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A Policy Brief on the Language-Specific Rehabilitation of Persian-Speaking Individuals with Stroke-Induced Agrammatic Aphasia

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Abstract

Background: Aphasia rehabilitation in Persian is limited by the lack of widely adopted language-specific assessment and rehabilitation guidance. This policy brief draws on evidence from Persian-speaking individuals with stroke-induced agrammatic aphasia.

Methods: A descriptive-analytical study included 21 individuals with agrammatic aphasia and 21 non-brain-damaged participants. Language performance was examined across word, sentence, and discourse production and complex sentence comprehension.

Results: Participants with agrammatic aphasia showed reduced language output and grammatical resources, shorter and simpler sentence and discourse structures, verb production difficulties, and poorer comprehension of longer and noncanonical sentences.

Conclusion: The findings support five priorities: Persian-specific assessment standards, interdisciplinary workforce training, a national aphasia database, shared research infrastructure, and functional, person-centered rehabilitation guidance

Keywords: Agrammatic aphasia, Stroke-induced aphasia, Persian language, Persian aphasia rehabilitation, Health policy

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Policy Problem

Communication is central to social participation, daily functioning, and quality of life, as emphasized in contemporary health frameworks (1). Stroke-induced aphasia is an acquired disorder of language that may affect both comprehension and expression across spoken and written language, occurring in approximately 20-40% of acute stroke cases worldwide. This condition is one of the most common and disabling cognitive consequences of stroke (2, 3). Stroke represents a significant public health burden in Iran, with 102,778 incident cases reported in 2019, equating to approximately 282 new cases per day, thereby creating substantial demand for post-stroke rehabilitation (4). Among Persian-speaking Iranian adults assessed acutely after stroke, aphasia has been reported in 61.8% of cases (5). International evidence also indicates that aphasia is prevalent early after stroke, with a systematic review and meta-analysis reporting median frequencies close to 30% in acute stroke settings (6).

Clinical presentations of aphasia are commonly categorized as fluent, such as Wernicke or conduction aphasia, and nonfluent, such as global or Broca's aphasia, based on preserved and impaired language comprehension and production abilities (1). Agrammatism is a prevalent manifestation of nonfluent aphasia, characterized by effortful and slowed speech, reduced grammatical well-formedness, omission or simplification of morphosyntactic structures, and difficulty comprehending complex sentences (7, 8). It limits functional communication, independence, and social participation (8, 9). Importantly, agrammatism is not uniform across languages (8). Typological and grammatical differences shape symptom profiles and define meaningful assessment and rehabilitation targets (10). Consequently, tools developed primarily for English and some

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Key Messages:

↑What is "already known" in this topic:

Aphasia after stroke can reduce communication, participation, and quality of life. Agrammatic aphasia affects grammar, verb use, and sentence production, but grammatical impairments vary across languages.

→What this article adds:

This policy brief identifies Persian-specific rehabilitation priorities: assessment standards, workforce training, a national aphasia database, shared research infrastructure, and functional rehabilitation guidance.

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European languages may not fully capture Persian language patterns, potentially diminishing their accuracy and clinical usefulness for assessment and rehabilitation (10).

Evidence Summary

Persian aphasia rehabilitation is constrained by the absence of a widely adopted Persian post-stroke language protocol, the dependence on translated tools that may overlook Persian-specific morphosyntactic patterns, limited interdisciplinary training in speech-language pathology, neuroscience, and linguistics, and inadequate coordination between research institutions and rehabilitation policy bodies (5, 11).

Target Audience and Stakeholders

This policy brief translates findings from a multi-level linguistic study of Persian-speaking individuals with stroke-induced agrammatic aphasia (PSWA) into priorities for national health and research policy. It includes a Persian-specific assessment framework across word, sentence, and discourse levels. The brief is directed toward the Ministry of Health and Medical Education, rehabilitation hospitals and clinics, academic consortia, professional speech-language pathology associations, university policymakers, researchers, educators, and clinicians.

Methods

This brief presents findings from a descriptive analytical study conducted between 2023 and 2025 in Tehran and Shiraz, involving 21 participants with PSWA and 21 non-brain-damaged (NBD) participants, selected through purposive sampling according to the study inclusion and exclusion criteria. The study was approved by the Research Ethics Committee of the University of Social Welfare and Rehabilitation Sciences (IR.USWR.REC.1402.059). Language performance was assessed through production and comprehension tasks, which included single-word production, sentence production, discourse production, and comprehension of complex Persian sentences. Samples were transcribed and coded using established linguistic procedures, with inter-rater and intra-rater reliability checks. Quantitative analyses examined within-group and between-group differences, as well as associations between production and comprehension measures, while controlling for aphasia severity. Additionally, error analysis was conducted to identify patterns of lexical and morphosyntactic errors across all levels of production (11, 12).

Key Findings

Across word, sentence, and discourse tasks, PSWA showed reduced language output and syntactic resources compared to NBD participants, especially in grammatical markers that support sentence structure and discourse cohesion. They produced fewer total words and core grammatical units, with larger gaps in discourse. Sentence and discourse production were shorter and structurally simpler, with limited complex sentence forms and prominent verb impairments, including reduced verb retrieval and low performance on complex verb structures in discourse (11-13). Syntactic comprehension was also compromised, especially for longer sentences and structures that deviate from the typical Persian subject-object-verb (SOV) order, such as object-fronted sentences (e.g., /doxtar rā pesar hol dād/ “the girl was pushed by the boy”).

Evidence Interpretation

The findings identify three policy priorities: improved diagnostic precision, linguistically adapted rehabilitation, and closer alignment between research evidence and service delivery (7, 9, 10). Given that impairment profiles vary across linguistic levels and task demands, assessments should integrate measures of words, sentences, and discourse to identify Persian-specific breakdowns and guide clinical decisions. Persian agrammatism shows patterns that do not fully align with frameworks primarily developed for other languages, including a reduced use of prepositions in sentence production and conjunctions for discourse cohesion, as well as difficulties with Persian compound verbs and grammatical devices that support syntactic cohesion (8, 10). This underscores the necessity for Persian-specific assessment and rehabilitation planning.

Differences between tasks highlight the importance of assessing language within meaningful contexts. Enhanced performance in more supported tasks indicates that discourse samples are essential for a more accurate understanding of everyday communication. The observed association between syntactic comprehension and production supports coordinated rehabilitation planning that considers both comprehension and production. Integrated and individualized rehabilitation strategies may be clinically appropriate when the objective is functional communication (14). These findings align with the ICF, which emphasizes the significance of activity and participation in conjunction with considerations of impairment (15).

Policy Recommendations and Implementation Considerations

- Persian agrammatism assessment: A national standard for assessing Persian agrammatism should be established to evaluate lexical, sentence-level, and discourse performance using constructs validated for the Persian language. This initiative can be guided by the Ministry of Health and Medical Education, universities, rehabilitation centers, and professional speech-language pathology associations.
- Workforce capacity and interdisciplinary training: Workforce capacity should be enhanced through interdisciplinary training that integrates speech-language pathology, linguistics, and neuroscience. This may encompass graduate training in clinical neurolinguistics and continuing professional development centered on Persian-specific linguistic analysis and clinical decision-making. Incentives could include funded training positions, research-clinic fellowships, protected clinical training time, and small competitive grants for hospital-university collaborations.
- National Aphasia Database: Concurrently, the establishment of a national aphasia database would facilitate the systematic collection and classification of Persian aphasia language samples, thereby supporting benchmark-

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ing, tool development, and the translation of research into practice. This database could be maintained by a national rehabilitation research institute or a university consortium under the oversight of the Ministry. It should incorporate clear guidelines for consent, de-identification, data security, governance, and access for researchers and clinicians.

- Shared research infrastructure should include a centralized data repository, standardized transcription and coding protocols, shared behavioral assessment facilities, and an open-access Persian aphasia corpus where ethically permissible. This infrastructure can facilitate collaboration among universities, clinics, and policy bodies while enhancing standardization. Standardized transcription protocols, shared discourse datasets, and ethically governed data repositories can bolster clinical services, promote research collaboration, and support the development of Persian-specific tools.
- Rehabilitation guidance: Rehabilitation protocols should be developed based on findings specific to Persian regarding agrammatism at the lexical, sentence, and discourse levels. The recommendations adhere to an ICF-based, person-centered rehabilitation approach that takes into account impairment, activity, participation, and everyday communication needs (14, 15).

Conclusion

This policy brief is directed toward health authorities, rehabilitation centers, universities, professional associations, researchers, educators, and clinicians involved in Persian aphasia rehabilitation. The findings identify Persian-specific patterns of agrammatism across lexical, sentence, and discourse levels, highlighting the need for language-specific rehabilitation policies. The main recommendations include the creation of a national Persian agrammatism assessment standard, strengthening interdisciplinary workforce training, establishing a governed national aphasia database, developing shared research infrastructure, and preparing functional rehabilitation guidance. These actions can facilitate the transition of Persian aphasia care from fragmented tools to standardized, person-centered, and language-specific rehabilitation.

Acknowledgment

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Conflict of Interests

The authors declare that they have no competing interests.

Authors' Contributions

Fariba Yadegari: Conceptualization, Methodology, Supervision, Writing-review and editing, and approval of the final manuscript. Samaneh Sazegar Nejad: Investigation, Data curation, Formal analysis, Interpretation, Writing the original draft, Writing-review and editing, and approval of the final manuscript. Both authors reviewed and approved the final manuscript and take responsibility for the work.

Ethical Considerations

The study was approved by the Ethics Committee of the University of Social Welfare and Rehabilitation Sciences, Tehran, Iran (IR.USWR.REC.1402.059). All participants gave informed consent before taking part in the study.

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Data Availability

The study data are not publicly available because of participant confidentiality and ethical requirements. De-identified data may be requested from the corresponding author, subject to institutional approval.

AI Use Statement

ChatGPT was used only to assist with language editing, readability, and reducing the manuscript length to meet the journal's word limit. It was not used to analyze data, interpret results, or produce scientific content.

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