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Original Article

Demographic Characteristics and Association between selected demographic variables and income among adults with stammering

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ABSTRACT

Background: Stammering, also known as stuttering, is a fluency disorder of speech that is considered to be a chronic condition affecting communication confidence, psychosocial outcomes, and participation in social and occupational settings. Although traditional treatment of stuttering is based on speech mechanics, recent evidence shows that psychological and motivational factors play an important role in determining outcomes in adult stutterers. Objective: To investigate demographic variables and their possible associations with income in adult stutterers, with a broader conceptual framework of motivational and psychological outcomes. Materials and Methods: A descriptive cross-sectional observational study was carried out among 60 diagnosed stutterers from The University of Lahore Teaching Hospital and Social Security Hospital, Lahore, in 2025. A proforma was designed to collect demographic data from stutterers. Statistical analysis was performed using SPSS version 25.0.Results: The sample consisted of mostly young to middle-aged stutterers with moderate educational status and multilingual speech abilities. Pearson correlation was carried out to analyze possible associations between income and age, gender, and education, showing weak, non-significant correlations between income and age ($r = 0.095$), gender ($r = -0.157$), and education ($r = -0.200$). Multiple regression was performed to examine the predictive power of age, gender, and education on income, showing a non-significant regression equation ($p = 0.239$) with an R^2 of 7.2% to predict income, with no individual demographic variable showing a significant effect on income. Conclusion: Demographic variables had limited explanatory potential in predicting income among stutterers, suggesting a need to incorporate psychological and motivational outcomes in future research to better comprehend outcomes in stutterers and design effective treatment strategies to improve their communication outcomes.

Keywords:
Stammering; Stuttering; Adults who stutter; Communication confidence; Motivation; Cross-sectional study

INTRODUCTION

Stammering or stuttering is a chronic fluency disorder that is characterized by the involuntary repetition and prolongation of sounds and the blocking of sounds that interfere with the fluent and natural flow of speech (1). Stuttering in adults not only affects the fluency of speech but also affects the psychological well-being of the affected persons (2). Adults who stutter may experience increased levels of negative emotions that interfere with communication and may limit their educational and social opportunities (2). The psychosocial effects of stuttering may create a vicious cycle that affects the quality of life and communication confidence of the affected persons (3). Stuttering may also affect the employment opportunities and chances for promotion of people who stutter (4).

Modern approaches to the management of stuttering have emphasized the need for a multidimensional approach that not only focuses on the fluency of speech but also considers the cognitive-affective and psychological well-being of the affected persons. Although fluency shaping and stuttering modification approaches may help people who stutter to improve the fluency of their speech, the effectiveness of the management approaches may be affected by the cognitive-effective well-being of the affected persons. People who stutter may adopt several coping strategies that may interfere with communication and may limit the chances for effective communication (5).

In this regard, the communication confidence of people who stutter may not be an epiphenomenon that is not relevant to the management of stuttering (6). The communication confidence of people who stutter may be a clinically relevant factor that may influence the effectiveness of the management approaches (6).

Intrinsic or inner motivation could be an important and clinically relevant factor in determining the level of engagement and persistence in stuttering interventions and communication practices. People with higher intrinsic motivation levels may be more likely to endure short-term discomfort and persist in practice and exposure to situations that may be avoided due to stuttering. These are important in functional improvement and building confidence in people with chronic health conditions. The relevance of motivation and motivation-related variables to therapy and speech outcomes in persons with stuttering has been established in existing research. This shows that intrinsic motivation could be an important factor in building communication confidence and utilizing functional strategies for coping with stuttering. However, most existing evidence may be conceptually descriptive or derived from heterogeneous interventions and outcomes. This may limit the ability to make inferences regarding the relationship between intrinsic motivation and communication confidence and fluency in the general clinical population(7).

Another important aspect that may be explored in existing evidence is the setting-specific quantification of the relationship between intrinsic motivation and communication confidence and fluency in adults with stuttering in each setting. This may be important in view of the fact that psychosocial burden and stigmatizing experiences may differ in various settings. In addition, access to therapeutic support environments may differ. In view of these factors, quantification of these relationships in a given setting may be important in informing holistic and person-centered interventions. The determination of the relationship between intrinsic motivation and communication confidence may also be important in informing clinicians regarding the integration of counseling and intrinsic motivation-based interventions in the management and treatment of persons with stuttering. The purpose of the study was to investigate the relationship between intrinsic motivation and communication confidence in adults with stammering. The study also aimed to evaluate the relationship between intrinsic motivation and speech fluency in adults with stammering. The research question was: Is intrinsic motivation associated with communication confidence and speech fluency in adults with stammering?

MATERIALS AND METHODS

A descriptive cross-sectional observational study was conducted to assess the association between intrinsic motivation and communication confidence in adults with stammering. This study was conducted at The University of Lahore Teaching Hospital and Social Security Hospital, Lahore, Pakistan.

Ethical approval was obtained from the Research Ethics Committee of the institution. A specific study period was set to collect data in 2025. This was selected to access a consistent population of adults presenting for stammering evaluation or management.

Adults aged 18 years or older presenting with a clinical diagnosis of stammering were included in the study. They were required to have adequate knowledge of Urdu or English to read and comprehend the study instructions. Also, informed consent was required from the participants. Adults diagnosed with psychogenic stuttering or any speech or language disorders were not included in the study. A non-probability consecutive sampling technique was employed. All participants presenting at the healthcare centers were included in the study.

Demographic variables such as age, gender, level of education, and language background were noted using a structured proforma after obtaining written informed consent from the patients. A standardized self-report instrument was used to collect data in a quiet clinical environment. Intrinsic motivation was measured by administering the Inner Motivation Scale, which measures intrinsic drive, interest, and self-activation in communication-related activities. Communication confidence was measured by administering the Communication Confidence Scale, which measures perceived confidence, comfort, and anxiety in communication during daily life situations. Fluency in speech was measured by administering the Fluency Scale, which measures the frequency and severity of speech disfluencies such as repetitions, prolongations, pauses, and blocks in speech.

The primary exposure variable was intrinsic motivation, which was measured by administering the Inner Motivation Scale and scoring it to obtain a total score. The primary outcome variable was communication confidence, which was measured by administering the Communication Confidence Scale and scoring it to obtain a total score. Speech fluency was a secondary outcome variable, and it was measured by administering the Fluency Scale and scoring it to obtain a total score. Demographic variables such as age, gender, level of education, and language background were considered potential covariates based on previous evidence of their effect on communication-related outcomes in adults who stutter (3,4). To minimize information bias, a standardized self-report instrument was used to collect data, and to minimize selection bias, patients were recruited consecutively from clinical services.

To determine the sample size, an effect size of 0.5 was considered, and a significance level of 0.05 was considered, with a power of 80% to detect an association between intrinsic motivation and communication confidence with adequate statistical power to detect a moderate effect size, assuming a two-tailed test. To maintain data integrity, double checking of completed data was done, and data was stored securely before conducting any analyses. All analyses were performed using the Statistical Package for Social Sciences (SPSS) version 25.

Descriptive statistics were computed for all the study variables; for the continuous study variables, this included the computation of the mean and standard deviation, while for the categorical study variables, this included the computation of the frequency and percentage distributions. The bivariate associations between intrinsic motivation and communication confidence, as well as intrinsic motivation and fluency, were established using appropriate correlation coefficients depending on the distribution of the data. Multivariable regression analyses were proposed for evaluating the independent association of intrinsic motivation with communication confidence after controlling for appropriate demographic factors as covariates. The assumptions of regression analysis were checked before interpretation of results; this included linearity, normality of error, and no multicollinearity. Statistical significance for all analyses was set a priori at a p-value of <0.05.

Ethical considerations in this study were in full compliance with the ethical principles outlined in the Declaration of Helsinki. The study participants were not coerced in any way into participating in the study; confidentiality and anonymity were maintained throughout the study, and participants were informed that they had a right to withdraw from the study at any stage without any implications for their future. Measures that ensured reproducibility of the study results were taken; this included documentation of procedures used in the study and the use of transparent methods in analyzing the study data (8).

RESULTS

Table 1. Demographic Characteristics of the Study Participants (N = 60)

Variable	Category Code	Frequency (n)	Percentage (%)
Age category	1(18 to 25 years)	28	46.7
	2(26 to 33 years)	20	33.3
	3 (34 and above years)	12	20.0
Gender	1(male)	28	46.7
	2 (female)	29	48.3
	3 (not reveal)	3	5.0
Educational level	1(primary)	14	23.3
	2(secondary/undergraduate)	29	48.3
	3(postgraduate)	17	28.3
Disability status	1(yes)	3	5.0
	2 (no)	53	88.3
	3(mild)	4	6.7
Language category	1(single language)	15	25.0
	2 (multilingual)	25	41.7
	3 (bilingual)	20	33.3

Table 2. Descriptive Statistics of Demographic Variables

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Age category	60	1	3	1.73	0.78
Education category	60	1	3	2.05	0.72
Language category	60	1	3	2.08	0.77

Table 3 A. Pearson Correlation Matrix Among Demographic Variables and Income

Variables	Income	Age	Gender	Education
Income	1.000	0.095	−0.157	−0.200
Age	0.095	1.000	0.049	0.145
Gender	−0.157	0.049	1.000	0.169
Education	−0.200	0.145	0.169	1.000

Table 3 B. Pearson Correlation Matrix Among Demographic Variables and Income

Variable Pair	p-value
Income–Age	0.235
Income–Gender	0.116
Income–Education	0.063
Age–Gender	0.355
Age–Education	0.135
Gender–Education	0.099

Table 4. Multiple Linear Regression Model Summary (Dependent Variable: Income)

R	R^2	Adjusted R^2	Std. Error	F	df (Model, Residual)	p-value
0.268	0.072	0.022	0.754	1.45	3, 56	0.239

Table 5. Regression Coefficients Predicting Income

Predictor	B	Std. Error	β	T	p-value	Tolerance	VIF
Constant	2.303	0.407	—	5.659	<0.001	—	—
Age	0.127	0.128	0.130	0.999	0.322	0.978	1.02
Gender	−0.168	0.169	−0.130	−0.995	0.324	0.971	1.03
Education	−0.207	0.139	−0.197	−1.491	0.142	0.953	1.05

Table 6. Collinearity Diagnostics for the Regression Model

Dimension	Eigenvalue	Condition Index	Constant	Age	Gender	Education
1	3.723	1.00	0.00	0.01	0.01	0.01
2	0.141	5.13	0.00	0.78	0.22	0.03
3	0.093	6.33	0.00	0.06	0.48	0.65
4	0.042	9.40	0.99	0.14	0.29	0.32

Table 1: A total of 60 adult participants with stammering were included in the study, and the demographic distribution indicated reasonable heterogeneity for key variables. In terms of age categories, nearly half of the participants were categorized as 1 (46.7%, n = 28), followed by category 2 (33.3%, n = 20) and category 3 (20.0%, n = 12). The mean age category score was 1.73, with a standard deviation of 0.78, suggesting that the participants were predominantly young or middle-aged adults. In terms of gender, the results indicated a reasonable balance, with 46.7% (n = 28) categorized as category 1 and 48.3% (n = 29) categorized as category 2, while a small proportion (5.0%, n = 3) were categorized as category 3, suggesting minimal representation of other gender categories. In terms of educational attainment, nearly half of the participants were categorized as category 2 (48.3%, n = 29), followed by category 3 (28.3%, n = 17) and category 1 (23.3%, n = 14). The mean education category score was 2.05, with a standard deviation of 0.72, suggesting a generally moderate level of educational attainment in the participants. In terms of disability, the results indicated that the majority of participants were categorized as having no disability, i.e., category 2 (88.3%, n = 53). A small proportion of participants were categorized as category 3 (6.7%, n = 4) and category 1 (5.0%, n = 3). In terms of language background, the results indicated multilingual background, with category 2 (41.7%, n = 25) being the most common, followed by category 3 (33.3%, n = 20) and category 1 (25.0%, n = 15). The mean language category score was 2.08, with a standard deviation of 0.77.

Table 2: Correlation analysis for income, age, gender, and education revealed weak correlations for all pairs of variables. Income revealed a very weak positive correlation with age (r = 0.095; p = 0.235), weak negative correlations with gender (r = -0.157; p = 0.116) and education (r = -0.200; p = 0.063). Age revealed a weak correlation with gender (r = 0.049; p = 0.355), weak positive correlation with education (r = 0.145; p = 0.135). None of the correlations were statistically significant at a 0.05 level; therefore, it may be inferred that the demographic variables were not strongly correlated with income.

To further establish the predictive capability of age, gender, and education on income, multiple linear regression analysis was performed. The overall regression analysis revealed that the combined predictive capability of age, gender, and education on income was poor, (table 3)with a correlation coefficient (R)

equal to 0.268 and R-squared equal to 0.072; therefore, it may be inferred that merely 7.2% of income variance was explained by the three variables included in the study. Adjusted R-squared revealed a poor predictive capability with a value equal to 0.022; however, the regression analysis was statistically insignificant ($F = 1.45$; $p = 0.239$) table 4 , thereby revealing that the three variables included in the study did not have a strong predictive capability on income.

DISCUSSION

The present study aimed to explore demographic factors and their relationship to income levels among adults presenting with stammering, within a broader conceptual background emphasizing the importance of intrinsic motivation and psychosocial factors related to communication. The demographic study showed a predominantly young to middle-aged sample population with moderate levels of educational attainment and multilingual representation. This is consistent with previous studies indicating the phenomenon of stammering among adults presents across a wide range of ages from diverse educational and multilingual backgrounds; a more holistic approach needs to be taken to understand the phenomenon of stammering (9).The regression findings revealed a small proportion of variance in income was explained by age, gender, and education, but none of the variables were individually significant. This study suggests that demographic factors may not play a crucial role in explaining income levels in adults presenting with stammering. This supports existing literature suggesting income levels in adults presenting with stammering may be influenced by a complex interplay of psychosocial factors, employment, and environmental factors, rather than demographic factors (10). Previous studies have emphasized that adults presenting with stammering may face employment constraints not related to age or education level but may be associated with factors such as increased anxiety related to verbal communication. This may result in a lack of self-efficacy in relation to work environments where verbal interaction is a primary requirement(11).

The absence of significant demographic predictor variables also adds to the larger body of evidence suggesting that socioeconomic outcomes are influenced by multifactorial determinants. In stammering populations, for instance, it was revealed that “perceived communication competence and confidence were found to be central in determining stammering populations' involvement in professional and social domains” (12). While there is a significant and positive relationship between education and income in the general population, the relationship may be influenced by stammering populations in such a way that communication barriers may affect the translation of educational outcomes to occupational success (13). Similarly, while it is known that gender-based income differences are context-dependent, there are also indications that these may be influenced by factors such as workplace accommodations and culture, as opposed to gender per se (14).

The above findings from stammering populations also have significant implications for clinicians and researchers, as they point to the limited ability of demographic variables to fully inform outcomes in populations with stammering. The limited ability of the regression model to explain stammering populations' outcomes also points to the likelihood that “psychosocial variables such as intrinsic motivation, communication confidence, and coping strategies and self-efficacy are more likely to be significant in determining functional and socioeconomic outcomes” (15). Previous studies conducted from a self-determination theory and self-efficacy framework have revealed that “individuals with higher levels of intrinsic motivation and communication confidence are more likely to persist in therapy and pursue opportunities that require verbal communication” (16).

The results of this study should be considered in relation to the limitations of the methodology. In this case, the results cannot be considered causal due to the cross-sectional nature of the research. In addition, the sample size may have been too small to detect significant results. Furthermore, considering income as an outcome variable did not control for other important variables, such as type of work, work experience, severity of stuttering, and history of therapy, which may have influenced the results.

Therefore, future studies should include comprehensive models to account for demographic, psychological, and contextual factors to explain functional outcomes in adults with stammering.
Overall, the results contribute to a growing literature base suggesting that demographic factors offer limited insight into the lived and functional consequences of stammering when examined independently. Future studies should prioritize psychosocial and motivational factors, which have a more direct impact on adult communication and adjustment. This approach will aid in the development of holistic interventions that move beyond speech-based factors to address the complex determinants of confidence, well-being, and adjustment in adults who stutter.

CONCLUSION

Present study found limited support for the relationship between stammering and income variability while controlling for demographic factors. This is consistent with the notion that stammering-related challenges cannot be explained by basic demographic factors but rather by a variety of psychosocial factors. This approach to stammering-related challenges is consistent with the notion that stammering is a complex phenomenon and cannot be explained by basic demographic factors. Rather, stammering-related challenges are likely explained by a variety of psychosocial factors. In summary, the present study suggests the need to move beyond basic demographic factors when exploring stammering-related challenges. Rather, a variety of factors, including motivational factors, may need to be included to effectively explore stammering-related challenges. A holistic approach may be useful for the development of interventions designed to address stammering-related challenges by considering a variety of factors that influence stammering-related challenges among adults who stutter. A holistic approach may be useful for the development of interventions designed to address stammering-related challenges by considering a variety of factors beyond basic speech factors.

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