



BMJ Open Current state of management and outcomes of facial nerve palsy in low-income and middle-income countries: a scoping review protocol

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ABSTRACT

Introduction The aim of the protocol is to present the methodology of a scoping review that aims to synthesise up-to-date evidence on the management and outcomes of facial nerve palsy in low-income and middle-income countries (LMICs).

Methods and analysis The scoping review will be conducted per the Arksey and O'Malley's framework and the Joanna Briggs Institute Reviewers' Manual. The scoping review question, eligibility criteria and search strategy will be developed in accordance to the Population, Concept, and Context strategy. The search will be conducted in electronic bibliographic databases (Medline (OVID), Embase, WHO Global Index Medicus, Cochrane Library, Global Health, African Journals Online). The review will synthesise and report the findings with descriptive statistics and a narrative description of both quantitative and qualitative evidence.

Ethics and dissemination This scoping review does not require ethical approval. This protocol will describe the proposed scoping review that will map the evidence on the management and outcomes of facial nerve palsies in LMICs. The proposed review aims to collate and summarise published literature to inform policy-makers and healthcare organisations and governments and to identify knowledge gaps that will translate into future research priorities in LMICs.

INTRODUCTION

Facial nerve palsy occurs when there is partial total (paralysis) loss of facial nerve function. This could occur following a variety of aetiologies such as infection, trauma and neoplasia, and sometimes, it can be idiopathic as seen in Bell's palsy.¹ In the USA, the incidence of the common aetiologies of facial nerve palsy are: Bell's palsy is 20–25 per 100 000 population annually,² infection including herpes zoster ophthalmicus, Lyme disease and otitis media (7.7 cases per 100 000 annually),^{3–6} neoplastic aetiologies (6.8 cases per 100 000 annually),⁴ neurological aetiologies including cerebrovascular

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ To our knowledge, this will be the first scoping review to evaluate and describe the literature on the management and outcomes of facial nerve palsy in low-income and middle-income countries.
- ⇒ This protocol will ensure transparency in the methodology of the scoping review, which will reduce the likelihood of reviewing bias.
- ⇒ The proposed search strategy will be conducted in six electronic databases.
- ⇒ Only article reviews published in English and French in scientific journals will be considered eligible for inclusion.
- ⇒ There will be no quality assessment of the included studies.

accidents (6.8 cases per 100 000 annually)^{5 7} and traumatic aetiologies (4.1 cases per 100 000 annually).⁸ In children, the incidence is lower, 6.6 cases per 100 000 population annually.⁹ Facial nerve palsy has been shown to affect females more than males,¹⁰ often affecting those aged between 15 and 45 years.¹¹

Facial palsy is a disorder that can severely impact facial function.¹² Facial nerve palsy has both functional and psychosocial implications.¹³ For example, the lack of facial animation caused by the disorder can affect one's verbal and non-verbal communication.¹⁴ Other issues include dry eyes, drooling, hemifacial spasms and feeding difficulties caused by muscle weakness.¹⁵ Changes in facial symmetry can contribute to depressed mood¹⁶ and anxiety and severely impact these individuals' quality of life.¹⁷ It is indeed critical to diagnose this condition early and have comprehensive treatment and rehabilitation systems in place, concentrating on functional and psychosocial rehabilitation.

Box 1 Primary and secondary aims of the review

Primary

1. Characterise the treatment modalities of facial nerve palsies in low-income and middle-income countries (LMICs)

Secondary

1. Assess the epidemiology of facial nerve palsies in LMICs
2. Evaluate the aetiology of facial nerve palsies in LMICs
3. Assess the availability of diagnostic modalities such as neuroimaging (MRI, CT scan), including the use of clinical examinations and tests, and
4. Assess the clinical outcome of patients primarily defined as rates of morbidity and quality of life

There is a limited literature on the global burden of facial nerve palsy, especially in low-income and middle-income countries (LMICs). Although some reports from some LMICs exist,^{18–20} there has not been any comprehensive review of the epidemiology, aetiology, clinical characteristics and management across all LMICs, despite the pressing need. We intend to critically evaluate how this condition is managed in these countries and to assess the outcomes of affected patients.

The aim of this protocol is to describe the methodology of contemporary scoping review of the published literature on the epidemiology, management and outcomes of facial nerve palsies and to identify gaps in knowledge. The primary and secondary aims of the review are described in [Box 1](#). The proposed review work could be valuable in informing policy-makers and healthcare organisations delivering care to patients with facial nerve palsies. This is the first step in informing research question(s) for further work to be conducted as larger research projects in LMICs.

METHODS AND ANALYSIS

A scoping review on the epidemiology, management and outcomes of patients with facial nerve palsy in LMICs will be conducted in accordance with Arksey and O'Malley's framework.²¹ A scoping review methodology is chosen instead of a systematic review because the evidence relating to epidemiology, presentation, management and outcomes of facial nerve palsy in LMICs has yet to be comprehensively reviewed. Systematic reviews aim to address a specific research question with narrow parameters, strict outcome measures and eligibility criteria of the included studies through a structured, predefined process. A scoping review, however, may explore several questions in a broad sense and aims to provide an overview of the current evidence. As it is unclear which specific questions should be asked, a scoping review would suit our investigation better.

Our review will include all study types to ensure the inclusion of the majority of relevant literature. The design of the proposed scoping review methodology was informed by Arksey and O'Malley's framework²¹ and the Joanna Briggs Institute Reviewers' Manual.²² Arksey and

O'Malley's framework includes the following five stages to conduct a scoping review.

Stage 1: identifying the research question

The Population, Concept and Context (PCC) strategy framework will be used to define the title, scoping review objectively, scoping review question and eligibility criteria. Our main research question will address: how are facial nerve palsies managed in LMICs?

Stage 2: identifying relevant studies

The members of the review team discussed the keywords constituting the search strategy and the eligibility criteria for inclusion and exclusion of the studies based on the PCC strategy.

Databases and search strategy

Two members of the review team (CAI and SZYO) developed the search strategy by testing and identifying suitable keywords, MeSH terms and electronic bibliographic databases to search. Next, a discussion was held among all members to ascertain the final search strategy. The search will be conducted using the following databases: Medline (OVID), Embase, WHO Global Index Medicus, Cochrane Library, Global Health and African Journals Online. One reviewer (CAI) will hand search additional resources including the references of included studies on databases such as Google Scholar to ensure all relevant evidence is captured. This search strategy broadly includes facial nerve palsies AND LMICs. The language of publications will be restricted to English and French. No restrictions on the date of publication will be made, to allow further analysis on the publication trend of literature of facial nerve palsy management across the years. The full search strategy can be found in online supplemental file 1.

Eligibility criteria

An eligibility criteria was also developed and defined in order to guide the reviewers' decisions. The inclusion criteria listed below are based on the PCC strategy:

- ▶ Population: patients of any age.
- ▶ Context: LMICs. This includes low-income, lower-middle-income, upper-middle-income countries listed by the World Bank Country and Lending Groups²³ as of the date the search on the databases is completed.
- ▶ Concept: patient(s) or patient cohorts reporting on (1) aetiology of facial nerve palsy (eg, infective causes, trauma and idiopathic), (ii) symptoms of facial nerve palsy (eg, ptosis, drooping of the affected corner of the mouth, decreased tearing, hyperacusis and/or loss of taste sensation on the anterior 2/3 of the tongue), (3) degree of facial nerve weakness (evaluated using the House-Brackmann tool²⁴), (4), diagnostic modality (eg, clinical diagnosis only, MRI, CT), (5) treatment plan (conservative, medical and surgical) and (6) outcome of patient (both short-term and long term).
- ▶ Type of studies: quantitative and qualitative studies, for example, primary research studies, reviews and

cross-sectional studies. There will be no restrictions on the publication time of the studies.

The following articles will be excluded:

- ▶ Do not include LMIC patients or do not have disaggregated data about the LMIC population.
- ▶ Do not discuss facial nerve palsy or do not have disaggregated data about facial nerve palsy.
- ▶ Do not discuss the epidemiology, presentation, management or outcomes of patients with facial nerve palsy.
- ▶ Are neither written in English nor French.
- ▶ Conference abstracts (due to the lack of in-depth information available).

There will be no restrictions on the age of patients included.

Stage 3: study selection

The screening process of this proposed scoping review will comprise two phases. First, a calibration exercise will be carried out before title and abstract screening in order to ensure an adequate understanding of the inclusion criteria by the study screeners.²⁵⁻²⁷ All the articles resulting from the search will be exported in Rayyan,²⁸ to facilitate deduplication and independent, blinded

screening. Two reviewers will independently screen the titles and abstracts of the identified articles based on the predefined eligibility inclusion criteria, that is, studies looking at the management and outcomes of facial nerve palsies in LMICs. Decisions of the two reviewers will then be unblinded. Conflicts between reviewers will be resolved through discussions, and the lead authors (CAI, SZYO and BDT) will arbitrate if consensus cannot be achieved. The next stage involves the same process mentioned above being repeated, however, with the full text of the articles. Disagreements between reviewers will be resolved in a similar manner. Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow diagram (figure 1) will be presented to reflect the search process.

During the stage of screening the full-text articles, corresponding authors of articles will be contacted if the full-text cannot be accessed. If no response is received, a reminder email will be sent after 2 weeks. If still to no avail, the article will be excluded on the reason of 'full-text unavailable'.

Stage 4: charting the data

Key data points to be extracted from the included studies will be extracted using a predefined data-extraction sheet

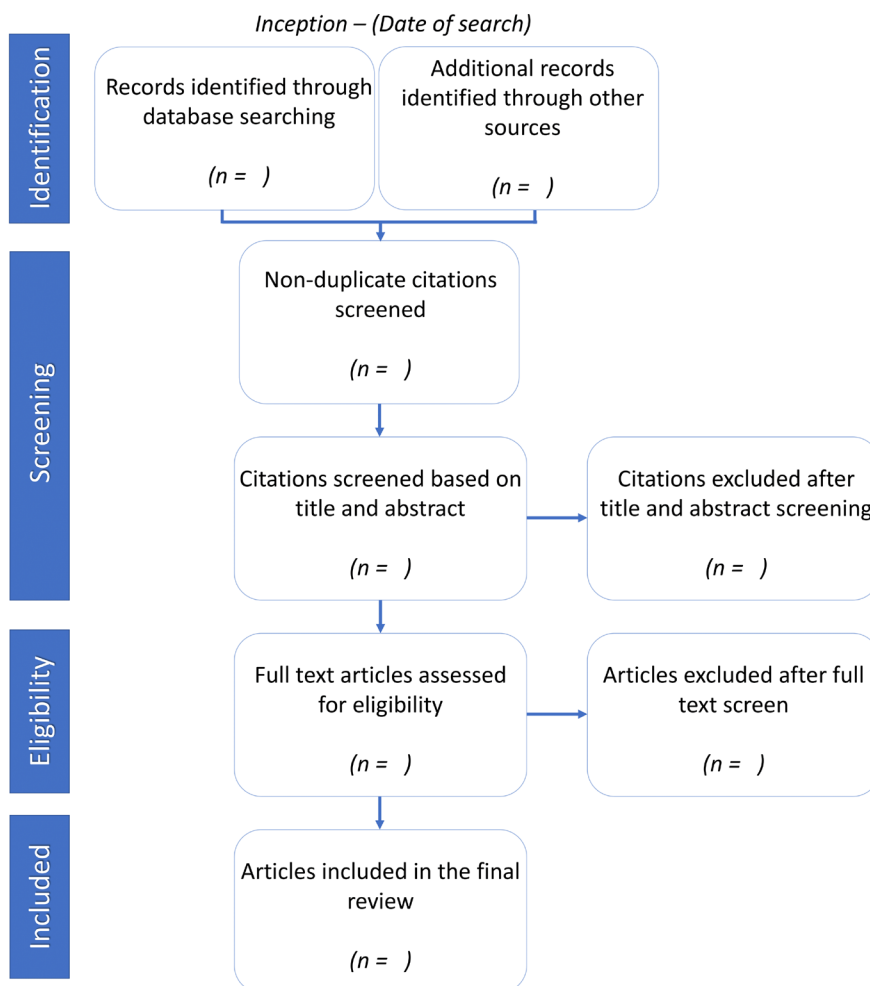


Figure 1 Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow diagram for scoping review process.

Table 1 Data extraction framework

Main category	Subcategory	Description
1. First author		
2. Title		
3. Journal		
4. Year of publication		
5. Country of first author		
6. Country where the study was conducted		
7. Language of publication		
8. Study design		Specify the study design such as cross-sectional, prospective cohort, retrospective cohort, case-control studies, reviews and qualitative studies.
9. Sample size		Specify the number of patients with facial nerve palsy.
10. Age of patients		Specify the age mean, median, SD and range of patients in the study.
11. Sex of patients		Specify the number of male and female patients in the study.
12. Quantitative outcome measures	Predisposing risk factors	Specify any risk factors in patients such as pregnancy, pre-eclampsia, obesity, hypertension, diabetes and upper respiratory ailments.
	Aetiology of facial nerve palsy	Specify the causes of facial nerve palsy in the patients such as infective causes, trauma, neoplastic and idiopathic.
	Presenting clinical features	Specify symptoms and clinical signs in patients such as hyperacusis, decreased tear production, facial weakness, taste impairments and impaired salivation.
	Degree of facial nerve palsy	The degree of facial nerve weakness will be evaluated using the House-Brackmann Scale, if appropriate.
	Other cranial nerve palsies	Specify other cranial nerve palsies, if applicable.
	Diagnostic modalities	Specify diagnostic tests used such as serologic testing for Lyme disease, erythrocyte sedimentation rate, C reactive protein, blood cultures and electrodiagnostic testing.
	Treatment	Specify treatments provided such as glucocorticoid therapy, antiviral therapy, eye care, surgical decompression, botulinum toxin for synkinesis, eyelid tape and tarsorrhaphy, cosmetic procedures, use of physical therapy and stimulation.
Outcomes	Specify if the patient(s) have had complete recovery, incomplete recovery, no improvement nor deterioration or severe sequelae. The follow-up period of the patients will be noted.	
13. Qualitative outcome measures	Experiences on impact of condition on quality of life	Specify any experiences reported by patients suffering facial nerve palsy or reported by physicians.
	Opinions on standard of care received	Specify any opinions reported by patients suffering facial nerve palsy or reported by physicians.

made in Microsoft Excel (Microsoft, Richmond, Virginia, USA). Data extraction will also be performed in two stages. The first stage is a pilot which consists of having all authors, each extracting data from the same 10 randomly selected included articles. This assures the reliability of the pro forma and that all authors can extract data accurately and homogeneously. Feedback from the pilot stage will inform any necessary changes to be made prior to commencing the second stage, to ensure data-extraction sheet captures the relevant themes in the literature and is reflective of the included studies. The expected key information to be extracted is outlined in [table 1](#).

Stage 5: collating, summarising and reporting the results

The data extracted will be primarily reported in tabular form showing descriptive statistics, and when appropriate, described in a narrative form. SPSS V.26 will be used for analysis. Pooled statistics will be calculated using measures of central tendency and spread. Unless otherwise stated, the statistical significance will be set at 0.05. The tables may display the publication year of the studies, the geographical area where the studies

were conducted, aetiology of facial nerve palsy, clinical presentation, mode of diagnosis, mode of treatment, the timing of follow-up and outcomes. If appropriate, a thematic analysis will be used to analyse the findings from qualitative studies. Data will be exported and analysed independently by two reviewers and an inductive coding approach will be followed to identify relevant themes. This would ensure homogeneity in the results presented. Any conflicts between the reviewers will be resolved by discussion.

Risk of bias assessment

The scoping review aims to provide a comprehensive overview on the management and outcomes of facial nerve palsies in LMICs from the current literature, hence a formal bias assessment will not be conducted. Given the emerging evidence and the heterogeneous literature body, a formal bias risk assessment was deemed unnecessary due to the inherent standard biases associated with new areas of clinical research.

Patient and public involvement

No patients or members of the public were involved in the development of the protocol.

Ethics and dissemination

Ethics

This review does not require ethical approval as it exclusively involves secondary data collection and no human participants will be involved in the development or organisation of this study.

Dissemination

Once the study is completed, the findings will be published in an academic peer-reviewed journal. The findings will also be presented at local, regional, national and international conferences. Any publications of the protocol and the main manuscript will be advertised through social media through visual and video abstracts prepared in the English and French languages. All presentations resulting from the study will be noted by the lead authors to ensure all conference regulations are fulfilled.

This protocol will provide an overview of the evidence available on the epidemiology, management and outcomes of facial nerve palsies in LMICs. Thus, the scoping review will identify research priorities, and more importantly, identify any uncovered disparities among countries in LMICs. The review will inform the development of new research questions as well as interventions to systemically improve the management and outcomes of patients with facial nerve palsies in LMICs.

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Contributors CAI conceived the idea. All authors (CAI, SZYO, BDT, DAJ, CN, TO, OO, SD, TO and AU) were involved in writing the first draft of the manuscript. SZYO supervised the protocol and critically edited and reviewed the manuscript. SZYO contributed to the search strategy. All authors approved the final manuscript. CAI and SZYO contributed equally and are joint first authors of the manuscript.

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