# Pain and pain assessment in stroke patients with aphasia: a Systematic Review

### Carolien (N.J.) de Vries[1], Petra H. Sloot[2] , Wilco P. Achterberg[1]

[1]Department of Public Health and Primary Care, Leiden University Medical Center, Leiden, The Netherlands
[2] Department of Health Care Studies, Speech- Language Therapy, Rotterdam University for Applied Science, The Netherlands

## Introduction

The impact of pain in stroke patients with aphasia has not been well established due to self-report assessment difficulties in these patients who are unable to communicate their pain (Smith et al., 2013). Earlier studies showed that this may lead to under treatment of pain in aphasia patients (Kehayia et al., 1997). Registering the presence of pain with a self-report scale is especially challenging in this population. Self-report pain scales typically require respondents to understand abstract information, and make judgements. See Figure 1 for examples of pain scales like the Visual Analogue Scale (VAS) (Huskisson, 1974), Numeric Rating Scale (NRS) (McCaffery, 1997) and Faces Pain Scale (FPS) (Wong & Baker, 1988). The combination of inability to communicate pain because of aphasia and the high prevalence of pain after stroke stresses the need for adequate assessment of pain in this vulnerable population. Therefore, we performed a systematic review on pain in aphasia to answer the following research questions: What is the incidence and prevalence of pain or pain management in patients with aphasia? Which pain measurement instruments have been used, and are most valid?



Figure. 1. Self-report pain scales FPS, NRS and VAS

## Methods

A systematic search in databases (PubMed, Cinahl, PsychInfo, EMBASE, Web of Science and Cochrane) was performed for studies that described pain, pain assessment or pain intervention in stroke patients with and without aphasia or in right and left hemispheric stroke patients (RH/LH). We recorded data on: study characteristics, prevalence of aphasia/inability to communicate, prevalence of pain or pain intervention and psychometric properties of pain scales. The included studies were evaluated for methodological quality according to the Mixed Methods Appraisal Tool (MMAT-version 2011; Pluye et al., 2011). The COSMIN-checklist is used to critically appraise and compare the methodological quality of the included studies and the used measurement instruments.
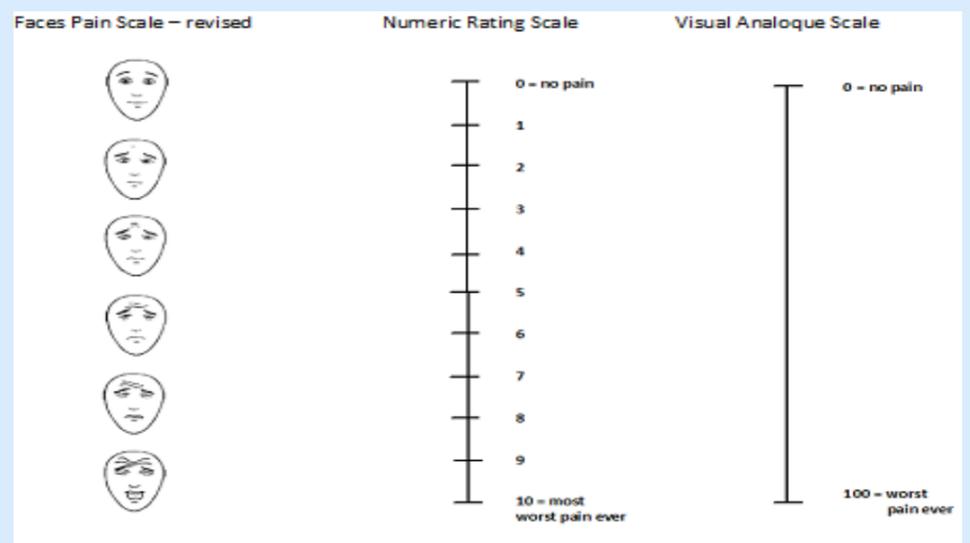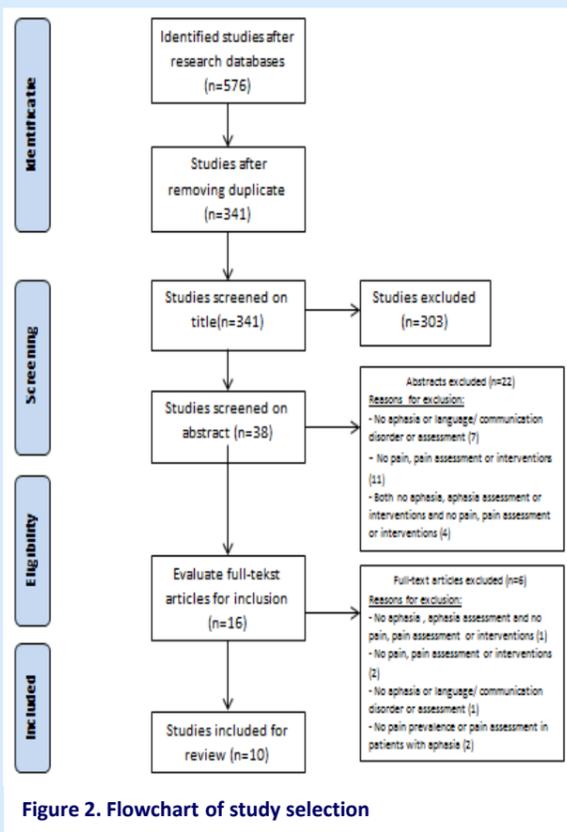


Figure 2. Flowchart of study selection

| Pain scale: | Validity: | Reliability: | Feasibility: |
|---|---|---|---|
| VAS Vertical (4) | 🙂 | 🙁 | RH: 😐  LH: 🙂 |
| VAS mecha-nical (1) | 🙂 | 🙁 | 😐 |
| VAS hori-zontal (1) | 🙂 | 🙁 | 😐 |
| FPS (2) | 🙂 🙁 | 😐 🙁 | RH: 😐  LH: 🙂 |
| VRS (2) | 🙂 🙁 | 😐 🙁 | 🙁 😐 |
| NRS (2) | 🙁 🙂 | 🙁 | 😐 |
| Site-of-pain scale (1) | 🙁 | 🙁 | 😐 |
| SPIN (1) | 🙂 | 🙂 | 😐 |

Table 1. Summary of psychometric properties of pain scales in stroke

## Results

The literature search yielded 576 articles. After screening, 10 articles were included in the review. See Figure 2.  Prevalence of pain in patients with inability to communicate because of aphasia varied from 44% to 88%. Pomeroy and Frames (1999) reported higher results on prevalence of pain in patients without aphasia (83-88%) compared with results of patients who suffer from aphasia (60-75%). Kehayia and Korner-Bitensky (1997) described patients with aphasia used significant less pain medication. Pain was measured using different self-report pain scales and Quality of Life instruments. Comparing the use of FPS, VAS and VRS in LH and RH patients, FPS scores are highly correlated with VAS and VRS in both stroke groups. Additional, LH patients  prefer the use of FPS to VAS and VRS. RH patients prefer VAS to FPS and VRS (Benaim and Froger, 2006). The psychometric properties are summarized in Table 1.

## Conclusion

To the best of our knowledge this is the first review that gives an overview on pain and pain management in stroke patients with aphasia. The majority of studies describe pain assessment in stroke patients with mild-to-moderate aphasia. Stroke patients with severe aphasia were excluded because of their inability to communicate their pain or to use self-report pain assessment tools.  Various pain assessment tools are used whose feasibility, validity and reliability proves low quality. The pain scales VAS vertical and FPS would provide the best results on methodological quality. Patients with a left hemispheric stroke prefer the use of FPS compared with the VAS and VRS. An feasible, reliable and valid pain assessment instrument is not available for stroke patients with aphasia.

Contact: n.j.de_vries@lumc.nl