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Assessment of Age-Related Differences in Public Attitudes Toward Stuttering Using the Hindi Version of the Public Opinion Survey of Human Attributes-Stuttering (POSHA-S) Questionnaire in Delhi

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Abstract: Stuttering affects approximately 1% of adults globally and carries a significant psychosocial burden shaped by public attitudes. Despite growing cross-national evidence using the Public Opinion Survey of Human Attributes–Stuttering (POSHA-S), age-related differences in public attitudes toward stuttering remain relatively underexplored in the Indian context. To address this gap, in the current study, ninety adults from a rural population of Delhi were divided equally into three age groups: young adults (18–35 years), middle-aged adults (36–55 years), and older adults (55+ years). Age group significantly predicted the Overall Stuttering Score and the Beliefs Score. Across both measures, young adults held comparatively least positive attitudes toward people who stutter, middle-aged adults showed demonstrated moderately positive attitudes, and older adults consistently showed the most positive attitudes overall. Bonferroni post-hoc comparisons confirmed that young adults scored significantly lower than older adults on both the Overall Stuttering Score and the Beliefs Score. Significant group differences were also observed for the Traits/Personality, Help From, and Potential components. Bonferroni-adjusted post-hoc comparisons indicated that older adults rated people who stutter more positively on Help From and Potential compared with younger adults, while middle-aged adults rated people who stutter more positively on Traits/Personality compared with younger adults, whereas no significant age-group differences were found for Self-Reactions. These component-level patterns suggest that beliefs about the character, potential, and available support for people who stutter accumulate more positively with age, while immediate behavioral reactions to stuttering remain uniformly negative across all age groups. These findings suggest that public attitudes toward stuttering in Delhi become more positive with increasing age, primarily through differences in the Beliefs domain. Speech-language pathologists (SLPs) have a central role to play in translating these findings into action. As both clinicians and community educators, SLPs are positioned to design and deliver targeted stuttering awareness and destigmatization programs, particularly for young adults who demonstrated the least positive attitudes in the present study. SLPs can advocate for the inclusion of stuttering education in school curriculum, workplace orientation programs, and public health campaigns, and can use instruments such as the POSHA-S to evaluate the effectiveness of such initiatives over time. The results indicate that young adults should be considered a priority target for future stuttering awareness, education, and destigmatization initiatives.

Key words: Hindi version of POSHA-S (Public Opinion Survey of Human Attributes–Stuttering); stuttering attitudes; age differences; public opinion; Beliefs; Self-Reactions; India

INTRODUCTION

Stuttering is a neurodevelopmental speech fluency disorder characterized by sound and syllable repetitions, prolongations, and blocks that interrupt the forward flow of speech (Guitar, 2013; Wingate, 1964). The condition affects approximately 1% of adults globally, with a male-to-female prevalence ratio of roughly 3:1. The disorder's impact extends well beyond its acoustic features, as people who stutter (PWS) frequently experience shame, anticipatory anxiety, and avoidance behaviors that constrain both occupational and social functioning. Listener behaviors, social distance, and stigma directly amplify the activity-participation restrictions experienced by PWS within the International Classification of Functioning framework. Reduced quality of life (QoL) among adolescents and young adults who stutter has been documented as an effect mediated by perceived social stigma rather than speech severity alone.

Understanding how lay public attitudes toward stuttering are distributed and what factors shape them is therefore clinically important. Doody et al. (1993) found that community members attributed negative personality traits to PWS compared with non-stuttering speakers. Van Borsel et al. (1999) established that most community respondents recognized stuttering as a distinct disorder but held inaccurate etiological beliefs rooted in psychological and emotional explanations. Craig et al. (2003) reported that negative stereotyping toward PWS was pervasive, and that respondents perceived PWS as less employable and less socially competent. Yaruss and Quesal (2006) documented that self-perceptions of PWS are frequently negative, involving shame, anticipatory anxiety, and avoidance behaviors. De Britto Pereira et al. (2008) showed that most respondents lacked accurate etiological knowledge about stuttering. Boyle et al. (2009) found that neurological attributions toward stuttering generated more positive ratings than psychological ones, highlighting the clinical relevance of public education on stuttering etiology. Plexico et al. (2005) found that positive social environments characterized by informational accuracy and reduced stigma were a consistent contextual feature of successful stuttering management. Bricker-Katz et al. (2013) confirmed that stuttering interferes substantially with work life, particularly in roles requiring frequent verbal communication. McAllister et al. (2012) found that adolescents and young adults who stutter report significantly reduced QoL compared with fluent peers.

To systematically capture and address these global disparities through objective measurement, the International Project on Attitudes Toward Human Attributes (IPATHA) was launched in 1999. IPATHA's foundational mission sought to develop an evidence-based family of instruments capable of measuring and comparing public opinions regarding potentially stigmatizing conditions across divergent geographical, cultural, and natural language groups. Instrument development transformed the field. St. Louis et al. (2009) established the construct and concurrent validity of the Public Opinion Survey of Human Attributes–Stuttering (POSHA–S), the first and most widely used instrument emerging from the IPATHA framework. Administered primarily as a standard written questionnaire to ensure cross-sample consistency, the survey evaluates explicit attitudes toward stuttering in the general public. The survey covers two primary subscores—Beliefs and Self-Reactions derived from eight core components, while additionally measuring attitudes within the comparative context of eight distinct anchor attributes designed to span a psychological spectrum from positive (e.g., intelligent), to neutral (e.g., left-handed), to negative (e.g., obesity and mental illness). All individual items are mathematically converted onto a standard linear scale ranging from −100 to +100, where 0 represents neutrality, negative values indicate lesser accuracy or tolerance, and positive scores signify more sensitive, accurate, and supportive public attitudes.

St. Louis (2011) provided a summary framework of the POSHA-S and outlined empirical comparisons across countries. St. Louis (2012) synthesized the growing database and reported that Beliefs scores were generally positive across multiple nations, while Self-Reactions scores—particularly Knowledge/Experience were consistently negative or near zero, reflecting widespread unfamiliarity with PWS. Özdemir et al. (2011) replicated this negativity pattern in Turkey, where accommodating behaviors were positive but social distance and knowledge-related scores remained markedly negative. Üstün-Yavuz et al. (2021) documented that attitudes vary systematically by country and that Western nations consistently score higher than Middle Eastern and Asian nations. St. Louis et al. (2016) confirmed strong regional effects, with South and East Asian samples clustering below global median benchmarks.

Demographic correlates of stuttering attitudes have been studied in several directions. Klassen (2002) demonstrated that social distance toward PWS was greater among individuals without prior contact with PWS. Al-Khaledi et al. (2009) found that higher education was associated with more realistic etiological beliefs about stuttering. Ntourou et al. (2011) highlighted that language and social-processing abilities, which change markedly across adulthood, influence evaluations of speech disorders. Gudlavalleti (2018) demonstrated that challenges in accessing health care for people with disability in South Asia are shaped by intersecting socioeconomic and contextual factors (class, gender, rural/urban location, financial dependency). Arnold et al. (2015) showed that professional status does not necessarily confer positive attitudes, as teachers held more negative beliefs about PWS's occupational potential than non-teachers. Klassen (2002) confirmed that familiarity with stuttering was the strongest demographic predictor of positive attitudes. Flynn and St. Louis (2011) demonstrated that targeted educational interventions could meaningfully shift adolescent and young adult attitudes toward stuttering, with structured public education programs producing significant improvements in these attitudes. Boyle et al. (2016) found that contact-based experiences with PWS produced larger attitudinal shifts than educational materials alone, particularly on affirming/positive attitudes toward PWS. St. Louis et al., 2024 found that public awareness campaigns produced attitudinal improvements but that roughly one-third of intervention samples failed to show measurable change. A crossover effect emerged wherein the greatest gains were observed among recipients who started out most negative, while those with intermediate attitudes showed minimal change.

Research examining public attitudes toward stuttering in the Indian context has grown steadily in recent years. Veerabhadrappa et al. (2025) administered a Kannada-translated POSHA-S to an Indian sample and found that overall attitudes were moderately positive, with Beliefs scores exceeding Self-Reactions scores across all subgroups and the Overall Stuttering Score closely mirroring the POSHA-S international median while exceeding other South Asian samples, particularly those from Malaysia and South Egypt. Sociodemographic analyses further revealed that education and income were small but significant predictors of positive attitudes, whereas gender, age, and familiarity with stuttering showed no independent effect, and that teachers held the most positive attitudes toward PWS, followed by the general public and then students underscoring that occupational role and educational exposure may modify the general attitudinal pattern within India. Pachigar et al. (2011) similarly noted persistent stereotypes about stuttering etiology despite relatively positive aggregate scores, with urban respondents outperforming rural counterparts on knowledge-related subscales. Concurrently, investigations using the official Hindi adaptation of the POSHA-S, translated by Shweta Gupta with assistance from Dutt and Rastogi remain exceptionally limited. Early baseline measures were captured via an unpublished master's dissertation by Usmani (2012), followed over a decade later by the single published dataset from Gupta et al. (2025) exploring attitude stability.

Age is one of the most theoretically reasonable yet empirically debated factors influencing public attitudes toward stuttering. Chon (2016) examined self-reactions to PWS in a Korean adult sample across four age groups and found no significant differences by age in overall self-reactions, including in helping behaviors, experience, or knowledge sources. A notable exception emerged for social distance, where older men showed greater distancing than younger men, with no comparable pattern among women. Overall, Chon (2016) concluded that self-reactions to PWS in the Korean public were broadly negative regardless of age or sex, attributable to limited familiarity and restricted access to accurate information. A scoping review of Asian longitudinal research has explicitly noted a total absence of follow-up studies tracking long-term attitudinal shifts over time in this region, reinforcing that age-related patterns in stuttering attitudes remain uncharted across South and East Asia.

SLPs are uniquely placed to understand and address the impact of public attitudes toward stuttering because they work closely with people who stutter across different life stages. Knowledge of age-related attitude patterns helps them counsel clients, advocate for awareness, and design targeted outreach programs. In the Indian context, where stuttering awareness initiatives are limited, tools such as the Hindi version of the POSHA-S can help SLPs evaluate and guide destigmatization efforts. The present study highlights young adults as a key group for intervention, enabling SLPs to focus on awareness campaigns in universities and workplaces and promote more accurate understanding of stuttering.

Need of the Study

Public attitudes toward stuttering have been documented in many countries, yet age-based analysis within India remains underexplored from the published literature. India's population exhibits significant variation in generational health literacy, media exposure, religious norms, and intergenerational communication patterns all of which could act as moderators of stuttering attitudes and lead to measurable differences across age groups. The global POSHA-S database reveals strong regional effects on attitude scores, and within-India work has shown that education and income co-vary with age to predict these scores, making covariate-controlled age-group analysis essential before any conclusions can be drawn about pure age effects. Limited studies have been conducted in India using the Hindi version of the POSHA-S instrument such as those of Gupta et al. (2025) and Usmani (2012). Subsequent contemporary research within the Indian context has expanded to alternate regional translations, such as the Kannada adaptation by Veerabhadrappa et al. (2025). This study aimed to fill this gap by comparing POSHA-S scores among three different adult age groups within an Indian rural population in Delhi using a reliable and valid Hindi version of the POSHA-S questionnaire.

Method

Aim

The present study aimed to examine age-related differences in public attitudes toward stuttering among rural Indian adults using the Hindi version of the POSHA-S

Participants

Ninety adults participated from rural areas of Delhi, India and divided equally into three groups: 30 young adults aged 18–35 years, 30 middle-aged adults aged 36–55 years, and 30 older adults aged 55 years and above.

The full sample was 61.1% male (n = 55) and 38.9% female (n = 35); 50.0% were bilingual, 42.2% multilingual, and 7.8% monolingual; 85.6% identified as Hindu, 13.3% as Muslim, and 1.1% as Sikh.

Inclusion Criteria

- Adults aged 18 years or above, residing in Delhi at the time of data collection.
- Absence of self-reported speech, language, or HI
- No formal academic training in speech-language pathology or fluency disorders.
- Willingness to complete the full POSHA-S questionnaire independently.

Exclusion Criteria

- Individuals with a current or historical diagnosis of a fluency disorder, including stuttering or cluttering.
- Those with known cognitive, neurological, or psychiatric conditions that might affect survey comprehension.
- Professionals in speech-language pathology, audiology, or related clinical fields.
- Respondents who did not complete at least 80% of POSHA-S items.

Study Tool

The Hindi version of the POSHA-S was translated from English to Hindi by Shweta Gupta, with assistance from Krishna Dutt and Alpana Rastogi from the Public Opinion Survey of Human Attributes–Stuttering [POSHA–S] (St. Louis, 2011). The Hindi version of the POSHA–S consists of a written questionnaire asking about beliefs and reactions related to stuttering, notably what respondents think about the cause of stuttering, what they believe they would feel or do if confronted with a person who stutters, who they believe should help those who stutter, how concerned they would be if various people stuttered, and what they believe regarding what stutterers can or should do in their lives. It also compares respondents' impressions and desire to stutter in relation to other "anchor" attributes ranging from positive (intelligent), to neutral (left-handed), and to negative (mental illness and obesity). An item asks

respondents to identify and indicate their relation to individuals with those attributes. A demographic section asks for information about each respondent's age, gender, educational achievement, race, religion, income relative to both the respondent's family and friends and all the people in that person's country, past or current location, living arrangement, languages known, physical and mental health, speaking or learning ability, and various life priorities (e.g., being safe and secure).

Procedure

Participants completed the official Hindi translation of the POSHA-S individually in written format. The survey contains anchor-trait sections measuring attitudes toward individuals with obesity, left-handedness, mental illness, and intelligence, followed by the core stuttering attitude section covering 11 components across the Beliefs and Self-Reactions subscores. Raw responses were transformed to a −100 to +100 scale using established POSHA-S formulas: Likert-scale items were converted with the formula (Raw − 3) × 50; dichotomous Yes/No/Unsure items were scored as +100, 0, and −100 respectively; and reverse scoring was applied to negatively worded items so that higher scores uniformly reflect more positive attitudes toward PWS. Blank or 'u' responses were treated as missing and excluded from component calculations. All participants provided informed consent prior to participation, and data collection complied with institutional ethical guidelines.

Statistical Analysis

Descriptive statistics (mean, SD, median, minimum, and maximum) were calculated for all POSHA-S scores and demographic variables, stratified by age group. One-way ANOVA examined unadjusted age-group differences; Welch ANOVA served as a sensitivity analysis where Levene's test indicated variance heterogeneity. ANCOVA was also conducted on a complete-case sample (n = 82), adjusting for years of education and country-relative family income as covariates. Bonferroni-adjusted pairwise post-hoc comparisons were performed for all ANCOVA-significant outcomes (young vs. middle-aged, young vs. older, middle-aged vs. older). Effect sizes were reported as partial η^2 for ANCOVA and η^2 for unadjusted ANOVA; partial $\eta^2 \geq 0.06$ was interpreted as a medium effect. All analyses were conducted in IBM SPSS Statistics version 21, and the alpha threshold was set at .05.

Results and Discussion

Response Rate

All 90 participants (30 in each age group, namely younger adults aged 18 to 35 years, middle aged adults aged 36 to 55 years and older adults aged 55+ years) participated in the present study, thus yielding a 100% response rate.

Participant Characteristics

Table 1 shows continuous demographic and general POSHA-S profile variables by age group.

Variable	Young adults (18–35)	Middle-aged adults (36–55)	Older adults (55+)	Total
Years of education	15.13 ± 2.34	16.73 ± 3.97	17.90 ± 3.43	16.59 ± 3.47
Relative family income (country-wide)	3.68 ± 0.98	3.22 ± 0.58	3.41 ± 0.50	3.44 ± 0.74
General Health Component	70.42 ± 27.95	72.08 ± 25.99	82.50 ± 23.58	75.00 ± 26.17
Life Priorities Component	56.25 ± 20.93	61.67 ± 13.24	58.61 ± 12.33	58.84 ± 15.95

Tables 1 shows that older adults had the highest mean years of education (17.90 ± 3.43) compared with middle-aged (16.73 ± 3.97) and young adults (15.13 ± 2.34). Country-relative family income was broadly comparable across groups (young = 3.68 ± 0.98; middle-aged = 3.22 ± 0.58; older = 3.41 ± 0.50). General Health Component scores increased steadily with age (70.42 ± 27.95; 72.08 ± 25.99; 82.50 ± 23.58), while Life Priorities scores were relatively stable (56.25 ± 20.93; 61.67 ± 13.24; 58.61 ± 12.33).

Table 2 shows categorical participant characteristics.

Variable	Category	Young (18–35)	Middle-aged (36–55)	Older (55+)	Total
Sex	Male	18 (60.0)	17 (56.7)	20 (66.7)	55 (61.1)
	Female	12 (40.0)	13 (43.3)	10 (33.3)	35 (38.9)
Work situation	Student	2 (6.7)	0 (0.0)	0 (0.0)	2 (2.2)
	Working	26 (86.7)	26 (86.7)	15 (50.0)	67 (74.4)
	Unemployed	2 (6.7)	4 (13.3)	3 (10.0)	9 (10.0)
	Retired	0 (0.0)	0 (0.0)	12 (40.0)	12 (13.3)
Language	Monolingual	0 (0.0)	4 (13.3)	3 (10.0)	7 (7.8)
	Bilingual	16 (53.3)	15 (50.0)	14 (46.7)	45 (50.0)
	Multilingual	14 (46.7)	11 (36.7)	13 (43.3)	38 (42.2)
Religion	Islam	12 (40.0)	0 (0.0)	0 (0.0)	12 (13.3)
	Hindu	18 (60.0)	29 (96.7)	30 (100.0)	77 (85.6)
	Sikh	0 (0.0)	1 (3.3)	0 (0.0)	1 (1.1)

Table 2 shows the categorical participant characteristics of the sample across the three age groups. The sample comprised 55 males (61.1%) and 35 females (38.9%). In terms of work situation, most participants were employed (n = 67, 74.4%), followed by retired (n = 12, 13.3%), unemployed (n = 9, 10.0%), and students (n = 2, 2.2%). Retirement was exclusive to the older adult group (n = 12, 40.0%), while students were found only in the young adult group (n = 2, 6.7%). Regarding language status, half of the sample was bilingual (n = 45, 50.0%), followed by multilingual (n = 38, 42.2%) and monolingual (n = 7, 7.8%). With respect to religion, the majority were identified as Hindu (n = 77, 85.6%), followed by Islam (n = 12, 13.3%) and Sikh (n = 1, 1.1%). All Muslim participants were concentrated within the young adult group (n = 12, 40.0%), while all older adult participants were identified as Hindu (n = 30, 100.0%).

Overall POSHA-S Descriptive Profile

Table 3 presents overall descriptive POSHA-S summary scores for the full sample

Variable	N	Mean	SD	Median	Min	Max
General Health Component	90	75.00	26.17	87.50	25.00	100.00
Life Priorities Component	90	58.84	15.95	58.33	16.67	91.67
Overall Stuttering Score	90	21.33	13.64	22.77	-10.42	53.27
Beliefs Score	90	47.43	23.95	56.25	-33.33	83.33
Self-Reactions Score	90	-4.78	17.18	-4.76	-39.58	44.05

Table 3 shows the overall POSHA-S descriptive profile across the entire sample. The General General Health Component had a mean score of 75.00 (standard deviation = 26.17), a median of 87.50, and values ranging from 25.00 to 100.00. The Life Priorities Component had a mean score of 58.84 (SD = 15.95), a median of 58.33, and scores ranging from 16.67 to 91.67. The Overall Stuttering Score had a mean of 21.33 (SD = 13.64), a median of 22.77, and varied between −10.42 and 53.27. The Beliefs Score had a mean of 47.43 (SD = 23.95), a median of 56.25, and spanned values from −33.33 to 83.33. The Self-Reactions Score had a mean of −4.78 (SD = 17.18), a median of −4.76, and varied between −39.58 and 44.05.

Age-Group Differences in Core POSHA-S Scores

Table 4 shows stuttering attitude scores on the basis of age group

Outcome	Young adults (18–35)	Middle-aged adults (36–55)	Older adults (55+)
Overall Stuttering Score	15.69 ± 15.13	21.72 ± 15.17	26.57 ± 7.11
Beliefs Score	33.19 ± 31.09	51.74 ± 18.28	57.36 ± 11.37
Self-Reactions Score	-1.82 ± 18.94	-8.29 ± 20.11	-4.23 ± 10.98
Traits / Personality	25.83 ± 58.16	55.00 ± 28.16	54.17 ± 25.50
Help From	61.67 ± 43.42	90.00 ± 18.10	98.33 ± 6.34
Cause	-10.56 ± 31.40	-7.22 ± 32.66	-10.56 ± 16.66
Potential	55.83 ± 40.30	69.17 ± 36.95	87.50 ± 17.06
Accommodating / Helping	5.24 ± 15.69	9.05 ± 23.57	1.43 ± 5.75
Social Distance / Sympathy	-26.11 ± 29.34	-24.44 ± 31.25	-27.50 ± 22.76
Knowledge / Experience	-14.17 ± 52.80	-43.33 ± 42.00	-27.50 ± 37.91
Knowledge Source	27.78 ± 48.01	25.56 ± 47.49	36.67 ± 16.02

Table 5 showing Between-Group Comparison of POSHA-S Scores

Outcome	ANOVA p	η^2	Welch p	ANCOVA p	Partial η^2
Overall Stuttering Score	0.007	0.108	0.003	0.030	0.087
Beliefs Score	< 0.001	0.188	< 0.001	0.003	0.138
Self-Reactions Score	0.340	0.024	0.440	0.716	0.009
Traits / Personality	0.008	0.106	0.045	0.042	0.079
Help From	< 0.001	0.253	< 0.001	< 0.001	0.198
Cause	0.867	0.003	0.880	0.997	0.000
Potential	0.002	0.137	< 0.001	0.011	0.110
Accommodating / Helping	0.215	0.035	0.138	0.345	0.027
Social Distance / Sympathy	0.915	0.002	0.910	0.854	0.004
Knowledge / Experience	0.045	0.069	0.064	0.216	0.039
Knowledge Source	0.527	0.015	0.349	0.798	0.006

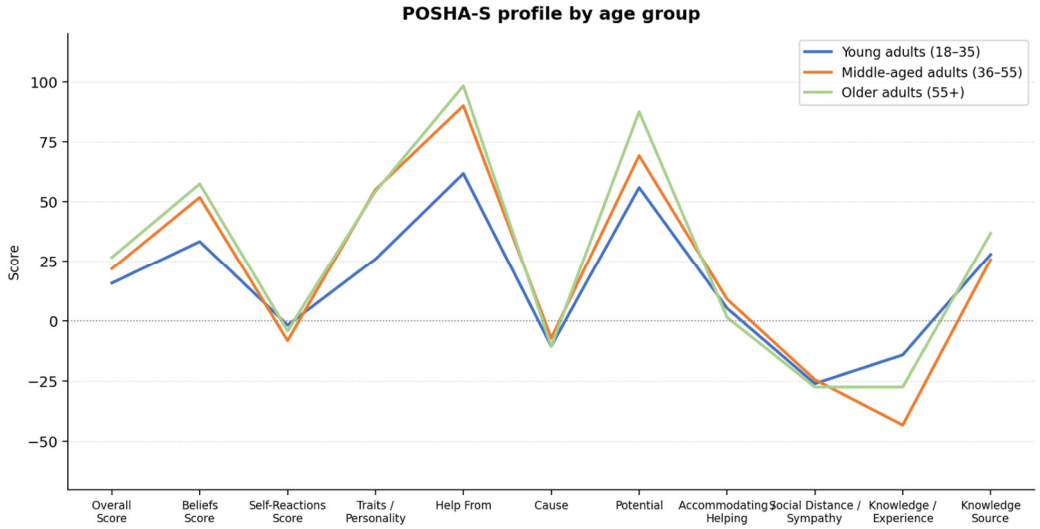

Figure 1. Shows POSHA-S profile of stuttering attitude scores by age group.

Table 4, Table 5 and Figure 1 show that mean Overall Stuttering Scores increased steadily with age: young adults 15.69 ± 15.13, middle-aged adults 21.72 ± 15.17, and older adults 26.57 ± 7.11. One-way ANOVA confirmed a significant effect of age group ($p = 0.007$, $\eta^2 = 0.108$), supported by Welch ANOVA ($p = 0.003$). After adjusting for years of education and country-relative income in ANCOVA, the age-group effect remained significant ($p = 0.030$, partial $\eta^2 = 0.087$), a medium effect. The Beliefs Score showed a steeper gradient: 33.19 ± 31.09 (young), 51.74 ± 18.28 (middle-aged), and 57.36 ± 11.37 (older); unadjusted ANOVA returned $p < 0.001$ ($\eta^2 = 0.188$, large effect), and ANCOVA maintained significance ($p = 0.003$, partial $\eta^2 = 0.138$). Beliefs-related scores were consistently higher in older adults, confirming what the profile chart shows visually. Self-Reactions showed no systematic gradient (young = −1.82 ± 18.94; middle-aged = −8.29 ± 20.11; older = −4.23 ± 10.98) and was non-significant in both ANOVA ($p = 0.340$) and ANCOVA ($p = 0.716$, partial $\eta^2 = 0.009$).

At the component level, significant ANCOVA effects emerged for Traits/Personality ($p = 0.042$, partial $\eta^2 = 0.079$), Help From ($p < 0.001$, partial $\eta^2 = 0.198$), and Potential ($p = 0.011$, partial $\eta^2 = 0.110$). Help From showed the largest effect, with older adults scoring 98.33 ± 6.34 versus young adults at 61.67 ± 43.42. Cause, Accommodating/Helping, Social Distance/Sympathy, Knowledge/Experience, and Knowledge Source were non-significant after ANCOVA adjustment. The Knowledge/Experience pattern was significant in unadjusted ANOVA ($p = 0.045$) but not ANCOVA ($p = 0.216$).

Table 6 showing Bonferroni-adjusted pairwise comparisons for the outcomes that reached statistical significance.

Outcome	Comparison	Adj. mean diff.	95% CI	Bonferroni p
Overall Stuttering Score	Young vs Older adults	-10.71	[-18.59, -2.84]	0.025
Beliefs Score	Young vs Middle-aged adults	-15.83	[-28.27, -3.38]	0.040
Beliefs Score	Young vs Older adults	-21.48	[-33.97, -9.00]	0.003
Traits / Personality	Young vs Middle-aged adults	-29.04	[-52.59, -5.50]	0.049
Help From	Young vs Middle-aged adults	-23.92	[-39.64, -8.20]	0.010
Help From	Young vs Older adults	-33.89	[-49.66, -18.12]	< 0.001
Potential	Young vs Older adults	-29.04	[-48.23, -9.86]	0.010

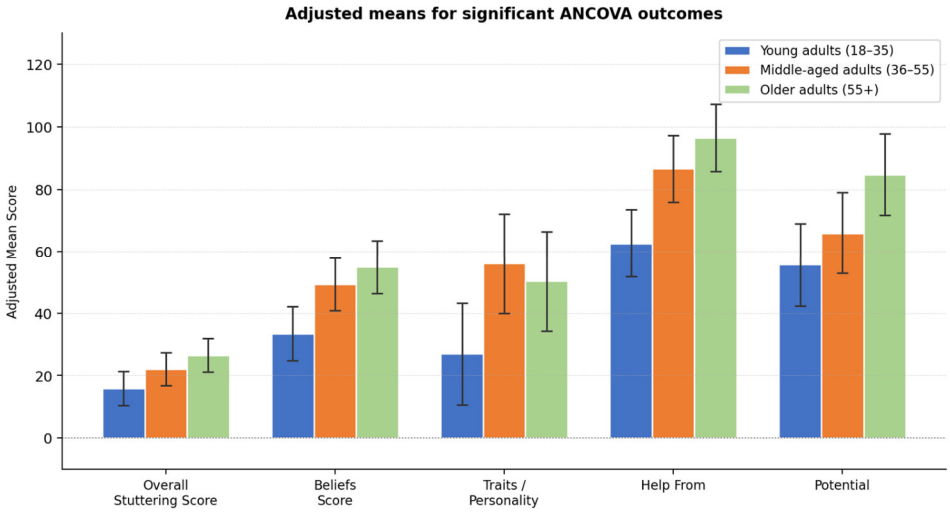

Figure 2. Showing Adjusted mean scores with 95% confidence intervals for significant ANCOVA outcomes.

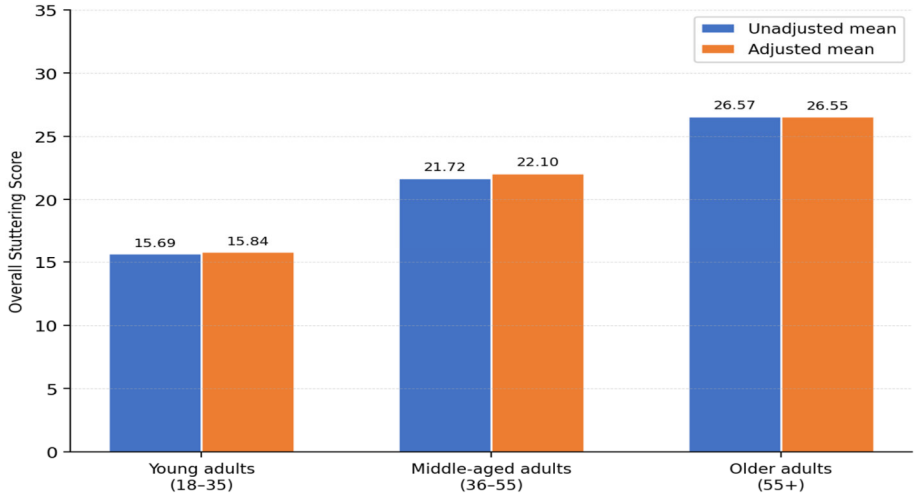

Figure 3. Showing Unadjusted and covariate-adjusted Overall Stuttering Score by age group.

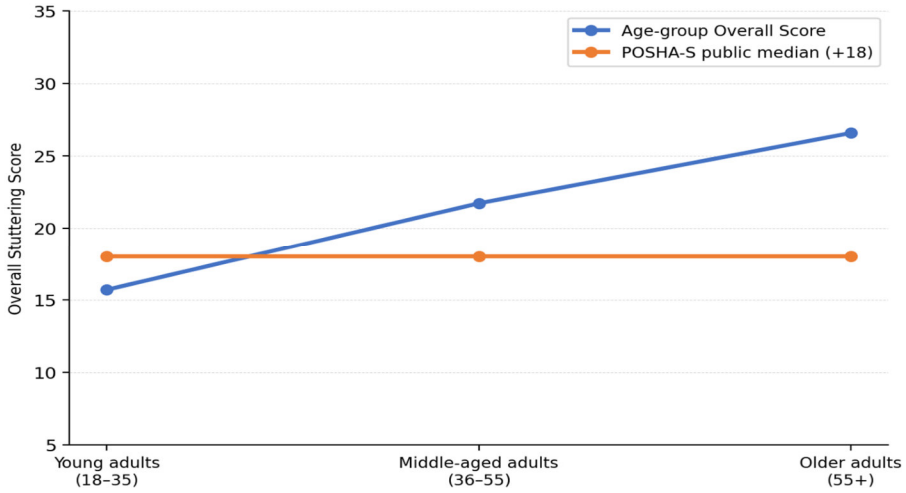

Figure 4. Overall Stuttering Score by age group against the POSHA-S public median benchmark (+18).

Table 6 and Figures 2,3 and 4 show that the primary attitudinal contrast was between young and older adults. Young adults scored 10.71 points lower on the Overall Stuttering Score (95% CI: −18.59 to −2.84, p = 0.025), 15.83 points lower than middle-aged adults on Beliefs (95% CI: −28.27 to −3.38, p = 0.040), and 21.48 points lower than older adults on Beliefs (95% CI: −33.97 to −9.00, p = 0.003). Crucially, Figure 4 shows that young adults scored below the POSHA-S international public median of +18 (their unadjusted mean = 15.69), while both middle-aged and older adults exceeded it.

At the component level, young adults scored 29.04 points below middle-aged adults on Traits/Personality (95% CI: −52.59 to −5.50, p = 0.049). For Help From, young adults scored 23.92 points below middle-aged adults (95% CI: −39.64 to −8.20, p = 0.010) and 33.89 points below older adults (95% CI: −49.66 to −18.12, p < 0.001). For Potential, young adults scored 29.04 points below older adults (95% CI: −48.23 to −9.86, p = 0.010). The adjusted means in Figure 2 make clear that for Help From where older adults averaged 96.56 versus young adults at 62.67, the gap is not merely statistically significant but clinically substantial.

Obesity, Left-Handedness, Mental Illness and Intelligence Scores

Table 7 shows Obesity, Left-Handedness, Mental Illness and Intelligence scores by age group.

Traits	Young (18–35)	Middle-aged (36–55)	Older (55+)	Total
Obesity	3.33 ± 35.75	-0.56 ± 25.96	-25.83 ± 18.84	-7.69 ± 30.34
Left-handedness	24.58 ± 47.70	17.08 ± 44.95	22.50 ± 27.15	21.39 ± 40.62
Mental illness	-19.17 ± 50.72	-49.17 ± 30.96	-41.67 ± 22.10	-36.67 ± 38.39
Intelligence	83.33 ± 17.47	76.67 ± 22.68	89.58 ± 15.77	83.19 ± 19.40

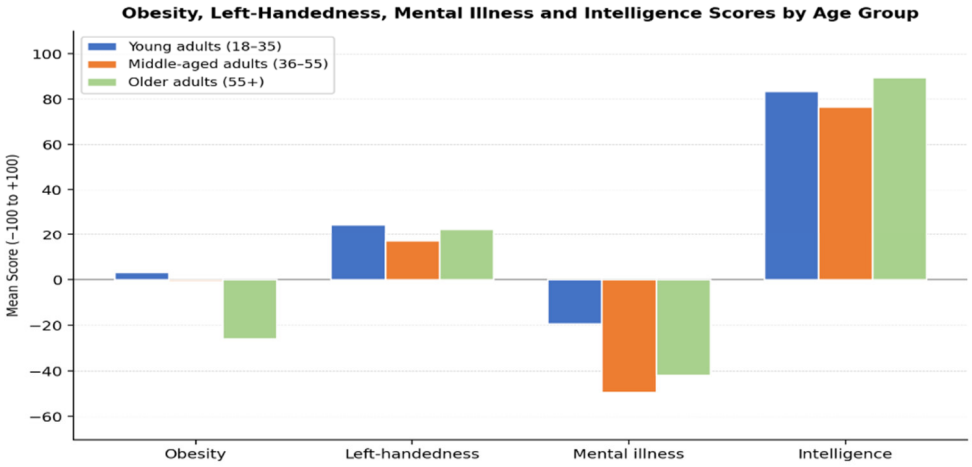

Figure 5. Showing Obesity, Left-Handedness, Mental Illness and Intelligence scores by age group.

Table 7 and Figure 5 show that acro`ss the full sample, Intelligence received the highest mean score (83.19 ± 19.40), followed by Left-handedness (21.39 ± 40.62), Obesity (−7.69 ± 30.34), and Mental illness (−36.67 ± 38.39). Among young adults, Intelligence scored highest (83.33 ± 17.47), followed by Left-handedness (24.58 ± 47.70), Obesity (3.33 ± 35.75), and Mental illness (−19.17 ± 50.72). Among middle-aged adults, Intelligence again ranked highest (76.67 ± 22.68), followed by Left-handedness (17.08 ± 44.95), Obesity (−0.56 ± 25.96), and Mental illness (−49.17 ± 30.96). Among older adults, Intelligence recorded the highest score (89.58 ± 15.77), followed by Left-handedness (22.50 ± 27.15), Obesity (−25.83 ± 18.84), and Mental illness (−41.67 ± 22.10). The rank order of all the traits was consistent across all three age groups, with Intelligence scoring most positively and Mental illness scoring most negatively in every group.

Discussion

The present study examined public attitudes toward stuttering across three age groups in a rural Delhi sample using the Hindi version of the POSHA-S. The overall attitude profile of the sample was moderately positive and broadly consistent with findings reported by Veerabhadrappa et al. (2025), who documented that Indian respondents' attitude scores were more positive than other South Asian samples and similar to, or modestly below, the international POSHA-S database average. The characteristic divergence between a relatively positive Beliefs profile and a more negative Self-Reactions profile, observed here across all three age groups, replicates a pattern described across multiple national datasets in the POSHA-S framework literature (St. Louis, 2011) and is consistent with the interpretation that negative Self-Reactions reflect limited experiential contact rather than active negative intent.

The most clinically meaningful finding was the consistent age gradient in the Beliefs domain, whereby older adults held significantly more positive attitudes than young adults, with middle-aged adults occupying an intermediate position. This pattern aligns with de Britto Pereira et al. (2008), who found younger adults to be less informed and more likely to hold stigmatizing views of people who stutter compared with older respondents. The stabilization of attitudes in middle and older adulthood, accompanied by increasing consensus among older respondents, is consistent with Arnold et al. (2015), who suggested that evaluative beliefs about people who stutter consolidate progressively through accumulated social experience. Notably, young adults in this sample fell below the POSHA-S international public median, while middle-aged and older adults both exceeded it, a divergence consistent with the broader finding of Üstün-Yavuz et al. (2021) that attitudes toward stuttering vary systematically by cultural and demographic background.

In contrast, behavioral self-reactions toward people who stutter remained uniformly negative across all three age groups, with no meaningful age-related variation. This finding directly mirrors Chon (2016), who similarly found that age did not significantly predict the overall Self-Reactions score among Korean adults, with the exception of Social Distance/Sympathy, where older men showed significantly

greater social distance than younger men, a pattern not observed among women. This suggests that behavioral proximity responses toward people who stutter are resistant to the experiential accumulation that appears to drive Beliefs-related improvement with age. Klassen (2002) similarly reported that familiarity with people who stutter, rather than age, was associated with fewer stereotypes and more favorable attitudes, a pattern broadly consistent with the present findings while Veerabhadrappa et al. (2025) found that education and income, but not age, gender, or familiarity, predicted overall attitudes in their Indian sample.

The obesity, mental illness, left-handedness, and intelligence data further contextualize the sample's attitude profile. Stuttering occupied a relatively favorable position on the stigma hierarchy, scoring on par with left-handedness and considerably more positively than obesity and mental illness, consistent with the broader POSHA-S international database (St. Louis, 2012). Boyle, Blood, and Blood (2009) showed that vignettes attributing stuttering to psychological causes elicited significantly more negative ratings than those attributing it to genetic or unknown causes, suggesting that public education emphasizing the neurological basis of stuttering could be a useful strategy, particularly for young adults whose causal attributions may be less fixed and therefore more responsive to change via targeted awareness efforts.

Summary and Conclusion

The present study compared public attitudes toward stuttering across three adult age groups in a rural Indian sample from Delhi using the Hindi version of the POSHA-S. Overall, the sample demonstrated a moderately positive attitude toward people who stutter, though meaningful differences emerged across age groups. Older adults consistently held the most positive attitudes, middle-aged adults demonstrated moderately positive attitudes, and young adults recorded the least positive attitudes, particularly within the Beliefs domain encompassing perceptions of personality, potential, and available help for people who stutter.

Behavioral self-reactions toward stuttering, however, remained uniformly negative across all three age groups, suggesting that while evaluative beliefs improve with age, immediate behavioral responses toward people who stutter do not follow the same trajectory and remain resistant to change regardless of age. Young adults were the only group to fall below the international POSHA-S public median, positioning them as the most critical target for stuttering awareness and destigmatization efforts in India. Despite the sample's overall score modestly exceeding the global median, persistent knowledge gaps within the Self-Reactions domain indicate that positive aggregate scores can obscure important vulnerabilities within specific subgroups. These findings carry clear clinical implications, particularly for SLPs working in educational and community settings, who are best positioned to design and deliver age-targeted awareness programs that address belief-level misconceptions about stuttering among younger adults. At a broader level, government bodies have a meaningful role to play in supporting such efforts through the inclusion of communication disorders awareness within national public health frameworks, the integration of stuttering education into school and university curriculum, and the funding of community outreach initiatives that bring accurate information about stuttering to populations where awareness currently remains limited. Coordinated action between clinical professionals and policymakers offers the most sustainable pathway toward reducing stuttering-related stigma across all age groups in India.

Limitations

- Small sample size
- The fact that all respondents belonging to a certain community fall within the young adult group may create a confounding factor between religious identity and age.
- The cross-sectional design cannot determine whether age-related differences in attitudes come from actual developmental changes over the lifespan, variations due to differing generational socialization experiences, or period effects linked to recent shifts in how Indian media presents disability.

Future Directions

- Future research should examine whether the Beliefs–Self-Reactions divergence observed here holds across urban Indian populations and across regional linguistic communities, where patterns of contact with PWS, media exposure, and disability-related norms differ from the rural contexts studied here.
- A comparison study can be done between urban and rural areas of Delhi and nearby areas.
- Future studies should use awareness campaigns to see if young adults' negative beliefs can be changed, comparing results against international data and sharing findings with the global International Project on Attitudes Toward Human Attributes (IPATHA) repository.
- Researchers need to design and test specific stuttering awareness programs for young Indian adults, measuring attitude changes to see if global success patterns apply in India.

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