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Screening Depression and Suicidality in Post Stroke Aphasia: A Theory of Planned Behaviour Study

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ABSTRACT

Background: Clinical guidelines recommend screening for post-stroke depression, which is particularly important for people with post-stroke aphasia, due to increased risk of depression and suicidality. The Theory of Planned Behaviour (TPB) suggests that behavioural intentions are influenced by three factors: attitudes, normative beliefs, and perceived behavioural control. It has been used to investigate staff intentions to perform post-stroke screening, but little is known about staff intentions to screen people with aphasia for depression or suicidality.
Aims: We examined how UK stroke professionals describe screening for depression and suicidality with people with aphasia and whether the TPB predicts intent to screen depression with this population.
Methods & Procedures: We conducted a cross-sectional online survey and used multiple regression to test whether attitudes, normative beliefs, and perceived behavioural control predicted intent to screen people with aphasia for depression and suicidality. To assess response stability over time we asked respondents to repeat the survey over a fortnight later.
Results: One hundred and eighteen UK stroke professionals completed the survey between May and September 2020. Intent to screen people with aphasia for depression was high (M = 71.6%, SD = 34.7) but much lower for suicidality (M = 42.4%, SD = 39). Approximately half the variance in intent to screen for depression was predicted by the TPB, $R^2 = .48$, $F\ (3,101) = 30.60$, $p < .001$, with normative beliefs identified as a significant predictor, $\beta = .62$, $p < .001$. Responses were stable over time for those who repeated the survey (N = 13).
Conclusions: More support is needed to help stroke professionals screen for depression and suicidality in people with post-stroke

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aphasia. Screening rates may be improved by communicating clear expectations that staff should screen all stroke survivors for depression and suicidality, developing aphasia-accessible screening tools and providing training to all stroke professionals.

Stroke is the second-leading cause of death and third-leading cause of death and disability combined worldwide (Global Burden of Disease Study 2019Stroke Collaborators, 2021). Approximately 1.2 million stroke survivors live in the United Kingdom (UK) alone (Stroke Association, 2017) with an estimated aggregate societal cost of £26 billion per year, including £8.6 billion for the National Health Service (NHS) and social care (Patel et al., 2020). The current research focused on three common consequences of stroke: aphasia, depression and suicidality and specifically, screening for depression and suicidality in people with post-stroke aphasia.

Depression after stroke is common affecting approximately a third of stroke survivors (Hackett & Pickles, 2014), making it more prevalent than in the general population (Evans et al., 2016). Post-stroke depression (PSD) has been negatively associated with survival (House et al., 2001), cost of medical care (Husaini et al., 2013), resumption of social activities (Espárrago Llorca et al., 2015), functional outcome and quality of life (Žikić et al., 2014). The UK Stroke Association states that "psychological effects of stroke often remain hidden, may go unrecognised by some healthcare professionals, with the true impact remaining unknown." (Stroke Association, 2014) and have made psychological consequences of stroke "top priorities" for research (Hill et al., 2022, p.312).

Having a stroke significantly increases the risk of suicide (Stenager et al., 1998). Stroke survivors experience higher rates of suicidal ideation, suicide attempts, and completed suicides than the general population (Bartoli et al., 2017; Eriksson et al., 2015; Pompili et al., 2012). A meta-analysis of 13 studies and 10,400 participants reported a pooled proportion of suicidal ideation among stroke survivors of 11.8% (Bartoli et al., 2017). A recent meta-analysis concluded that stroke should be considered a risk factor for suicide and that a strategy to screen and treat depression and suicidal ideation in stroke survivors should be developed (Vyas et al., 2021). Although several risk factors are thought to play a role, depression appears to be the most important predictor of post-stroke suicide (Eriksson et al., 2015; Forsström et al., 2010; Pohjasvaara et al., 2001; Pompili et al., 2012).

Approximately a third of stroke survivors have aphasia (Engelter et al., 2006; Flowers et al., 2016) which is negatively associated with quality of life (Ross & Wertz, 2003), social networks (Davidson et al., 2008; Hilari & Northcott, 2006; 2017), and self-identity (Shadden, 2005). Post-stroke aphasia is also reported to be associated with distress at 3 months after stroke (Hilari et al., 2010), depression at 1 month (Shehata et al., 2015), 6 months (De Ryck et al., 2014) and 12 months post-stroke (Kauhanen et al., 2000) and, given the association between PSD and attempted suicide after stroke (Eriksson et al. 2015), potentially increased risk of suicide. People with aphasia may receive poorer care in health services, due to barriers including inaccessible information, negative staff attitudes, or unskilled communication partners (O'Halloran et al., 2008); and awareness of aphasia is low (Hill et al., 2019; Jenkins, 2012; Simmons-Mackie et al., 2020) even amongst health care professionals (Simmons-Mackie et al., 2020). Evidence-based supported communication techniques and training for healthcare staff, however, can be used to support people with aphasia to engage in meaningful healthcare conversations (Jensen et al., 2015) and make rehabilitation more communicatively accessible (O'Halloran et al., 2014; Simmons-Mackie et al., 2016), including using techniques such as use of written keywords, body language and gestures, drawings and detailed pictographs (Kagan, 1998; Simmons-Mackie, et al., 2013).

Many ways to detect and treat PSD are language-based, which can be restrictive or make it difficult for people with aphasia to access help. They are often omitted from research on PSD (Allida et al 2020; Baker et al., 2018; Townend, 2007a, Starkstein et al., 1988). A systematic review by Townend et al., (2007a) found that 71% of 129 studies reviewed, reported some exclusion of people with aphasia. Of 60 studies reviewed, 80% identified depression using clinical interviews, 10% used questionnaires, 10% used both methods combined, and fewer than half adapted depression screening for participants with aphasia (Townend et al., 2007b). This exclusion is echoed in a more recent review of interventions to prevent or treat PSD, which found almost half of studies potentially relevant, excluded people with aphasia, or inadequately reported their inclusion (Baker et al., 2018). This exclusion is not inevitable, since there are means available to support detection of PSD in people with aphasia. These include using supported communication techniques (Kagan, 1998) and aphasia friendly written materials (Rose et al., 2011) in the screening process, observer rating measures such as the Aphasic Depression Rating Scale (Benaim et al., 2004) and Stroke Aphasia Depression Questionnaire (Sutcliffe & Lincoln., 1998) or self-report measures such as the Depression Intensity Scale Circles (Turner-Stokes et al., 2005) or Visual Analogue Mood Scales (Stern et al., 1997). These are not without limitations. There has been criticism of the robustness of nonverbal self-report depression measures and the methodological quality of validation studies of these measures (Bennett et al., 2006; van Dijk et al., 2016). To our knowledge, there are no available self-report measures to identify suicidality in people with post-stroke aphasia.

Clinical guidelines recommend detection of PSD (Duncan et al., 2005; Miller et al., 2010) through routine screening. Screening is defined as "the use of simple tests across an apparently healthy population in order to identify individuals who have risk factors or early stages of disease" (World Health Organisation, WHO, 2020). Screening for PSD is conducted by staff from different professions, usually through clinical interview or standardised screening measures (Duncan et al., 2005; Miller et al., 2010). UK and Canadian guidelines for suicide risk prevention also recommend screening for suicidality in those with suicide risk factors (Canadian Coalition for Seniors, 2006; Department of Health, 2012). Screening should be provided in the context of a pathway that identifies people with PSD in a timely manner to provide them with effective treatment for depression. Although stroke is a risk factor for suicidality and should therefore trigger suicidality screening, current stroke guidelines do not include the recommendation to screen for suicidality and not all measures to screen for PSD also screen for suicidality.

Issues have been raised with compliance rates for screening all stroke survivors for depression (Rogers, 2017). According to the UK Sentinel Stroke National Audit Programme (Intercollegiate Stroke Working Party, ICSWP, 2019) 92% of patients received depression and cognition screening by discharge "if required" but it is unclear that this meets the

WHO (2020) definition of screening. A survey of stroke professionals in Scotland found that 119 (68%) of the 174 participants reported routinely screening for depression (Lees et al., 2014) and a survey of UK stroke professionals found a third reported being very unlikely to screen depression (Hart & Morris, 2008). Surveys of stroke survivors by the UK Stroke Association (2013, 2019) found that of 1880 responses, 44% reported feeling depressed after stroke, 16% reported experiencing suicidal thoughts (Stroke Association, 2019) but the majority said they did not receive any information, advice or support to help with depression (Stroke Association, 2013).

Research has provided insights into factors influencing screening behaviours (Hart & Morris, 2008; Kneebone et al., 2010; McCluskey et al., 2013). Hart and Morris (2008) applied the Theory of Planned Behaviour (TPB) (Ajzen, 1985) to this issue; a model that predicts the intention to engage in a behaviour. The TPB suggests that behavioural intentions are influenced by three factors: attitude towards the behaviour, normative beliefs about the behaviour and perceived behavioural control. Attitude towards the behaviour concerns the person's positive or negative view about the behaviour. Normative beliefs concern the person's beliefs about whether others view the behaviour as important and approve or disprove of the behaviour. Perceived behavioural control relates to the person's view of the ease or difficulty of performing the behaviour.

TPB is one of the most frequently cited and influential models for the prediction of human social behaviour (Ajzen, 2011). Several studies have found that TPB successfully predicts health-related behavioural intention (Godin & Kok, 1996) and to a lesser extent specific behaviours (Blue, 1995; Hagger et al., 2002; Hausenblas et al., 1997). A meta-analysis of 185 studies found that the TPB predicted 39% of variance in behavioural intentions and 27% of variance in actual behaviours (Armitage & Conner, 2001). Hart and Morris (2008, p.69) argue that the TPB can be applied to screening intention and that "compliance may be enhanced by training to increase knowledge and skills, providing evidence of the utility, increasing awareness of guidelines, support from colleagues and integrating mood assessment into job roles and routine assessment." There is a developing literature within the field of stroke rehabilitation using TPB to explore staff intentions and behaviours to inform how best to facilitate service delivery (Gillespie et al., 2020; Hart & Morris, 2008) and it has been successfully applied to other staff intention studies, for example in interventions for emotionalism post-stroke (Gillespie et al., 2020).

Several research teams have investigated adherence to screening for PSD and the factors influencing this for stroke survivors without aphasia (Hart & Morris, 2008; Kneebone et al., 2013; McCluskey et al., 2013). The language difficulties experienced by people with aphasia are likely to influence screening for PSD, but to date, no research has focused on screening for PSD in people with post-stroke aphasia or screening of suicidality for stroke survivors with or without aphasia. The current study aimed to address these gaps by investigating self-reported staff practices in screening for PSD and suicidality in people with post-stroke aphasia and factors influencing screening intentions and behaviours. We examined how UK stroke professionals describe screening for PSD and suicidality when working with people with aphasia, which professions report doing this, the proportion of people with aphasia on service caseloads estimated to have been screened for PSD or suicidality, and how they have carried out screening to support this process for people with aphasia. Based on previous applications of the TPB to understand staff intentions and behaviours regarding service delivery in stroke (Gillespie et al., 2020; Hart & Morris, 2008) we investigated the extent to which the TPB, and its three factors of attitudes, subjective norms and perceived control, predict staff intentions to screen PSD in people with aphasia.

Materials and Methods

Design

An online survey was conducted using a cross-sectional, between- and within- participants, observational design.

Participants

The inclusion criteria for participation were 1) offering a clinical service to people with post-stroke aphasia across the continuum of stroke care, 2) as employees of the NHS, private health care or voluntary sector, 3) in the UK. Professionals not working with people with aphasia, stroke, or working outside the UK, were excluded.

Survey

An online survey (see Appendix) was developed by the research team which combined expertise in clinical neuropsychology, clinical psychology and speech and language therapy (SLT) with extensive experience of stroke and aphasia. The survey was piloted with a group of stroke nurses, clinical neuropsychologists and a SLT working in stroke. Adaptations were made to survey items based on their recommendations. The final survey had four sections: Demographic information, Screening behaviours, Knowledge and training, and TPB questions. Demographic data were collected on profession, service and geographical region. Screening data were collected on how frequently staff reported screening for PSD and suicidality in people with aphasia. They were asked to estimate the proportion of people with post-stroke aphasia on their service caseload who had been screened for PSD and suicidality by themselves or a member of their team. Additionally, data were collected on the method used to screen for PSD and suicidality in people with aphasia, in terms of measures, adaptations and accommodations. Research by Townend et al. (2007b) and van Dijk et al. (2016) and feedback from piloting with target users was used to establish a list of screening behaviours, approaches, measures and adaptions. In addition, staff were asked about their level of training and knowledge of PSD, suicide, aphasia and stroke guidelines. Finally, a series of questions were designed to establish behavioural intent towards screening following the theoretical framework of the TPB (Ajzen, 1985) and a manual on constructing TPB questionnaires (Francis et al., 2004).

Ethical Considerations

Ethical approval was received from the University of East Anglia (UEA) Faculty of Medicine and Health Sciences Research Ethics Committee [Approval number 2019/20-011]. To access the questionnaire, participants were required to read an electronic participant information sheet and complete an online consent form. Data were stored in accordance with the General Data Protection Regulation and UEA policy.

Procedure

Between May and September 2020, online snowball sampling was used to recruit UK stroke professionals by sharing the study advertisement widely via UK-based professional bodies and special interest groups who contacted their members via email or social media post (e.g., British Psychological Society) and social media or email advertisements (e.g., via Twitter, Facebook, email and ResearchGate). Potential participants received no more than two emails inviting them to participate. In addition to consenting to participate in the research, participants were also asked for their consent to complete the survey on a second occasion, two weeks after the first, to determine the stability of their intention.

Statistical Analysis

Descriptive statistics were calculated for demographic information, screening behaviours, knowledge and training, and TPB variables. The data on reported likelihood to screen for depression and suicidality were split by profession and mean likelihood per profession calculated and data on the professions completing mood screens summarised. For the TPB statements, a series of visual analogue scales were used, consisting of a line anchored at either end by the extremes of the TBP variable being measured. Visual analogue scales are psychometric response scales measuring subjective characteristics or attitudes that have been demonstrated to be valid for use in social science research (Svensson, 2000; van Dijk et al., 2002; Wewers et al., 1990). The line was divided into 10 individual pieces, with no midpoint and following any reverse scoring required, the number the participant mark fell on was used for statistical analysis. Answers relating to PSD screening were categorised into the three TPB factors: attitudes, (Items 28, 30-31, 34-5, 43, 45-6, 48, 51), subjective norms (Items 37, 39, 41, 44) and perceived behavioural control (Items 32-3, 36, 38, 40, 42, 47, 49, 50, 53) and total scores per factor calculated and entered into a multiple regression to analyse the extent to which TPB variables predicted intention to screen for PSD in people with aphasia. It was estimated a sample size of 74 or larger ($N > 50 + 8$ x independent variables) would have significant power for a regression (Tabachnick & Fidell, 2007). Homoscedasticity and multicollinearity were examined and residuals checked for approximately normal distribution. Significant outliers, high leverage points or highly influential points were analysed and removed where necessary. All statistical assumptions were checked before analysis and the appropriate parametric or non-parametric statistical test chosen. Finally, Cronbach's α coefficients were calculated to determine internal consistency and a repeated measure ANOVA was completed to evaluate stability of responses over time by comparing data from those who completed the questionnaire twice.

Table 1. Location and Work Setting of Sample (N = 118).

	N	%
Location		
England - South	41	34.7%
England - East	37	31.4%
Scotland, Northern Ireland or Wales	17	14.4%
England - North	17	14.4%
England – West	6	5.1%
Work Setting		
Hospital stroke unit	51	43.2%
Early Supported Discharge (ESD)	14	11.9%
Community neuro-rehabilitation team	13	11.0%
Community stroke team	12	10.2%
Hospital neuro-rehabilitation ward	11	9.3%
Hospital other	5	4.2%
Private healthcare	4	3.4%
Voluntary sector	4	3.4%
Other settings (primary care, outpatient clinics, university clinics)	4	3.4%
Profession		
Speech and Language Therapist (SLT)	40	33.9%
Occupational Therapist	16	13.6%
Nurse	16	13.6%
Clinical Psychologist	12	10.2%
Stroke Physician	10	8.5%
Clinical Neuropsychologist	6	5.1%
Other Psychological Practitioners (Assistant Psychologists, Trainee Clinical Psychologists, Senior Psychological Practitioners, Psychotherapists, Educational Psychologists)	6	5.1%
Physiotherapist	4	3.4%
Medical Doctor	3	2.5%
Nursing and Therapy Assistants	3	2.5%
Stroke Support Coordinator	2	1.7%

Results

One hundred and eighteen UK stroke professionals participated in the online survey. Table 1 summarises the work context of participants, which covered a diverse range of clinical settings, professions and geographic regions, with the largest groups of participants made up of SLTs, stroke unit staff and stroke professionals working in the South or East of England. On average, participants reported spending roughly three quarters of their working hours with stroke survivors *(M = 76%, SD = 23)* and under half of their time with people with post-stroke aphasia *(M = 40%, SD = 26)*.

Screening Rates

Most participants reported that clinical psychologists (*n* = 95), speech and language therapists (*n* = 81) and occupational therapists (*n* = 77) usually completed mood and suicide screens in their services; fewer reported that nurses (*n* = 58), doctors (*n* = 46) and physiotherapists (*n* = 46) screen people with aphasia for PSD and suicidality.

Table 2 summarises responses to questions about self-reported likelihood to screen a person with post-stroke aphasia, for PSD or suicidality during usual clinical practice, per professional group. Participants estimated that their clinical teams had screened many but not all people with post-stroke aphasia on their caseloads (*M* = 73.1%, *SD* = 31.3) and

Table 2. Individual Likelihood of Screening People with Post-Stroke Aphasia for Depression and Suicidality by Professional Group.

Professional Groups, listed according to likelihood of screening for Depression and Suicidality[a]	Individual likelihood to screen a person with post-stroke aphasia for depression during usual clinical practice (%) Mean	SD	Individual likelihood to screen a person with post-stroke aphasia for suicidality during usual clinical practice (%) Mean	SD	Statistical [b] Significance
Psychology (*N* = 21)	92.2	19.3	76.3	31.8	*t* (22) = 3.38, p = .003
Voluntary Sector (*N* = 3)	91.7	14.4	67.0	57.2	[c]
Occupational Therapy (*N* = 17)	91.5	15.0	39.7	34.2	*t* (16) = 5.265, p < .001
Speech and Language Therapy (*N* = 40)[d]	63.8	36.5	34.0	35.4	*t* (39) = 5.847, p < .001
Medicine (*N* = 13)	58.9	36.9	25.8	37.0	*t* (12) = 3.16, p = .008
Nursing (*N* = 17)	54.7	39.5	32.9	38.9	*t* (16) = 3.08 p = .007
Physiotherapy (*N* = 4)	46.3	39.5	18.8	21.0	[c]
Total (*N* = 117)[d]	71.6	34.7	42.4	39.0	*t* (116) = 9.53, p < .001

[a] Pre- and post-registration members and sub-specialties of professional groups have been combined to avoid risk of de-anonymisation.

[b] Significance was tested using paired, two-tailed, t-tests.

[c] No analysis possible due to small numbers.

[d] One missing data point

Table 3. Depression Screening Approaches, Adaptions and Accommodations Reported (N=118).

Screening Approaches Used	*n*	%	*n*	%
Reported Methods Used to Screen	**Depression**		**Suicidality**	
Clinical Interview with Patient	86	73	70	61
Standardised Self-Report Measure with Patient	75	64	45	39
Clinical Interview with a Family Member, Carer or Staff	63	53	42	37
Standardised Self-Report Measure with a Family Member, Carer or Staff	49	42	27	24
Observer Rating Scale	36	31	16	14
Other (e.g., Visual Scales, Talking Mats™ Assessment, Observation)	23	19	12	10
No screening used currently	9	8	33	29
Standardised Self-Report Measures Used				
The Depression Intensity Scale Circles (DISCS, Turner-Stokes et al., 2005)	62	53		
Visual Analogue Mood Scale (VAMS, Stern et al., 1997)	47	40		
Hospital Anxiety and Depression Scale (HADS, Zigmond & Snaith, 1983)	37	31		
Patient Health Questionnaire (PHQ, Kroenke et al., 2001)	31	26		
Distress Thermometer (Gillespie & Cadden, 2013)	24	20		
Aphasia Impact Questionnaire (Swinburn et al., 2015)	19	16		
CORE 10 (Barkham et al., 2013)	11	9		
Brief Assessment Schedule Depression Cards (BASDEC, Adshead et al., 1992)	5	4		
Cornell Depression Scale (Alexopoulos et al., 1988)	4	3		
Other	18	15		
Standardised Observer Rating Scale Used				
Stroke Aphasic Depression Questionnaire (SADQ-21, Sutcliffe & Lincoln, 1998)	24	20		
Stroke Aphasic Depression Questionnaire (SADQ-H10, Lincoln et al., 2000)	19	17		
Signs of Depression Scale (SODS, Hammond et al., 2000)	15	13		
Aphasia Depression Rating Scale (ADRS, Benaim et al., 2004)	5	4		
Hamilton Depression Rating Scale (HDRS, Hamilton, 1960)	2	2		
Reported Frequency of Adaptions to Clinical Interviews				
Always	68	58		
Routinely (>75%)	25	22		
Often (>50%)	6	5		
Occasionally (<25%)	9	8		
None	8	7		
Reported Adaptions Used to Support People to Understand Questions				
Accepting Non-verbal Answers e.g., gesture	110	93		
Checking Understanding	109	92		
Additional Time	105	89		
Provide Pictorial Support	100	85		
Provide Options for Answers e.g., words or picture	99	84		
Closed Questions	97	82		
Use Short Sentences	97	82		
Provide Pen & Paper	96	81		
Repetition	94	80		
Provide Written Support e.g., Key Words	89	75		
Re-phrasing Questions	87	74		
Use Only One Topic Per Sentence	81	69		
Explain Written Material	80	68		
Multiple Choice	77	65		
Providing Written Information in Alternative Formats e.g., Easy Read	69	58		
Joint Session with a Speech & Language Therapist	64	54		
Personalised Questions	63	53		
Talking Mats™	44	37		
Joint Session with a Psychologist	17	14		

rated their individual likelihood to screen people with post-stroke aphasia for depression at a similar level (*M* = 71.6%, *SD* = 34.7). In contrast, they estimated that their clinical teams had screened fewer people with post-stroke aphasia on their caseloads for suicidality (*M* = 42.5%, *SD* = 39) and rated their individual likelihood to screen people with post-stroke aphasia for suicidality at a similar level (*M* = 42.4%, *SD* = 39).

Table 2 indicates the variation in individual likelihood to screen for depression and suicidality in general and between professions. A high likelihood of screening for depression was reported by psychologists, voluntary sector staff and occupational therapists. In contrast, stroke professionals in SLT, medicine, nursing and physiotherapy reported lower likelihood to screen for depression. All professions reported themselves as significantly less likely to screen for suicidality than PSD (Table 2). For all professional groups except psychological practitioners and voluntary sector staff, likelihood to screen for suicidality fell below 50%.

Current Screening Practices

Table 3 summarises the approaches, adaptations and accommodations participants reported using to screen people with aphasia for PSD and suicidality. Most participants reported using a combination of standardised and non-standardised measures. Clinical interview with the patient was the most common method used to screen for PSD (*n* = 86, 73%) and suicidality (*n* = 70, 61%), followed by standardised self-report measures (Depression: *n* = 75, 64%; Suicidality: *n* = 45, 39%). Many participants reported interviewing family members, carers or staff to identify depression (*n* = 63, 53%) or suicidality (*n* = 27, 24%) or using standardised self-report measures with a family member, carer or staff to screen for PSD (*n* = 49, 42%) or suicidality (*n* = 27, 24%). In contrast, the use of observer-rated scales was a less commonly reported method for screening for PSD (*n* = 36, 31%) or suicidality (*n* = 16, 14%). Almost all participants reported using adaptations to screen people with aphasia for depression and suicidality at least occasionally (*n* = 108, 92%) (Table 3). They reported using a broad variety of self-report measures and observer rating scales, some designed to be accessible for those with aphasia and some not; over half of respondents did joint sessions with SLTs (Table 3).

Level of Training and Awareness of Guidelines

Almost all participants reported having received either formal or informal training on aphasia (*n* = 114, 97%). Over three-quarters reported having received either formal or informal training on depression (*n* = 92, 79%) and just under two-thirds had received either formal or informal training on suicide (*n* = 72, 62%). On a ten-point scale from 1 (‘comprehensive’) to 10 (‘restricted’), most participants (*n* = 94, 80%) rated their level of training as more comprehensive than restricted (e.g. ratings of 1-5) with a large proportion (*n* = 47, 40%) rating their level of training as comprehensive (e.g. ratings of 1). Approximately half described their level of training on screening for depression in post-stroke aphasia as comprehensive (*n* = 63, 53.8%). Most participants (*n* = 85, 73.9%) reported awareness of, or having read, clinical guidelines for depression. Many participants (*n* = 65, 55.6%) reported awareness of, or having read, aphasia guidelines.

Theory of Planned Behaviour (TPB)

Table 4 provides descriptive statistics for the TPB variables. All assumptions concerning multicollinearity, outliers, normality, linearity, homoscedasticity, independence of residuals were met. A multiple regression (summarised in Table 5) found that the TPB variables predicted 48% of variance in the intention to screen for depression, $R^2 = .48$, $F\ (3,101) = 30.60$, $p < .001$. Normative beliefs significantly predicted likelihood to screen for depression in post-stroke aphasia, $\beta = .62$, $p < .001$.

Internal Consistency

The Attitudes (α= .83) and Normative Beliefs (α =. 80) TPB variables had high internal consistencies with Cronbach's α >.8. The Control Beliefs TPB variable had good internal consistency (α = .71).

Test-Retest Reliability

Thirteen (11%) participants completed the questionnaire twice with at least two weeks between responses. Descriptive statistics indicated that the average change in scores on TPB variables was small. The mean change in Attitudes to screening was an increase of 2.6 (*SD* = 5.21), in Normative Beliefs concerning screening, there was a mean increase of 0.8 (*SD* = 3.83) and in Control Beliefs regarding screening, there was a mean increase of 1.7 (*SD* = 7.22). The mean change over two weeks in the reported likelihood to screen was also small: for depression the average change was a decrease of 2.92% (*SD* = 13.9). The average change in reported likelihood to screen for suicidality was an increase of 13.13% (*SD* = 6.25). Repeated measure ANOVAs were completed to evaluate stability of responses over time. A series of repeated measures ANOVAs with a Greenhouse-Geisser correction

Table 4. Descriptive Statistics for TPB Variables (N=105*).

Theory of Planned Behaviour Component	Possible Range	Observed Range	Mean	SD
Attitudes	13-130	62- 130	110.03	12.97
Normative Beliefs	4-40	7- 40	29.53	8.57
Control Beliefs	10-100	27- 89	58.77	12.97

*13 (15%) participants did not fully complete all TPB questions so only 105 participants were included in the multiple regression

Table 5. Multiple Regression: Predicting the Likelihood to Screen for Depression from TPB variables (N=105).

Variables	*B*	*SE B*	*β*
Attitudes	0.15	0.21	0.05
Normative Beliefs	2.54	0.33	0.62**
Control Beliefs	0.31	0.23	0.11
R^2		.48	
F		30.60**	

***p*<.001

determined that the reported likelihood to screen for depression, $F(1,12) = 1.30$, $p = .277$, the reported likelihood to screen for suicide, $F(1, 12) = .17$, $p = .680$, Attitude, $F(1,9) = 2.36$, $p = .159$, Normative Beliefs, $F(1, 9) = .44$, $p = .525$, and Control Beliefs, $F(1, 9) = .55$, $p = .476$, did not differ statistically significantly between time points, suggesting that responses were stable over time

Discussion

This is the first study to examine screening practices for post-stroke depression (PSD) and suicidality in people with post-stroke aphasia and the first to examine reported suicidality screening rates post-stroke. One hundred and eighteen UK stroke professionals, across professional groups, clinical settings and regions, completed the survey. Some reported that their teams screened everyone with aphasia on their caseload for depression and suicidality, but this was inconsistent and large variations in practice were apparent. There were promising findings with participants estimating that a large percentage of people with aphasia seen by their services were screened for depression and that as individuals they were highly likely to screen for depression. We found a similar self-reported rate of PSD screening to Lees et al., (2014) but a higher rate than Hart and Morris (2008). Both these studies examined screening of all stroke survivors, rather than specifically people with aphasia.. These findings suggest the National Stroke Strategy (Department of Health, 2007), which recommended screening, and was enacted between these studies, may have had a positive impact on rates that has been sustained. Encouragingly, depression screening rates in our study were not markedly lower for people with aphasia, than stroke survivors without aphasia.

Variation in screening practices between professions was reported. Participants reported that clinical psychologists, SLTs and occupational therapists usually completed mood and suicide screens in their services. It is interesting to note, however, that despite participants reporting that SLTs screened depression and suicidality in their services, SLT participants themselves (the largest group of respondents), as well as physiotherapists, nurses and doctors, reported lower likelihood to screen, compared to psychologists, voluntary sector staff and occupational therapists. As screening for PSD in people with post-stroke aphasia has not previously been investigated, it is possible that other professionals may assume incorrectly that SLTs are screening PSD and suicidality in people with post-stroke aphasia and, therefore, not conduct screening themselves. Further research would be needed to examine this, however, as the current survey did not identify or compare the answers from participants from different professions working in the same services. As SLTs have the most knowledge of aphasia and supported communication techniques, their involvement in screening PSD and suicidality is likely to be useful. However, SLTs report low knowledge, skills and confidence working in the area of mental health, specifically counselling (Sekhon et al., 2015; Northcott et al., 2018). Training for SLTs in mental health is limited (Doud et al., 2020; Sekhon et al., 2022a), however promisingly there is evidence that training increases their self-rated competency for counselling approaches to support psychological wellbeing in post-stroke aphasia (Sekhon et al., 2022b). Clinical competencies to facilitate psychological interventions for people with aphasia have also been developed to support training and development

(Baker et al., 2022). In this study, over half of respondents did joint sessions with SLTs, which is a promising result and may be necessary for sharing expertise across the MDT.

The approach to screening people with post-stroke aphasia for PSD reported by UK stroke professionals, was detailed, thorough and made good use of adaptations that could support people with aphasia in the process. Most of our participants reported using validated visual self-report measures such as the Depression Intensity Scale Circles (Turner-Stokes et al., 2005) and a smaller number reported using verbal self-report measures e.g. the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983). These findings contrast with those of Hart and Morris (2008) who found that most participants used verbal measures and very few reported using visual mood scales. The most frequently reported method in our survey was to combine clinical interview and standardised self-report measures with people with aphasia and family members. The approach reported by participants mirrors an NHS improvement suggestion that mood assessments use "a simple brief standardised measure . . . followed up with an interview . . . about the patient's view of their current emotional state" (Gillham & Clark, 2011, p.10). Almost all participants who used clinical interview with people with aphasia, reported routinely using supported communication techniques for this and using visual, rather than language-loaded (paper-based and written), self-report measures. This may, however, reflect the high number of SLT respondents in this survey. This is important to note as some language-based self-report measures have been validated in stroke, but not with people with aphasia, and may not be accessible for people with aphasia. Visual self-report mood measures have been validated in stroke and aphasia; though some have questioned the robustness of these measures and the methodology of these validation studies (Bennett et al., 2006; van Dijk et al., 2016). Despite thorough screening methods and good use of total communication strategies, reported screening rates remained below 100%. Infrequent use of observer-rated measures of mood was also found. This is perhaps surprising, as the use of observer-rated measures of mood, such as the Stroke Aphasic Depression Questionnaire (SAD-Q, Sutcliffe & Lincoln, 1998) has been suggested for people with more severe communication or cognitive difficulties following stroke (Gilham & Clark, 2011). Moreover, the 10-item versions of the SAD-Q (i.e., the SADQ-10 and the SADQ-H10) as well as the Signs of Depression Scale (Hammond et al., 2000) were considered appropriate for routine clinical practice by a systematic review of measures for screening depression in people with post-stroke aphasia (van Dijk et al., 2016).

The high screening rate for PSD in people with post-stroke aphasia, was not echoed for screening suicidality, despite the severity of the risks involved. Ratings of likelihood to screen for suicidality were significantly lower than those for PSD across all professional groups. This was mirrored in the estimates of the percentage of people with aphasia on service caseloads who had been screened for suicidality. No previous research has investigated self-reported suicidality screening rates. However, Kneebone et al., (2010) created a protocol to support occupational therapists to screen for low mood and suicidality, in those with and without communication difficulties. In a follow up study, it was reported that the suicide question may not have been asked; no record was evident in patient notes (Kneebone et al., 2013). It is possible that non psychologists may assume that if they screen for depression and refer to a mental health expert, the latter will then screen for suicidality.

To our knowledge, there is no screening tool for suicidality for people with aphasia, which may explain why interview with patients was the most commonly used method for suicidality. It is also possible that the lower likelihood to screen suicidality in people with post-stroke aphasia, reflects that suicidality screening is not included in UK clinical guidelines for stroke.

The TPB accounted for half the variation in likelihood to screen for PSD in people with post-stroke aphasia, with normative beliefs about screening strongly predicting screening intent. Normative beliefs concern the extent to which the individual believes others think they should or should not perform a behaviour (Azjen, 2011). In this context, participant beliefs regarding whether colleagues, others in their profession and their employer expect them to screen for depression in post-stroke aphasia, predicted screening intent. These results add to literature supporting the TPB as a model for understanding screening behaviour. Hart and Morris (2008) applied the TPB model to depression screening practices and concluded that despite limitations, the TPB provided an effective framework for identifying factors that influence depression screening. As in the current study, they found that normative beliefs predicted screening intention, however in contrast to our results, they found control beliefs also predicted intent. This may be because Hart and Morris (2008) used a correlational approach rather than multiple regression and did not examine screening in post-stroke aphasia. Gillespie et al., (2020) also concluded that a TPB model predicted intention to provide non-pharmacological approaches for post-stroke emotionalism; they found that attitudes and subjective norms predicted intent. Thus there is growing evidence that subjective norms predict behavioural intent in stroke professionals. Our findings suggest that variation in, or lack of, subjective norms concerning screening people with post-stroke aphasia for PSD and suicidality may partially account for variable and low intent to screen. This is consistent with a qualitative study of staff experiences of treating PSD in people with aphasia, which found a lack of clarity in expectations of the roles and responsibilities for managing depression screening among a multidisciplinary stroke team (Baker et al., 2021).

Strengths and Limitations

People with post-stroke aphasia are frequently excluded from PSD research (Allida et al., 2020; Brady et al., 2013; Townend et al., 2007a), have poorer mood and mental health outcomes compared to those post-stroke without aphasia (Hilari et al., 2010; Northcott et al., 2015) and have been reported to receive poorer care (O'Halloran et al., 2008). Until now, however, PSD and suicidality screening for people with post-stroke aphasia have not been researched. The current study begins to fill that gap. It goes beyond collecting data on screening rates and approaches, to predicting staff screening intent on the basis of a theoretical model of planned behaviour. The theory used to predict screening intention is one of the most cited and influential models for the prediction of human social behaviour (Ajzen, 2011) found to have a significant pooled effect size for predicting intention (Armitage & Conner, 2001) and to predict clinician behaviour from self-reported intentions (Eccles et al., 2006).

A number of limitations should be acknowledged. Recruitment was limited to UK stroke professionals and further research is needed to test whether the findings generalise internationally. Recruitment via professional bodies and social media may have meant our sample of stroke professionals had a particular interest in screening, PSD, suicidality or aphasia. It was not possible to assess stability of screening intent through test-retest analysis robustly due to the small number of participants completing the questionnaire twice, though descriptive statistics indicated consistency of screening intent over time. We suggest that rather than offering the option to repeat questionnaires, future TPB surveys of screening intention consider incorporating an explicit requirement that participants should complete the questionnaire twice over a fortnight or more apart, to allow a more robust assessment of the stability of responses over time.

Qualitative research has found that some hospital-based stroke professionals "dread, limit or avoid talking with patients with aphasia" and might benefit from support including ongoing education and on-the-job training in communicating with people with aphasia and a shift in ward culture (Carragher et al., 2021, p.3003). One limitation of our survey is that while participants were asked about the extent of their training on aphasia, as well as on depression, we did not distinguish between formal and informal training, so we lack specific data on the training received. Given the findings of Carragher et al. (2021) it seems likely that more formal training is needed on working with people with post-stroke aphasia. Research in the area of mental health and aphasia, would indicate that SLTs feel under-skilled in the area of mood and depression, and therefore more training may be needed for SLTs working in this area, or more focus on multi-disciplinary work and assessments.

There has been criticism of the TPB (Sniehotta et al., 2014) and alternative models of behaviour, for example the Capability, Opportunity, Motivation – Behaviour (COM-B) model of behaviour (Michie et al., 2014) could have been applied. The variance predicted by the TPB model in this study was significant however, supporting the utility of the TPB in this context. Moreover, previous TPB research has relied on Likert scales and correlational analyses, rather than the visual analogue scales to facilitate parametric analyses and fully powered regression used here. The validity of visual analogue scales has been demonstrated in the social sciences (Svensson et al., 2000; van Dijk et al 2002; Wewers et al., 1990) though it is acknowledged that both Likert and visual analogue scales, have strengths and weaknesses (Michie et al., 2014).

Recommendations

It is promising to find that PSD screening compliance was not markedly lower in this study focussing on people with aphasia, than in studies of stroke survivors in general (Hart & Morris, 2008; Lees et al., 2014). However, as people with aphasia have increased risk of PSD (De Ryck et al., 2014; Kauhanen et al., 2000; Shehata et al., 2015) we might expect a higher rate of PSD screening corresponding to higher level of risk. Screening is part of a pathway to detect and treat PSD rather than a standalone activity by a clinician. Overall, our findings suggest more effort is required to support services and teams to meet guideline recommendations to screen PSD in all stroke survivors and suicidality in all people with relevant risk factors including stroke (Canadian Coalition for Seniors, 2006; Department of Health, 2012; Duncan et al., 2005; Miller et al., 2010). In particular, our findings provide important evidence that suicide risk is not being assessed routinely for people with post-stroke aphasia. Stroke guidelines currently recommend screening mood but not suicide, despite other guidance to screen people with suicide risk factors, such as stroke or depression (Eriksson et al., 2015; Forsström et al., 2010; Pohjasvaara et al., 2001; Pompili et al., 2012). It is therefore recommended that stroke guidelines consider including a recommendation to screen suicide risk to make expectations of services explicit for this aspect of clinical risk assessment, and that a screening tool accessible for, and validated with, people with aphasia is developed.

Many of the stroke professionals surveyed reported having received training on depression. Most were aware of clinical guidelines for depression. A large proportion had received training on suicide. However, only just over half described their training on screening depression in post-stroke aphasia as comprehensive. Our findings therefore support a recommendation that services should provide greater training on PSD and suicide risk for all staff working with stroke survivors. They suggest that communicating clear normative beliefs that screening is necessary and expected of staff may help increase PSD and suicidality screening rates in people with aphasia. This could be achieved through inclusion of screening in job descriptions, publicising guidelines recommending post-stroke depression screening and suicidality screening in people with known risk factors such as aphasia and pre-stroke depression, and audits of screening rates, shared with staff and published.

More research is required to investigate post-stroke depression and suicidality in people with aphasia, including validation studies of self-report mood measures, the creation and validation of measures of suicidality, and use of protocols to support staff to screen for suicidality, including specific training on how to use supported communication strategies, and adapt the screening process when working with people with aphasia.

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

Disclosure statement

No potential conflict of interest was reported by the authors.

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References

Adshead, F., Cody, D. D., & Pitt, B. (1992). BASDEC: A novel screening instrument for depression in elderly medical inpatients. *BMJ (Clinical research ed.)*, *305*(6850), 397. https://doi.org/10.1136/bmj.305.6850.397

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhi & J. Beckmann (Eds.), *Action-control: From cognition to behaviour*. Springer.

Ajzen I. (2011). The theory of planned behaviour: Reactions and reflections. *Psychology & Health*, *26*(9), 1113–1127. https://doi.org/10.1080/08870446.2011.613995

Alexopoulos, G. S., Abrams, R. C., Young, R. C., & Shamoian, C. A. (1988). Cornell Scale for depression in dementia. *Biological Psychiatry*, *23*(3), 271–284. https://doi.org/10.1016/0006-3223(88)90038-8

Allida, S., Cox, K. L., Hsieh, C. F., Lang, H., House, A., & Hackett, M. L. (2020). Pharmacological, psychological, and non-invasive brain stimulation interventions for treating depression after stroke. *The Cochrane Database of Systematic Reviews*, *1*(1), CD003437. https://doi.org/10.1002/14651858.CD003437.pub4

Armitage, C. J., & Conner, M. (2001). Efficacy of the Theory of Planned Behaviour: A meta-analytic review. *The British Journal of Social Psychology*, *40*(Pt 4), 471–499. https://doi.org/10.1348/014466601164939

Baker, C., Ryan, B., Wallace, S., Wong, D., Thomas, S., Rose, M., Kneebone, I. & Jones, E. (2022, November 4). Clinical competencies to facilitate psychological interventions for people with aphasia. [Lightning talk]. Aphasiology Symposium of Australasia, Melbourne, Victoria, Australia.

Baker, C., Worrall, L., Rose, M., Hudson, K., Ryan, B., & O'Byrne, L. (2018). A systematic review of rehabilitation interventions to prevent and treat depression in post-stroke aphasia. *Disability and Rehabilitation*, *40*(16), 1870–1892. https://doi.org/10.1080/09638288.2017.1315181

Baker, C., Worrall, L., Rose, M., & Ryan, B. (2021). Stroke health professionals' management of depression after post-stroke aphasia: A qualitative study. *Disability and Rehabilitation*, *43*(2), 217–228. https://doi.org/10.1080/09638288.2019.1621394

Barkham, M., Bewick, B., Mullin, T., Gilbody, S., Connell, J., Cahill, J., Mellor-Clark, J. Richards, D., Unsworth, G. & Evans, C. (2013). The CORE-10: A short measure of psychological distress for routine use in the psychological therapies. *Counselling and Psychotherapy Research*, *13*(1), 3–13. http://doi.org/10.1080/14733145.2012.729069

Bartoli, F., Pompili, M., Lillia, N., Crocamo, C., Salemi, G., Clerici, M., & Carrà, G. (2017). Rates and correlates of suicidal ideation among stroke survivors: A meta-analysis. *Journal of Neurology, Neurosurgery, and Psychiatry*, *88*(6), 498–504. https://doi.org/10.1136/jnnp-2017-315660

Benaim, C., Cailly, B., Perennou, D., & Pelissier, J. (2004). Validation of the aphasic depression rating scale. *Stroke*, *35*(7), 1692–1696. https://doi.org/10.1161/01.STR.0000130591.95710.20

Bennett, H. E., Thomas, S. A., Austen, R., Morris, A. M., & Lincoln, N. B. (2006). Validation of screening measures for assessing mood in stroke patients. *The British Journal of Clinical Psychology*, *45*(Pt 3), 367–376. https://doi.org/10.1348/014466505x58277

Blue, C. L. (1995). The predictive capacity of the theory of reasoned action and the theory of planned behavior in exercise research: An integrated literature review. *Research in Nursing & Health*, *18*(2), 105–121. https://doi.org/10.1002/nur.4770180205

Brady, M. C., Fredrick, A., & Williams, B. (2013). People with aphasia: Capacity to consent, research participation and intervention inequalities. *International Journal of Stroke*, *8*(3), 193–196. https://doi.org/10.1111/j.1747-4949.2012.00900.x

Canadian Coalition for Seniors' Mental Health. (2006). *National guidelines for seniors' mental health: The assessment of suicide risk and prevention of suicide*. Retrieved September 25th, 2022, from https://ccsmh.ca/wp-content/uploads/2016/03/NatlGuideline_Suicide.pdf

Carragher, M., Steel, G., O'Halloran, R., Torabi, T., Johnson, H., Taylor, N. F., & Rose, M. (2021). Aphasia disrupts usual care: The stroke team's perceptions of delivering healthcare to patients with aphasia. *Disability and Rehabilitation*, *43*(21), 3003–3014. https://doi.org/10.1080/09638288.2020.1722264

Davidson, B., Howe, T., Worrall, L., Hickson, L., & Togher, L. (2008). Social participation for older people with aphasia: The impact of communication disability on friendships. *Topics in Stroke Rehabilitation*, *15*(4), 325–340. https://doi.org/10.1310/tsr1504-325

Department of Health (2007). *National stroke strategy*. Department of Health, UK Government.

Department of Health. (2012) *Preventing suicide in England: A cross-government outcomes strategy to save lives*. Retrieved September 25th, 2022, from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/430720/Preventing-Suicide-.pdf

De Ryck, A., Brouns, R., Geurden, M., Elseviers, M., De Deyn, P. P., & Engelborghs, S. (2014). Risk factors for poststroke depression: Identification of inconsistencies based on a systematic review. *Journal of Geriatric Psychiatry and Neurology*, *27*(3), 147–158. https://doi.org/10.1177/0891988714527514

Doud, A. K., Hoepner, J. K., & Holland, A. L. (2020). A survey of counseling curricula among accredited communication sciences and disorders graduate student programs. *American Journal of Speech-language Pathology*, *29*(2), 789–803. https://doi.org/10.1044/2020_AJSLP-19-00042

Duncan, P. W., Zorowitz, R., Bates, B., Choi, J. Y., Glasberg, J. J., Graham, G. D., Katz, R. C., Lamberty, K., & Reker, D. (2005). Management of adult stroke rehabilitation care: A clinical practice guideline. *Stroke*, *36*(9), e100–e143. https://doi.org/10.1161/01.STR.0000180861.54180.FF

Eccles, M. P., Hrisos, S., Francis, J., Kaner, E. F., Dickinson, H. O., Beyer, F., & Johnston, M. (2006). Do self- reported intentions predict clinicians' behaviour: A systematic review. *Implementation Science: IS*, *1*, 28. https://doi.org/10.1186/1748-5908-1-28

Engelter, S. T., Gostynski, M., Papa, S., Frei, M., Born, C., Ajdacic-Gross, V., Gutzwiller, F., & Lyrer, P. A. (2006). Epidemiology of aphasia attributable to first ischemic stroke: Incidence, severity, fluency, etiology, and thrombolysis. *Stroke*, *37*(6), 1379–1384. https://doi.org/10.1161/01.STR.0000221815.64093.8c

Eriksson, M., Glader, E. L., Norrving, B., & Asplund, K. (2015). Poststroke suicide attempts and completed suicides: A socioeconomic and nationwide perspective. *Neurology*, *84*(17), 1732–1738. https://doi.org/10.1212/WNL.0000000000001514

Espárrago Llorca, G., Castilla-Guerra, L., Fernández Moreno, M. C., Ruiz Doblado, S., & Jiménez Hernández, M. D. (2015). Post-stroke depression: An update. *Neurologia (Barcelona, Spain)*, *30*(1), 23–31. https://doi.org/10.1016/j.nrl.2012.06.008

Evans, J., Macrory, I., & Randall. C. (2016). *Measuring national wellbeing: Life in the UK*. Retrieved September 25th, 2022, from https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/articles/measuringnationalwellbeing/2016

Flowers, H. L., Skoretz, S. A., Silver, F. L., Rochon, E., Fang, J., Flamand-Roze, C., & Martino, R. (2016). Poststroke aphasia frequency, recovery, and outcomes: A systematic review and meta-analysis. *Archives of Physical Medicine and Rehabilitation*, *97*(12), 2188–2201.e8. https://doi.org/10.1016/j.apmr.2016.03.006

Forsström, E., Hakko, H., Nordström, T., Räsänen, P., & Mainio, A. (2010). Suicide in patients with stroke: A population-based study of suicide victims during the years 1988-2007 in northern Finland. *The Journal of Neuropsychiatry and Clinical Neurosciences*, *22*(2), 182–187. https://doi.org/10.1176/jnp.2010.22.2.182

Francis, J., Eccles, M. P., Johnston, M., Walker, A. E., Grimshaw, J. M., Foy, R., Kaner, E. F. S., Smith, L. & Bonetti, D. (2004). *Constructing questionnaires based on the theory of planned behaviour: A manual for health services researchers*. Centre for Health Services Research, University of Newcastle upon Tyne.

Gillespie, D. C., & Cadden, A. P. (2013). The Distress Management System for Stroke (DMSS): An approach for screening and initial intervention for post-stroke psychological distress. *Journal of Nursing Education and Practice 3*(3):50–58 https://doi.org/10.5430/jnep.v3n10p150

Gillespie, D. C., Cadden, A. P., West, R. M., & Broomfield, N. M. (2020). Non-pharmacological interventions for post-stroke emotionalism (PSE) within inpatient stroke settings: A theory of planned behavior survey. *Topics in Stroke Rehabilitation*, *27*(1), 15–24. https://doi.org/10.1080/10749357.2019.1654241

Gillham S, & Clark L. (2011). Psychological care after stroke: Improving stroke services for people with cognitive and mood disorders. Retrieved September 25th, 2022, from https://www.nice.org.uk/media/default/sharedlearning/531_strokepsychologicalsupportfinal.pdf

Global Burden of Disease Study 2019 Stroke Collaborators (2021). Global, regional, and national burden of stroke and its risk factors, 1990-2019: A systematic analysis for the Global Burden of Disease Study 2019. *The Lancet Neurology*, *20*(10), 795–820. https://doi.org/10.1016/S1474-4422(21)00252-0

Godin, G., & Kok, G. (1996). The theory of planned behavior: A review of its applications to health-related behaviors. *American Journal of Health Promotion: AJHP*, *11*(2), 87–98. https://doi.org/10.4278/0890-1171-11.2.87

Hackett, M. L., & Pickles, K. (2014). Part I: frequency of depression after stroke: An updated systematic review and meta-analysis of observational studies. *International Journal of Stroke*, *9*(8), 1017–1025. https://doi.org/10.1111/ijs.12357

Hagger, M. S., Chatzisarantis, N. L. D., & Biddle, S. J.H. (2002). A meta-analytic review of the theories of reasoned action and planned behavior in physical activity: Predictive validity and the contribution of additional variables. *Journal of Sport & Exercise Psychology*, *24*(1), 3–32. https://doi.org/10.1123/jsep.24.1.3

Hamilton M. (1960). A rating scale for depression. *Journal of Neurology, Neurosurgery, and Psychiatry*, *23*(1), 56–62. https://doi.org/10.1136/jnnp.23.1.56

Hammond, M. F., O'Keeffe, S. T., & Barer, D. H. (2000). Development and validation of a brief observer-rated screening scale for depression in elderly medical patients. *Age and Ageing*, *29* (6), 511–515. https://doi.org/10.1093/ageing/29.6.511

Hart, S., & Morris, R. (2008). Screening for depression after stroke: An exploration of professionals' compliance with guidelines. *Clinical Rehabilitation*, *22*(1), 60–70. https://doi.org/10.1177/0269215507079841

Hausenblas, H. A., Carron, A. V., & Mack, D. E. (1997). Application of the theories of reasoned action and planned behavior to exercise behavior: A meta-analysis. *Journal of Sport and Exercise Psychology*, *19*(1):36–51.

Hilari, K. & Northcott, S. (2006). Social support in people with chronic aphasia. *Aphasiology*, 20(1), 17–36. https://doi.org/10.1080/02687030500279982

Hilari, K., & Northcott, S. (2017). "Struggling to stay connected": Comparing the social relationships of healthy older people and people with stroke and aphasia. *Aphasiology*, *31*(6), 674–687. https://doi.org/10.1080/02687038.2016.1218436

Hilari, K., Northcott, S., Roy, P., Marshall, J., Wiggins, R. D., Chataway, J., & Ames, D. (2010). Psychological distress after stroke and aphasia: The first six months. *Clinical Rehabilitation*, *24* (2), 181–190. https://doi.org/10.1177/0269215509346090

Hill, A., Blevins, R., & Code, C. (2019). Revisiting the public awareness of aphasia in Exeter: 16 years on. *International Journal of Speech-Language Pathology*, *21*(5), 504–512. https://doi.org/10.1080/17549507.2018.1485742

Hill, G., Regan, S., Francis, R., & Stroke Priority Setting Partnership Steering Group (2022). Research priorities to improve stroke outcomes. *The Lancet. Neurology*, *21*(4), 312–313. https://doi.org/10.1016/S1474-4422(22)00044-8

House, A., Knapp, P., Bamford, J., & Vail, A. (2001). Mortality at 12 and 24 months after stroke may be associated with depressive symptoms at 1 month. *Stroke*, *32*(3), 696–701. https://doi.org/10.1161/01.str.32.3.696

Husaini, B., Levine, R., Sharp, L., Cain, V., Novotny, M., Hull, P., Orum, G., Samad, Z., Sampson, U., & Moonis, M. (2013). Depression increases stroke hospitalization cost: an analysis of 17,010 stroke patients in 2008 by race and gender. *Stroke Research and Treatment*, *2013*, 846732. https://doi.org/10.1155/2013/846732

Intercollegiate Stroke Working Party, ICSWP. (2019). Sentinel Stroke National Audit Programme (SSNAP) 2018. King's College London. https://www.strokeaudit.org/Documents/National/Clinical/Apr2017Mar2018/Apr2017Mar2018-AnnualReport.aspx

Jenkins, S. J. (2012). *Public awareness of aphasia*. [MA dissertation, Cleveland State University]. EngagedScholarship @ Cleveland State University Digital Repository. https://engagedscholarship.csuohio.edu/cgi/viewcontent.cgi?article=1392&context=etdarchive

Jensen, L. R., Løvholt, A. P., Sørensen, I. R., Blüdnikow, A. M., Iversen, H. K., Hougaard, A., Mathiesen, L. L. & Forchhammer, H. B. (2015). Implementation of supported conversation for communication between nursing staff and in-hospital patients with aphasia. *Aphasiology*, *29*(1), 57–80. https://doi.org/10.1080/02687038.2014.955708

Kagan, A. (1998). Supported conversation for adults with aphasia: methods and resources for training conversation partners, *Aphasiology*, *12*(9), 816–830. https://doi.org/10.1080/02687039808249575

Kauhanen, M. L., Korpelainen, J. T., Hiltunen, P., Määttä, R., Mononen, H., Brusin, E., Sotaniemi, K. A., & Myllylä, V. V. (2000). Aphasia, depression, and non-verbal cognitive impairment in ischaemic stroke. *Cerebrovascular Diseases*, *10*(6), 455–461. https://doi.org/10.1159/000016107

Kneebone, I., Baker, J., & O'Malley, H. (2010). Screening for depression after stroke: Developing protocols for the occupational therapist. *British Journal of Occupational Therapy*, *73*(2):71–6. https://doi.org/10.4276/030802210X12658062793843

Kneebone, I., Stone, N., Robertson, S., & Walker-Samuel, N. (2013). Screening for depression after stroke: Occupational therapists' performance to protocols. *Occupational Therapy in Mental Health*, *29*(2):106–13. https://doi.org/10.1080/0164212X.2013.788971

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, *16*(9), 606–613. https://doi.org/10.1046/j.1525-1497.2001.016009606.x

Lees, R. A., Broomfield, N. M., & Quinn, T. J. (2014). Questionnaire assessment of usual practice in mood and cognitive assessment in Scottish stroke units. *Disability and Rehabilitation*, *36*(4), 339–343. https://doi.org/10.3109/09638288.2013.791728

Lincoln N. B., Sutcliffe, L. M. & Unsworth, G. (2000). Validation of the Stroke Aphasic Depression Questionnaire (SADQ) for use with patients in hospital. *Clinical Neuropsychological Assessment*, *1*, 88–96.

McCluskey, A., Vratsistas-Curto, A., & Schurr, K. (2013). Barriers and enablers to implementing multiple stroke guideline recommendations: A qualitative study. *BMC Health Services Research*, *13*, 323. https://doi.org/10.1186/1472-6963-13-323

Michie, S., Atkins, L., & West, R. (2014). *The behaviour change wheel: A guide to designing interventions*. Silverback. Retrieved from https://books.google.co.uk/books?id=1TGlrgEACAAJ

Miller, E. L., Murray, L., Richards, L., Zorowitz, R. D., Bakas, T., Clark, P., Billinger, S. A., & American Heart Association Council on Cardiovascular Nursing and the Stroke Council (2010). Comprehensive overview of nursing and interdisciplinary rehabilitation care of the stroke patient: A scientific statement from the American Heart Association. *Stroke*, *41*(10), 2402–2448. https://doi.org/10.1161/STR.0b013e3181e7512b

Northcott, S., Burns, K., Simpson, A., & Hilari, K. (2015). 'Living with aphasia the best way I can: A feasibility study exploring solution-focused brief therapy for people with aphasia. *Folia Phoniatrica et Logopaedica 67*(3), 156–167. https://doi.org/10.1159/000439217

Northcott, S., Simpson, A., Moss, B., Ahmed, N., & Hilari, K. (2018). Supporting people with aphasia to 'settle into a new way to be': Speech and language therapists' views on providing psychosocial support. *International Journal of Language & Communication disorders*, *53*(1), 16–29. https://doi.org/10.1111/1460-6984.12323

O'Halloran, R., Hickson, L., & Worrall, L. (2008). Environmental factors that influence communication between people with communication disability and their healthcare providers in hospital: A review of the literature within the International Classification of Functioning, Disability and Health (ICF) framework. *International Journal of Language & Communication disorders*, *43*(6), 601–632. https://doi.org/10.1080/13682820701861832

O'Halloran, R., Lee, Y.S., Rose, M., & Liamputtong, P. (2014). Creating communicatively accessible healthcare environments: Perceptions of speech-language pathologists. *International Journal of Speech-Language Pathology*, *16*(6), 603–614. https://doi.org/10.3109/17549507.2014.894125

Patel, A., Berdunov, V., Quayyum, Z., King, D., Knapp, M., & Wittenberg, R. (2020). Estimated societal costs of stroke in the UK based on a discrete event simulation. *Age and Ageing*, *49*(2), 270–276. https://doi.org/10.1093/ageing/afz162

Pohjasvaara, T., Vataja, R., Leppävuori, A., Kaste, M., & Erkinjuntti, T. (2001). Suicidal ideas in stroke patients 3 and 15 months after stroke. *Cerebrovascular Diseases*, *12*(1), 21–26. https://doi.org/10.1159/000047676

Pompili, M., Venturini, P., Campi, S., Seretti, M. E., Montebovi, F., Lamis, D. A., Serafini, G., Amore, M., & Girardi, P. (2012). Do stroke patients have an increased risk of developing suicidal ideation or dying by suicide? An overview of the current literature. *CNS Neuroscience & Therapeutics*, *18*(9), 711–721. https://doi.org/10.1111/j.1755-5949.2012.00364.x

Rogers S. C. (2017). Poststroke Depression Screening: An Executive Summary. *The Journal of Neuroscience Nursing*, *49*(2), 66–68. https://doi.org/10.1097/JNN.0000000000000270

Rose, T. A., Worrall, L. E., Hickson, L. M., & Hoffmann, T. C. (2011). Aphasia friendly written health information: Content and design characteristics. *International Journal of Speech-Language Pathology*, *13*(4), 335–347. https://doi.org/10.3109/17549507.2011.560396

Ross, K. & Wertz R. (2003). Quality of life with and without aphasia. *Aphasiology*. *17*(4), 355–364. https://doi.org/10.1080/02687030244000716

Sekhon, J. K., Douglas, J., & Rose, M. L. (2015). Current Australian speech-language pathology practice in addressing psychological well-being in people with aphasia after stroke. *International Journal of Speech-Language Pathology*, *17*(3), 252–262. https://doi.org/10.3109/17549507.2015.1024170

Sekhon, J. K., Oates, J., Kneebone I. & Rose, M. L. (2022a). Counselling education for speech-language pathology students in Australia: A survey of education in post-stroke aphasia, *Aphasiology*, *36*(12), 1417–1446. https://doi.org/10.1080/02687038.2021.1967280

Sekhon, J. K., Oates, J., Kneebone, I., & Rose, M. L. (2022b). A phase II randomised controlled trial evaluating the feasibility and preliminary efficacy of an education program on speech-language pathologist' self-efficacy, and self-rated competency for counselling to support psychological wellbeing in people with post-stroke aphasia. *Topics in Stroke Rehabilitation*, 1–23. Advance online publication. https://doi.org/10.1080/10749357.2022.2145736

Shadden, B. (2005). Aphasia as identity theft: Theory and practice. *Aphasiology*, *19*(3–5), 211–23. https://doi.org/10.1080/02687930444000697

Shehata, G. A., El Mistikawi, T., Risha, A. S., & Hassan, H. S. (2015). The effect of aphasia upon personality traits, depression and anxiety among stroke patients. *Journal of Affective Disorders*, *172*, 312–314. https://doi.org/10.1016/j.jad.2014.10.027

Simmons-Mackie, N., King, J. M., & Beukelman, D. R. (Eds.). (2013). *Supporting Communication for Adults with Acute and Chronic Aphasia*. Brookes Publishing.

Simmons-Mackie, N., Raymer, A., & Cherney, L. R. (2016). Communication partner training in aphasia: An updated systematic review. *Archives of Physical Medicine and Rehabilitation*, *97*(12), 2202–2221. https://doi.org/10.1016/j.apmr.2016.03.023

Simmons-Mackie, N., Worrall, L., Shiggins, C., Isaksen, J., McMenamin, R., Rose, T., Guo, Y. E., & Wallace, S. J. (2020). Beyond the statistics: A research agenda in aphasia awareness. *Aphasiology*, *34*(4), 458–471. https://doi.org/10.1080/02687038.2019.1702847

Sniehotta, F. F., Presseau, J., & Araújo-Soares, V. (2014). Time to retire the theory of planned behaviour. *Health Psychology Review*, *8*(1), 1–7. https://doi.org/10.1080/17437199.2013.869710

Starkstein, S. E., Robinson, R. G., & Price, T. R. (1988). Comparison of patients with and without poststroke major depression matched for size and location of lesion. *Archives of General Psychiatry*, *45*(3), 247–252. https://doi.org/10.1001/archpsyc.1988.01800270061007

Stenager, E. N., Madsen, C., Stenager, E., & Boldsen, J. (1998). Suicide in patients with stroke: Epidemiological study. *BMJ (Clinical research ed.)*, *316*(7139), 1206. https://doi.org/10.1136/bmj.316.7139.1206

Stern, R. A., Arruda, J. E., Hooper, C. R., Wolfner, G. D., & Morey, C. E. (1997). Visual analogue mood scales to measure internal mood state in neurologically impaired patients: Description and initial validity evidence. *Aphasiology*, *11*(1), 59–71. https://doi.org/10.1080/02687039708248455

Stroke Association. (2013) *Feeling overwhelmed: The emotional impact of stroke*. UK Stroke Association. Retrieved September 25th, 2022, from https://www.stroke.org.uk/sites/default/files/feeling_overwhelmed_final_web_0.pdf

Stroke Association. (2014). Psychological consequences of stroke workshop: Priority setting. UK Stroke Association. Retrieved December 19th, 2022, from https://www.stroke.org.uk/news/psychological-consequences-stroke-workshop-priority-setting

Stroke Association. (2017). *State of the Nation: Stroke statistics*. UK Stroke Association. Retrieved September 25th, 2022, from https://www.stroke.org.uk/sites/default/files/state_of_the_nation_2017_final_1.pdf

Stroke Association. (2019). *Lived Experience of Stroke Report*. UK Stroke Association. Retrieved 26th February, 2023, from https://www.stroke.org.uk/lived-experience-of-stroke-report

Sutcliffe, L. M., & Lincoln, N. B. (1998). The assessment of depression in aphasic stroke patients: The development of the Stroke Aphasic Depression Questionnaire. *Clinical Rehabilitation*, *12*(6), 506–513. https://doi.org/10.1191/026921598672167702

Svensson, E. (2000). Comparison of the quality of assessments using continuous and discrete ordinal rating scales. *Biometrical Journal: Journal of Mathematical Methods in Biosciences*, *42*(4), 417–434. https://doi.org/10.1002/1521-4036(200008)42:4<417::AID-BIMJ417>3.0.CO;2-Z

Swinburn, K., Pearce-Willis, E., Smith, L., Cruice, M., Garder, K., Sweeney, J., & McVicker, S. (2015). *Aphasia Impact Questionnaire*. British Aphasiology Society Conference, London 2015.

Tabachnick, B. G., & Fidell, L. S. (2007). *Experimental designs using ANOVA*. Thomson/Brooks/Cole.

Townend, E., Brady, M., & McLaughlan, K. (2007a). Exclusion and inclusion criteria for people with aphasia in studies of depression after stroke: A systematic review and future recommendations. *Neuroepidemiology*, *29*(1–2), 1–17. https://doi.org/10.1159/000108913

Townend, E., Brady, M., & McLaughlan, K. (2007b). A systematic evaluation of the adaptation of depression diagnostic methods for stroke survivors who have aphasia. *Stroke*, *38*(11), 3076–3083. https://doi.org/10.1161/STROKEAHA.107.484238

Turner-Stokes, L., Kalmus, M., Hirani, D., & Clegg, F. (2005). The Depression Intensity Scale Circles (DISCs): A first evaluation of a simple assessment tool for depression in the context of brain injury. *Journal of Neurology, Neurosurgery, and Psychiatry*, *76*(9), 1273–1278. https://doi.org/10.1136/jnnp.2004.050096

van Dijk, M. J., de Man-van Ginkel, J. M., Hafsteinsdóttir, T. B., & Schuurmans, M. J. (2016). Identifying depression post-stroke in patients with aphasia: A systematic review of the reliability, validity and feasibility of available instruments. *Clinical Rehabilitation*, *30*(8), 795–810. https://doi.org/10.1177/0269215515599665

van Dijk, M., Koot, H. M., Saad, H. H., Tibboel, D., & Passchier, J. (2002). Observational visual analog scale in pediatric pain assessment: Useful tool or good riddance?. *The Clinical Journal of Pain*, *18*(5), 310–316. https://doi.org/10.1097/00002508-200209000-00006

Vyas, M. V., Wang, J. Z., Gao, M. M., & Hackam, D. G. (2021). Association between stroke and subsequent risk of suicide: A systematic review and meta-analysis. *Stroke*, *52*(4), 1460–1464. https://doi.org/10.1161/STROKEAHA.120.032692

Wewers, M. E., & Lowe, N. K. (1990). A critical review of visual analogue scales in the measurement of clinical phenomena. *Research in Nursing & Health*, *13*(4), 227–236. https://doi.org/10.1002/nur.4770130405

World Health Organisation (2020). *Screening programmes: A short guide - Increase effectiveness, maximize benefits and minimize harm*. Retrieved September 25th, 2022, from https://apps.who.int/iris/bitstream/handle/10665/330829/9789289054782-eng.pdf

Zigmond, A. S., & Snaith, R. P. (1983). The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica*, *67*(6), 361–370. https://doi.org/10.1111/j.1600-0447.1983.tb09716.x

Žikić, T. R., Divjak, I., Jovićević, M., Semnic, M., Slankamenac, P., Žarkov, M., & Žikić, M. (2014). The effect of post stroke depression on functional outcome and quality of life. *Acta Clinica Croatica*, *53*(3), 294–301.