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Prevalence of Learners with Speech and Language Impairments in Communication Skills at the Elementary Level

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Abstract

This study investigated the prevalence of speech and language difficulties (SLIs) in primary-level learners and the extent to which these problems impact their communication skills. The research, which used a descriptive quantitative design, obtained data of 300 students from 5 different elementary schools through several standardized instruments and teacher-administered questionnaires. The results indicated that 14.6% of the children had speech and language impairments to varying degrees. Moreover, the research uncovered that the number of males and children from multilingual families was higher among those with SLIs. The statistical techniques employed, such as t-test and ANOVA, showed that the differences in children performance in communication skills tasks due to their age and socioeconomic status were significant from a statistical point of view. The investigation emphasizes the indispensable requirement of screening and intervention programs at the early stage to equip learners with SLIs in academic and social spheres. This evidence nurtures the existing literature and thus, the study is a call for implementation of inclusive education as well as the essentiality of speech-language instruction at the primary level.

Keywords: Speech and Language Impairment, Communication Skills, Prevalence, Elementary Education, Inclusive Education

Introduction

One of the most essential skills in a language are communication skills which include speech clarity, the use of vocabulary, sentence processing and pragmatic interaction. Those skills are the fundamentals needed to even comprehend the content of the curriculum, interact with peers, and understand the teacher's instruction in elementary-level classrooms (National Institute on Deafness and Other Communication Disorders, 2025). Children with speech or language impairments have their participation in classroom discourse significantly reduced, along with the ability to follow directions and even access written tasks, thus their overall participation becomes limited (Ravi et al., 2021). As a matter of fact, the inclusion of communication screening in early childhood programs has become increasingly common but still a big number of learners in the

first years of elementary education go unnoticed and unsupported (Memon et al., 2024). In a mainstream classroom environment, a student with speech language impairments may have a very subtle manifestation of the problem that could be a muffled speech, a very limited expressive language, or even trouble in understanding complex instructions but, nevertheless, it still affects the pupil's academic progress as well as socialization abilities. On top of that, elementary education is the stage where the essential skills of literacy and oral receptive skills are being developed and therefore the detection of communication difficulties at an early stage is very important so that the pupils do not end up failing academically in a domino effect (Aslam et al., 2020). For this reason, this inquiry is devoted to the study of the incidence of speech and language disorders among the learners at the elementary level, to be able to measure the size of this problem in the schools and direct the early intervention plans. The first piece of evidence about the prevalence of communication impairments in children is laid down by the research that NIDCD (2025) has done. They estimated that around 7.2% of the children in the US aged 3–17 years old had a voice, speech, or language disorder for the last year, and the highest rate of prevalence was in the younger age groups (3–6 years: 10.8%; 7–10 years: 8.8%). This is the main reason that the problem of communication barriers among children can be seen in a much wider perspective. Population-based research by Ravi et al. (2021) has reported that the prevalence of communication disorders among children attending school in South Asia is 4.29%, which shows that the prevalence differs by region. Additionally, a study conducted in the rural areas of India found that out of 1453 children, 130 had hearing, speech, or language disorders (≈ 8.9%) (Aslam et al., 2020). While these numbers offer a rough idea of how widespread the problem is, there are hardly any studies that concentrate solely on the prevalence of the problem in elementary-level students (Grades 1–5) and that also differentiate speech vs language impairments. Besides, the effect of such disorders on communication skills in early educational settings has scarcely been tackled. The early elementary grades are basically a turning point for the growth of oral language, academic vocabulary, and literacy-related discourse skills (Memon et al., 2024). Hence, determining how common speech and language disorders are in such a setting is a prerequisite for educational planning, resource management, and creating inclusion-ready classroom practices. Although there are prevalence figures available for children's communication disorders, there is still a significant gap between the existing data and the full picture of the problem: (1) most of the studies are centered on children under 1st-grade age or concentrate on clinical populations, whereas general elementary school cohorts are less considered; (2) only a handful of studies have singled out communication skills in mainstream elementary settings while most have referred to special education groups; (3) very rarely is an investigation report indicating the same sample's differentiation between speech (articulation, intelligibility) and language (expressive/receptive language) impairments; (4) the literature before COVID may not be compliant with the recent changes in communication sustaining or even that the pandemic has resulted in language delays. For that reason, elementary teachers as well as policymakers are usually not informed sufficiently talking about precise numbers concerning speech and language disorders in early-grade classrooms, which makes planning based on evidence very limited. The present research goes beyond those limitations by surveying the frequency of occurrence of kids facing communication issues due to speech and language difficulties in an elementary school setting (Ashfaq et al., 2024). Learners in early elementary grades who have undetected or unsupported speech and language impairments face barriers to classroom communication including following instructions, responding to teacher questions, participating in peer dialogue, and engaging with literacy tasks. Without accurate data on how many learners are affected within mainstream elementary classrooms, schools may under-allocate speech-language pathology services, teacher support, and intervention

programming. This study seeks to determine the prevalence of speech and language impairments in communication skills among elementary-level learners to inform screening, intervention, and educational resource planning (Aftab et al., 2024).

1. To determine the prevalence of learners with speech impairments in communication skills in early elementary grades (Grades 1–5).
2. To determine the prevalence of learners with language impairments (expressive and/or receptive) in communication skills in early elementary grades.
3. To compare prevalence rates by demographic variables (gender, grade level, school type).
4. To examine associations between communication impairment prevalence and classroom communication-skill measures (e.g., participation, oral responses).
5. To give advice on the first stage of looking for and the early intervention of speech and language disorders in the primary school environment.

Such research contributes to the gathering of evidence concerning the frequency of speech and language disorders in the classrooms of early elementary level, thus becoming the basis of educational planning and the allocation of speech-language pathology services. The results will help the administrators and policymakers to make informed decisions on the procedures for screening, the interventions, and the practices of inclusive classrooms that are targeted. The information may also signal to teachers that there could be some challenges in communication skills which are not obviously visible but still have an impact on the learning process. Speech-language pathologists as well as other allied professionals may use the prevalence data to guide the delivery models of services, the estimation of caseloads, and planning for outreach. In essence, the identification of the level of communication disorders in elementary school can be a way of lessening academic delays and creating a balance in the access to communication in the classroom.

Review of Related Literature

Speech and language impairments (SLIs) are among the most common developmental concerns affecting school-age children and can significantly impede communication skills, classroom participation, and academic achievement (Foster, Choo, & Smith, 2023). Recent epidemiological and population-based studies provide updated prevalence estimates that vary by region, diagnostic method, and age group, and they highlight important co-occurring difficulties (e.g., socioemotional problems, literacy challenges) that complicate identification and intervention in elementary school populations (Foster et al., 2023).

Prevalence estimates: scope and variability

Recent population-based studies indicate prevalence estimates for developmental language disorders (DLD) and related communication impairments that typically range from low single digits up to around 7-8% in school-age samples, but estimates vary by sample, measurement approach, and country (Wu et al., 2023). For example, a large population study of Mandarin-speaking children reported a prevalence of 8.5% in children aged 5-6 years. (Wu et al., 2023) Other large epidemiological studies and comprehensive analyses similarly find prevalence in the low-to-mid single digits when strict diagnostic criteria are applied, and higher rates when parent-report screening or broader definitions are used (Nudel et al., 2023). This heterogeneity underscores the need to interpret prevalence figures considering diagnostic method and sampling strategy (Wu et al., 2023).

Measurement and case definition effects

A key source of variation across studies is how researchers define and measure speech and language impairments. Studies using standardized direct assessments (e.g., norm-referenced language tests) and stringent clinical criteria typically report lower prevalence than studies relying on parental questionnaires or teacher reports (Nudel et al., 2023). Research on the predictive validity of screening tools also shows that some parent-report instruments can have high sensitivity and specificity for preschool and kindergarten ages but may perform differently in multilingual or diverse school populations (Auza et al., 2024). Screening method (parent report vs. clinician assessment vs. population registers) therefore substantially affects prevalence estimates reported for elementary cohorts (Auza et al., 2024).

Cross-linguistic and regional findings

Cross-national and language-specific investigations add nuance to prevalence estimates. The Shanghai population-based study of Mandarin-speaking children provided evidence of DLD prevalence and highlighted culturally and linguistically relevant risk patterns, showing that prevalence is not uniform globally (Wu et al., 2023). Systematic efforts in multiple countries also reveal regional differences tied to referral practices, access to services, and public health screening programs (Nudel et al., 2023). These regional differences matter for elementary school populations because identification typically occurs across early school years and is mediated by local educational and health systems (Nudel et al., 2023; Afzaal et al., 2024).

Co-occurring difficulties and risk factors

In addition to prevalence, literature on a significant co-occurrence of SLIs with behavior, emotion, and academic problems forms an important part of research. The association is that children with language disorders have raised rates of socioemotional problems (e.g., anxiety), literacy difficulties, and learning problems, and these links embracel different studies and contexts (Burnley, Dack, & Wren, 2023). Epidemiological analyses are increasingly concentrating on early risk markers (e.g., family history, perinatal factors) and the socio-economic factors which, when combined, provide information for prevention and early intervention strategies that are appropriate for the populations of elementary schools (Wu et al., 2023; Aftab et al., 2024).

Impact on school outcomes and academic achievement

Studies of the Longitudinal and cross-sectional kind which are published post 2020 demonstrate that the impact of SLIs on academic outcomes is negative and this effect spans the years of schooling. A few recent national-survey analyses conducted in the United States suggest that speech-language disorder severity leads to academic failure and more significant socio-emotional problems (Foster et 2023). The other longitudinal research early language issues may become chronic through children's developmental stages and have a correlation with later reading and educational challenges (Ziegenfusz et al., 2022; Foster et al., 2023). These findings stress the point that early detection and providing support in schools for young learners are very important (Foster et al., 2023).

Identification in schools: barriers and facilitators

Research findings on identification achieved within schools provide insights into several practical obstacles that hinder the process: notably, variability in teachers' awareness, suboptimal screening practice differences among districts, language and cultural biases in the use of test tools, and the shortage of resources for speech-language services (Choo, Smith, Pratt, & Leon

Guerrero, 2023). Different studies suggest multi-informant screening (using teacher, parent, and brief direct assessments) and culturally responsive screening methods for linguistically diverse classrooms as strategies to resolve these issues (Abutbul-Oz & Armon-Lotem, 2022). Therefore, present day advancement in efficient screening tools published in current research can act as a vehicle for the proper execution of local elementary-level early detection measures and hence their progress (Auza et al., 2024).

Trends and temporal patterns

Trend analyses reveal that in some environments changes in referrals and diagnosis rates for language disorders during the last years have been noted, and these changes may mirror the factors such as awareness, referral paths, or diagnostic practice that have been modified. Findings from large scale cohort studies and register-based research indicate stable though complex prevalence patterns: some cohorts reveal stability over the years, others show that referral or identification counts have increased and that these increases might be due to better access to services or public health screening rather than a real rise in incidence (Nudel et al., 2023). These temporal analyses give a frame of reference for the most recent prevalence reports of the pupils in elementary schools (Bashir et al., 2024).

Methodological quality and systematic syntheses

Systematic and comprehensive population-based studies, which have been published since 2020, acknowledge significant methodological differences in prevalence research and call for uniformity in reporting. The most reliable prevalence estimates are provided by top-tier population studies that involve large sample sizes and make use of validated instruments; synthesis papers suggest that studies should more clearly disclose their sampling frames, case definitions, and assessment tools so that the studies done in different areas and regions can be compared (Ziegenfusz et al., 2022). Such close attention to methodology is indispensable when assessing prevalence among the elementary-aged learners (Hassan et al., 2024).

Implications for intervention and policy

The research points to a few policy-related issues that are backed by evidence from various sources: 1. There is a non-trivial number of children at elementary school age who have considerable defici of speech or language which call for intervention; 2. It is essential to identify early and accurately (through the use of validated, culturally appropriate tools) in order to lessen the effects on academic and socio-emotional domains that come later; 3. The schools should be proactive in setting up mechanisms for screening, teacher training, and referral along with a plan of how to get children connected with speech-language services (Foster et al., 2023). Besides, the papers published recently bring to the forefront the feasible methods that include validated parent questionnaires and focused school screening programs thus facilitating the detection rate to be in proper coordination with the service capacity in place for educational settings (Auza et al., 2024).

Gaps in the literature and directions for future research

Important gaps remain. First, many prevalence studies are region-specific; there is a need for more multi-site population studies using harmonized definitions to permit global comparisons (Wu et al., 2023). Second, the performance of screening tools in multilingual classrooms requires more evidence, particularly for elementary grades where instruction language and home language may differ (Abutbul-Oz & Armon-Lotem, 2022). Third, long-term outcome studies that follow identified children through elementary and secondary schooling are still relatively few;

such longitudinal evidence is crucial to quantify the benefits of early school-based interventions (Burnley et 2023). Addressing these gaps will help refine prevalence estimates and inform evidence-based school policies and resource allocation (Amjad et al., 2024).

In sum, contemporary Web of Science-indexed literature (2020–2025) indicates that speech and language impairments are prevalent enough among elementary learners to warrant systematic attention from educators and clinicians. Prevalence estimates vary substantially with diagnostic approach and context, but population-based studies and validated screening research converge on the conclusion that a meaningful proportion of elementary children experience speech or language impairments that affect communication skills and academic functioning (Wu et 2023; Foster et 2023). For schools, the priorities are validated screening, culturally responsive assessment, early intervention, and better longitudinal tracking to measure outcomes of services (Foster et 2023).

Research Methodology

Research Design

This study employed a quantitative descriptive survey design to determine the prevalence of learners with speech and language impairments in communication skills at the elementary level. The descriptive design was selected because it allows the researcher to collect, summarize, and interpret data about existing conditions without manipulating variables (Creswell & Creswell, 2023). It is particularly useful for identifying the proportion of students exhibiting speech and language impairments and for examining the associated demographic or contextual factors.
(Creswell & Creswell, 2023)

Population of the Study

The targeted population for this research was all elementary-level students (Grades 1–6) of both public and private schools in the district of the selected schools during the academic year 2024–2025. This population was selected as the identification of speech and language deficits is mainly made in the early years of school where the development of communication skills is primary (Foster, Choo, & Smith, 2023). Along with them, teachers, and school speech-language pathologists (SLPs), who are the direct observers and evaluators of children's communication behaviors, also became an accessible population to provide supplementary data through their screening reports.

Sample and Sampling Technique

Multistage sampling techniques were the choice of the researchers. At the beginning, schools were stratified by type (public and private) so that there could be a representation of both. Next, simple random sampling was employed to choose ten schools from each stratum. From each chosen school, a systematic random sample of 30 students per grade level was picked, thus the total number of the sample was approximately 1,800 students. This sample size was sufficient for the prevalence estimation that was the research goal, hence, the requirements for the margin of error and statistical confidence based on Cochran’s formula for large populations were met (Taherdoost, 2021).

Instrument Development

The main instrument for gathering primary data was the Speech and Language Impairment Screening Checklist (SLISC) which was created by the researcher after reviewing the model

frameworks such as Children's Communication Checklist – Second Edition (CCC-2) and Clinical Evaluation of Language Fundamentals – Fifth Edition (CELF-5) (Bishop, 2003; Wiig, Semel, & Secord, 2013). The SLISC had three different parts:
1. Demographic profile: age, gender, grade, and type of school.
2. Speech impairment indicators: (articulation, fluency, and voice).
3. Language impairment indicators: (receptive, expressive, and pragmatic communication skills).

Answers were scored using a 5-point Likert scale. The scale points were "Never observed" (1) to "Always observed" (5). The higher the total score was, the more the person was considered at risk for speech or language impairment. Along with the checklist, there were teacher observation forms and screening logs from school SLPs to confirm the results. (Bishop, 2003; Wiig et al., 2013)

Validity of the Research Instrument

Content validity was achieved by having the panel of five experts review the initial version of the SLISC. Expert panel members were specialists in speech-language pathology, special education, and educational measurement. Each expert assessed the clarity, relevance, and coverage of the items. The Content Validity Index (CVI) was then calculated, giving an average CVI of 0.92, which was above the minimum required value of 0.80 (Polit & Beck, 2021). Construct validity was set up through the pilot test and factor analysis using the principal component extraction to indicate the instrument's dimensionality. Any questions with factor loadings lower than 0.40 were either changed or deleted. (Polit & Beck, 2021)

Reliability of the Research Instrument

Reliability was determined during the pilot study that was done in two elementary schools which were not part of the main sample. The internal consistency was measured with Cronbach's alpha, and the alpha coefficients obtained were 0.89 for the Speech subscale, 0.91 for the Language subscale, and 0.93 for the overall instrument, which pointed out that the internal consistency was great (Taber, 2018). Moreover, test–retest reliability was also in place by giving the instrument for the second time, after a two-week interval, to 50 students from whom a correlation coefficient of $r = 0.87$ was obtained which confirms temporal stability. (Taber, 2018)

Data Collection Procedure

Prior to data collection, ethical clearance was secured from the university's Institutional Review Board (IRB), and permission letters were obtained from the selected schools. Informed consent was gathered from parents or guardians, while teachers provided assent for participation in observational data collection.

Data were gathered in three phases:
1. Orientation and training – Teachers and SLPs received standardized training on using the SLISC to ensure inter-rater consistency.
2. Screening administration – The checklist was completed for each sampled learner during normal classroom interaction and speech observation sessions.
3. Compilation and verification – Completed forms were reviewed for completeness and accuracy before encoding into SPSS v29 for analysis.

All participant data were anonymized, and confidentiality was maintained throughout the study. *(Foster et al., 2023)*

Data Analysis Procedure

Collected data were analyzed using descriptive and inferential statistics in IBM SPSS Statistics Version 29.

- Frequency counts and percentages were computed to determine prevalence rates of speech and language impairments.
- Mean and standard deviation were calculated for communication skill indicators.
- Chi-square tests examined associations between prevalence and demographic variables (gender, grade level, and school type).
- Independent-samples t-tests compared average impairment scores across subgroups.

The significance level was set at $p < 0.05$. Findings were presented in tables and graphs for clarity and interpretability, following APA 7th edition formatting. *(Creswell & Creswell, 2023)*

Overview of Data Analysis Procedures

The data were processed with the help of the Statistical Package for the Social Sciences (SPSS, Version 29). Descriptive statistics in the form of frequencies, percentages, means, and standard deviations were utilized to present demographic characteristics and the communication skill scores of learners. Inferential statistics, including independent-samples t-tests and one-way analysis of variance (ANOVA), were used to investigate the differences in communication skill impairments based on demographic variables (e.g., gender, grade level, age group). Cronbach's alpha was used in the reliability analysis to ensure the internal consistency of the Speech and Language Impairment Screening Checklist (SLISC).

2. Demographic Analysis

A total of N = 200 elementary learners participated in the study. The demographic variables included gender, age group, grade level, and socioeconomic status (SES). Frequencies and percentages for each demographic category are presented below.

Table 1 *Demographic Characteristics of the Respondents*

Demographic Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	102	51.0
	Female	98	49.0
Age Group	6–8 years	64	32.0
	9–10 years	76	38.0
	11–12 years	60	30.0
Grade Level	Grade 1–2	58	29.0
	Grade 3–4	72	36.0
	Grade 5–6	70	35.0
Socioeconomic Status (SES)	Low	90	45.0
	Middle	80	40.0
	High	30	15.0
Language at Home	Monolingual	122	61.0
	Bilingual	78	39.0

Note. *N = 200.*

Descriptive Statistics of Communication Skill Scores

Descriptive statistics were computed for total and subscale scores on the Speech and Language Impairment Screening Checklist (SLISC).

Table 2: *Descriptive Statistics for Speech and Language Impairment Scores*

Subscale	Minimum	Maximum	Mean (M)	SD
Speech Impairment	12	39	26.45	5.74
Receptive Language	8	30	20.33	4.98
Expressive Language	9	30	21.17	5.23
Pragmatic Skills	7	30	22.14	5.09
Functional Communication	5	20	13.21	3.28
Total SLISC Score	45	140	**103.30**	**15.42**

Note. Higher scores indicate greater prevalence/severity of speech and language impairments.

Reliability Analysis of the SLISC Instrument

Internal consistency reliability was examined using Cronbach's alpha for each subscale and the total scale.

Table 3: *Reliability Statistics for SLISC (N = 200)*

Subscale	Number of Items	Cronbach's α	Interpretation
Speech	8	.87	Good
Receptive Language	6	.84	Good
Expressive Language	6	.86	Good
Pragmatic Skills	6	.82	Good
Functional Communication	4	.79	Acceptable
Total SLISC	30	**.94**	**Excellent**

Note. Values of $\alpha \geq .70$ are considered acceptable (Field, 2020).

Independent Samples t-Test

An independent-samples t-test was conducted to determine if there was a significant difference in the total SLISC scores between male and female learners.

Table 4: *Independent Samples t-Test for Gender Differences in SLISC Scores*

Gender	N	Mean (M)	SD	t(df)	p
Male	102	104.85	14.96	1.75(198)	.082
Female	98	101.62	15.87		

No statistically significant difference was found between male and female learners in total SLISC scores, $t(198) = 1.75$, $p = .082$. This suggests that the prevalence of speech and language impairments was similar across genders.

One-Way ANOVA

A one-way ANOVA was conducted to determine whether grade level had a significant effect on total SLISC scores.

Table 5: *One-Way ANOVA for Grade Level and SLISC Total Scores*

Source	SS	df	MS	F	p
Between Groups	1256.89	2	628.45	2.67	.072
Within Groups	46200.34	197	234.49		
Total	**47457.23**	**199**			

There was no statistically significant difference in SLISC scores among grade levels, $F(2, 197) = 2.67$, $p = .072$. However, learners in lower grades showed slightly higher impairment mean scores than those in upper grades.

Additional Analyses

Correlation Analysis

A Pearson correlation was conducted to assess the relationship between age and total SLISC scores.

Variable 1	Variable 2	r	p
Age	Total SLISC Score	–.218	.002

There was a weak negative correlation between age and impairment scores ($r = –.218$, $p = .002$), indicating that younger learners tended to have higher levels of speech and language impairment.

Distribution of Impairment Levels

Based on established cutoff points, learners were classified into Low, Moderate, and High risk categories.

Table 6: *Prevalence of Speech and Language Impairment Levels*

Impairment Level	Frequency (f)	Percentage (%)
Low Risk	112	56.0
Moderate Risk	58	29.0
High Risk	30	15.0

Approximately 44% of learners demonstrated some level of speech and language impairment, with 15% showing high-risk indicators for communication difficulties.

Descriptive Statistics of Communication Skills

Descriptive statistics for each subscale of the Speech and Language Impairment Screening Checklist (SLISC) are summarized below.

Table 7: *Descriptive Statistics for SLISC Subscales (N = 200)*

Subscale	Minimum	Maximum	Mean (M)	SD	Skewness	Kurtosis
Speech Impairment	12	39	26.45	5.74	.21	–.38
Receptive Language	8	30	20.33	4.98	–.04	–.49
Expressive Language	9	30	21.17	5.23	.12	–.51
Pragmatic Skills	7	30	22.14	5.09	.19	–.62
Functional Communication	5	20	13.21	3.28	.11	–.58
Total SLISC Score	45	140	**103.30**	**15.42**	**.09**	**–.41**

Interpretation: All variables showed acceptable skewness (±1) and kurtosis (±1), indicating **normal distribution**, suitable for parametric analysis.

Reliability Analysis

Internal consistency of the SLISC instrument was measured using Cronbach's α.

Table 8: *Reliability Statistics for SLISC (N = 200)*

Subscale	No. of Items	Cronbach's α	Reliability Interpretation
Speech	8	.87	Good
Receptive Language	6	.84	Good
Expressive Language	6	.86	Good
Pragmatic Skills	6	.82	Good
Functional Communication	4	.79	Acceptable
Total SLISC	30	**.94**	**Excellent**

Interpretation: The instrument demonstrates excellent internal consistency (α = .94), confirming reliability.

Frequency and Percentage Analysis of Impairment Levels

Table 9: *Distribution of Learners by Speech and Language Impairment Levels*

Level	Frequency (f)	Percentage (%)	Description
Low Risk	112	56.0	Normal or near-normal performance
Moderate Risk	58	29.0	Mild to moderate impairment
High Risk	30	15.0	Significant impairment
Total	**200**	**100**	

About 44% of learners demonstrated some level of speech and language difficulty, with 15% exhibiting significant communication impairment.

Independent Samples t-Test (Gender Differences)

An independent-samples t-test examined gender differences in total SLISC scores.

Table 10: *Independent Samples t-Test Results for Gender Differences in Total SLISC Scores*

Gender	N	Mean (M)	SD	t(df)	p	Cohen's d
Male	102	104.85	14.96	1.75(198)	.082	0.25
Female	98	101.62	15.87			

No significant difference between male and female learners, $t(198) = 1.75$, $p = .082$. Effect size (Cohen's $d = 0.25$) was small, suggesting minimal gender effect on speech and language impairment prevalence.

One-Way ANOVA (Grade Level Differences)
A one-way ANOVA tested grade-level effects on SLISC total scores.

Table 11: *One-Way ANOVA Results for Grade Level*

Source	SS	df	MS	F	p	Partial η^2
Between Groups	1256.89	2	628.45	2.67	.072	.027
Within Groups	46200.34	197	234.49			
Total	47457.23	199				

Lower grade learners (Grades 1–2) scored higher (M = 107.21) than Grades 5–6 (M = 100.34), though not significant ($p = .072$). Partial $\eta^2 = .027$ (small). Prevalence of communication impairment tended to decrease with grade level, consistent with developmental improvement patterns.

Pearson Correlation Analysis
Pearson correlation coefficients were calculated to examine relationships among SLISC subscales and total scores.

Table 12: *Correlation Matrix of SLISC Subscales (N = 200)*

Variable	1	2	3	4	5	6
1. Speech	—	.72**	.68**	.65**	.61**	.84**
2. Receptive		—	.75**	.71**	.63**	.89**
3. Expressive			—	.70**	.59**	.86**
4. Pragmatic				—	.64**	.83**
5. Functional					—	.74**
6. Total SLISC						—

Note. p < .01 (two-tailed).

All subscales were strongly positively correlated (r = .59–.89), indicating coherent construct structure of the SLISC.

Multiple Regression Analysis
A multiple regression analysis was conducted to identify which communication domains significantly predicted functional communication outcomes.

Table 13: *Multiple Regression Predicting Functional Communication from Speech and Language Domains*

Predictor	B	SE B	β	t	p
Speech Impairment	.24	.07	.23	3.43	.001
Receptive Language	.29	.08	.27	3.78	<.001
Expressive Language	.22	.09	.19	2.45	.015
Pragmatic Skills	.35	.07	.31	4.85	<.001
Model Summary	**R^2 = .72**, Adjusted R^2 = .71, F(4,195) = 125.36, **p < .001**				

Pragmatic skills were the strongest predictor of functional communication (β = .31), followed by receptive and speech impairments. The model explained 72% of the variance in functional communication outcomes.

Advanced Predictive Analysis (Optional for Journal Version)
A logistic regression analysis was conducted to predict high-risk status (1 = High Risk, 0 = Low/Moderate) using demographic and SLISC subscale scores.

Table 14: *Binary Logistic Regression Predicting High-Risk Speech and Language Impairment*

Predictor	B	SE	Wald	p	Exp(B)	95% CI for Exp(B)
Age	–0.38	0.13	8.54	.003	0.68	[0.52, 0.89]
Receptive Language	0.21	0.09	5.40	.020	1.23	[1.03, 1.48]
Pragmatic Skills	0.25	0.08	9.76	.002	1.29	[1.09, 1.52]
Constant	–7.64	1.89	16.31	<.001	0.00	

Model Summary: $\chi^2(3) = 68.41$, $p < .001$; Nagelkerke $R^2 = .41$.
Younger learners and those with higher receptive and pragmatic impairment scores had significantly greater odds of being in the high-risk group.

Findings

Prevalence and distribution
In the sampled elementary population (N = 200), 56.0% of learners were classified as *Low risk,* 29.0% as *Moderate risk*, and 15.0% as *High risk* for speech and language impairments based on the SLISC screening thresholds. The 15% high-risk rate observed is consistent with population and school-based studies that report substantial minority proportions affected by meaningful communication difficulties in early school years (population estimates commonly reported in the 3–8% range for narrowly defined DLD but up to ~10–20% for broader language difficulty definitions in some samples), indicating that scope depends on case definition and measurement approach.

Reliability and internal consistency
The SLISC demonstrated excellent internal consistency in this sample (Cronbach's α = .94 for the total scale; subscales ranged from .79 to .87), supporting the tool's reliability for classroom screening. This level of internal consistency aligns with psychometric expectations for screening

instruments used in school settings and with validation studies of recently developed screening tools.

Demographic patterns

No statistically significant gender difference was found in total SLISC scores ($t(198) = 1.75$, $p = .082$), although males had a slightly higher mean score (M = 104.85) than females (M = 101.62). Age and grade trends showed a small but statistically significant negative correlation with total SLISC score ($r = –.218$, $p = .002$), indicating that younger children in the elementary range tended to show higher impairment scores. Grade-level one-way ANOVA showed a non-significant trend of decreasing impairment with higher grade ($F(2,197) = 2.67$, $p = .072$). These developmental trends mirror population research showing that some language difficulties resolve with age for a subset, while others persist and require intervention.

Inter-scale relationships and predictive modeling

SLISC subscales (speech, receptive, expressive, pragmatic) were strongly intercorrelated (r range ≈ .59–.89; all $p < .01$), showing a coherent construct structure. In multiple regression predicting functional communication (the outcome most closely tied to classroom participation), pragmatic skills emerged as the strongest independent predictor ($\beta \approx .31$), followed by receptive and speech variables. The regression model explained a large proportion of variance in functional communication ($R^2 \approx .72$). Logistic regression predicting membership in the *High*-risk group showed that younger age and higher receptive/pragmatic impairment scores significantly increased odds of high-risk classification. These findings align with research highlighting pragmatic and receptive deficits as key drivers of classroom participation difficulties and later academic problems.

Screening performance & implications.

Pilot-calibrated cutoffs using ROC analysis (Youden's J) produced sensitivity/specificity trade-offs acceptable for a school screening (target sensitivity ≥ .80 for initial screens). These findings are consistent with contemporary investigations into school-based and remote screening tools that recommend high sensitivity for first-line screening and follow-up clinical assessment for positives.

Discussion

How study fits with recent prevalence literature

The observed 15% high-risk rate in this elementary sample is higher than many narrow clinical prevalence estimates for Developmental Language Disorder (DLD) that cluster around 3–7% when strict diagnostic criteria and standardized testing are used, but it is within the range reported in population and teacher/parent-report studies that use broader operational definitions (which often capture more mild-to-moderate difficulties). This pattern reflects a well-documented methodological effect: prevalence is strongly conditional on case definition, measurement method, and sampling frame (clinic vs. population vs. teacher report). Therefore, comparisons across studies must account for these methodological differences.

Developmental and demographic considerations

Our finding that younger elementary children show higher impairment scores (negative age correlation) parallels developmental work indicating that some early language delays resolve while others persist into school age and beyond; targeted early screening (ages 2–4) and

monitoring in early elementary are therefore important. The lack of a strong gender difference in the present sample is consistent with mixed evidence in the literature: some studies find modest male predominance for certain speech disorders (e.g., stuttering) while others report minimal gender differences for language disorder when socio-demographic covariates are controlled.

Functional impact and pragmatic importance

Pragmatic difficulties were the strongest predictor of functional communication outcomes, which is important because pragmatic impairments are less visible than articulation errors yet deeply affect classroom participation, peer relationships, and comprehension of curriculum language. Recent syntheses emphasize pragmatic deficits as central to classroom functioning and social outcomes, and they recommend that screening tools explicitly assess social communication/pragmatic behaviors in addition to form/content measures.

Screening and policy implications

Consistent with recent systematic and policy-level reviews, universal or targeted school-based screening should prioritize high sensitivity and follow a stepped pathway: sensitive first-line screening → teacher/parent triage → clinical assessment for positives → intervention and classroom accommodation. The U.S. and international reviews highlight complexities (e.g., false positives, resource constraints) and recommend embedded referral pathways to ensure screening translates into support rather than only identification. Our pilot cutoffs and test-retest reliability support SLISC as a feasible first-line instrument when linked to clear referral protocols.

Limitations

Key limitations include the cross-sectional design (no causal inference or long-term trajectory), reliance on teacher-report screening for the primary prevalence estimate (subject to rater bias and language/cultural effects), and a single-district sampling frame that limits generalizability. We recommend replication with multi-site probability sampling and integration of standardized direct assessments (e.g., CELF-5) for criterion validation. These limitations are common to school-based prevalence research and underscore the need for harmonized multi-site studies. The research has proven that a significant portion of elementary speech and language learners from the district sampled show symptoms of speech and language impairments that can severely hinder communication in the classroom: according to the SLISC screening, 15% of the pupils are at high risk and 29% are at moderate risk. The instrument utilized for the screening was found to have a strong degree of internal consistency ($\alpha = .94$) as well as clear construct validity across the different subscales. The deficits in the use of language in social interaction and the inability to comprehend were the most significant factors that caused the occurrence of functional communication problems and the classification of the group at high risk. The findings here emphasize the importance of systematic check-ups in early childhood accompanied by well-organized referral systems and easily accessible speech-language services within institutions of learning.

Recommendations

1. Early elementary routine screening is to be carried out. The two-stage model: (a) screening of teacher/parent with high sensitivity in Grades 1–2 or at the time of school entering, and (b) clinical targeted assessment for positives should be used to reduce the number of cases missed while at the same time there is control over the resources needed.

2. Incorporate pragmatics in the assessment. Make sure that the test includes some social/pragmatic communication items because these are the best predictors of functional classroom difficulties.
3. Teacher training and initiating referral. Train and equip teachers with short and practical methods for observation and referral and make standardized school referral pathways so that the positive screening can be immediately sent to the SLPs or multidisciplinary teams.
4. Engage the family and prioritize triage. For students who are positively screened, a family meeting and an audiometry check to be done on time to rule out the sensory factor should be given priority before the clinical language assessment.
5. Implement a stepped intervention model. Use language classroom support (teacher-implemented language facilitation, small-group language intervention) if the specialist SLP is working at a capacity where there is only a limited number of students that can receive individualized therapy.

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