

Inquiring Life span Impact of Mild and Moderate Hearing Impairment on Diverse Aspects of Development

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ABSTRACT

The current study was particularly designed to endeavor the effects of hearing impairment on the developmental dimensions of persons with hearing impairment. Mild and moderate hearing impairment was assumed to be as independent factor having mild and moderate levels of losses. Multidimensional developmental dimensions of persons with hearing impairment were taken to be as dependent variables such as cognition, physical, moral, social as well as economic developments. The parents as well as relatives of the persons with hearing impairment from Faisalabad, Jhang and Chiniot cities were chosen as the population of the study while sample was comprised of n=208 participants chosen through purposive sampling technique. Effects were stronger among older n=51 with mean ages 69 years (65-74 years) than younger n=72 with mean ages 36 years (20-44 years) and middle aged n=77 with mean ages 58 years (45-64 years) manifesting long lasting effects of independent variable (hearing impairment) on dependent variables (developmental dimensions) of persons with mild and moderate hearing losses. The results of the study revealed monotonically increasing function of developmental dimensions that is affected by the level of disability as in the case of hearing impairment, the effects of disability on the person's developmental dimensions always increase or remain constant and never decrease in any case or in any circumstances at any stage of life.

KEY WORDS

Hearing impairment, cognitive, physical, moral, social, economic

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INTRODUCTION

The focal point of this particular study was an investigation into the developmental variables adversely affected, thereby giving rise to complexities in the normal pattern of development for individuals with hearing impairment. In addition to these ideas, it has also been strongly supported that the deficiencies found in the natural growth and development of hearing-impaired individuals are directly attributed to the effects of their level of disability, which forms a foundation of stress for their parents. Undoubtedly, the effects of hearing impairment tend to increase in childhood and adulthood but are more pronounced in older age. Refer to other drafts by Terry et al. (2023), Su et al. (2020), & Sharma et al. (2021).

When investigating the effects of hearing impairment, researchers universally agree that no other physical handicap can have as many effects on the multifaceted developmental dimensions of people as hearing impairment can (Kohrman et al., 2020; ASHA, 2023). All individuals with hearing impairment manifest distinctive changes in their developmental dimensions, while others do not. The key lies in their willpower, physical strength, mental capability, spiritual beliefs, as well as economic resources to triumph over the adversities of various aspects of life. Hearing loss of any degree is challenging at any age, but it poses unique issues for individuals in their developmental dimensions. This study is an effort to explore such developmental factors affected by an individual's level of disability for the sake of parental and societal awareness. It will provide humble knowledge about the deficiencies and hurdles faced by hearing-impaired individuals (Tsou et al., 2021; Byatt et al., 2019; Merchán et al., 2022).

Although numerous studies have been conducted in the past to investigate the effects of hearing impairment on the developmental dimensions of individuals with hearing impairment, most of them were carried out in Western developed countries. However, in Pakistani society, this issue has not received keen and thorough attention from researchers. There is much to explore regarding the effects of hearing impairment, particularly by considering the perspectives of parents within the context of Pakistani society. Consequently, a few studies have been conducted so far, focusing on the practical aspects of the disabled population in Pakistan, especially those experiencing hearing loss of any degree.

The primary aim of the study was to investigate the effects of hearing impairment on individuals with hearing loss across various dimensions of development. The study's findings will undoubtedly assist parents, siblings, relatives, teachers, trainers, as well as professionals in formulating and implementing effective interventions that can minimize the impact of disability. It is anticipated that this research will open new horizons for future researchers in this field Mumtaz et al. (2023) Khan et al. (2022) Rasheed & Malik (2021).



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Literature Review

360 million people, constituting 5% of the world's population, have disabling hearing loss, with 328 million adults and 32 million individuals. Concerning the prevalence of disability in Pakistan, it ranks seventh among the most densely populated countries globally, with a population of 130.58 million. Within this population, an estimated 15% are disabled, of which 2.49% are individuals with disabilities in Pakistan, specifically 7.40% being the estimated disabled segment of the population affected by deafness.

In addition to the general prevalence rate of the disabled segment of the population, the World Health Organization (WHO) quotes a figure of 10% to 15% for disability, which may make Pakistan seem to have a relatively lower segment of disability. However, this is higher compared to the figures from the National Census Report of 1998 (Federal Bureau of Statistics, 1986). The majority of individuals with hearing impairment or who are hard of hearing live in underdeveloped countries, such as Pakistan, which typically have low or middle-income levels.

In the general perception, around one-third of people aged over 65 years commonly experience disabling hearing loss, with the highest prevalence in South Asia, the Asia Pacific, and sub-Saharan Africa. Even minimal hearing loss places individuals with hearing impairment at developmental risks (Davis et al., 1986).

Hearing impairment can take various forms, such as conductive loss, sensory loss, neural loss, or a combination of these (mixed). The location of the problem (site of lesion) causing hearing loss, whether in the middle or inner ear, can significantly impact a child's development and result in a smaller social network (Kramer et al., 2002). Hearing loss is a complex interplay of psychological, physiological, biological, and social factors that put a child at greater risk than typically developed peers (Cruikshanks et al., 1998).

Commonly noted secondary aspects of hearing loss that adversely affect the growth and development of a child include communication and behavioral problems, low self-esteem, image problems, depression, and introversion (Clark, 1981). Understanding how deaf and hard-of-hearing individuals perceive the world is crucial, considering the varying degrees of disability. Failure to learn sign language or other means of communication can lead to imprecise perceptions of the world, unclear emotional development, deficient social skills, and vague morality (Gammon & Otomo, 1985).

Deafness separates individuals from people, while blindness separates them from things (Mary & Kate, 1983). Hearing loss confines individuals to limited boundaries of interaction, making communication with the outside world challenging. Although hearing loss is an invisible handicapping condition, it has profound effects on the social realm of the world. Hearing loss significantly impacts functional ability, leading to a decline in overall developmental processes in individuals (Lin et al., 2004). The psychological, emotional, and behavioral effects of hearing loss vary from person to person, causing significant and irreparable damage in various facets of a child's development. Mother-toddler interaction plays a crucial role in securing and maintaining normal developmental proceedings in persons with hearing impairment (Lederberg & Mobley, 2008).

Blair (1985) investigated the effects of mild hearing loss on the academic performance of young school-going children and found that hearing loss negatively affects academic development, fostering an unusual pattern of normal living. Hearing loss is associated with feelings of discomfort, uneasiness, embarrassment, fatigue, irritability, tension, stress, anger, avoidance of social activities, withdrawal from social situations, depression, negativities, and danger to personal safety. Tambs (2004) explained that hearing loss gradually leads individuals with mild and moderate hearing impairment toward reduced general health standards, with subjective social and emotional well-being being deprived in the long run, depending on the severity of the loss.

Rabbitt (1991) conducted a study and discovered that mild hearing loss causes apparent failures of memory, ultimately reducing the level of intelligence over time. Hearing loss can lead individuals with hearing loss toward loneliness, social isolation, less alertness to the environment, and impaired memory. McCoy et al. (2005) concluded that the effects of hearing loss result in significant differences in performances between individuals with normal hearing and those with mild to moderate hearing loss. Similarly, individuals with hearing loss have less adaptability skills to learn new tasks, as they experience paranoia, reduced coping skills, reduced overall mental and psychological health, and rejection by others. These issues push individuals with hearing impairment toward an inadequate level of development. Adequate intervention can reduce such disturbances, improving the overall functional level of individuals with hearing impairment (Keller et al., 2015).

Hearing impairment leads to social isolation in elderly individuals over the age of 65, establishing a positive relationship between hearing impairment and passing social life in isolation (Weinstein & Ventry, 1982). The universal truth is that no other physical handicapping condition has such inverse effects on different developmental aspects of people as hearing impairment. Hearing loss nearly doubles with age, showing significant dysfunction in communication and emphasizing the need for audiologists and speech-language pathologists to improve educational, behavioral, and functional performances (Bess et al., 1998).

A child's development is significantly affected by the level of disability, and in the case of hearing impairment, the effects of disability always increase or remain constant, never decreasing at any stage of life. Early identification and intervention can potentially lead individuals with hearing impairment toward better vocabulary, verbal reasoning skills, and

compensatory strategic policies to adapt fundamentally (Moeller, 2000). The controversy surrounding the stability of economic growth often intersects with growth and development in children. While some consider economic stability as part of a child's comprehensive growth and development, others do not.

The effects of hearing impairment become more pronounced among the young (20-40 years) and middle-aged (45-64 years) than among the older (65+ years), leaving denser effects on a child's cognitive development. Loss of high or middle-frequency hearing has almost no impact on the mental health of individuals if low-frequency hearing is not impaired. The strongest observed effect is a change of 0.1 SD in mental health per 10 dB hearing loss.

The effects of hearing impairment become deeper and more significant in childhood and older age, while health-related quality of life in an older population with hearing impairment reports poorer physical health burdened with diseases (Munn et al., 2007). A child's development shows increasing effects of hearing loss at a growing age and does not remain stable, exhibiting fluctuations in the graph of disability effects. The smooth, typical pattern of a child's development under the effect of hearing impairment claims that it tends to stabilize around the age of thirty, while the severity of hearing loss reduces the quality of life at all levels (Dalton et al., 2003).

Statement of the Problem

The problem to be investigated was how hearing impairment taken as determinant contributes to the person's cognitive, physical, social, moral and economic development.

Objective of the Study

Objective of the study was to:

1. investigate the effects of hearing impairment on person's cognitive, physical, social, moral and economic dimensions of development.

Research Questions

Following questions were raised to address the research problem:

1. What is the influence of independent variable (hearing impairment) on dependent variables (developmental dimensions)?
2. What is the significant contribution of independent variable (hearing impairment) on dependent variables (developmental dimensions)?

Research Hypothesis

Keeping in view the above mentioned objectives, following hypotheses were formulated:

- *H₀: There would be increased and significant effect of hearing impairment (disability) among older on their developmental dimensions.
- *H₁: There would be increased and significant effect of hearing impairment (disability) among younger and middle aged on their developmental dimensions.
- **H₀: There would be adverse effects of hearing impairment on social and moral development of hearing impaired persons on their developmental dimensions.
- **H₁: There would be less adverse effects of hearing impairment on cognitive, physical and economic development of hearing impaired persons on their developmental dimensions.

RESEARCH METHODOLOGY AND METHODS

In the current study, a purposive sampling technique was employed because the participants were the parents/relatives of individuals with hearing impairment. The research aimed to explore the effects of hearing impairment on the developmental dimensions of persons with hearing impairment, specifically examining whether there is an increasing and significant effect, decreasing and insignificant effect, or a constant/non-fluctuating effect.

Research Design

The chosen method for this research was both descriptive and quantitative in nature. The quantitative method was selected for its capacity to allow the study's findings to be generalized. This approach facilitated the investigation of the effects of hearing impairment on a child's development from the perspective of parents.

Regarding the descriptive method, it was chosen for its ability to address questions about the current status of the participants within the context of the specific research (Mugenda & Mugenda, 2003). Descriptive research allows researchers to incorporate multiple variables into their study (Borg & Gall, 1996). Its purpose is to organize the study's findings, align the results with interpretations, and then test or validate the findings over the general population (Krathwohl, 1998). Descriptive research is concerned with specific predictions and the narration of facts and characteristics related to individuals, groups, or situations (Kothari, 2009).

Target Population

The present study was included sample comprised of (n=208) parents chosen by using purposive sampling technique.

Sampling Technique

Purposive sampling technique was used to select the sample.

Data Collection Method

A structured questionnaire on five point likert scale was designed for the current study. Close ended questions were formulated for the questionnaire. The questionnaire was divided into two parts namely, demographic variables for collecting general information and research variables for collecting specific information. Later, the questionnaire was provided to each participant of the study in order to collect data from them. The researchers personally approached all the participants of the study and obtained data in their own presence.

Questionnaire Design

(a) Formulation of Questionnaire

A questionnaire on five point likert scale was developed in order to investigate the effects of mild and moderate hearing impairment on developmental dimensions of persons with hearing impairment. In the formulation of the questionnaire, 5 was considered as strongly disagreed, 4 for disagreed, 3 for not sure, 2 for agreed and 1 for strongly agreed. The questionnaire had 40 questions with five developmental dimensions. Both qualitative data and quantitative data were used by the researchers in the current study. The researchers used qualitative data as the agreement of the respondents was based on meanings and expressions in the form of words which was later analyzed through the use of conceptualization. On the other hand, the quantitative data was appropriate and applied by the researchers in order to derive meanings from numbers through the use of statistical analysis of the data. Afterwards, Statistical Package for the Social Sciences (SPSS) gave visible picture of the results on the basis of coded data. Quantitative analysis of data enabled the researchers to interpret the results and hence presented recommendations.

Table 1: Questionnaire distribution according to the category (Demographical variables)

Category	No. of Questions in the Questionnaire
Name	1
Age	1
Gender	1
Class	1
School	1
Profession	1
Experience	1
Level/Grade	1
Qualification	1
Domestic	1
Total Questions	10

Table 2: Questionnaire distribution according to the category (Independent variables)

Category	No. of Questions in the Questionnaire
Mild Hearing Impairment	1
Moderate Hearing Impairment	1
Total Questions	2

Table 3: Questionnaire distribution according to the category (Dependent variables)

Category	No. of Questions in the Questionnaire
Cognitive Development	7
Physical Development	9
Moral Development	6
Social Development	10
Economic Development	8
Total Questions	40

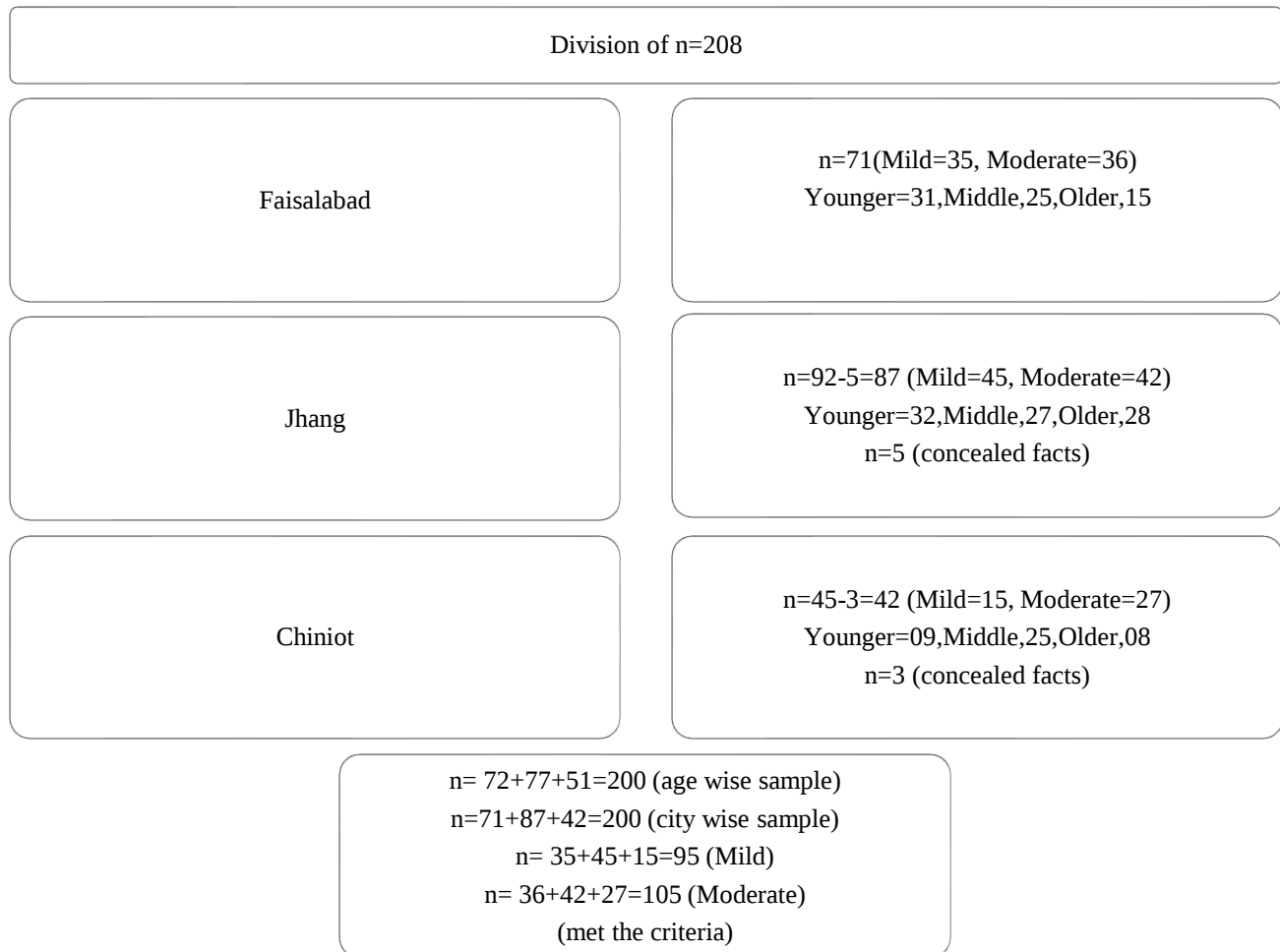
(b) Circulation of Questionnaire

Figure 1. Circulation of Questionnaire

Research Instrument

The researchers developed a structured questionnaire on five point likert scale and used as research instrument for collecting general and specific information from the parents and relatives of the individuals with hearing impairment in order to measure the variables taken as determinants and their effects on the developmental dimensions of persons with hearing impairment while, the measurement of Pearson's correlation, multiple regression analysis, mean values, standard deviations and analysis of variance were used as instruments of research analysis in order to quantify the amount of interrelationship, variation or dispersion of the given set of variables.

Procedure of the Study

The current study was conducted in Faisalabad, Jhang and Chiniot cities in order to accomplish the requirement of the study. In the light of the objective, a questionnaire was developed and questions were asked from the parents. A structured questionnaire was circulated to the sample selected through purposive sampling technique and the general as well as specific data was collected. After that, statistical significance of the data was determined by using statistical description through the Statistical Package for the Social Sciences (SPSS). At the end of the study, hypotheses were tested and results were interpreted.

Data Analysis

The researchers used cronbach alpha co-efficient to find out the inter item consistency reliability of the collected data (Walsh, 1995). Cronbach alpha co-efficient for cognitive development was 0.8465, for physical development was 0.8762, for moral development was 0.7873, for social development was 0.7543 and for economic development was 0.7653. Therefore, it is evident from the analyzed values determined by cronbach alpha co-efficient that internal reliability of each instrument was quite satisfactory. Pearson's correlation (PC), multiple regression analysis (MRA), mean values (MVs), standard deviations

(SDs) and variance of analysis (ANOVA) were applied in order to analyze the effects of hearing impairment on the developmental dimensions of persons with hearing impairment. Multiple regression analysis also helped the researchers to determine the significance level of independent variable on each dependent variable.

RESULTS AND DISCUSSION

The study was set out to explore the effects of mild and moderate hearing impairment on the developmental dimensions of persons with hearing impairment. Pearson's correlation, multiple regression analysis, mean values, standard deviations, standard errors with 95% confidence interval for mean and ANOVA table had been carried out to manifest the effects of independent (IVs) variables on dependent variables (DVs). Results showed long lasting effects of hearing impairment among those who were aged (65-74) or onward.

Pearson's Correlation

Table 4: Pearson's Correlation of Each Dependent Variable (DV) with Each Independent Variable

Independent Variables	Dependent Variables				
	Cognitive Developmental Dimension	Physical Developmental Dimension	Moral Developmental Dimension	Social Developmental Dimension	Economic Developmental Dimension
Mild H.I	0.39	0.38	0.43	0.42	0.35
Moderate H.I	0.41	0.40	0.44	0.45	0.37

Table-4 manifests that all the dependent variables (cognitive development, physical development, moral development, social development and economic development) are positively correlated with independent variable (mild hearing impairment). Likewise, all the dependent variables (cognitive development, physical development, moral development, social development and economic development) are positively correlated with independent variable (moderate hearing impairment). With slight difference on Pearson's correlation for mild level (0.39) & for moderate level (0.41), adverse effects were observed on cognitive development for younger while with slight difference on Pearson's correlation for mild level (0.38, 0.43, 0.42, 0.35) & for moderate level (0.40, 0.44, 0.45, 0.37), adverse effects were observed respectively on physical, moral, social and economic development for older. Such strong and positive correlation between hearing impairment and developmental dimensions exhibit out-turn of disability influencing normal patterns of passing a smooth life.

Multiple Regression Analysis

The strengths of influence that each independent variable had on the dependent variable were determined by multiple regressions co-efficient of the independent variables. The influence of each independent variable was shown in Table-5.

Table 5: Results of Multiple Regression Analysis

Independent Variable	(β)	Standard Error	Significance	R ²
Multiple Regression Analysis of Hearing Impairment (Overall):				
Mild Hearing Impairment (IV ₁)	0.24	0.24	0.002	0.41
Moderate Hearing Impairment (IV ₂)	0.22	0.11	0.021	
Multiple Regression Analysis of Cognitive Development (DV ₁):				
Mild Hearing Impairment (IV ₁)	0.36	0.26	0.025	0.32
Moderate Hearing Impairment (IV ₂)	0.27	0.21	0.008	
Multiple Regression Analysis of Physical Development (DV ₂):				
Mild Hearing Impairment (IV ₁)	0.23	0.27	0.037	0.28
Moderate Hearing Impairment (IV ₂)	0.28	0.17	0.028	
Multiple Regression Analysis of Moral Development (DV ₃):				
Mild Hearing Impairment (IV ₁)	0.47	0.25	0.043	

Moderate Hearing Impairment (IV ₂)	0.33	0.19	0.022	0.39
Multiple Regression Analysis of Social Development (DV4):				
Mild Hearing Impairment (IV ₁)	0.24	0.22	0.039	
Moderate Hearing Impairment (IV ₂)	0.26	0.27	0.021	0.27
Multiple Regression Analysis of Economic Development (DV5):				
Mild Hearing Impairment (IV ₁)	0.48	0.24	0.038	
Moderate Hearing Impairment (IV ₂)	0.37	0.29	0.041	0.37

The results derived from Table-5 reveal that there is positive relationship for mild hearing impairment (Dependent Variable-1) with two independent variables. Same results have also been derived for (DV-2, 3, 4, 5) with two independent variables (IV₁, IV₂). In addition, multiple regression analysis was applied between the independent variables (IDs) and the dependent variable (DVs) as a whole IV₁ and DV ($\beta = 0.24$, $p < 0.05$), IV₂ and DV ($\beta = 0.22$, $p < 0.05$). The values of R^2 obtained from different models range from 27% to 41%.

Statistical Description of Results

Table 6: Mean Values, Standard Deviations and Standard Errors on 95% Confidence Interval for Mean Values with Inferences

Categories		95% Confidence Inferences Interval for Mean						
		N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	
1. Cognitive Developmental Dimension	20-44	72	3.3611	.63932	.10655	3.1448	3.5774	Cognitive Development among younger has adverse effects than older and middle aged as 3.36>3.33>3.26
	45-64	77	3.2609	.77272	.11393	3.0314	3.4903	
	65-74	51	3.3333	.68599	.16169	2.9922	3.6745	
	Total	200	3.3100	.70632	.07063	3.1699	3.4501	
2. Physical Developmental Dimension	20-44	72	3.5278	1.15847	.19308	3.1358	3.9197	Physical Development among older has adverse effects than middle aged and younger as 4.00>3.67>3.52
	45-64	77	3.6739	.99005	.14597	3.3799	3.9679	
	65-74	51	4.0000	.97014	.22866	3.5176	4.4824	
	Total	200	3.6800	1.05294	.10529	3.4711	3.8889	
3. Moral Developmental Dimension	20-44	72	3.0833	.73193	.12199	2.8357	3.3310	Moral Development among older has adverse effects than middle aged and younger 3.27>3.21>3.28
	45-64	77	3.2174	.72765	.10729	3.0013	3.4335	
	65-74	51	3.2778	.57451	.13541	2.9921	3.5635	
	Total	200	3.1800	.70180	.07018	3.0407	3.3193	
4. Social Developmental Dimension	20-44	72	2.9444	.67377	.11230	2.7165	3.1724	Social Development among older has adverse effects than younger and middle aged as 3.16>2.94>2.86
	45-64	77	2.8696	.68666	.10124	2.6657	3.0735	
	65-74	51	3.1667	.70711	.16667	2.8150	3.5183	
	Total	200	2.9500	.68718	.06872	2.8136	3.0864	
5. Economic Developmental Dimension	20-44	72	3.3056	.70991	.11832	3.0654	3.5458	Economic Development among older has adverse effects than younger and middle aged as 3.66>3.30>3.17
	45-64	77	3.1739	.73950	.10903	2.9543	3.3935	
	65-74	51	3.6667	.76696	.18078	3.2853	4.0481	
	Total	200	3.3100	.74799	.07480	3.1616	3.4584	

The results derived from Table-6 clearly show that the effects of hearing impairment are adverse on older rather than younger or middle aged. Such results ultimately accept the null hypothesis (H_0) formulated for the current study and does not

accept its alternative hypothesis (H_1). As far as null hypothesis (H_0) is concerned, above analyzed results do not support it for its acceptance as the adverse effects of hearing impairment can be observed more on physical, cognitive and economic development with mean values of $3.68 > 3.31 = 3.31$ respectively. Therefore, alternative hypothesis of the study (H_1) is accepted and null hypothesis (H_0) is not accepted.

Analysis of Variance

Table 7: Sum of Squares and Mean Squares with Level of Significance (Differences among Group Means) Category

Interpretation on Results Analyzed by ANOVA			
		F	Sig.
1. Cognitive Developmental Dimension	a. The variability of effects between each group with (sum of squares=.215 & mean squares=.107) reflected individual's differences on both the levels of H.I. b. Effects of both the levels of H.I were observed with slight difference on all the independent variables within the younger, middle as well as older. Notably, worse effects with (sum of squares=.49.175 & mean squares .507) were observed in younger on their cognitive development as compare to middle and older.	.21 2	.809
Inference	Total value between and within groups (49.390) support monotonically increasing function between H.I and developmental dimensions.	$F(x) = Prob(X \leq x)$	
2. Physical Developmental Dimension	a. The variability of effects between each group with (sum of squares=2.679 & mean squares=1.340) reflected individual's differences on both the levels of H.I. b. Effects of both the levels of H.I were observed with slight difference on all the independent variables within the younger, middle as well as older. Notably, worse effects with (sum of squares=54.081 & mean squares 1.104) were observed in older on their physical development as compare to younger and middle.	1.2 13	.302
Inference	Total value between and within groups (55.760) support monotonically increasing function between H.I and developmental dimensions.	$F(x) = Prob(X \leq x)$	
3. Moral Developmental Dimension	a. The variability of effects between each group with (sum of squares=.573 & mean squares=.286) reflected individual's differences on both the levels of H.I. b. Effects of both the levels of H.I were observed with slight difference on all the independent variables within the younger, middle as well as older. Notably, with worse effects with (sum of squares=48.187 & mean squares .497) were observed in older on their moral development as compare to younger and middle.	.57 7	.564
Inference	Total value between and within groups (48.760) support monotonically increasing function between H.I and developmental dimensions.	$F(x) = Prob(X \leq x)$	
4. Social Developmental Dimension	a. The variability of effects between each group with (sum of squares=1.144 & mean squares=.572) reflected individual's differences on both the levels of H.I. b. Effects of both the levels of H.I were observed with slight difference on all the independent variables within the younger, middle as well as older. Notably, with worse effects with (sum of squares=45.606 & mean squares .470) were observed in older on their social development as compare to younger and middle.	1.2 16	.301
Inference	Total value between and within groups (46.750) support monotonically increasing function between H.I and developmental dimensions.	$F(x) = Prob(X \leq x)$	
5. Economic Developmental Dimension	a. The variability of effects between each group with (sum of squares=3.142 & mean squares=1.571) reflected individual's differences on both the levels of H.I. b. Effects of both the levels of H.I were observed with slight difference on all the independent variables within the younger, middle as well as older. Notably, with worse effects with (sum of squares=52.248 & mean squares .539) were observed in older on their economic development as compare to younger and middle.	2.9 17	.059
Inference	Total value between and within groups (53.390) support monotonically increasing function between H.I and developmental dimensions.	$F(x) = Prob(X \leq x)$	

Table 8: *Acceptance/Not Acceptance of the Formulated Hypothesis of the Study on the Basis of the Above Analyzed Results*

Formulated Hypotheses	Remarks
*H ₀ : There would be increased and significant effect of hearing impairment (disability) among older on their developmental dimensions.	Accepted
*H ₁ : There would be increased and significant effect of hearing impairment (disability) among younger and middle aged on their developmental dimensions.	Not Accepted
**H ₀ : There would be adverse effects of hearing impairment on social and moral development of hearing impaired persons on their developmental dimensions.	Not Accepted
**H ₁ : There would be less adverse effects of hearing impairment on cognitive, physical and economic development of hearing impaired persons on their developmental dimensions.	Accepted

Findings

The study found that mild hearing impairment had a 45% effect, while moderate hearing impairment had a 55% effect on various developmental dimensions of life in the participants. The effects of hearing impairment on physical, cognitive, economic, social, and moral development were determined to be 23%, 21.5%, 21.5%, 17%, and 16%, respectively. The impact was particularly severe on the physical developmental dimensions of individuals with hearing impairment.

Within different age groups, the older group (65-74) exhibited worse effects compared to the younger group (20-44) and the middle-aged group (45-64) across all developmental dimensions. Specifically, in physical development, the mean value for the older group was 4.00, for moral development, it was 3.27, for social development, it was 3.16, and for economic development, it was 3.66. The cognitive dimension had more pronounced effects on the younger group (20-44) with a mean value of 3.36, compared to the middle-aged group (45-64) with a mean value of 3.26 and the older group (65-74) with a mean value of 3.33.

CONCLUSIONS

Effects on developmental dimensions as analyzed by Statistical Package for the Social Sciences (SPSS) represent monotonically increasing function, is escalated for hearing impaired subjects. Older (65-74) with hearing impairment have a greater effects than younger (20-44) and middle aged (45-64) influencing developmental status and independent living. Undoubtedly, findings of the study revealed long lasting and deep hearted effects of mild/moderate hearing impairment in younger on their cognitive developmental procedure and in older on their physical, moral, and social as well as economic developmental dimensions. Overall, these results suggest interventions to reduce the intensity and to improve the functional as well as developmental status of independent living for persons with hearing impairment.

Limitations and Future Scope

The current study was confined to investigating the effects of mild and moderate hearing impairment on the cognitive, physical, moral, social, and economic developmental dimensions of individuals with hearing impairment only. There could be additional developmental dimensions (such as language, psychological, emotional, and others) that have disability effects up to a profound level. Severe and profound levels of hearing impairment were not included in the study, and the effects of both these levels should be investigated, taking distinctive determinants into account.

Undoubtedly, the prenatal process until birth and childhood (from birth to 19) are crucial stages for both normal and abnormal developmental dimensions. However, the researchers did not explore the effects of hearing impairment on those falling within these developmental categories. Similarly, the researchers did not direct their attention to investigating the effects of hearing impairment on those aged above 74. The study's focus was limited to a specific area or culture, consequently restricting the study's scope. A cross-cultural study might yield different results for researchers. Future opportunities and scope are available for new researchers in the field. The researchers of the current study hope that this research will be of great assistance for further studies in the field.

Recommendations

Following recommendations have been summarized below:

1. Communicational, physical environmental and instructional accommodations should be considered to address the access and learning needs of persons with hearing impairment.
2. The modifications of curricular and evaluation should be dispensed.
3. Supplemental instructions, sign language instructions, transitional services, counseling, family support and financial assistance should also be granted.

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