor sustained its utilization." (2015: 6). The authors argue that though clinicians may be aware of what practices accord with scientific evidence, "they often remain confined by a set of structural forces beyond their control and are not able to make changes" (2015: 7).

Therapists offered a range of therapy approaches which aligns with previous research findings (Palmer et al., 2018; Rose et al., 2014). The top three areas of focus were functional language therapy, impairment-based therapy, and involvement of family/others. This is a similar finding to another UK study of post-acute aphasia therapy which measured session content by retrospective goal analysis (Palmer et al., 2018). The authors found a primary focus (60%) on rehabilitation tasks (which would mostly fall under impairment-based approaches), a secondary focus (17%) on enabling (roughly classifying as functional therapy), and low levels of family involvement in therapy (percentage could not be calculated). A primary focus on functional therapy parallels UK practice in other domains of stroke rehabilitation. A UK survey of upper limb intervention after stroke found 88% of therapy focused on functional activities (McHugh et al., 2014). A more recent UK survey agreed but found the focus on functional work varied depending on the severity of the impairment (Stockley et al., 2019).

The second most frequent focus was on impairment-based approaches. As in the current survey, a majority focus on functional therapy with secondary focus on impairment-based approaches was found amongst Australian therapists (Verna et al., 2009). However more recent Australian research shows a primary focus on impairment-based single word expression (Brogan et al., 2020). A focus on impairment-based tasks was also identified in international research on aphasia practices, though an impairment-based focus was more strongly associated with certain countries (Ireland, New Zealand, USA) (Trebilcock et al., 2019).

The involvement of family/others was offered by 97% of therapists reflecting its importance. However, it was in the top 3 most frequently offered approaches of 58% of SLTs. There is a mismatch between perceived importance of family involvement and the extent to which family are involved in therapy. Gauvreau et al 2019 found that inclusion of relatives was a "peripheral clinical activity" occurring "only under specific conditions and… perceived as optional" by Canadian SLTs (2019: 856). They were more likely to provide them with information about aphasia/communication strategies than specific training e.g., communication partner training (CPT). An Irish survey found variable support available for family members with only 27% of SLTs reporting CPT was available for family (Manning et al., 2020). There are difficulties in involving family members in aphasia rehabilitation including availability and family expectations about level of involvement (Wray et al., 2020) which may be why it is not implemented as often as it is offered. Another possibility is that involvement of family may not be beneficial for the PWA depending on family dynamic. Family involvement is core to some approaches to aphasia intervention e.g., communication partner training, but involvement of family more generally in aphasia therapy is justified by family desires (Howe et al., 2012) rather than evidence base for their involvement. In some therapies e.g., paediatric stuttering, family therapy involvement is mandatory and essential for positive outcomes (Millard et al., 2018). This differs from ICAPs (Rose et al., 2013) and family involvement as an inclusion/exclusion criterion is worth exploring in future.

This survey did not explore factors influencing the therapy approach, an interesting avenue for future research. The data could not be analysed to explore the influence of geographical region or workplace type on therapy approach.

In terms of facilitators for CAT, therapists were overall more positive about CAT than IAT. Delivery of CAT was seen as a core part of their role. This creates an interesting conflict as UK stroke services are rated according to the results of their SSNAP audit which focuses only on the quantity but not the content of therapy. As a result, therapists interviewed by Taylor et al. (2018) felt SSNAP results did not reflect the quality of their service. Taylor et al. also found patients were more concerned with quality and nature of therapy received rather than intensity. A unique barrier to CAT delivery was lack of reinforcement from colleagues. The current survey did not query why SLTs feel unsupported to deliver CAT, and this is an interesting avenue for further exploration. An inflexible work culture (e.g., a prevailing impairment-based ethos) was deemed one reason for lack of support for comprehensive therapy in Trebilcock et al. (2019).

In this survey, the barriers were at an individual level (emotion, optimism) and organisational level (resources, reinforcement). An example solution for individual-level change could be to increase optimism by showcasing and detailing IAT/CAT implementation success stories. However, solutions must also address organisational-level change which is beyond the control of individual SLTs.

Service user candidacy

Respondents had conceptualisations of what type of PWA was best suited to receiving IAT, CAT, and an ICAP. Their key concerns irrespective of therapy type were cognitive ability and fatigue. These were the third and fourth most prevalent admission criteria for ICAPs respectively (Rose et al., 2021). There is good reason for SLTs to use cognitive ability as a therapy candidacy criterion for impairment-based therapy given the evidence cognitive ability links to outcomes for anomia therapy (Dignam et al., 2017; Yeung and Law 2010). Levels of fatigue have been noted by SLTs in 80% of clients with aphasia and increasing fatigue was felt to correlate with declining performance (Riley et al., 2017). Brady et al. (2016) noted increased drop-out from intensive therapy regimes – aligning with therapist concerns about fatigue. However, a scoping review found insufficient research on post-stroke fatigue and aphasia (Riley et al., 2021) and a recent poster presentation (Pierce et al., 2022) showed that fatigue was not a factor influencing outcomes in the high intensity VERSE trial. Of interest, fatigue was experienced by SLTs delivering intensive therapy.

Candidacy expectations were lowest for those receiving CAT, climbing higher for IAT, and the highest standards were reserved for those seen as suitable for an ICAP. UK SLTs who have provided ICAPs feel candidacy should be restricted to a small subset of the aphasia population e.g., those with milder aphasia. Putman et al. (2007) found that stroke rehabilitation settings with more restrictive admission criteria delivered more therapy. There may be a relationship between admitting those viewed as more “able” for therapy and the ability of the SLT to deliver more intensive therapy. This may explain why ICAP participants have high compliance with therapy (Monnelly et al., 2021) but may reduce the generalisability of positive outcome findings from ICAPs (e.g., Babbitt et al., 2015; Persad et al., 2013) to the wider aphasia population. There is evidence of additional candidacy criteria which may be at play but were not queried in this survey. Gittins et al. (2020) analysing SSNAP data found men received more physiotherapy (PT) and SLT but less occupational therapy (OT) than women; those with very severe strokes received less PT/OT but more SLT; and ethnic minorities and those with premorbid disabilities received less therapy.

ICAPs

15 SLTs had been involved in ICAP provision reflecting a minimum of 6 individual ICAPs in England and at least 1 in Scotland. Previously research found 2 modified ICAPs and 1 ICAP running in the UK (Rose et al., 2021), so the numbers reported on this survey reflect growth.

There was low optimism amongst those who had not run ICAPs about the ability to reform services to run an ICAP. This indicates that ICAPs might only be feasible in a limited number of settings, and this is supported by data demonstrating that ICAPs do not typically run in mainstream clinical settings (Rose et al., 2021) and highlighting the barriers to implementation of intensive/comprehensive services in international clinical settings (Trebilcock et al., 2019). There is however very encouraging data from this survey demonstrating that ICAPs can be run in NHS settings. There is much to be learned from the services where this has occurred. This is being explored in Australia where an ICAP which evolved in a research setting is being adapted for mainstream clinical implementation (Shrubsole et al., 2022).

Limitations

This survey asked SLTs to estimate average weekly intensity received by each of their clients with aphasia but did not ask about average length of therapy in weeks. Gaining duration of therapy in weeks would have enabled a calculation of average overall therapy dose which would have made an interesting comparison with the literature. The survey used the NICE metric (given to survey respondents after initial questions on definition of intensity), however this metric is not used in Scotland - though respondents in Scotland are advised to defer to NICE guidance in the absence of contemporary clinical guidelines. The survey gave multiple choice options for therapy approaches delivered (with an option for free text responses for other approaches). This limits the interpretation possible from therapies delivered most frequently as the survey omitted examples given in other surveys e.g., offering “cognition” as a named approach as in Tierney-Henricks et al., 2022. Due to the amount of some categorical variables (e.g., geographic location, workplace type), statistical analysis methods could not be applied to all questions. The phrasing of TDF questions in the intensive and comprehensive sections was slightly different. This was necessary as the therapy types are different but means direct comparisons of the findings for IAT and CAT are problematic. There was only one question posed for each TDF domain again due to burden of survey, but multiple questions for each domain would have been preferable.

Implications

Implications for research: The survey showed that aphasia provision in the UK is predominantly low dose. One response to this could be to focus pragmatic research effort on identifying treatments that are effective within this dosage. Similarly, there may be candidacy constraints which could be highlighted, so that we can identify the PWA who are most likely to benefit from low dose regimes.

The risk of the above is that we conduct trials that produce negative outcomes, because insufficient therapy has been provided. Therefore, aspirational goals should be retained. While not fully conclusive, existing evidence suggests that intensive therapy achieves better outcomes (RELEASE Collaborators, 2022). Further high dose trials could bolster this evidence. While continuing research into high dose therapy, it is important to be mindful of the gap between research and practice. Indeed, our survey respondents were unclear in their definitions of IAT and identified significant barriers to achieving it in their practice; and such barriers extended to the adoption of ICAPs. One response is to up resources. But we also need to explore service re-configurations. Shrubsole et al (2019a) discuss the need for SLTs and researchers to meet mid-way, where clinicians advise researchers on how evidence-based interventions may be implemented in their specific setting and where researchers design interventions suited to the local context (e.g., with resource limitations). There is a need to think creatively about ways in which larger doses can be provided to PWA e.g., through delegated models involving student SLTs, health care assistants and volunteers. Recent evidence from 2249 PWA supports the use of self-managed aphasia-specific apps in boosting intensity of provision and maximising a range of language/cognitive gains (Cordella et al., 2022), so their integration in increasing intensity warrants further inclusion in research.

It would also be useful to increase awareness of comprehensive therapy approaches through their integration in clinical guidelines and via university curricula teaching to SLT students.

Implications for client management include considering what aphasia therapy is best provided in a low intensity service (i.e., what therapy approaches are still effective at low intensities). Examples of therapies delivered at the average weekly intensity in this survey can be found from 24 trials in the supplemental material of the RELEASE paper (RELEASE Collaborators, 2022). A focus on delivering impairment-based therapy in a known low-intensity context may need to be challenged given the lack of evidence to support this practice. It may be necessary to challenge one’s own perceptions of who is suitable for intensive or comprehensive aphasia therapy; and explore possible solutions to increase intensity of therapy within service constraints (e.g., reducing time spent in information exchange, increasing role for family/others/technology/and independent practice in therapy delivery).

Implications for service delivery include a recommendation that regions delivering low intensity services liaise with regions delivering high intensity services. This will allow for peer support across aphasia services, sharing good practice and advice, and possibly supporting service to develop an argument for increased therapy resourcing. Dissemination of services and therapists delivering high intensity and comprehensive aphasia therapy and running ICAPs in NHS services is crucial to encourage others. This can be done via national clinical excellence networks and Integrated Stroke Delivery Networks (ISDNs) in England. Teams may also reflect on the type of aphasia therapy they deliver and whether there are means to increasing intensity and comprehensiveness in their setting.

Summary/Conclusion(s)

The SLTs surveyed in this study had a wide variety of experience and were regular aphasia practitioners representative of those working in aphasia in the UK. A combination of research evidence and clinical experience shows that it is fundamentally difficult to define intensive aphasia therapy. There is a gap in the type of aphasia therapy that is being delivered regularly in a UK context. While functional and impairment-based approaches are common, comprehensive approaches such as groups are under used despite being evidence based and providing a range of social and economic benefits. The growth in ICAP delivery in a UK context is worthy of attention. Solutions to increasing the intensity and comprehensiveness of aphasia therapy in a UK context should be sought. These may include adaptations that would make implementation of the ICAP model in UK clinical practice feasible.

Acknowledgements:

The authors would like to acknowledge the UK based speech and language therapists who gave feedback on the initial draft of the survey: Alison Bain, Virginia Clark, Luiza Deaconescu, Rhiannon Haag, Amelia Heelan, Leo Morgan, Lucy Roebuck Saez, and Emma Louise Sinnott and thanks to Emma Richards who provided feedback on the final paper. Thanks to Joanie Scott and Paula Smejka who provided feedback on survey questions as family members of people with aphasia who attended ICAPs, and to Sarah Scott who provided survey question feedback from her perspective as a person with aphasia and ICAP attendee. We would like to extend our heartfelt appreciation to the 227 SLTs who provided data for this survey.

References

Arnold H, Wallace SJ, Ryan B, et al. Current practice and barriers and facilitators to outcome measurement in aphasia rehabilitation: a cross-sectional study using the theoretical domains framework. Aphasiology. 2020;34(1):47-69. DOI: 10.1080/02687038.2019.1678090

Australian Aphasia Rehabilitation Pathway [Internet]. Queensland, (Australia). Australian Aphasia Rehabilitation Pathway; 2014. Available from: http://www.aphasiapathway.com.au/ (Accessed: 3rd August 2022).

Babbitt EM, Worrall L, Cherney LR. Structure, processes, and retrospective outcomes from an intensive comprehensive aphasia program. Am J Speech Lang Pathol. 2015; 24(4):S854–S863

Baker E. Optimal intervention intensity in speech-language pathology: Discoveries, challenges, and unchartered territories. Int J Speech Lang Pathol. 2012;14(5):478-485, DOI: 10.3109/17549507.2012.717967

Bowen A, Hesketh A, Patchick E, et al. Effectiveness of enhanced communication therapy in the first four months after stroke for aphasia and dysarthria: a randomised controlled trial. BMJ. 2012;345:e4407. DOI: 10.1136/bmj.e4407

Brady MC, Kelly H, Godwin J, et al. Speech and language therapy for aphasia following stroke. Cochrane Database Syst Rev. 2016;6:CD000425

Brindley P, Copeland M, Demain C, et al. A comparison of the speech of 10 chronic broca aphasics following intensive and non-intensive periods of therapy. Aphasiology. 1989;3(8):695–707

Brogan E, Ciccone N, Godecke E. Behind the therapy door: what is “usual care” aphasia therapy in acute stroke management? Aphasiology. 2020;34(10):1291–1223

Cane J, O'Connor D, Michie S. Validation of the theoretical domains framework for use in behaviour change and implementation research. Implement Sci. 2012;7(37)

Chang HF, Power E, O'Halloran R, et al. Stroke communication partner training: a national survey of 122 clinicians on current practice patterns and perceived implementation barriers and facilitators. Int J Lang Commun Disord. 2018;53(6):1094-1109

Cavanaugh R, Kravetz C, Jarold L, et al. Is there a research-practice dosage gap in aphasia rehabilitation? Am J Speech Lang Pathol. 2021. DOI: 10.1044/2021_AJSLP-20-00257

Chadd K, Moyse K, Enderby P. Impact of the COVID-19 pandemic on the speech and language therapy profession and their patients. Front. Neurol. 2021. DOI: 10.3389/fneur.2021.629190

Cherney LR, Patterson JP, Raymet AM. Intensive of aphasia therapy: evidence and efficacy. Curr Neurol Neurosci Rep. 2011;11:560-569

Clarke DJ, Burton LJ, Tyson SF, et al. Why do stroke survivors not receive recommended amounts of active therapy? Findings from the ReAcT study, a mixed-methods case-study evaluation in eight stroke units. Clin Rehabil. 2018;32(8):1119-1132. DOI: 10.1177/0269215518765329

Code C and Petheram B. Delivering for aphasia. Int J Speech Lang Pathol. 2011;13(1):3–10

Cordella C, Munsell M, Godlove J, et al. Dosage Frequency Effects on Treatment Outcomes Following Self-managed Digital Therapy: Retrospective Cohort Study. J Med Internet Res 2022;24(7):e36135. DOI: 10.2196/36135

Cruice M, Botting N, Marshall J, et. UK speech and language therapists' views and reported practices of discourse analysis in aphasia rehabilitation. Int J Land Commun Disord. 2020;50(3):417-442

Dignam J, Copland D, McKinnon E, et al. Intensive versus distributed aphasia therapy: a nonrandomized, parallelgroup, dosage-controlled study. Stroke. 2015;46(8):2206–2211

Dignam J, Copland D, O'Brien K, et al. Influence of Cognitive Ability on Therapy Outcomes for Anomia in Adults With Chronic Poststroke Aphasia. J Speech Hear Res. 2017;60:406-421. DOI: 10.1044/2016_JSLHR-L-15-0384

Dillman DA, Smyth J D, Christian LM. Internet, Phone, Mail, and Mixed-Mode Surveys: The Tailored Design Method. 4th Ed. New Jersey: Wiley; 2014.

Elman RJ, Bernstein-Ellis E. The efficacy of group communication treatment in adults with chronic aphasia. J Speech Lang Hear Res. 1999;42(2):411–419

Eysenbach, G. Improving the Quality of Web Surveys:The Checklist for Reporting Results of Internet E-Surveys (CHERRIES). J Med Internet Res. 2004;6(3):e34. DOI: 10.2196/jmir.6.3.e34

Gabbay, J, le May, A. Practice-Based Evidence for Healthcare: Clinical Mindlines. Oxon: Routledge; 2011.

Gauvreau GA, Le Dorze G, Croteau C, et al. Understanding practices of speech-language pathologists in aphasia rehabilitation: a grounded theory study. Aphasiology. 2019;33(7):846-864. DOI: 10.1080/02687038.2019.1602814

Gittins M, Vail A, Bowen A, et al. Factors influencing the amount of therapy received during inpatient stroke care: an analysis of data from the UK Sentinel Stroke National Audit Programme. Clin Rehabil. 2020;34(7):981-991. DOI: 10.1177/0269215520927454

Godecke E, Armstrong E, Rai T, et al. A randomized control trial of intensive aphasia therapy after acute stroke: The Very Early Rehabilitation for SpEech (VERSE) study. Int J Stroke. 2021;16(5):556–572. DOI: 10.1177/1747493020961926

Harvey SR, Carragher M, Dickey MW, et al. Treatment dose in post-stroke aphasia: a systematic scoping review. Neuropsychol Rehabil. 2020. DOI:10.1080/09602011.2020.1786412

Henson DM. An intensive aphasia needs assessment tool [master's thesis]. Bowling Green (KY): Western Kentucky University; 2016. Available from: https://digitalcommons.wku.edu/theses/1570/ (Accessed 7th November 2022).

Howe T, Davidson B, Worrall L, et al. 'You needed to rehab … families as well': family members' own goals for aphasia rehabilitation. Int J Lang Commun Disord. 2012; 47(5):511–521

Huijg JM, Gebhardt WA, Dusseldorp E, et al. Measuring determinants of implementation behavior: psychometric properties of a questionnaire based on the theoretical domains framework. Implement Sci. 2014;9(33)

IBM SPSS Statistics for Windows, Version 27.0 [Computer Program]. Armonk, NY: IBM Corp.

Intercollegiate Stroke Working Party [Internet]. National clinical guideline for stroke. Fifth edition. London (UK): Royal College of Physicians; 2016. Available from: https://www.strokeaudit.org/Guideline/Guideline-Home.aspx (Accessed: 3rd August 2022).

International Classification of Functioning, Disability, and Health (ICF) [Internet]. Geneva (Switzerland): World Health Organisation; 2001. Available from: https://www.who.int/classifications/icf/en/ (Accessed: 3rd August 2022).

Katz RC, Hallowell B, Code C, et al. A multinational comparison of aphasia management practices. Int J Lang Commun Disord. 2000;35(2):303–314

Leff AP, Nightingale S, Gooding B, et al. Clinical Effectiveness of the Queen Square Intensive Comprehensive Aphasia Service for Patients With Poststroke Aphasia. Stroke. 2021;52:e594–e598. DOI: 10.1161/STROKEAHA.120.033837

Manning M, Cuskelly C, Russ, E, et al. Supporting people with post-stroke aphasia to live well: A cross-sectional survey of Speech & Language Therapists in Ireland. Health Soc Care Community. 2020;28:2105-2116. DOI: 10.1111/hsc.13021

McHugh G, Swain ID, Jenkinson D. Treatment components for upper limb rehabilitation after stroke: a survey of UK national practice. Disabil Rehabil. 2014;36(11):925-931

Menahemi-Falkov M, Breitenstein C, Pierce JE, et al. A systematic review of maintenance following intensive therapy programs in chronic poststroke aphasia: importance of individual response analysis. Disabil Rehabil. 2021. DOI: 10.1080/09638288.2021.1955303

Michie S, Johnston M, Abraham C, et al. Making psychological theory useful for implementing evidence based practice: a consensus approach. Qual Saf Health Care. 2005;14:26–33. DOI: 10.1136/qshc.2004.011155

Millard SK, Zebrowski P, Kelman E. Palin Parent-Child Interaction Threapy: The Bigger Picture. Am J Speech Lang Pathol. 2018;27:1211-1223

Mitchell AJ, Sheth B, Gill J, et al. Prevalence and predictors of post-stroke mood disorders: A meta-analysis and meta-regression of depression, anxiety and adjustment disorder. Gen Hosp Psychiatry. 2017;47:48-60. DOI: 10.1016/j.genhosppsych.2017.04.001

Mitchell C, Gittins M, Tyson S, et al. Prevalence of aphasia and dysarthria among inpatient stroke survivors: describing the population, therapy provision and outcomes on discharge. Aphasiology. 2021;35(7):950-960. DOI: 10.1080/02687038.2020.1759772

Monnelly K, Marshall J, Cruice M. Intensive Comprehensive Aphasia Programmes: a systematic scoping review and analysis using the TIDieR checklist for reporting interventions. Disabil Rehabil. 2021. DOI: 10.1080/09638288.2021.1964626

Montini T and Graham D. “Entrenched practices and other biases”: unpacking the historical, economic, professional, and social resistance to de-implementation. Implement Sci. 2015;10(24). DOI 10.1186/s13012-015-0211-7

Morris R, Eccles A, Ryan B, et al. Prevalence of anxiety in people with aphasia after stroke. Aphasiology. 2017;31(12):1410–1415

Nouwens F, de Lau LML, Visch-Brink EG, et al. Efficacy of early cognitive-linguistic treatment for aphasia due to stroke: A randomised controlled trial (Rotterdam Aphasia Therapy Study-3). Eur Stroke J. 2017;2(2):126-136. DOI: 10.1177/2396987317698327

NVivo Version 12 [Computer Program]. QSR International Pty Ltd. Available from: https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home

Palmer R, Witts H, Chater T. What speech and language therapy do community dwelling stroke survivors with aphasia receive in the UK? PLoS One. 2018;13(7): e0200096.

Persad C, Wozniak L, Kostopoulos E. Retrospective analysis of outcomes from two intensive comprehensive aphasia programs. Top Stroke Rehabil. 2013;20(5):388–397

Pierce JE, Harvey S, Dickey M, et al. (Poster presentation). Fatigue Levels Across 30 Hours of Intensive Treatment - An Analysis of 140 Participants from the COMPARE Trial. International Aphasia Rehabilitation Conference. Philadelphia, PA. June 22-24 2022

Pierce JE, O’Halloran R, Menahemi-Falkov M, et al. Comparing higher and lower weekly treatment intensity for chronic aphasia: a systematic review and meta-analysis. Neuropsychol Rehabil. 2020;31(8):1289–1313

Population estimates for the UK, England and Wales, Scotland and Northern Ireland: mid-2020 [Internet]. Office for National Statistics; 2021. Available from: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/mid2020 (Accessed: 16th August 2022).

Putman K, De Wit L, Schupp W, et al. Inpatient stroke rehabilitation: a comparative study of admission criteria to stroke rehabilitation units in four European centres. J Rehabil Med. 2007;39:21-26

Rafsten L, Danielsson A, Sunnerhagen KS. Anxiety after stroke: a systematic review and Meta-analysis. J Rehabil Med. 2018;50(9):769–778

RELEASE Collaborators. Dosage, Intensity, and Frequency of Language Therapy for Aphasia: A Systematic Review–Based, Individual Participant Data Network Meta-Analysis. Stroke. 2022;53:956-967. DOI: 10.1161/STROKEAHA.121.035216

Riley EA, Hart E, Preston JL, et al. Pervasiveness of speech-language disorders and fatigue in stroke: A systematic scoping review. J Commun Disord. 2021;93:106145. DOI: 10.1016/j.jcomdis.2021.106145

Riley EA. Patient Fatigue During Aphasia Treatment: A Survey of Speech-Language Pathologists. Commun Disord Q. 2017;38(3):143-153. DOI: 10.1177/1525740116656330

Rodriguez AD, Worrall L, Brown K, et al. Aphasia LIFT: exploratory investigation of an intensive comprehensive aphasia programme. Aphasiology. 2013;27(11):1339–1361

Rose ML, Cherney LR, Worrall LE. Intensive comprehensive aphasia programs: an international survey of practice. Top Stroke Rehabil. 2013;20(5):379–387

Rose M, Ferguson A, Power E, et al. Aphasia rehabilitation in Australia: current practices, challenges and future directions. Int J Speech Lang Pathol. 2014;16(2):169–180

Rose ML, Nickels L, Copland D, et al. Results of the COMPARE trial of Constraint-induced or Multimodality Aphasia Therapy compared with usual care in chronic post-stroke aphasia. J Neurol Neurosurg Psychiatry. 2022;93:573-581. DOI: 10.1136/jnnp-2021-328422

Rose ML, Pierce JE, Scharp VL, et al. Developments in the application of Intensive Comprehensive Aphasia Programs: an international survey of practice. Disabil Rehabil. 2021. DOI: 10.1080/09638288.2021.194862

Royal College of Speech and Language Therapists (RCSLT) (2005) Clinical Guidelines. Bicester: Speechmark Publishing Ltd.

Sentinal Stroke National Audit Programme: National Results – Clinical Annual Results Portfolio [dataset]. Sentinal Stroke National Audit Programme [Internet]. 2018. Available from: https://www.strokeaudit.org/results/Clinical-audit/National-Results.aspx (Accessed: 3rd August 2022).

Sentinal Stroke National Audit Programme: National Results – Clinical Annual Results Portfolio [dataset]. Sentinal Stroke National Audit Programme [Internet]. 2021. Available from: https://www.strokeaudit.org/results/Clinical-audit/National-Results.aspx (Accessed: 16th August 2022).

Sentinel Stroke National Audit Programme: Post-Acute Audit - Services [dataset]. Sentinel Stroke National Audit Programme [Internet]. 2015. Available from: https: https://www.strokeaudit.org/results/PostAcute/services.aspx (Accessed: 8th August 2022).

Seward K, Wolfenden L, Wiggers J, et al. Measuring implementation behaviour of menu guidelines in the childcare setting: confirmatory factor analysis of a theoretical domains framework questionnaire (TDFQ). Int J Behav Nutr Phys Act. 2017;14(45). DOI: 10.1186/s12966-017-0499-6

Shirley Ryan AbilityLab [Internet]. Chicago, (US). 2022 – Intensive Comprehensive Aphasia Program; 2022. Available from : https://www.sralab.org/research/labs/aphasia/projects/intensive-comprehensive-aphasia-program (Accessed: 7th November 2022).

Shrubsole K, Copland D, Hill A, et al. Development of a tailored intervention to implement an Intensive and Comprehensive Aphasia Program (ICAP) into Australian health services. Aphasiology. 2022. DOI: 10.1080/02687038.2022.2095608

Shrubsole K, Worrall L, Power E. Closing the evidence-practice gaps in aphasia management: are we there yet? Where has a decade of implementation research taken us? A review and guide for clinicians. Aphasiology. 2019a;33(8):970-995. DOI: 10.1080/02687038.2018.1510112

Shrubsole K, Worrall L, Power E, et al. Barriers and facilitators to meeting aphasia guidelines recommendations: what factors influence speech pathologists' practice? Disabil Rehabil. 2019b;41(13):1596-1607. DOI: 10.1080/09638288.2018.1432706

Simmons-Mackie N, Raymer A, Cherney LR. Communication partner training in aphasia: an updated systematic review. Arch Phys Med Rehabil. 2016;97(12): 2202–2221

Stockley R, Peel R, Jarvis K, et al. Current therapy for the upper limb after stroke: a cross-sectional survey of UK therapists. BMJ Open. 2019;9:e030262. DOI:10.1136/bmjopen-2019-030262

Stroke in adults Quality standard QS2 [Internet]. National Institute for Health and Care Excellent (NICE); 2016. Available from: https://www.nice.org.uk/guidance/qs2 (Accessed: 16th August 2022).

Stroke rehabilitation in adults Clinical guideline GC162 [Internet]. National Institute for Health and Care Excellence (NICE); 2013. Available from: https://www.nice.org.uk/guidance/cg162 (Accessed: 16th August 2022).

Taylor E, Jones F, McKevitt C. How is the audit of therapy intensity influencing rehabilitation in inpatient stroke units in the UK? An ethnographic study. BMJ Open. 2018;8:e023676. DOI: 10.1136/bmjopen-2018-023676

Taylor E, McKevitt C, Jones F. Factors shaping the delivery of acute inpatient stroke therapy: a narrative synthesis. J Rehabil Med. 2015;47:107-119

Tierney-Hendricks C, Schliep ME, Vallila-Rohter, S. Using an Implementation Framework to Survey Outcome Measurement and Treatment Practices in Aphasia. Am J Speech Lang Pathol. 2022;31:1133-1162

Trebilcock M, Worrall L, Ryan B, et al. Increasing the intensity and comprehensiveness of aphasia services: identification of key factors influencing implementation across six countries. Aphasiology. 2019;33(7):865–887

Verna A, Davidson B, Rose T. Speech-language pathology services for people with aphasia: A survey of current practice in Australia. Int J Speech Lang Pathol. 2009;11(3):191-205

Wallace SJ, Worrall L, Rose T, et al. Which outcomes are most important to people with aphasia and their families? an international nominal group technique study framed within the ICF. Disabil Rehabil. 2019;39(14):1364-1379. DOI: 10.1080/09638288.2016.1194899

Warren SF, Fey ME, Yoder PJ. Differential treatment intensity research: a missing link to creating optimally effective communication interventions. Ment Retard Dev Disabil. 2007;13:70-77. DOI 10.1002/mrdd

Wray F, Clarke D, Forster A. "Guiding them to take responsibility": exploring UK speech and language therapists' views of supporting self-management of aphasia. Aphasiology. 2020;24(4):411-430. DOI: 10.1080/02687038.2019.1697865

Worrall L, Sherratt S, Rogers P, et al. What people with aphasia want: Their goals according to the ICF. Aphasiology. 2011;25(3):309-322. DOI: 10.1080/02687038.2010.508530

Yeung O, Law SP. Executive functions and aphasia treatment outcomes: Data from an ortho-phonological cueing therapy for anomia in Chinese. Int J Speech Lang Pathol. 2010;12(6):529-544. DOI: 10.3109/17549507.2011.516840

Young L, Shrubsole K, Worrall L, et al. Factors that influence Australian speech-language pathologists' self-reported uptake of aphasia rehabilitation recommendations from clinical practice guidelines. Aphasiology. 2018;32(6):646-665. DOI: 10.1080/02687038.2018.1443201

Zheng C, Lynch L, Taylor N. Effect of computer therapy in aphasia: a systematic review. Aphasiology. 2016;30(2–3): 211–244

Appendix 1: Survey questions

(NB not all survey questions are included e.g., demographic questions and answers are presented in the body of the article and COVID19 questions were not presented in this article, but the intensive and comprehensive sections are presented below)

Survey questions
Intensive aphasia therapy
Before you are given options, could you please enter a definition of intensive aphasia therapy? (NB you cannot return to this question).
How should intensive aphasia therapy be delivered? Evenly dispersed across the week (e.g. 1 hour a day for 5 days)? Having a set number of hours within a week but not daily therapy (e.g. 2 x 2 hour sessions and 1 x 1 hour session)? o Evenly dispersed across the week o Achieving a set number of hours in a week o Neither factor is more important than the other o Unsure
In your opinion, how much aphasia therapy should be given per day to count as intensive aphasia therapy? o 30 minutes per day o 45 minutes per day o 1 hour per day o 2 hours per day o 3 hours per day o 4 hours per day o 5 hours per day
In your opinion, how much aphasia therapy should be given per week to count as intensive aphasia therapy? o 2 hours 30 mins o 3 hours 45 mins o 5 hours o 10 hours o 15 hours o 20 hours o 25 hours
In your opinion, how long should aphasia therapy last to count as intensive aphasia therapy? o 1 week o 2 weeks o 3 weeks o 4 weeks o 5 weeks o 6 weeks o More than 6 weeks

For this section, intensive aphasia therapy will be defined as 45 minutes a day of aphasia therapy for at least 5 days a week

In the year leading up to March 2020, would you say at least one client with aphasia received intensive aphasia therapy from your service? This is therapy provided by you/one of your SLTs perhaps in conjunction with a student/therapy assistant/colleague but not via “topping up” from private therapy/work done independently by the client.

o Yes
o No
o Unsure

It is likely that clients with aphasia in your service receive different amounts of aphasia therapy. Before March 2020, what was the minimum amount of direct aphasia therapy provided to a client with aphasia on your caseload or in your service if you are an SLT manager. This question refers to clients who are actively seen, not those on a waiting list. Direct aphasia therapy does not include home practice activities but it may include some sessions with an SLT and some with an SLT student/therapy assistant.

o Approximately 1 hour a month
o Approximately 1 hour a fortnight
o Approximately 1 hour a week
o Approximately 2 hours a week
o Approximately 3 hours a week
o Approximately 4 hours a week
o 5 or more hours a week

Before March 2020, what was the maximum amount of direct aphasia therapy provided to a client with aphasia on your caseload or in your service if you are an SLT manager. This question refers to clients who are actively seen, not those on a waiting list. Direct aphasia therapy does not include home practice activities but it may include some sessions with an SLT and some with an SLT student/therapy assistant.

o Approximately 1 hour a month
o Approximately 1 hour a fortnight
o Approximately 1 hour a week
o Approximately 2 hours a week
o Approximately 3 hours a week
o Approximately 4 hours a week
o 5 or more hours a week

Before March 2020, how many minutes of direct aphasia therapy* per week did your service provide to your average client with aphasia? *Direct therapy is time spent directly with a client by an SLT, an SLT student, or a therapy assistant on aphasia therapy activities.

Please type the average time in minutes per week

What type of person with aphasia makes them a suitable candidate for intensive aphasia therapy?

o Having aphasia is the only requirement to be a candidate for intensive aphasia therapy
o I think some people with aphasia are better candidates for intensive aphasia therapy than others
o Unsure

The next questions ask what type of candidate could tolerate intensive aphasia therapy. These questions are NOT about the ideal candidate for intensive aphasia therapy. Instead, think of the upper limits of who could tolerate intensive aphasia therapy. Think of "the most severe" type of candidate that could tolerate intensive aphasia therapy.

What is the MOST SEVERE level of expressive language abilities suitable for intensive aphasia therapy?

○ Mild expressive aphasia
○ Moderate expressive aphasia
○ Severe expressive aphasia
○ All severities of expressive aphasia
○ Unsure

The above phrasing was used for

- Receptive language
- Cognitive ability
- Physical disability
- Fatigue
- Motor speech disorder

Which of the following client factors are necessary for intensive aphasia therapy. MULTIPLE CHOICE

☐ Potential for improvement
☐ Return to work potential
☐ Clear goals
☐ Client motivation
☐ Client confidence
☐ Clients having insight into their difficulties
☐ Aphasia having a significant impact on the stroke survivor
☐ Aphasia being a rehabilitation priority for the client
☐ Time commitment from client
☐ Medical stability
☐ Emotional stability
☐ Independence for Activities of Daily Living
☐ No significant behavioural issues
☐ Pre-stroke proficiency in English
☐ None of these features are necessary

Is age relevant to intensive aphasia therapy?

○ Intensive aphasia therapy is most suited to those younger than 65
○ Intensive aphasia therapy is most suited to those older than 65
○ Age is irrelevant
○ Unsure

Is there a MOST SUITABLE time post-stroke for someone to engage in intensive aphasia therapy?

○ Any time post-stroke is fine
○ Should be within the first 3 months
○ Should be within the first 6 months
○ Should be within the first 12 months
○ Should be more than a year post-stroke before starting intensive aphasia therapy
○ Should be more than 2 years post-stroke before starting intensive aphasia therapy
○ Should be several years post-stroke before starting intensive aphasia therapy
○ Unsure

What other factors make someone most suitable for intensive aphasia therapy?

What support do you think people with aphasia need to engage in intensive aphasia therapy?
MULTIPLE CHOICE
☐ Transport to sessions if needed
☐ Telehealth technology (e.g. access to video conferencing software to connect with therapists)
☐ General technology (e.g. access to/use of hardware and software)
☐ Support from occupational therapy/physiotherapy for access requirements
☐ Support from psychology/medic/nursing re: emotional and health requirements
☐ Family/friend/carer support
☐ Support for toileting if required
☐ Translator support if they are not proficient in English
☐ Other (please detail)

TDF intensive questions

To make this survey quicker and more relevant for you, in the next section, would you prefer to answer questions as a speech and language therapist, or as a manager?
○ Show me questions for speech and language therapists
○ Show me questions for managers

NB, the questions for SLT Managers were phrased differently but due to inadequate numbers (less than 10), these sections were not presented in the current paper

- TDF1 Knowledge: There is an evidence base for intensive therapy
○ Strongly agree
○ Somewhat agree
○ Neither agree nor disagree
○ Somewhat disagree
○ Strongly disagree

The following questions were all presented using the above 5-point Likert scale

- TDF2 Skills: I have the skills to deliver intensive aphasia therapy according to the NICE guidance (45 mins per day)
- TDF3 Social/professional role and identify: Delivering intensive speech and language therapy for people with aphasia is part of my role as a speech and language therapist
- TDF4 Beliefs about capabilities: Given the opportunity I am NOT confident that I could deliver intensive aphasia therapy following NICE guidance (45 minutes per day)
- TDF5 Optimism: I am doubtful that issues around the delivery of intensive aphasia therapy in my service can be solved
- TDF6 Beliefs about consequences: Delivering intensive aphasia therapy following NICE guidance (45 minutes a day) will lead to benefits for clients
- TDF7 Reinforcement: There is no incentive for me to provide intensive aphasia therapy to clients
- TDF8 Intentions: I always intend to provide clients with intensive aphasia therapy where possible
- TDF9 Goals: I am working towards providing intensive aphasia therapy to more clients with aphasia
- TDF10 Memory, attention and decision processes: Delivering intensive aphasia therapy according to NICE guidance (45 minutes a day) is something I often forget
- TDF11 Environmental context and resources: Where I work, all necessary resources are available to deliver intensive aphasia therapy

- TDF12 Social influences: My colleagues are supportive of me delivering intensive aphasia therapy according to the NICE guidance (45 minutes a day)
- TDF13 Emotion: I do NOT feel stressed when delivering intensive aphasia therapy
- TDF14 Behavioural Regulation: I have a clear plan on how to deliver intensive aphasia therapy according to the NICE guidance (45 minutes a day)

Comprehensive aphasia therapy

Clients with aphasia will have co-morbidities and you may see them for dysphagia (swallowing) therapy, motor speech therapy (e.g. dysarthria, apraxia of speech), voice therapy (e.g. dysphonia), or cognitive communication difficulties. In this section, the questions relate only to time you or an assistant or student under your direction personally spent conducting aphasia therapy with a client with aphasia.

Before you are given options, could you please enter a definition of comprehensive aphasia therapy? (NB you cannot return to this question).

- Is comprehensive therapy, therapy delivered to more than just the person with aphasia (e.g. family/carer therapy approaches alongside therapy for the individual)?
- Is comprehensive therapy, therapy delivered via different means (e.g. computer-based therapy alongside non computer-based therapy)?
- Is comprehensive therapy, therapy delivered in different formats (e.g. participant attending both individual sessions and group therapy)?
- Is comprehensive therapy a mixture of therapies addressing different levels of the International Classification of Function (e.g. impairment based therapy combined with psychosocial therapy)?
- Is comprehensive therapy, therapy addressing one aspect of the language impairment through different language modes (e.g. working on single word reading, writing, naming, and comprehension for a client with difficulties at the single word level)?

Each question required a response in this format:
o Yes
o No
o Unsure

For this survey, comprehensive aphasia therapy is defined as:
- Therapy that addresses aphasia at more than one level of the ICF (e.g. comprehensive therapy could include impairment based-naming therapy and time to address the psycho-social consequences of aphasia e.g. loss of friendships.)
- Comprehensive therapy can be achieved by providing a mixture of 1:1 sessions and group therapy sessions.
- Comprehensive therapy can be supplemented by use of technology (e.g. specialist aphasia software or general software skills e.g. sending voice-notes if a person can't type.)
- Comprehensive therapy is delivered to more than just the person with aphasia (e.g. a focus on family/carer involvement through communication partner training.)

In the year leading up to March 2020, would you say at least one client with aphasia received comprehensive aphasia therapy from your service (e.g. provided by you/one of your SLTs perhaps in conjunction with a student/therapy assistant/colleague but not via "topping up" from external sources e.g. with private therapy/work done independently by the client).
o Yes
o No
o Unsure

Which of the following types of aphasia therapy do you offer to your average client with aphasia? (If you are a manager, what do your team do). MULTIPLE CHOICE

☐ Impairment-based therapy (e.g. naming therapy)
☐ Functional language therapy (e.g. communication practice
☐ Psycho-social aphasia therapy (e.g. coping with loss of social connections)
☐ Environmental approaches (e.g. having aphasia-friendly adaptations made to accommodate a language impairment)
☐ Social approaches (e.g. assisting a client with aphasia in lobbying for their rights)
☐ Use of technology in therapy (apps/tablets/computers/smartphones/e-book readers etc.)
☐ Group therapy (provided by your service, not an external agency)
☐ Involvement of family/significant others/carers (e.g. communication partner training/education sessions)
☐ Education on stroke and aphasia
☐ Other (please detail)

Can you select the TOP THREE aphasia therapy approaches you offer most frequently to your average client with aphasia? (If you are a manager, what do your team do). MULTIPLE CHOICE
The same options as above were presented

What type of person with aphasia makes them a suitable candidate for comprehensive aphasia therapy?

o Having aphasia is the only requirement to be a candidate for comprehensive aphasia therapy
o I think some people with aphasia are better candidates for comprehensive aphasia therapy than others
o Unsure

The next questions ask what type of candidate is suitable for comprehensive aphasia therapy.
These questions are NOT about the ideal candidate for comprehensive aphasia therapy.
Instead, think of the upper limits of who is suitable for comprehensive aphasia therapy.
Think of "the most severe" type of candidate who is suitable for comprehensive aphasia therapy.

What is the MOST SEVERE level of expressive language ability suitable for comprehensive aphasia therapy?
o Mild expressive aphasia
o Moderate expressive aphasia
o Severe expressive aphasia
o All severities of expressive aphasia
o Unsure

The rest of the comprehensive therapy section consisted of the same questions as in the intensive therapy section around service user candidacy.

TDF comprehensive questions

NB, as in the TDF intensive questions section, different questions were presented for SLT Managers and SLTs but due to inadequate numbers (less than 10), these SLT Manager section was not presented in the current paper

- TDF1 Knowledge: I know a variety of approaches to aphasia therapy that I could use
o Strongly agree
o Somewhat agree
o Neither agree nor disagree
o Somewhat disagree
o Strongly disagree

The following questions were all presented using the above 5-point Likert scale

- TDF2 Skills: I do NOT have skills in a wide range of approaches to aphasia therapy
- TDF3 Social/professional role and identity: I believe speech and language therapists should use a wide range of approaches in aphasia therapy.
- TDF4 Beliefs about capabilities: I have personal control to deliver a range of aphasia therapy approaches
- TDF5 Optimism: I am doubtful that any issues around delivering comprehensive aphasia therapy in my service can be solved.
- TDF6 Beliefs about consequences: Delivering comprehensive aphasia therapy to patients is worthwhile
- TDF7 Reinforcement: I do NOT get recognition from colleagues when I provide comprehensive aphasia therapy
- TDF8 Intentions: I intend to provide comprehensive aphasia therapy within the next 3 months
- TDF9 Goals: It is NOT a high priority to provide more comprehensive therapy within my caseload
- TDF10 Memory, attention and decision processes: I routinely provide comprehensive aphasia therapy
- TDF11 Environmental context and resources: In the organization I work, all necessary resources are available to provide comprehensive aphasia therapy
- TDF12 Social influences: My colleagues encourage me to provide comprehensive aphasia therapy
- TDF13 Emotion: Providing comprehensive therapy is rewarding for me
- TDF14 Behavioural regulation: I have a clear plan of when to deliver comprehensive aphasia therapy

Appendix 2

Checklist for Reporting Results of Internet E-Surveys (CHERRIES)

CHERRIES checklist for "Intensive and comprehensive aphasia therapy – a survey of the definitions, practices, and views of speech and language therapists in the UK"	
Checklist Item	***Explanation***
Describe survey design	Describe target population, sample frame. Is the sample a convenience sample? (In "open" surveys this is most likely.)
	Target population is SLTs working in the UK in the field of aphasia. A formal sampling frame cannot be generated as the number of SLTs working in aphasia in the UK is unknown (the RCSLT do not have this information). Therefore, a sample size cannot be determined. This is a convenience sample, nonprobability sampling.
IRB approval	Mention whether the study has been approved by an IRB.
	Received ethical approval from the Division of Language and Communication Science Proportionate Review at City, University of London. ETH2021-0357
Informed consent	Describe the informed consent process. Where were the participants told the length of time of the survey, which data were stored and where and for how long, who the investigator was, and the purpose of the study?
	Participants were presented with an information sheet via the online survey link prior to survey initiation. This stated an estimated survey completion time of 20-25 minutes, data privacy with links to data management at the institution, the name and details of the principal researcher, and the purpose of the study. The information sheet also stated that free text responses may be used in future dissemination of the work e.g., via anonymous quotes. They were then offered a choice to agree or decline to take part. Informed consent was implied through completion of the survey.
Data protection	If any personal information was collected or stored, describe what mechanisms were used to protect unauthorized access.
	Data was collected on Qualtrics, the survey instrument approved by the institution. Access was linked to an institutional account held by the principal researcher. Password protected access was shared with the supervisory team of two academics. When the data was downloaded via an Excel spreadsheet, this was saved on the personal institutional One Drive account of the principal researcher and on a password protected USB. There was no unauthorized access to the data.
Development and testing	State how the survey was developed, including whether the usability and technical functionality of the electronic questionnaire had been tested before fielding the questionnaire.
	The survey was developed by the principal researcher following attendance on a 3-day course on survey methodology. It was amended by the supervisory team of two academics, then adapted further via PPI input from speech and language therapists and one person with aphasia and one family member of a PWA. It was piloted by three members of the public known to the principal researcher and by six SLTs. Feedback was obtained from the pilot group via an online focus group and email.

Open survey versus closed survey	An “open survey” is a survey open for each visitor of a site, while a closed survey is only open to a sample which the investigator knows (password-protected survey).
	This was an open survey, link shared via networks and social media.
Contact mode	Indicate whether or not the initial contact with the potential participants was made on the Internet. (Investigators may also send out questionnaires by mail and allow for Web-based data entry.)
	Initial contact was via emails sent by professional organizations on behalf of the research team and/or the social media (Twitter) accounts of the research team – then retweeted by organisations and the online community.
Advertising the survey	How/where was the survey announced or advertised? Some examples are offline media (newspapers), or online (mailing lists – If yes, which ones?) or banner ads (Where were these banner ads posted and what did they look like?). It is important to know the wording of the announcement as it will heavily influence who chooses to participate. Ideally the survey announcement should be published as an appendix.
	The survey was advertised online only via mailing lists of professional organisations (which the research team did not have direct access to), and via social media (Twitter). A recruitment flyer was constructed and shared by the aforementioned methods alongside the survey link containing the participant information sheet.
Web/E-mail	State the type of e-survey (eg, one posted on a Web site, or one sent out through e-mail). If it is an e-mail survey, were the responses entered manually into a database, or was there an automatic method for capturing responses?
	This was an e-survey only, sent via email/social media and not posted on a website. Results were automatically entered into Qualtrics, the platform used to create the e-survey.
Context	Describe the Web site (for mailing list/newsgroup) in which the survey was posted. What is the Web site about, who is visiting it, what are visitors normally looking for? Discuss to what degree the content of the Web site could pre-select the sample or influence the results. For example, a survey about vaccination on a anti-immunization Web site will have different results from a Web survey conducted on a government Web site
	No website was used.
Mandatory/voluntary	Was it a mandatory survey to be filled in by every visitor who wanted to enter the Web site, or was it a voluntary survey?
	Voluntary survey sent by email/social media link.
Incentives	Were any incentives offered (eg, monetary, prizes, or non-monetary incentives such as an offer to provide the survey results)?
	No
Time/Date	In what timeframe were the data collected?
	The survey ran from December 18th 2020 until May 18th 2021 (5 months).
Randomization of items or questionnaires	To prevent biases items can be randomized or alternated.

	In two sections of the survey (sections with 14 TDF questions each), the questions were presented in a randomized order.
Adaptive questioning	Use adaptive questioning (certain items, or only conditionally displayed based on responses to other items) to reduce number and complexity of the questions.
	Two sections contained questions using negative phrasing to prevent acquiescence bias. Branch logic was used in different sections to provide questions suitable either for managers or therapists. Skip logic was used if participants had not taken part in an ICAP (these questions were not revealed to them).
Number of Items	What was the number of questionnaire items per page? The number of items is an important factor for the completion rate.
	Minimum of 1 and maximum of 16
Number of screens (pages)	Over how many pages was the questionnaire distributed? The number of items is an important factor for the completion rate.
	Minimum 20 pages maximum 23 (depending on participant answers and survey logic).
Completeness check	It is technically possible to do consistency or completeness checks before the questionnaire is submitted. Was this done, and if "yes", how (usually JAVAScript)? An alternative is to check for completeness after the questionnaire has been submitted (and highlight mandatory items). If this has been done, it should be reported. All items should provide a non-response option such as "not applicable" or "rather not say", and selection of one response option should be enforced.
	A prior decision was made not to require completion of all items based on the possibility that respondents may be forced to answer when they'd rather skip. Options such as "unsure" were offered, and a reminder of incomplete items was added, so respondents could see highlighted in red the items they'd skipped. They were allowed however to progress to the next page and not forced to respond.
Review step	State whether respondents were able to review and change their answers (eg, through a Back button or a Review step which displays a summary of the responses and asks the respondents if they are correct).
	There were two items for which respondents were not able to change answers. This related to an optional free text request to provide a definition. The next survey item provided the definition, so participants could not return to any item prior to this. They were given advance warning. Otherwise they could use a back button.
Unique site visitor	If you provide view rates or participation rates, you need to define how you determined a unique visitor. There are different techniques available, based on IP addresses or cookies or both.
	A site was not used so this was not calculated.
View rate (Ratio of unique survey visitors/unique site visitors)	Requires counting unique visitors to the first page of the survey, divided by the number of unique site visitors (not page views!). It is not unusual to have view rates of less than 0.1 % if the survey is voluntary.
	Unique site visitors unknown, could not calculate.

Participation rate (Ratio of unique visitors who agreed to participate/unique first survey page visitors)	Count the unique number of people who filled in the first survey page (or agreed to participate, for example by checking a checkbox), divided by visitors who visit the first page of the survey (or the informed consents page, if present). This can also be called "recruitment" rate.
	First survey page is the same as the page for giving consent, so cannot calculate this.
Completion rate (Ratio of users who finished the survey/users who agreed to participate)	The number of people submitting the last questionnaire page, divided by the number of people who agreed to participate (or submitted the first survey page). This is only relevant if there is a separate "informed consent" page or if the survey goes over several pages. This is a measure for attrition. Note that "completion" can involve leaving questionnaire items blank. This is not a measure for how completely questionnaires were filled in. (If you need a measure for this, use the word "completeness rate".)
	Users who gave consent to participate = 280 Users who were eligible (self-declaration) = 14 said no, 15 left blank and discontinued, 251 said yes, were eligible. Users to completed Q164 (last demographic Q) = 147 147/251 = 58%
Cookies used	Indicate whether cookies were used to assign a unique user identifier to each client computer. If so, mention the page on which the cookie was set and read, and how long the cookie was valid. Were duplicate entries avoided by preventing users access to the survey twice; or were duplicate database entries having the same user ID eliminated before analysis? In the latter case, which entries were kept for analysis (eg, the first entry or the most recent)?
	No cookies used.
IP check	Indicate whether the IP address of the client computer was used to identify potential duplicate entries from the same user. If so, mention the period of time for which no two entries from the same IP address were allowed (eg, 24 hours). Were duplicate entries avoided by preventing users with the same IP address access to the survey twice; or were duplicate database entries having the same IP address within a given period of time eliminated before analysis? If the latter, which entries were kept for analysis (eg, the first entry or the most recent)?
	Yes IP check was run. Duplicate IPs were not prevented. 26 complete surveys with duplicate IPs were retained. 15/26 were 24 hours apart. 11/26 were less than 24 hours apart but as SLTs hot desk computers and may have filled in following team discussions, it was decided on consultation with other SLTs to retain all entries even if from duplicate IPs. Careful demographic and answer checks revealed that the entries were from unique participants per their demographic questions and not duplicates.
Log file analysis	Indicate whether other techniques to analyze the log file for identification of multiple entries were used. If so, please describe.
	Not used

Registration	In “closed” (non-open) surveys, users need to login first and it is easier to prevent duplicate entries from the same user. Describe how this was done. For example, was the survey never displayed a second time once the user had filled it in, or was the username stored together with the survey results and later eliminated? If the latter, which entries were kept for analysis (eg, the first entry or the most recent)?
	Not done. Open survey.
Handling of incomplete questionnaires	Were only completed questionnaires analyzed? Were questionnaires which terminated early (where, for example, users did not go through all questionnaire pages) also analyzed?
	Of 280 surveys (those who gave initial consent), 97 were removed as they did not complete the initial six demographic questions. There were 183 surveys analysed although they did not all include fully complete data. A flowchart was kept of drop-off points for participants. As long as they completed one full section e.g., the first section on intensity, then their answers were part of the analysis. Two participants skipped middle sections but completed final sections fully, so their contributions were kept.
Questionnaires submitted with an atypical timestamp	Some investigators may measure the time people needed to fill in a questionnaire and exclude questionnaires that were submitted too soon. Specify the timeframe that was used as a cut-off point, and describe how this point was determined.
	Duration was checked. The quickest full completion of a survey was 12.75 minutes, which was deemed acceptable.
Statistical correction	Indicate whether any methods such as weighting of items or propensity scores have been used to adjust for the non-representative sample; if so, please describe the methods.
	TBD

This checklist has been modified from Eysenbach G. Improving the quality of Web surveys: the Checklist for Reporting Results of Internet E-Surveys (CHERRIES). J Med Internet Res. 2004 Sep 29;6(3):e34 [erratum in J Med Internet Res. 2012; 14(1): e8.]. Article available at https://www.jmir.org/2004/3/e34/; erratum available https://www.jmir.org/2012/1/e8/. Copyright ©Gunther Eysenbach. Originally published in the Journal of Medical Internet Research, 29.9.2004 and 04.01.2012.