

Experiences of transient ischaemic attack diagnosis and secondary prevention: a qualitative review

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Title

Experiences of TIA diagnosis and subsequent engagement in secondary prevention behaviours: a qualitative review

Abstract

BACKGROUND: A Transient Ischemic Attack (TIA) diagnosis is a serious, early sign that a person is at high risk of stroke. However, little is known about patients' experiences, perceptions and behaviours regarding TIA symptoms, diagnosis, and secondary prevention.

AIM: To explore patients' experiences of TIA symptoms, diagnosis and treatment, and secondary-prevention.

METHODS: A qualitative review was conducted using a meta-aggregation approach. Five major databases were searched to identify eligible papers. Findings were extracted, grouped into categories to generate synthesised findings.

FINDINGS: Four papers (69 participants) were included. Three synthesised findings were developed: *The first 24 hours*, *Impact and effect on quality of life* and *Reducing the Risk*. Following TIA diagnosis patients may experience persistent anxiety and fatigue, and many patients do not understand the importance of secondary prevention.

CONCLUSION: There is a lack awareness of TIA symptoms, and of the importance of seeking immediate help and engaging with secondary prevention.

Key words

TIA; Transient Ischaemic Attack; qualitative review; secondary prevention; patient perspectives

Key points

The general public lack awareness of TIA symptoms and how to respond appropriately.

Some patients experience long-term effects of TIA which may impact on their quality of life, including return to work and finances.

Fear of recurrence of TIA or of future cardiovascular events does not necessarily motivate patients to engage with secondary prevention.

Understanding of the patient experience is essential when designing and delivering TIA interventions.

By addressing the three core issues identified in this review i.e. *The First 24 hours, Impact and Effect on quality of life, and Reducing the Risk*, health professionals can deliver patient-centred TIA secondary prevention interventions.

Reflective Questions

1. What is the risk for a patient ignoring symptoms of a Transient Ischaemic Attack?
2. Why do patients ignore TIA symptoms?
3. Anxiety is a common problem reported by patients following a TIA – Why do you think this is and what can be done to reduce the patient's anxiety?

4. Do you think patients fully understand their TIA diagnosis, secondary prevention and symptoms of potential further events following healthcare intervention?

Background

Annually in the UK 50,000-60,000 people have a Transient Ischaemic Attack (TIA). Of these, 1 in 12 (8%) go on to have a stroke within 7 days of the TIA (Coull, 2004; Giles, 2007). Amarenco et al (2016) reported a 7 day risk of 2.8% of a stroke after TIA for those patients who were seen in contemporary TIA clinics with the rapid initiation of secondary prevention. Stroke is still the leading cause of disability in the UK and the fourth biggest killer (Stroke Association 2018). Estimated NHS and social care costs for each person that has a stroke is £22,000 a year (Royal College of Physicians (RCP) 2016). This considerable financial burden, together with the individual and societal implications, highlights the importance of prompt and effective management of TIA, including early diagnosis, medical management, and appropriate lifestyle advice to help reduce the risk of further vascular events (Hankey et al, 2007).

Following publication of the *National Stroke Strategy* (Department of Health, 2007), and clinical guidelines promoting the need for rapid TIA intervention services (National Institute for Health and Care Excellence (NICE) 2008; RCP 2016; Kerman et al, 2014), there have been significant improvements in the UK in TIA management. Acute guidelines recommend that all patients with suspected TIA are seen in a specialist clinic within 24 hours (Lavalley et al, 2007). Primary care guidelines stress the importance of initiating secondary prevention strategies (medication prescription, risk factor education, advice) at diagnosis (RCP, 2016). However, because TIA symptoms can last less than 24 hours, they are often ignored, and patients, even after a TIA diagnosis,

may not understand the implications of that diagnosis and the need to adhere to prescribed medication regimes or make advised changes to lifestyle (Chandratheva, 2010).

A nationwide survey (Stroke Association 2014) identified inequalities in TIA service provision and reported varying experiences of management and care. Sixteen percent of respondents felt they were not taken seriously when describing their symptoms to a healthcare professional, and more than half (51%) reported they were not told about the link between TIA and stroke. Fifty percent reported being told little or nothing about how they can make lifestyle changes to reduce the chance of further TIAs or strokes. This highlights a 'missed opportunity' for health professionals to give advice which may help prevent further strokes and other vascular events.

TIA patients' needs post-diagnosis may also differ (Wilson et al, 2016; Heron et al, 2017). For example, some patients take a proactive role in managing lifestyle changes whereas others ignore the potential risks and doing nothing (Spurgeon et al, 2012). Gaining a comprehensive understanding of these differing needs could help clinicians to develop patient-centred secondary prevention interventions and services. However, whilst there have been qualitative studies of the experiences and perceptions of patients who have had a stroke (e.g. Murray and Harrison, 2004; Lawrence, 2010) there is limited empirical research on patients' experience of TIA diagnosis and management. This represents an important limitation in the evidence base, as gaining an understanding of patients' experiences and perceptions is an

essential stage in the development of person-centred interventions which should, from design to delivery, reflect an understanding of, and a responsiveness to, the experiences and needs of recipients (Lawrence and Kinn, 2012). Scoping searches revealed no relevant qualitative syntheses. Therefore, a qualitative review was undertaken, which aimed to explore the experience of TIA diagnosis and management, and engagement with secondary prevention, from the patients' perspective.

Methods

A meta-aggregation system was used to synthesise the qualitative evidence (Hannes and Lockwood, 2012). This pragmatic approach, when rigorously applied, produces methodologically sound syntheses that may be used to inform healthcare practice and service delivery (Hannes and Lockwood, 2012).

An inclusive search strategy was used to identify potentially relevant studies. Five electronic bibliographic databases were searched: CINAHL, EMBASE, Medline, PsycINFO and AMED. A comprehensive search was developed using subject headings and keywords combined with Boolean operators (AND; OR), as appropriate e.g. Mini Stroke OR TIA OR transient ischaemic attack AND diagnosis OR experience. Delimiters were applied, including 'human' and, due to resource constraints, 'English language'. RefWorks™, electronic reference management software, was used to manage the bibliographic records.

Preliminary screening (titles and abstracts) enabled exclusion of studies that did not meet broad inclusion criteria (TIA; patient experience). Full-text papers were retrieved for studies that potentially met the more detailed study inclusion criteria (see Box 1). Three independent reviewers (GR, LG, ML) reviewed and screened the full-text papers. Any disagreements were resolved by discussion.

Data regarding study design and participant characteristics and qualitative findings were extracted from the papers and recorded in data extraction and findings forms designed specifically for this review. Two reviewers (GR, LG) worked independently before coming together to agree the extracted items. The extracted findings were reviewed and discussed (GR, LG, ML) and a final list of extracted findings agreed. The findings were then synthesised, based on resemblance and similarities of meaning, to develop Categories, which in turn were synthesised to develop Synthesised Findings. Further discussions lead to minor amendments before the final Synthesised Findings were agreed by the team.

The Critical Appraisal Skills Programme 10-item Qualitative Checklist, a standardised tool commonly used in qualitative reviews, was used for quality appraisal of included studies (Smith and Noble, 2016). An inclusion criterion of ≥ 6 ensured only high-quality evidence would be included. Two reviewers (GR, LG) independently appraised each paper before agreeing on the concluding assessment.

Findings

The searches, conducted in June 2017 and updated in November 2018, retrieved 489 papers. Following removal of duplicates, 384 papers were screened; 26 full-text papers were assessed for eligibility. Four papers met the study inclusion criteria (Box 1; Diagram 1).

Characteristics of included studies

Three studies were undertaken in the United Kingdom (Gibson and Watkins, 2011; Kamara and Singh, 2012; Croot et al, 2014); one in Australia (Crowfoot et al, 2016). Participants were recruited from a GP register (Kamara and Singh, 2012), a vascular clinic (Gibson and Watkins, 2011), and an acute neurovascular clinic run (Crowfoot et al, 2016). One study recruited participants from several clinical sites (Croot et al, 2014). Participants (n=69) were mostly male (n=42, 60%); age ranged from 31-89 years. Where reported, time post-diagnosis varied considerably, from ≥ 2 weeks (Gibson and Watkins, 2012) to 25 years (Kamara and Singh, 2012) (Table 1).

Clinical TIA management varied. Gibson and Watkins (2011) recruited participants from a vascular clinic where, following referral by a GP (General Practitioner) or other physician, patients' suitability for carotid endarterectomy surgery was assessed. Croot and colleagues (2014) recruited from dedicated nurse-led or consultant-led stroke and TIA clinics. Crowfoot and colleagues (2016) recruited from an acute neurovascular clinic. Kamara and Singh (2012) identified potential participants from a GP database. It is unclear how quickly participants were seen by a medical professional after TIA onset. In Gibson

and Watkins' (2011) study patients were seen at the vascular clinic 2-4 weeks after referral; Croot and colleagues (2014) report participants were assessed in line with UK guideline recommendations, however time post-TIA was not specified.

Methodological quality

Three studies (Croot et al, 2014; Crowfoot et al, 2016; Kamara and Singh, 2012) scored 9; one scored 8 (Gibson and Watkins 2011). Commonly, authors did not elucidate the nature of the researcher-participant relationship but, overall, the studies were considered methodologically robust (Table 2).

Qualitative synthesis

Thirty-two findings were extracted from the four papers and subsequently grouped into 11 categories. From these 11 categories, in an iterative process, 3 Synthesised Findings were developed: The First 24 hours, Impact and Effect on Quality of Life (QoL), Reducing the Risk. These synthesised findings are presented below, illustrated with verbatim quotes from the papers. Square brackets denote where explanatory text has been inserted.

The First 24 hours

The First 24 hours encompasses the sudden onset of symptoms, recognition of symptoms, and awareness of their significance, to participants or others, and the processes and feelings associated with seeking medical assistance.

The onset of symptoms of TIA are sudden and without warning: *'[it was] out of the blue'* (Gibson and Watkins, 2011; p.1711). Often participants were in the middle of an activity as symptoms struck: *'I was on the phone to a girlfriend and my arm just went funny'* (Crowfoot et al, 2016; p.55). This sudden loss of movement or of speech was a shock, but often such symptoms were not recognised as symptoms of a TIA, *'It never occurred to me that I might be having a stroke'* (Crowfoot et al, 2016; p.54). Some participants found alternative explanations for what had happened to them: *'I thought it was something on the floor and I had tripped up'* (Gibson and Watkins 2012; p.1711).

Attempting to hide symptoms, due to lack of awareness of the importance of seeking medical assistance, whilst simultaneously knowing that something was wrong was a common response. One woman hid her unexpected and unexplained symptoms because she was fearful that her husband might ridicule her: *'My immediate reaction was to hide [the symptoms] from my husband because he would have told me I was stupid, why can't you remember words?'* (Kamara and Singh, 2012 p.168).

The lack of understanding of TIA symptoms can result in symptoms being dismissed due to their transient nature. One participant described ignoring transient symptoms that had occurred on several occasions, before finally deciding to get medical help: *'If it [numbness, funny arm, feeling weird] had gone [away quickly], I probably wouldn't have worried about it'* (Crowfoot et al, 2016; p.55).

Lack of awareness of symptoms and their significance meant that some people delayed looking for help, with some delaying seeking medical attention for several days: '*... I went to lay down in bed and rested and then report it to my Doctor,*' (Kamara and Singh, 2012; p.168). And, '*My speech was slurred. It never occurred to me that I might be having a stroke ... I said to Susan, I'll be right, when I get home next week I will go and get myself checked out and she said, 'no you won't, I will be ringing up the family doctor.'*' (Crowfoot et al, 2016; p.54).

Often, family members or others needed to prompt the participant to seek help: '*I might not have rung the doctor, had she [wife] not been there*' (Gibson and Watkins, 2012; p.1711) and in the same study a daughter instructs her mother: '*You must go and see the doctor*' (p.1712).

Participants were not always clear about the distinction between 'stroke' and 'TIA'. And, some chose to use the word 'stroke' when talking to others: '*[I would] probably [call it] a stroke actually, 'cos most people don't know what TIAs are*' (Kamara and Singh, 2012; p.168). Other participants described their experience in such a way, i.e. symptoms lasting more than 24-hours, that it seems that a more accurate diagnosis would have been stroke: '*... after about three, four days it was gone completely*' (Kamara and Singh, 2012; p.169). And some, looking back at their symptoms and diagnosis, were not sure that they had had an accurate diagnosis: '*I, always ... felt, are there any more tests that can be done ...?*' (Croot et al, 2014; p.4).

Impact and Effect on Quality of Life

Impact and Effect on Quality of Life describes how although the physical symptoms of a TIA are transient, the effects of TIA can, in some cases, be experienced in the long-term: *'[5 months post-TIA] I suffer from a lot of fatigue ...'* (Croot et al, 2014; p.4).

The psychological effect of experiencing a TIA was highlighted. In particular, anxiety about recurrence of TIA, or a stroke: *'I'd be worrying a lot ... wondering when or how it [TIA/stroke] was going to happen'* (Gibson and Watkins, 2012; p.1712). Some participants were so concerned about recurrence that it severely affected daily life: *'[I am] terrified of having a shower ... [I have a] bath instead'* (Gibson and Watkins, 2012; p.1712). And, *'I'd be worrying a lot, yes, wondering when or how it was going to happen again ... which takes some of the pleasure out of life'* (Gibson and Watkins, 2012; p.1712). Participants also experienced anxiety about the care and advice they had received: *'I'm thinking can I take a lower dosage ... should I be checked more often?'* (Croot et al, 2014; p.5).

Anxiety also affected the patient's family and friends, resulting in some being overprotective: *'people around me have ... convinced me I am a bit fragile'* (Gibson and Watkins, 2012; p.1712).

A TIA diagnosis also impacted on employment and had financial implications for some participants: *'I can't drive; my job involves driving'* (Croot et al, 2014; p.4); *'I'm thinking, Oh God! insurance you know you want to go on holiday or something like that and you're telling them you've had this TIA and your insurance goes up fifty pound[s]'*. Croot and colleagues (2014) also reports that fatigue had caused participants to reduce their working hours, with a resultant on their financial situation.

Reducing the Risk

Reducing the Risk included the, sometimes, dawning awareness of the significance of TIA and an understanding of the need for secondary prevention: *'... it wasn't until I saw the surgeon that that the alarm bells rang'* (Gibson and Watkins, 2012; p.1712). Whilst some people had little or no awareness of the significance of TIA, others were well informed: *'... and you know a mini-stroke could lead to a stroke ...'* (Kamara and Singh, 2012; p.170). Whilst others had pre-existing long-term conditions that caused them more distress than the TIA: *'Arthritis is worse than mini-stroke ... mini-stroke, as you see I'm all right ... arthritis very different'* (Kamara and Singh, 2012; p.170).

Some participants experienced problems getting any information about TIA and the associated risk: *'I think it would just [have] been nice to be able to sit and talk to somebody and tell them how scared I am, still am in a way ... for somebody to turn around and say 'well this is how you can really prevent it*

happening again' but there's nobody ... GPs don't do it' (Croot et al, 2014; p.5).

In contrast, other participants believed their TIA was a catalyst for making changes to 'risky' lifestyle behaviours: *'it was a tap on the shoulder'* (Gibson and Watkins 2012; p.1713). Some participants who knew that they were at risk of future events reported having made changes to their lifestyles. Kamara and Singh (2012) report that participants found it easier to be compliant with medication, which they recognised as an important secondary prevention measure, than to improve their diet or physical activity: *'I am very, very particular in taking my medication because that helps me considerably and stops it [TIAs]'* (Kamara and Singh, 2012; p.170)

However, risk of recurrence was dismissed by some participants, especially as they resumed their busy lives: *'It's over and done with now. I'm back to normal you know what I mean? ... I have enough to think about without thinking about a thing that might never come again.'* (Croot et al, 2014; p. 5).

Although, for some, the fear never disappeared entirely *'... after the first year the chance of [TIA] reoccurring diminishes ... but [fear of recurrence] is there all the time,'* (Croot et al, 2014; p. 4).

Discussion

Three synthesised themes, the First 24 hours, Impact and Effect on QoL, and Reducing the Risk, resulted from the meta aggregation of qualitative data

from studies exploring TIA patients' experiences, perceptions and attitudes to secondary prevention.

Responses to TIA symptoms, diagnosis and management varied. The transient nature of symptoms created the impression that there is no immediate cause for concern, and some participants dismissed their TIA as *'just one of those things'*. Others were fully aware that something unusual and medically worrisome had happened and therefore quickly sought help. This reflects findings from the wider stroke literature, which reports delayed response to symptom onset (e.g. Ruiz et al, 2018). Following diagnosis, the need to take medication correctly and make healthy changes to lifestyle, was accepted by some, but not all, participants. And, whilst perceived risk would appear to be a motivational factor, evidence suggests that it is not a determinant for lifestyle change (Voros et al, 2018).

Although motor symptoms resolved quickly, for some participants fatigue was a significant problem, which impacted on daily living in the long-term. As fatigue is common following stroke (Hinkle et al, 2017), this may indicate that some participants had been misdiagnosed. Diagnosis of TIA, relying on history-taking and patient characteristics, is known to be difficult and often inaccurate (Bose et al 2018). For example, GPs tended to over-interpret non-specific symptoms (Jagadeshram et al, 2008), and it has been suggested that at least 50% of patients referred to a TIA clinic have not had a vascular event (e.g. Kandiyali et al, 2017). Also, GPs may refer patients to exclude rather than confirm a final diagnosis (Clarey et al, 2004). However, there is also

evidence of under-referral and under-use of appropriate medication (e.g. Jagadesham et al, 2008; Leung et al 2012).

The psychological effects of living with a TIA diagnosis were highlighted. The fear of subsequent stroke is sometimes overwhelming and may persist over time. Anxiety was seen to impact day-to-day living, of patients and families, sometimes restricting ability to enjoy life. Getting information-giving right is essential as lack of information, inadequate information provision, and patient misunderstanding of information may give rise to feelings of fear and anxiety. A Cochrane review (Forster et al, 2018) recommended that strategies to actively involve patients and family members, which include planned follow-up for clarification and reinforcement, should be used routinely in clinical practice. Oikarinen et al (2017) also comment on the need for good quality lifestyle counselling in secondary prevention.

Strengths and limitations

It is possible that included studies may have recruited stroke patients, inadvertently; this is likely to reflect the difficulty associated with TIA diagnosis, discussed above. It has been suggested that recent advancements in imaging may improve diagnosis of TIA and stroke (Ganzer et al, 2016). Considerable variation in time post-diagnosis was noted. One study (Kamara and Singh, 2012) recruited people up to 25 years post-TIA diagnosis. It is likely that lapse of time will have altered participants' memories and understandings of the original event.

This review's updated searches identified a recent qualitative review with a similar topic (Crowfoot et al, 2018), however, it is broader in scope and lacks the specific focus of this review. It is recognised that a wider search could have been conducted, though it was felt that this would not answer the original question of exploring patients who have been diagnosed with a pure TIA and their perception of that diagnosis and its impact.

The protocol for the study is registered in PROSPERO: CRD42015017474 and has been reported here in line with the ENTREQ (Tong et al, 2012) reporting checklist. The small number of studies included in the review highlights the limited nature of the evidence regarding participants experiences and perceptions of the transient nature of TIA, its diagnosis and management, and subsequent engagement with secondary prevention. This reinforces the need for more high-quality research to aid understanding of how best to deliver patient-centred interventions to help prevent recurrent TIA and subsequent stroke. It is recognised that there has been an improvement in health care models of TIA services since some of the studies were conducted. With this recognition of the importance of rapid access to TIA clinics, research into the frequency of specialist follow up appointments for patients would be interesting due to the nature of complications that the patient can have after a TIA, and to ensure full understanding of the importance of secondary prevention i.e. changes in lifestyle and medicine adherence.

Further research needs to be conducted into how we can educate the general public into treating a TIA as an emergency. The effectiveness of

effective, rapid treatment and secondary prevention, becomes irrelevant if the urgency to treat a TIA is not recognised. Further investigation into why some people ignore, don't recognise symptoms or present late after a TIA is required to help reduce the risk of a stroke. It is also noted that the studies included did not explore cultural differences in experiences of TIA and therefore questions arise over the suitability of services and awareness in all communities.

Conclusion

The experience of TIA varies widely, as does the individual's understanding of the urgency and seriousness of the event. This suggests that 'one size' does not 'fit all'. The three themes described here i.e. *the First 24 hours, Impact and Effect on QoL, and Reducing the Risk*, provide a framework for future patient-centred clinical pathways. By addressing these three issues, health professionals will be able to work to develop effective interventions tailored to the individual.

Word count: 3,144

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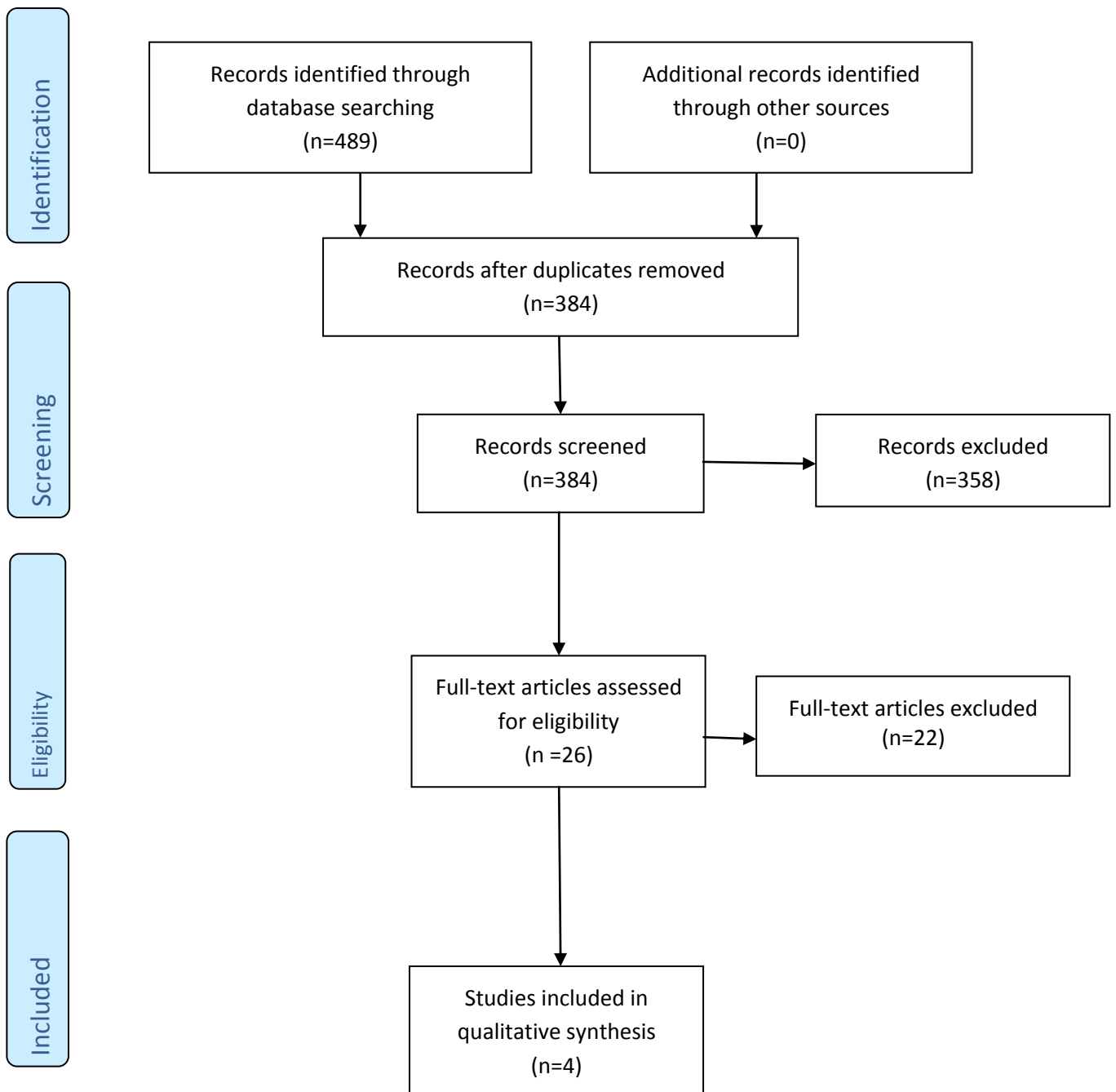
Box 1: Inclusion/exclusion criteria

	Inclusion criteria	Exclusion criteria
Study design	Qualitative designs: any Mixed method studies where the qualitative data may be extracted	Quantitative studies Epidemiological studies Audit Literature reviews Clinical guidelines Discussion/opinion papers
Population	Adults (aged ≥18 years) People with experience of TIA diagnosis Mixed populations where TIA data can be extracted	Other diseases/conditions Stroke survivors Carers/family members/family caregivers of stroke or TIA survivors Health Professionals
Context	Any clinical setting where patients diagnosed with TIA	
Outcomes	The findings e.g. themes or categories, as reported by the author(s), constitute 'outcomes', and may include information about: Lifestyle e.g. symptom onset, awareness/knowledge of symptoms, seeking help/ appropriate response Impact and effects on quality of life e.g. psychological, physical, intimate relationships, social relations, finances, employment Reducing the risk e.g. reducing the risk, knowledge and awareness (understanding the implications), motivation for secondary prevention, medication compliance	Public health outcomes As sole outcome of interest: physical symptoms/implications, social and intimate relationships, stroke rehabilitation outcomes, social functioning/participation, readmission to hospital, mental health disorders

Diagram 1: PRISMA Flow Diagram



PRISMA 2009 Flow Diagram



Study, date, country	Study design, sampling, data collection methods, timing	Participants number, stroke type, age, gender	Intervention type, setting, timing, duration	Key outcomes findings, authors' conclusions
Croot et al, 2014 UK	Qualitative study; purposive and subsequent sampling; semi-structured interviews; within 9 months over a 2-year period.	39 participants; TIA or suspected TIA Age range: 31-89 years Gender: M=21; F=18	Exploring patients' experience and response to TIA and to any received care as a result of the TIA. Within 2-24 months prior suspected TIA.	4 themes: Physical sequelae, Practical impact, Psychological consequences, Lack of Information. The importance that some patients with TIA have ongoing physical and emotional problems.
Crowfoot et al, 2016 Australia	Qualitative study; Purposive sampling; semi-structured interviews; After receiving a TIA diagnosis (Not specific timeframe)	3 participants with TIA experience (not specified further) No specific age or gender mentioned	Exploring the stories of 3 people who experienced a TIA through a framework of narrative inquiry Within 3 months post-TIA	5 emerging themes: Time stasis, physical symptoms, altered temporal perceptions, the role of others and help-seeking behaviour TIA experience is shaped and constructed mainly by an individual circumstance.
Gibson and Watkins 2011 UK	Qualitative Grounded theory study (part of a broader interview-based study); purposive sampling; semi-structured Interviews Not specific timeframe mentioned	16 participants with recent carotid territory TIA experience Age range: 50-81 years Age (mean): 71.6 years Gender: M=11; F=5	Report of a study of how people's experiences of TIA affect their perception of their health and their uptake of health maintenance measures. 1-2 weeks before participants had surgery (carotid endarterectomy) and 3-4 weeks postoperatively.	8 themes: Acknowledgement vs. denial, describing the TIA, initial attribution of a TIA, ignoring the symptoms, fear, seeking help, changed perception of health, a fortunate warning Investigation and treatment of patients after TIA is an important measure to

<p>Kamara and Singh 2012 UK</p>	<p>Qualitative study using a thematic framework analysis interpretive methodology; purposive sampling; semi-structured interviews;</p>	<p>11 participants with TIA diagnosis and no previous ischaemic or haemorrhagic stroke event. Age range: 46-86 years Gender: M=8; F=3</p>	<p>Exploring the illness beliefs about TIAs and future risk of stroke, and to determine whether these beliefs determine secondary stroke prevention activities. 2-25 years post-TIA diagnosis</p>	<p>reduce the incidence of stroke and stroke-related disability. 4 themes: Diagnosis and stigma, recognition and definition of the stroke/TIA, causes of TIA and risk for future TIA/Stroke Perceptions of the severity of the initial TIA event and the risk of future stroke episodes may influence the uptake of secondary stroke prevention activities. Post TIA stroke prevention interventions should include tailored discussions focussing on the importance of the acute event and its implications for long-term health and future stroke risk.</p>
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Table 3: Quality appraisal (CASP qualitative research checklist)

Paper	Was there a clear statement of the aims of the research?	Is a qualitative methodology appropriate?	Was the research design appropriate to address aims of the	Was the recruitment strategy appropriate to the aims of the	Was data collected in a way that addressed the research issue?	Relationship between researcher & participants been	Have ethical issues been taken into consideration?	Was the data analysis sufficiently rigorous?	Is there a clear statement of findings?	How valuable is the research?
Croot et al, 2014	yes	yes	yes	yes	yes	no	yes	yes	yes	yes
Crowfoot et al, 2016	yes	yes	yes	yes	can't tell	yes	yes	yes	yes	no
Gibson & Watkins 2011	yes	yes	yes	yes	yes	no	yes	yes	yes	yes
Kamara & Singh 2012	yes	yes	yes	yes	yes	can't tell	yes	yes	yes	yes