

RESEARCH REPORTS

PATIENT EXPERIENCES OF POSTERIOR CIRCULATION STROKE AT SYMPTOM ONSET: A QUALITATIVE STUDY

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ABSTRACT

Introduction: Posterior Circulation Stroke (PCS) accounts for around 20% of ischemic strokes but is missed more frequently than Anterior Circulation Stroke (ACS), mainly due to its subtle symptoms and non-specific presentation. Currently there are no studies evaluating PCS patients' experiences of their symptoms at stroke onset, and so this study aimed to evaluate this to aid in paramedic understanding and detection of PCS.

Methods: A qualitative descriptive approach was adopted. Clinical Nurse Specialists and Advanced Nurse Practitioners in Stroke purposefully sampled PCS patients confirmed by MRI and admitted to the stroke wards of University Hospital Galway and Mayo University Hospital in the West of Ireland. Once consented, semi-structured interviews were carried out, transcribed verbatim, and thematic analysis completed. Inclusion criteria were any stroke in the posterior portion of the brain confirmed by MRI, patient 18 and less than four weeks since stroke onset.

Results: Ten patients were interviewed. 90% did not believe they were having a stroke. Only 50% sought help immediately. 70% were taken to hospital by ambulance and 30% were taken by car. 20 different symptoms were reported by participants. Loss of balance was the most prevalent symptom, followed by being unable to walk unaided, dizziness, vision disturbance and headache. 60% had prodromal symptoms prior to the onset of their stroke. Qualitative analysis created three main themes: 1) Physical Disturbance, 2) Visual and Spatial Disturbance and 3) Dismissal.

Conclusion: PCS is a difficult condition for patients to recognize, which affects their help seeking behavior, delays treatment and negatively affects outcomes. These patients described a wide variety of symptoms and their reasons for dismissing them. These results may help inform future paramedic educational programs for PCS awareness and recognition in the prehospital environment.

INTRODUCTION

Stroke is the third leading cause of death in Ireland and Western Europe and is the number one cause of acquired disability (McCormack et al., 2024). It can be caused by a blockage of blood flow to the brain due to a clot (ischemic) or a bleed (hemorrhagic) (Campbell & Khatri, 2020).

Depending on the location of the blockage, strokes can be separated into anterior circulation stroke (ACS) or posterior circulation stroke (PCS). ACS is much more common, and can have dramatic symptoms such as facial droop, arm and leg weakness and slurred speech (Tao et al., 2012). These symptoms are commonly picked up by the FAST test (face, arm, speech, time) (Harbison et al., 2003), which is the main prehospital stroke screening tool in Ireland and the UK (Feeney et al., 2016; Prehospital Emergency Care Council, 2023; C. Price & Paramedic, 2017). The posterior part of the brain consists of the cerebellum, brainstem and occipital lobes, which are responsible for functions including vision, co-ordination, balance and fine motor control. A lack of blood flow to these portions of the brain will cause a deficit in one or more of these functions (Carr, 2015). These patients therefore may not exhibit the typical 'FAST' symptoms which are the hallmark of public awareness campaigns (Irish Heart Foundation, 2020; Public Health England, 2021). The New England Medical Center Posterior Circulation Registry indicates that the most common symptoms of PCS are dizziness, unilateral arm weakness, dysarthria, headache and nausea or vomiting (Searls et al., 2012). PCS has been shown to account for around 20% of ischemic strokes (Floßmann & Rothwell, 2003; Merwick & Werring, 2014) and is missed three times more than ACS in the emergency department (ED) (Tarnutzer et al., 2017). The signs and symptoms of PCS have been shown to account for as much as 50% of missed strokes by the emergency medical services (EMS) in a recent systematic review (Jones et al., 2021).

Internationally, there is a paucity of research focused on recognition of PCS symptoms in the prehospital environment, but it is recognized to be poor (Hunt et al., 2024). A narrative review from Germany highlighted the pitfalls of PCS diagnosis, including a lack of public awareness of the symptoms and a predominated focus on large vessel occlusion/ anterior stroke from EMS (Hoyer & Szabo, 2021). Recent Irish research has shown that 67% of paramedics missed the symptoms of PCS in a vignette setting and were uncomfortable of the diagnosis (Devlin & Bury, 2023). Because of this, recognition and therefore treatment is delayed, which has been shown to result in worse outcomes than their anterior circulation stroke counterparts (Sommer et al., 2018).

To date, only one study from Sweden has investigated patient reported symptoms of stroke, which showed that many patients experienced subtle and puzzling symptoms not commonly included in public awareness campaigns (Andersson et al., 2024) or typical paramedic undergraduate training (Prehospital Emergency Care Council, 2014, 2023). Most of the patients in this study, along with their families had no idea that they may be having a stroke (Andersson et al., 2024). As the FAST test is still the primary tool used in Ireland and the UK for recognition of stroke by paramedics prehospital (Feeney et al., 2016; Prehospital Emergency Care Council, 2023; C. Price & Paramedic, 2017) there may be a significant proportion of patients with subtle, less typical symptoms missed.

At the time of writing, there are no studies detailing patient reported symptoms of stroke subtypes, including PCS. Therefore, the aim of this study was to gather the patient's description of their PCS symptoms in their own words, which will allow paramedics and other healthcare professionals to gain an appreciation and understanding of the patient's experience, in order to increase recognition in the future.

METHODS

STUDY DESIGN

This study took place in Galway and Mayo University Hospitals, part of the Saolta Group in the west of Ireland over a four-month period (May – August 2025). A qualitative descriptive design was used, with thematic analysis informed by Braun and Clarke (2006). The Standards for Reporting Qualitative Research (SRQR) were used to describe the research.

Semi-structured interviews (see appendix) were used to explore patients experiences of their posterior circulation stroke, with the template adapted from another qualitative study on stroke patients’ experiences at symptom onset (Andersson et al., 2024), where the authors looked at general strokes rather than a PCS subset. Advanced Nurse Practitioners and Clinical Nurse Specialists in Stroke in both hospitals were approached for patient selection and data collection.

REFLEXIVITY

The primary investigator (PI) conducted all semi-structured interviews. The researcher works as an Advanced Paramedic with the National Ambulance Service in Ireland, regularly treating acutely ill or injured patients in the community. This clinical background provided familiarity with stroke patients and their assessment and helped form the interview template. The researcher recognized that this background may have influenced data collection and interpretation, emphasizing more subtle symptoms of PCS. To address this, patients were encouraged to tell their story in their own chronological order, before exploration of specific clinical elements of their experience. The researcher was not involved in their care and kept reflective memos throughout the process to challenge assumptions and influences on data collection and analysis.

ETHICS

Ethical approval was sought from the Clinical Research Ethics Committee, Saolta Group, and granted on the 28th of March 2025 (reference C.A. 3390).

PATIENT SELECTION

Purposeful sampling was employed, where PCS patients (confirmed as such by MRI) were approached by Advanced Nurse Practitioners (ANPs) and Clinical Nurse Specialists (CNS’s) in Stroke and informed of the study. If consented, clinical data including age, gender, co-morbidities/past medical history, stroke type (territory) and treatment (Table 2) were collected by ANP’s and CNS’s. The patients were then contacted by the primary investigator (PI) to confirm inclusion in the study and arrange an interview date and time.

Inclusion/exclusion criteria are shown in Table 1.

DATA COLLECTION AND ANALYSIS

ANPs and CNSs collected demographic and clinical data (Table 2). Semi-structured interviews were conducted over a four-month period (May – August

Inclusion Criteria	Exclusion Criteria
• Posterior Circulation Stroke (ischemic and hemorrhagic) • Aged 18 and over • <4 weeks since stroke	• Stroke in any other territory • <18 • 4 weeks since stroke • Unable to participate

Table 1. Study inclusion and exclusion criteria.

2025) both in person (70%) and over the phone (30%). The median interview time was 29 minutes. These interviews were recorded with consent and transcribed verbatim. Qualitative analysis was informed by Braun and Clarke's method (Braun & Clarke, 2006). This method was chosen as it is well suited to exploratory qualitative research seeking to identify patterns of meaning across participant's accounts.

This approach allows analysis to be performed inductively, while also enabling the researcher to consider the relevance of these experiences to prehospital care. While a semi-structured interview guide was used to support consistency throughout the interviews, no a priori schema was used. The guide informed data collection while keeping the analysis inductive. Themes were generated by getting to know the data, finding patterns and generating codes, which were grouped to form sub themes and overall themes from the dataset. The target number of patients was set at ten due to staffing and timing constraints and as such, thematic saturation was not sought.

In keeping with Creswell's recommendations for qualitative validation (Creswell & Miller, 2000), rich, thick description was prioritized by presenting detailed accounts and descriptions of symptom onset and interpretation. Clarification of researcher bias through reflexivity and regular engagement with the wider research team ensured further validity of results.

RESULTS

54 PCS patients presented to Galway and Mayo University Hospitals in the four-month study period. Recruitment stopped at ten patients, which represented 18.5% of the PCS population during this time period.

The median age was 70 years old, ranging from 43-80. Participants' medical history can be seen in Figure 1. Hypertension was the most prevalent co-morbidity (70%), followed by type 2 diabetes, and dyslipidemia (30%). 20% of participants had ischemic heart disease, coronary artery bypass graft (CABG), atrial fibrillation, previous stroke, aortic valve replacement and deafness. One case of atrial fibrillation was presumed to be a new onset and cited as the causative factor.

90% (9/10) did not believe they were having a stroke at the time. Only 50% (5/10) sought help immediately. 70% were taken to hospital by ambulance (with only two going immediately) and 30% were taken by car (with all these going immediately). The remainder of the ambulance group help seeking time varied from four hours to four days (Figure 2).

Patient	Gender	Stroke Territory	Treatment
1	Male	Left cerebellar infarct and left PICA* occlusion	Transferred. Right frontal EVD* and posterior fossa craniotomy
2	Male	Left occipital infarct	DAPT*
3	Male	Right occipital infarct	Aspirin
4	Female	Left thalamic infarct	Aspirin
5	Male	Left occipital/temporal infarct	Aspirin
6	Male	Right pontine infarct	Thrombolysis
7	Male	Acute left paramedian midbrain infarct	Medical management
8	Female	Right and midbrain infarct	Transferred. EVT*
9	Male	Large PICA* territory acute left cerebellar infarct	Medical management
10	Male	Basilar artery thrombus and right cerebellar infarct	Thrombolysis

Table 2. Stroke territory and treatment.

Abbreviations: PICA = posterior inferior cerebellar artery, EVD = external ventricular drain, DAPT = dual anti-platelet therapy, EVT = endovascular thrombectomy

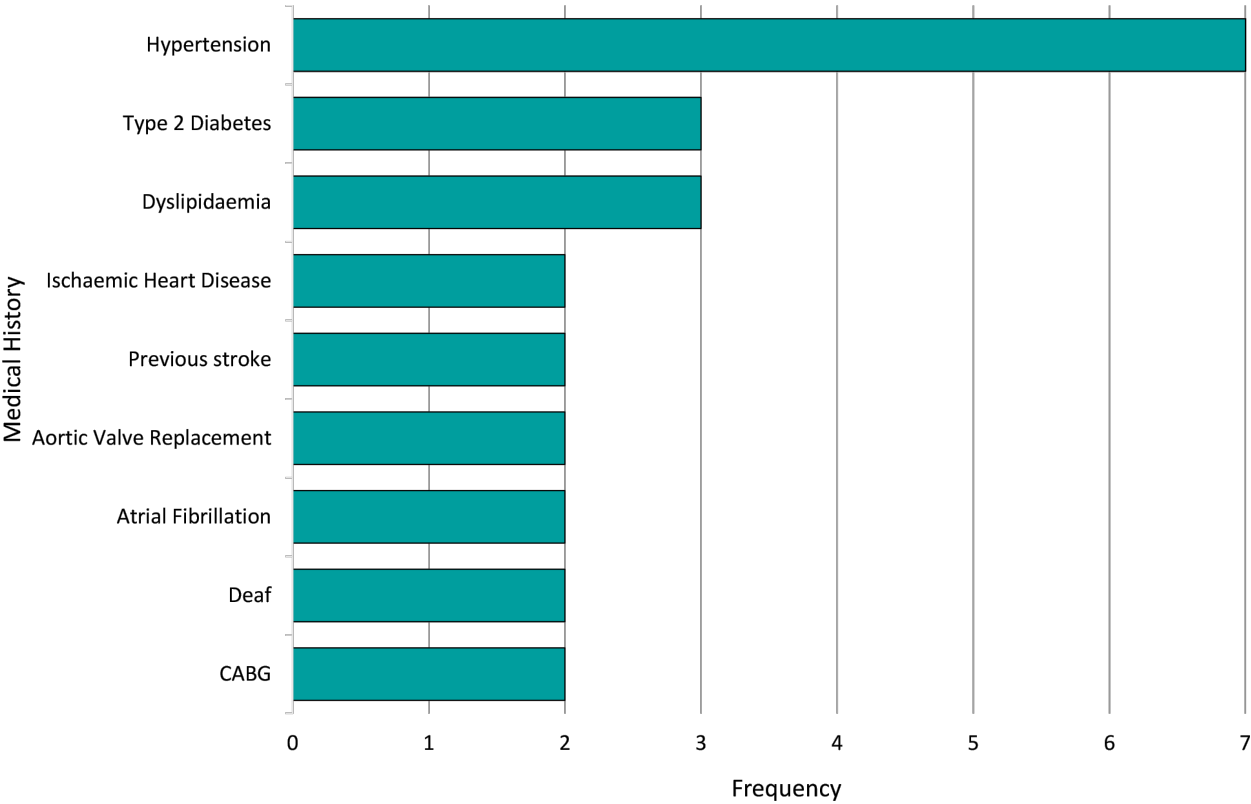


Figure 1. PCS patient’s medical history.

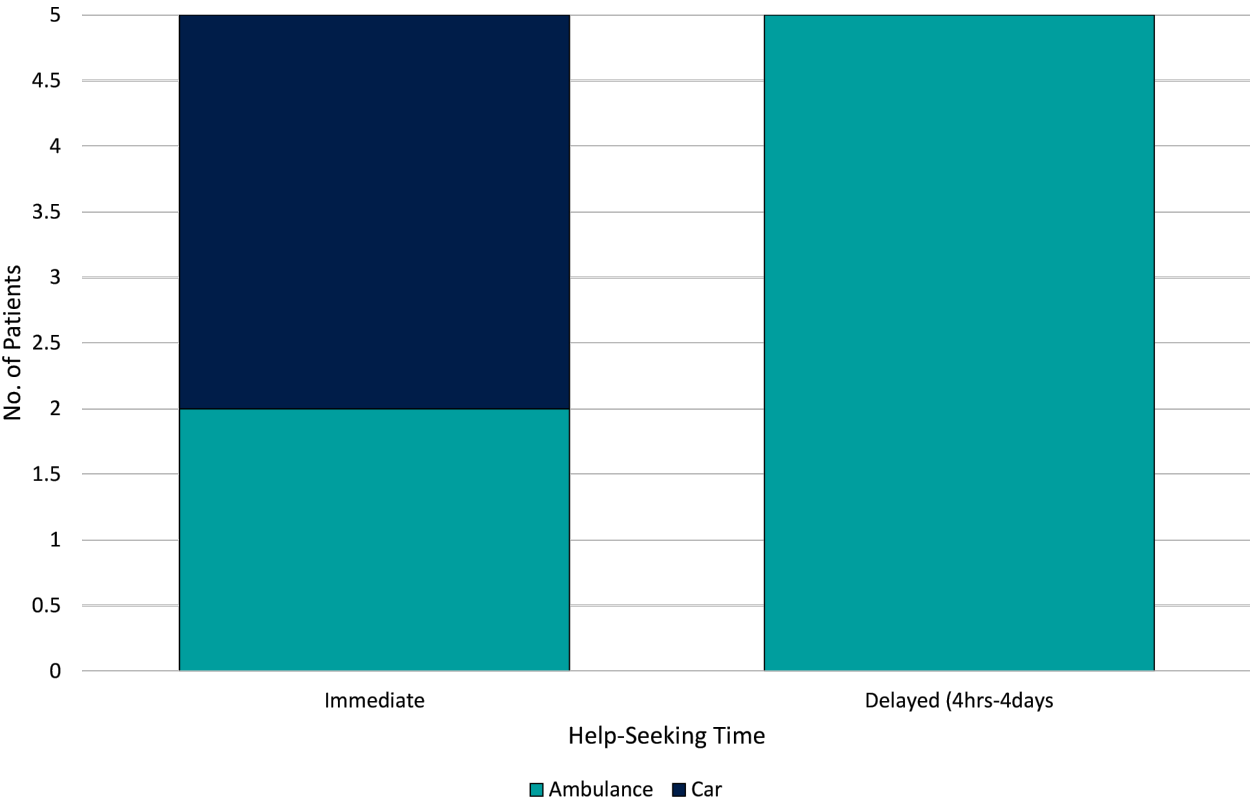


Figure 2. Help-seeking time and transport mode.

20 different symptoms were reported by the participants in this study. The median number of symptoms was five (ranging between three and ten). Loss of balance was the most prevalent noted (80%), followed by unable to walk unaided (70%), dizziness (50%), and vision disturbance and headache (both 40% occurrence). 30% (3/10) reported symptoms present in the FAST test, with two patients having speech problems and one describing arm weakness (Figure 3).

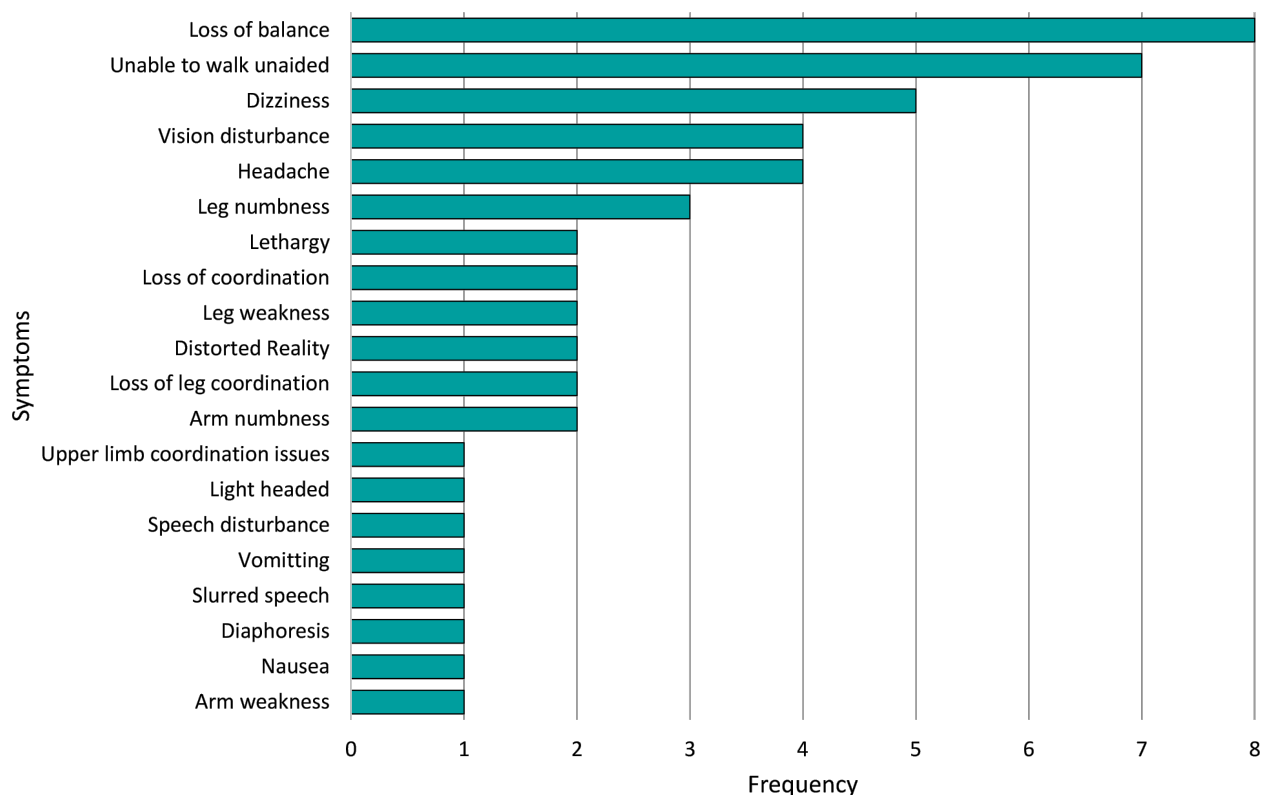


Figure 3. Patient reported symptoms of PCS.

60% (6/10) had intermittent prodromal symptoms (i.e. early signs/symptoms that appear before a more apparent illness) prior to the onset of their stroke. The most common were vision changes (40%), headache (30%), and loss of balance/coordination (30%). None of the sample group were permitted to drive in the study timeframe (within four weeks of their stroke) with two patients restricted from driving until further notice due to visual problems.

Reasons for non-recruitment of patients apart from declining included cognitive issues, memory issues, new cancer diagnosis, and being too unwell to participate.

QUALITATIVE ANALYSIS

Three main themes of physical disturbance, visual and spatial disturbance, and dismissal were created with separate subthemes as shown in Table 3. Due to small numbers, thematic saturation was not sought.

Patients were anonymized prior to data analysis. Participant 1 is labeled P1, participant 2 as P2 etc.

PHYSICAL DISTURBANCE

The loss of balance or an inability to walk was a common theme among participants, but this was on a spectrum. Some could not walk at all, and others could manage walking with some assistance.

"I got down onto the ground. My phone was over in the kitchen, which would be about 20 feet away, and I crawled over to get my phone to call my wife who was upstairs" – P5.

Many described a similar pattern where they needed to hold on to something in order to walk:

"I was hanging onto the wall" – P8.

"I had to go from chair to chair [to get to the phone]" – P3.

Coordination varied, with some only affecting either the upper or lower limbs:

"I could change my top part, but I couldn't change my trousers at all" – P6.

"My hands were fine....but I found it difficult to get the second trouser leg in and shoes on" – P9.

Patients described a variety of limb symptoms, but not necessarily an arm or leg 'weakness':

"... my left arm, which, you know like on occasions when you're sitting in a chair and your arm would fall asleep, it kind of went fairly dead and heavy, but by the time I got to (town), it had kind of had a relaxed again with the bit of maneuvering I was doing" – P3.

"(my arm) just felt like something really, really tight...like as if somebody had kind of put bandages kind of way too tight or you know if someone is taking your blood pressure and they put the thing on too tight and it's getting tighter and tighter, you know what I mean? It's just that feeling of just constriction" – P4.

Despite being diagnosed with PCS, some patients had anterior stroke symptoms such as aphasia:

"When I spoke to her (my wife), my speech was slurred, even though I knew exactly what I was trying to say. And I was able to say it but. It sounded like I was drunk. Yeah, it was very slurred and very hard to get out" – P10.

Of note, two of the participants described a difficulty in carrying out normal tasks, requiring increased concentration, that weren't noticed by others:

"They asked me my name and date of birth, and even though I answered those two questions, the words were there but I couldn't get them out. The words sounded okay but they weren't the words I wanted to use" – P2.

"They (the paramedics) made me touch my nose and touched with my right hand and all that was fine. I did it with my left and they said, "Oh that's fine", I said no. I really had to concentrate to do that to get it right. I almost missed and I had to readjust to hit his finger" – P10.

Theme	Sub-theme
Physical Disturbance	• Balance/coordination impairment, • Limb sensory disturbance • Speech impairment
Visual and Spatial Disturbance	• Visual disturbance • Vertigo • Altered reality
Dismissal	• Misattribution to benign causes • Prodromal features

Table 3. Qualitative themes.

Some patients described varying levels of headache, from an instant 'pop' to a more nagging type of discomfort:

"I felt something pop in my head and I couldn't remember where I was. I didn't know where the kids were.....and then I started vomiting" – P1.

".. it wasn't really a pounding headache...you know, it was really just annoying, nagging, maybe" – P9.

VISUAL AND SPATIAL DISTURBANCE

Many participants described experiences of visual disturbances and spatial disorientation that gave them an altered sense of reality. Vision problems were vividly described by patients:

"I was laying in my bed, and I opened my eyes and everything had shifted in the room. Like, so this wall here with the window was on the ceiling. The ceiling was on the (side) wall with the light sticking out of it, the bathroom door was on the floor. The floor was on this wall. It's like somebody got the room and just shifted it around...I remember going the bathroom and having to crawl there...I was like, everything's the wrong way round, everything's shifted" – P1.

"I was just getting the dinner ready and when I went over to put on the oven and I couldn't distinguish which side the oven controls were on...I didn't know which control was which. I was looking at the dials, and it just wouldn't click in" – P2.

Participants described a feeling of dizziness or vertigo-like symptoms like the room was spinning:

"The room was spinning like I was on a rollercoaster... Then I just puked on the floor like, like, I can't make it to the toilet" – P1.

"I got really dizzy and I felt I was gonna fall. My head was going round, spinning" – P8.

DISMISSAL OF SYMPTOMS

Due to the subtle nature of symptoms and a lack of knowledge on what they could be, the majority of patients dismissed their symptoms as something more benign:

"I didn't think this was a stroke as my hand was okay, my last stroke my hand was weak" – P6.

Due to patient's misattributing the stroke symptoms as something else, this delayed their help seeking behavior:

"My niece and my sister were kind of saying you should call the doctor. And I said, oh, c'mon, I don't want the drama. And well, he [the doctor] took my blood pressure and just the symptoms and he kind of said 'when did this start?' and why didn't you come to me sooner? And I said, well, I didn't really know what it was" – P4.

Dismissal not only occurred by the patients, but also medical staff:

"My speech and doing that finger to nose finger to those different situations [were] all perfect, and they came to the conclusion that it's just classical vertigo, seeing as I was able to do everything they asked me. They done a repeat scan then which showed a clot in the cerebellum" – P9.

Many patients had prodromal symptoms, i.e. subtle signs or symptoms before an established 'stroke' occurred. These were ignored, causing a delay in seeking help:

"The Tuesday beforehand I had an episode of double vision while driving, and I had to close 1 eye to focus better. That lasted for around 20 seconds I'd say and then it went back to normal again then" – P9.

"...My runners just kept getting caught (on the tiles) as if I was about to trip myself up...it seemed to happen quite a few times and it's kind of like...what am I tripping on?" – P4.

*"We bought a new car myself and the wife, one of these electric petrol hybrid things, a Yaris. I took one drive in it, and I just looked left and I said to myself there's more of a blind spot on this car than there was on the last car. And two weeks later I turned in the entrance and **** me I touched the left-hand side of the car off the wall. Cost 750euros to fix it" – P3.*

DISCUSSION

This is the first known qualitative study of PCS patients' experiences of their symptoms and shows large variation in their presentations. Many patients described unusual and subtle symptoms that were difficult to interpret including disturbances of balance, co-ordination, vision and perception, and were often not considered symptoms of a stroke. Therefore, the relevance of these findings highlights how PCS may be experienced and described by the patient before a clinical assessment is carried out.

The majority of patients (90%) in this study did not think that they were having a stroke, with only 50% seeking help immediately. The remaining 50% sought help between four hours, and four days later. Previous research has shown mixed results in the public's awareness of stroke symptoms, with hospitals showing increased public attendance at ED's for stroke in the immediate aftermath of a stroke campaign (e.g. FAST campaigns) but not sustaining this in the long term (Mellon et al., 2014).

A survey on the Irish populations awareness of stroke symptoms published in 2023 showed a low public awareness of the 'FAST' signs of a stroke. The survey of over 1,000 people showed that facial weakness is the most commonly recognized symptom but only recognized by 35% of people. Slurred speech was recognized by 16%, whereas arm weakness or numbness was recognized by 14%. Only one in ten people knew what all four FAST letters stood for (IPSOS, 2023; Shannon, 2023). These results are extremely worrying, because if a population is not aware of the signs of the most common type of stroke i.e. anterior stroke, then it must be assumed that they have very little knowledge of the more subtle signs of posterior stroke. This lack of awareness is also echoed in the medical community, where 37% of PCS were missed in the ED in a retrospective chart review (Arch et al., 2016) and 67% were missed by paramedics in a vignette study (Devlin & Bury, 2023). The most recent Irish National Audit of Stroke (INAS) report from the National Office of Clinical Audit (NOCA) shows that 43% of stroke patients did not arrive at hospital within 4.5 hours of stroke symptom onset (McCormack et al., 2024). While the document reports on stroke as a whole rather than its subsets (i.e. anterior versus posterior stroke), the current study may offer some insights into the difficulties of PCS patients recognizing their symptoms and the subsequent delay in their help seeking behavior. As PCS patients represent approximately 20-25% of ischemic strokes (Floßmann & Rothwell, 2003; Merwick & Werring, 2014), they may represent a significant proportion of the patients that arrive late to hospital and therefore outside the window for potential treatment and future research should examine this group.

The participants in this study did not present their experiences as isolated textbook symptoms, but instead described complex combinations of balance issues, visual disturbances, changes in bodily function, speech issues, and a sense that something was wrong but couldn't put their finger on it. This may help explain in part why PCS can be so challenging to detect in the prehospital environment. The ten patients here reported 20 different symptoms, highlighting the large variation in patient presentation, even among a small cohort. Here, the top four reported symptoms were loss of balance, unable to walk unaided, and dizziness, while visual disturbance and headache tied for 4th. The New England Medical Center Posterior Circulation Registry, consisting of 407 PCS patients, reports the top four symptoms as dizziness, unilateral limb weakness, dysarthria and headache (Searls et al., 2012). The registry reports gait ataxia as the second most common sign, but it is described as a symptom here as it is self-reported. Therefore, while this is a small study size, results are somewhat comparable to this large registry in comparison.

It is important to note that no single patient reported only one symptom in isolation in this study. For example, the patient with the lowest number of symptoms described having dizziness, loss of balance, and unable to walk unaided. However, caution must be taken if extrapolating these results to broader populations, given the very small sample size of this group. For example, isolated dizziness with no other neurological findings presents a diagnostic challenge for physicians in recognizing a peripheral cause (e.g. vertigo, labyrinthitis, Ménière's disease) as opposed to a central cause (e.g. stroke, multiple sclerosis, brain tumor) (Kerber & Newman-Toker, 2015). A recent study found that acute stroke was found in 55/1239 patients (4.5%) with isolated dizziness, and recommended further neuroimaging workup is needed in high-risk patients - patients > 65 and a history of stroke were the strongest predictors - but associations were also found in those with known stroke risk factors such as hypertension and atrial fibrillation (Kim et al., 2021). However, other studies have reported higher incidences of isolated dizziness caused by a stroke at 11% (Doijiri et al., 2016) and 28% (Hu et al., 2025) and so extreme caution must be taken when dealing with these patients, especially those with risk factors for stroke. Therefore, dizziness/vertigo symptoms 'plus' other neurological findings increase the likelihood of stroke, and caution should be exercised in those with isolated symptoms with accompanying risk factors.

While many PCS patients can be 'FAST negative' (Gulli & Markus, 2012; Jones et al., 2021; Rowe et al., 2020), 30% of this study population described symptoms present in the FAST test (20% speech problems, 10% arm weakness). It is important to note that many participants described arm and/or leg paraesthesia (e.g. numbness, tingling, squeezing sensations) and also leg weakness, however these points are not traditionally taught or examined as part of the FAST exam, as FAST was originally developed to only test arm weakness and not the lower limbs, with no test for paraesthesia included (Harbison et al., 2003). Therefore, paramedic education may benefit from including both upper and lower limb paraesthesia as part of their clinical assessment to aid in stroke detection.

The results of this study share similarities in Andersson et al.'s study (2024), including patients having a distorted sense of reality where stationary objects were moving or altered (oscillopsia), and physical disturbances such as limb numbness, tingling, loss of coordination described as clumsy fingers, and a need for support such as holding on to a wall or furniture, with patients here describing similar experiences. Whereas Anders-

son's study did not explore the subtypes of stroke, the current study may propose that a proportion of their patients were experiencing posterior circulation strokes due to the similarities in their presentation.

Similarly to Andersson, this study had a repeated theme of patient's needing extra support to walk: "I was hanging onto the wall, I had to go from chair to chair, I was holding onto the car". As Paramedics deal primarily in acute undifferentiated patients and are the first point of contact and entry into the healthcare system for almost 80% of stroke patients (C. I. Price et al., 2013), being vigilant to the patient who acutely needs aids to walk, such as holding on to walls or furniture, may prompt the practitioner to investigate further for signs and symptoms of stroke. These findings suggest that paramedic education may benefit from exploring an assessment of the patient's ability to walk unaided (where safe to do so) in such cases. In the absence of other causes like hypotension, infection and diabetes for example, the acute inability to walk may lead the paramedic to consider PCS as a differential diagnosis prehospital.

60% of this cohort experienced prodromal symptoms prior to the onset of their stroke. The most prevalent symptoms included vision changes, headache and loss of balance/coordination. In retrospect, these patients may have been suffering from spontaneous episodic vestibular syndromes (EVS) in the week(s) leading up to their stroke. This is described as transient dizziness lasting seconds to hours, but rarely days, and often accompanied by nausea, nystagmus and sudden falls (Kaski et al., 2025). A cross-sectional study on vestibular syndromes presenting to the ED showed that EVS was caused by a TIA in 10% of cases, whereas acute vestibular syndrome (AVS, continuous dizziness plus symptoms from days to weeks) was more likely to have a stroke diagnosis at 25% of patients (Comolli et al., 2023). As TIA's are a significant risk factor for future strokes (Hajarian et al., 2025; Khan et al., 2025), paramedics should be vigilant of prodromal symptoms in their patient's history that may be undiagnosed episodic vestibular syndromes, to heighten their suspicion of PCS.

At the time of writing, new education standards have recently been introduced by the Irish Prehospital Emergency Care Council (PHECC), with the most recent paramedic competency framework including posterior circulation stroke education for paramedics for the first time (Prehospital Emergency Care Council, 2025). Formal education on PCS for paramedics will inevitably increase awareness and subsequent recognition, but future research exploring the public's help seeking behavior for stroke would be highly beneficial.

LIMITATIONS

This study, while rich in data, was small in size with only ten patients, and only represented 18.5% of the PCS population that presented to these two stroke hospitals in the study period. As such, thematic saturation was not achieved, and a larger sample size would be needed to achieve this. As the study period was only four months, analysis of seasonal variations was not possible. As a qualitative study, there is also a risk of bias from the patient (recall bias) and the primary investigator as a practicing Advanced Paramedic (confirmation bias). These were mitigated somewhat by having the participants take part within a four-week period to help memory recall and reduce bias, and having the PI complete a statement of reflexivity and regularly review with the wider research

team. This study should not be interpreted as identifying diagnostic criteria for PCS, but rather an explanatory account of how a small sample experienced their symptoms which may help inform future education of paramedics. Of note, many potential participants were excluded from the study as they were too unwell to participate, indicating that this sample population consisted of the healthiest patients available to take part and therefore excluded those with more severe presentations and deficits.

CONCLUSION

The posterior circulation stroke patients in this study suffered a large variety of symptoms, many of which went unnoticed both by the patient and their surrounding families. 90% of patients did not think they were having a stroke, and 60% had prodromal symptoms preceding the event. Qualitative analysis created three main themes of physical disturbance, visual and spatial disturbance, and dismissal, highlighting the difficulties in both recognizing PCS and seeking help for it. Future research should employ larger sample sizes, and focus on public awareness of PCS symptoms, and its further integration into Paramedic education to ensure prompt prehospital recognition and subsequent management.

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APPENDIX

SEMI-STRUCTURED INTERVIEW QUESTIONS

Introduction

- Introduction and general outline of study
- Consent and written consent gained
- Resources available if recalling events becomes difficult.

Main Questions

- What were you doing when your stroke occurred?
- What was it like when it happened? Can you describe it to me?
- Did you think you were having a stroke at the time?
- How long did it take you to call for help?
- Did you call for an ambulance or make your own way to hospital?
- Were you well in the week leading up to this?
- Is there anything you'd like to add?