

Developmental Stuttering in Preschool Children Who Are Deaf and Hard of Hearing: A Systematic Review

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INTRODUCTION

Although age of onset, prevalence, and incidence rates of developmental stuttering are relatively firmly established in the literature (Andrews & Harris, 1964; Craig et al., 2002; Manson, 2000; Yairi & Ambrose, 2013), the rate of developmental stuttering in children who are deaf and hard of hearing is understudied and research findings are conflicting. The purpose of the present investigation was to determine stuttering onset, prevalence and incidence rates, in children who are deaf and hard of hearing. The systematic review also reveals trends, study limitations, as well as future directions and clinical implications for this population.

METHODS

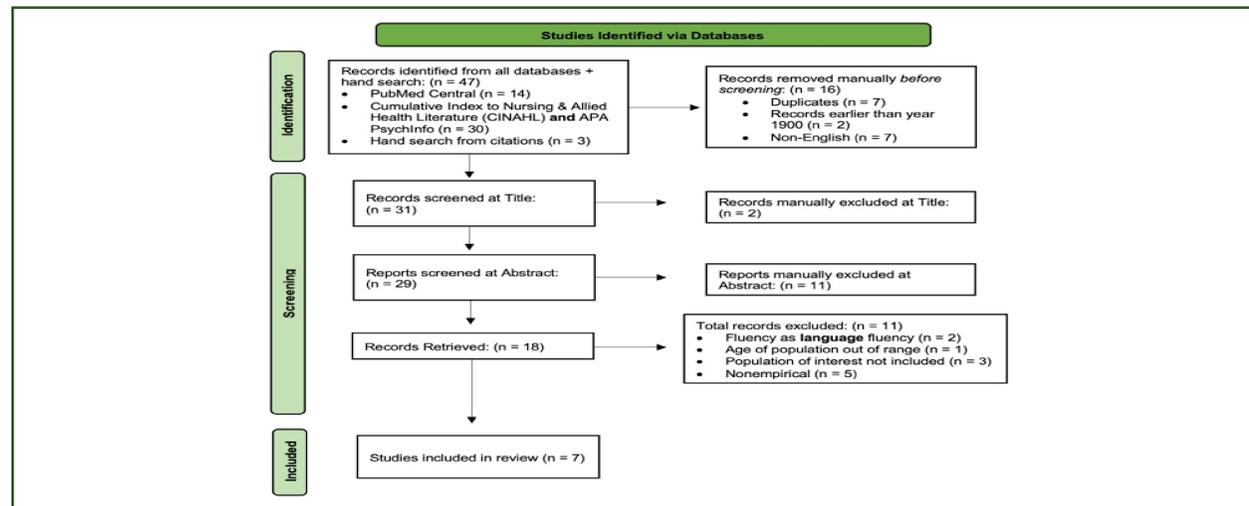
Investigators conducted a comprehensive, online literature review using health science databases PubMed Central, Cumulative Index to Nursing & Allied Health Literature (CINAHL), and APA PsychInfo. The following search string was utilized for articles between the years 1900-2021:

(stuttering OR fluency disorder OR stammering OR dysfluency) AND (deaf OR hard of hearing OR hearing impaired OR d/hh)

RESULTS

A systematic review of the extant literature revealed that information around onset, prevalence, and recovery rates of developmental stuttering in C-DHOH is underinvestigated. Incidence of stuttering is only reported in one article. Prevalence ranges from 0%-19% depending on method of investigation. No longitudinal investigations are reported, so persistency rates cannot be determined.

PRISMA FLOWCHART



STUDIES IDENTIFIED VIA DATABASES

AUTHOR (YEAR)	STUDY DESIGN	SAMPLE SIZE	PREVALENCE OF STUTTERING	AGE & GENDER	EDUCATIONAL SETTING	COMMUNICATION MODALITY	HEARING LEVEL AND CHARACTERISTICS	STUTTERING ONSET AND CHARACTERISTICS
Arenas et al., (2017)	Survey	n = 33	17%	M=8;0, 53% male	Not reported	Oral (English)	Better ear PTA 48.8 dB HL; all but 5 used hearing aids or cochlear implants	Age of onset 33 months; for children who exhibited spontaneous recovery (30%), stopped at age 4;6; part-word repetitions, prolongations, blocks
Backus, 1938	Survey	n = 55	0.04%	Age not reported, 80% male	Schools of the Deaf	Oral (English)	"<20% to 100%" HL	Not reported
Boulet et al., 2009	Retrospective analysis	n=433	19.7%	3-17 years; 63% male	Not reported	Not reported	Not reported	Age of onset not reported. 50% reported stuttering prior to onset of deafness. Stuttering characteristics not reported.
Harms & Malone, 1939	Survey	n=8	0.06%	Not reported	Schools of the Deaf	Not reported	"46% average loss"	Stuttering characteristics not reported.
Montgomery & Fitch (1988)	Survey	n=12	0.12%	5-18 years; 75% male	Schools of the Deaf	25% oral (English); 50% sign (ASL), 25% both	92% congenitally deaf; 92% >70 db HL	Age of onset not reported. Part word repetitions, whole word repetitions, blocks, prolongations
Voelker & Voelker, 1937	Case study	n=1	N/A	12 years, male	School of the Deaf	Oral (English)	"Hearing acuity curve typical of congenitally deaf"	Age of onset not reported; part word repetitions and blocks

Table 1. Studies of C-DHOH who also stutter. Note. Two studies of CWS who are also D-HOH were not included in this poster.

DISCUSSION

Although stuttering incidence and prevalence rates in the general population are well established at 1% and 5% respectively (Yairi & Ambrose, 2013), stuttering incidence rates have not been established in C-DHOH. Prevalence rates range from 0%-19% depending on the population of interest and method of investigation.

Limitations of previous investigations include the use of survey data vs. direct measurement of both hearing levels and stuttering-like dysfluencies, lack of longitudinal data to track onset and persistence, lack of information on children's language experience and skills. Future studies should measure stuttering-like dysfluencies, language skills, and hearing levels objectively across multiple time points.

The relatively increased rate of stuttering in children with mild-to-moderate levels of hearing loss (17%) suggests that the quality of auditory and linguistic input may be a contributing factor to stuttering-like dysfluencies in C-DHOH. In fact, Arenas et al. (2017) found that higher language scores were a protective factor against stuttering persistence.

Recommendations

1. Normative data on onset and recovery of stuttering should not be utilized in this population, as it does not take into account auditory or linguistic input.
2. Stuttering in C-DHOH should be monitored and treated when stuttering has a negative impact on the child's academic, emotional, or social wellbeing.

SELECTED REFERENCES

- Arenas, R. M., Walker, E. A., & Oleson, J. J. (2017). Developmental stuttering in children who are hard of hearing. *Language, Speech, and Hearing Services in Schools, 48*(4), 234–248. https://doi.org/10.1044/2017_lshss-17-0028
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- Yairi, E., & Ambrose, N. (2013). Epidemiology of stuttering: 21st century advances. *Journal of Fluency Disorders, 38*(2), 66-87.