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## Treatment Efficacy of Total Communication in Hearing Impaired Children

Fahad Masood<sup>1</sup>, Dr. Suryakala Perumal Chandran<sup>2</sup>, Amreen Raheem<sup>3</sup>, Muhammed Ahmed<sup>4</sup>, Saffa Nawaz<sup>5</sup>, Amna Rashid<sup>6</sup>, Maira Saleem<sup>7</sup>, Dr M.Sikander Ghayas khan<sup>8</sup>, Wajeeha Sahar<sup>9</sup>

<sup>1</sup>Senior lecturer, PhD scholar, University of Lahore, Pakistan

[fahad.masood@dhpt.uol.edu.pk](mailto:fahad.masood@dhpt.uol.edu.pk)

<sup>2</sup>Assistant professor, Lincoln university college Malaysia [suriyakala@lincoln.edu.my](mailto:suriyakala@lincoln.edu.my)

<sup>3</sup>Lecturer, Department of Rehabilitation sciences, University of Lahore, Pakistan

[Amreen.raheem@drs.uol.edu.pk](mailto:Amreen.raheem@drs.uol.edu.pk)

<sup>4</sup>Assistant professor, Department of Rehabilitation sciences, University of Lahore, Pakistan

[muhammed.ahmed@dhpt.uol.edu.pk](mailto:muhammed.ahmed@dhpt.uol.edu.pk)

<sup>5</sup>Lecturer Department of Rehabilitation sciences, University of Lahore, Pakistan

[saffa.nawa@drs.uol.edu.pk](mailto:saffa.nawa@drs.uol.edu.pk)

<sup>6</sup>Assistant professor, Department of Rehabilitation sciences, University of Lahore,

[Amna.rashid@dhpt.uol.edu.pk](mailto:Amna.rashid@dhpt.uol.edu.pk)

<sup>7</sup>University Education, [Mairaqureshi102@gmail.com](mailto:Mairaqureshi102@gmail.com)

<sup>8</sup>Professor, Department of Rehabilitation sciences, University of Lahore

[sikander.ghayas@dhpt.uol.edu.pk](mailto:sikander.ghayas@dhpt.uol.edu.pk)

<sup>9</sup>PHD Scholar, Lecturer, The University of Lahore, [wajeeha.sahar@uipt.uol.edu.pk](mailto:wajeeha.sahar@uipt.uol.edu.pk)

**Corresponding Author** : Dr M.Sikander Ghayas khan, Professor, Department of Rehabilitation sciences, University of Lahore, [sikander.ghayas@dhpt.uol.edu.pk](mailto:sikander.ghayas@dhpt.uol.edu.pk)

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**Abstract:**

This study analyses the treatment efficacy of the total communication approach in addressing hearing impairment. Total communication, an inclusive method integrating various communication modes such as sign language, speech, visual aids, and written communication, aims to enhance the overall communication and learning experience for individuals with hearing impairments. In this review we examine the literature review that has been done from 2015 to 2023 nationally and internationally. A meticulous search was executed across five reputable databases: Science Direct, Web of Science, Google Scholar, PubMed, and Medline.

The findings that have been analyzed in this study points that this holistic approach not only supports academic advancements but also nurtures social integration and personalized learning experiences.

**Key words:** total communication, hearing impairment, treatment efficacy, total communication approach

**Introduction:**

Hearing impairment, a multifaceted condition encompassing a range of auditory challenges, holds profound implications for individuals across diverse age groups and backgrounds (1). In the realm of education, the Individuals with Disabilities Education Act defines hearing impairment as any deviation in auditory function, whether enduring or fluctuating, that detrimentally affects a child's educational performance (2). Hearing impairment can stem from a variety of factors, each with its own unique impact on auditory function. One of the most prevalent causes is age-related hearing loss, known as presbycusis, which gradually diminishes hearing sensitivity over time. Prolonged exposure to loud noises, whether from industrial machinery, recreational activities like concerts, or everyday environments, can also damage the delicate structures of the inner ear, leading to hearing impairment. Additionally, genetic predispositions can play a significant role, with certain hereditary conditions affecting auditory function from birth or developing later in life. Infections such as meningitis or chronic ear infections, head trauma, and ototoxic medications further contribute to hearing loss by damaging the auditory system. Environmental factors, including exposure to chemicals or smoking, and lifestyle choices such as poor nutrition, also have implications for hearing health. Additionally, cardiovascular conditions and recreational activities involving rapid pressure changes can impact auditory function. Hearing impairment, a condition affecting millions worldwide, presents a unique set of challenges that extend beyond the audiological realm. The diversity in its manifestations, ranging from mild to profound, calls for comprehensive approaches that go beyond traditional interventions. One such holistic approach that has gained prominence in recent years is Total Communication (3).

Total Communication is a philosophy that acknowledges the multifaceted nature of hearing impairment, recognizing that no single method fits all. It encapsulates a dynamic blend of communication strategies, embracing both oral and manual modalities to facilitate effective interaction and comprehension (4). In the context of hearing impairment, it goes beyond the conventional dichotomy of sign language versus spoken language, striving to create an inclusive environment that caters to the diverse needs and preferences of individuals with varying degrees of hearing loss (5). The spectrum encompasses individuals with mild to profound hearing loss, each facing unique challenges in communication and social interaction. Total Communication recognizes and accommodates this diversity by incorporating a range of tools, including but not limited to sign language, lip-reading, amplification devices, and visual aids (6). By doing so, it aims to empower individuals to navigate the intricacies of communication in a world that often takes the sense of hearing for granted. Historically, debates have centered on the choice between oralism, emphasizing spoken language, and manualism, advocating for sign language (7). Total Communication transcends this dichotomy, promoting an inclusive environment where individuals have the freedom to utilize a combination of communication methods that best suit their needs (8). Whether through spoken language, sign language, gestures, or written communication, the goal is to ensure that every individual has access to effective and meaningful interaction. In the realm of education, Total Communication holds significant promise (9). It recognizes the importance of tailoring teaching methods to the individual, considering factors such as age of onset, residual hearing, and personal preferences (10). By fostering an environment where educators, parents, and peers are versed in diverse communication modes, Total Communication seeks to create an inclusive learning atmosphere that maximizes the potential for academic success and social integration (11). The advent of technology has further enriched the Total Communication landscape. Cochlear implants, hearing aids, speech-to-text applications, and video conferencing tools contribute to a comprehensive toolkit that enhances communication accessibility (12). This integration of technology aligns with the philosophy of Total Communication, leveraging innovation to bridge communication gaps and enhance the overall quality of life for individuals with hearing impairment (13).

This exploration into Total Communication sets the stage for a deeper examination of its components, implementation in various contexts, and the potential it holds for fostering inclusivity in education, professional settings, and everyday interactions.

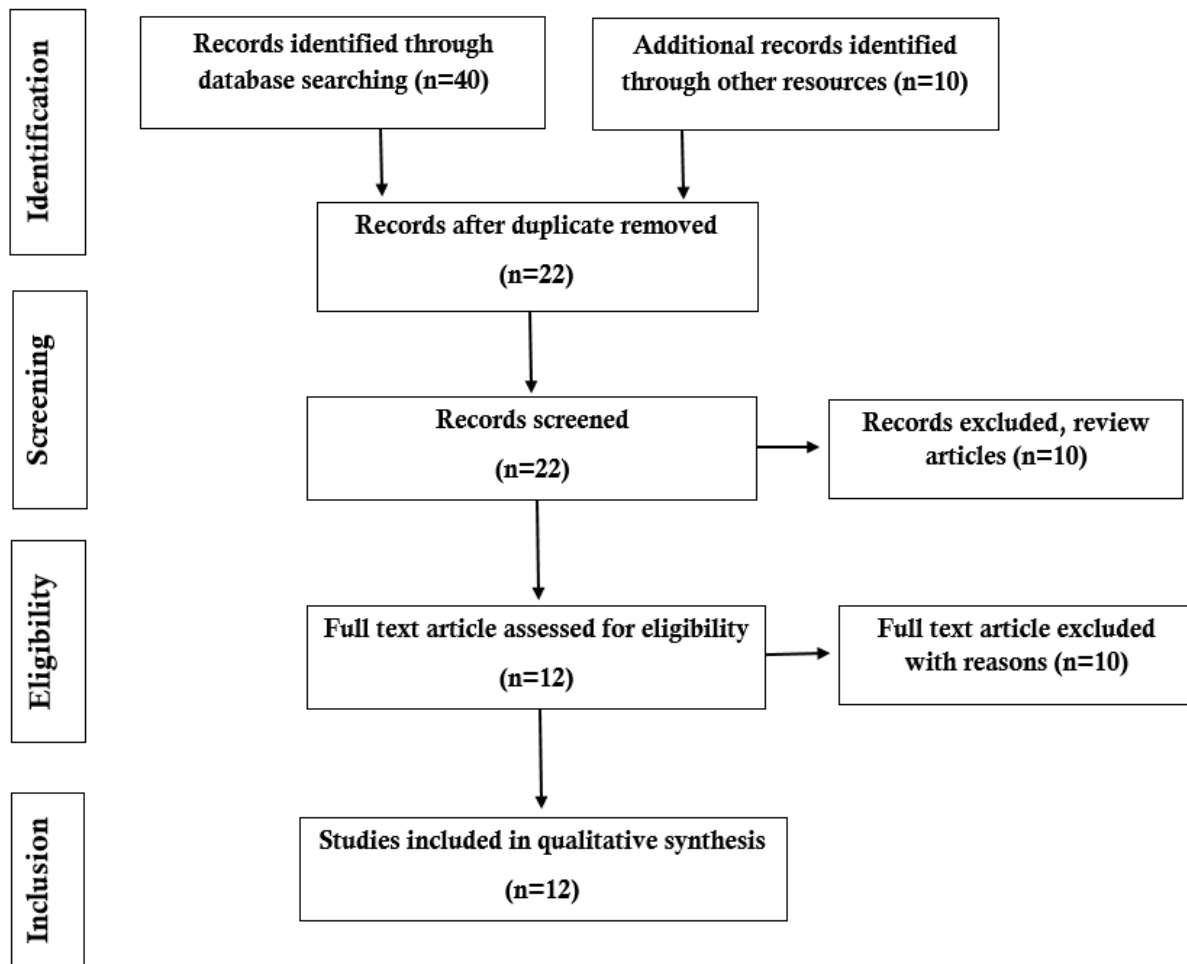
## **Methodology:**

This research is a review study. A meticulous search was executed across five reputable databases: Science Direct, Web of Science, Google Scholar, PubMed, and Medline. The search strategy encompassed a combination of keywords, including "total communication," "hearing impairment," "total communication approach," and "treatment efficacy," or "speech perception," or "auditory perception". This systematic review exclusively incorporated original studies involving human participants aged 2 months to 17 years. Various study designs, such as descriptive, longitudinal and qualitative studies were included. The focus was on examining the impact of Total

communication (TC) on receptive and expressive language development, auditory/speech perception, and mainstreaming. Exclusion criteria encompassed studies addressing rehabilitative approaches for communication improvement in children with hearing impairment (HI) other than total communication. Additionally, commentaries, opinion articles, reviews, and short letters were excluded from the search process.

The initial exploration generated a collection of 40 articles. The PRISMA flow chart, illustrated in Figure 1 outlines the systematic process employed in this investigation.

**Figure 1:** Flow chart describing the selection procedure



### Results:

Sr. no	Author	Focus of Research	Results	Conclusion
1.	Kusumastuti et al.	Total communication as the basis for the	The results show that the concept of seminars	The findings shows that total communication is very

	(2023) (10)	learning of deaf students	and workshops in training is very effective in improving the ability of teachers to compile learning programs for deaf students that are tailored to their communication characteristics.	effective in improving the learning ability of deaf students.
2.	Ullah S et al. (2022) (14)	Effect of Total Communication Technique on Students with Hearing Impairments	The results shows that the total communication technique when applied for teaching English to the hearing-impaired children in an inclusive education classroom would affect the level of knowledge and understanding of the students with hearing impairment.	The intervention in the subject suggests that the utilization of the total communication strategy in teaching hearing-impaired children had a noteworthy impact on students' learning.
3.	Nyambere et al. (2022) (15)	The Influence of Manual Communication on Academic Performance of Learners with Hearing Impairment	The result showed that 73.3% of the variations in academic performance of hearing-impaired learners were attributed to independent variables. The study also revealed that TC was mostly used as the instructional mode. However, the results further showed that the availability of Kenyan Sign Language made most significant contribution in the performance of learners with HI.	The research indicated that Total Communication (TC) was predominantly employed as the instructional approach and made the most substantial contribution to the academic performance of students with hearing impairment.

4.	Arrozy et al. (2021) (16)	Impact of total communication in hearing impairment	The results show that there are seven communication modes that were used. Those are lip-reading, sign language, images, writing, Indonesian Alphabetic Symbol System (IAS), finger spelling, and speech. Those modes are combined depending on the needs of the users (both English teacher and HI students).	Total communication is flexible and effective approach for communication. Additionally, TC provides opportunities for HI students to develop skills in speaking, writing, and reading.
5.	Mullyana et al. (2020) (12)	The Communication Ability With Total Communication Method of Hearing Impairment Children	The ability of the child's communication from this research is dominated by cues, verbal and writing through up to three words with gesture and expression. The ability level of deaf children to use total communication can be demonstrated with various aspects of SPEAKING.	In this study, the child's communication ability is primarily characterized by cues, verbalization, and written expression, typically involving up to three words, accompanied by gestures and facial expressions
6.	Kholis et al. (2020) (17)	Total Communication Learning Model to Support the Effectiveness of Social Interaction for Deaf Children	The results showed that the total communication learning model can support deaf children understand language better, so they are able to interact socially and adapt to the times. Even, they can use	The findings indicated that the total communication learning model effectively aids deaf children in comprehending language, enabling them to engage socially and adapt to contemporary circumstances more proficiently.

			applications and features on smartphone as communication media.	
7.	Purwowibowo et al. (2019) (7)	Total communication increase language capacity for deaf children	The research revealed that total communication learning model through the use of pictures, writings, and readings increases and enhances the language skill of deaf children. It was also discovered that the model helped these children to communicate verbally with other people in their community	In conclusion, the study demonstrated that deaf children can effectively communicate with others without solely depending on sign language.
8.	Fobi et al. (2019)(18)	Communication approaches for educating hard of hearing	The results showed that sign communication approach and other strategies which the authors believe will aid Ghana achieve the Sustainable Development Goal 4 for all DHH individuals.	Due to the lack of consistent instruction using a specific approach for Deaf and Hard of Hearing (DHH) children, their academic accomplishments have been significantly restricted.
9.	Dzikri et al. (2019) (19)	Development of Interactive Multimedia Using Total Communication Approach	Based on the results the interactive multimedia application of sign Language introduction to the deaf child of Grade 1 special elementary school can help the child to add vocabulary. The result is the aspect of ease of the users 88.3%, aspect of	It is concluded that introduction of an interactive multimedia application for sign language to students in a special school can contribute to the expansion of the child's vocabulary.

			view of 82.5% and education aspect 82.5% with the interval category is very good.	
10.	MED et al. (2017) (20)	Perspective regarding Total Communication Technique in Teaching Students with Hearing Impairment	Findings of the study showed that teachers perceived the use of Total communication as a technique that would improve the academic progress of SHI in schools. But most of the teachers found the technique difficult to use, they need time and training to apply the technique.	Utilizing total communication is a valuable technique as it aids learners in understanding the content being taught, retaining what is learned, and staying engaged with the ongoing activities
11.	Johnson et al. (2017) (21)	Effects of Bilingual Education and Total Communication in hearing impaired students	The results showed that total communication in general education best serves students who are deaf and hard of hearing in the United States.	It was promptly observed that one cannot solely examine setting, communication, or approach in isolation; these elements are closely intertwined and must be considered collectively.
12.	Wahyuningty as et al. (2015) (11)	The use of total communication to teach English vocabulary to deaf students	The results show that the students felt helpful by the use of TC. It can be also concluded that the classroom's mean score which is 75 meets the minimum standard; while for the individual mean score, there is only one student who fulfilled the standard by obtaining 100 and there are three students who could not meet the	The findings indicate that students perceived the use of TC as beneficial. Additionally, it can be inferred that the average score, which stands at 75, meets the standard.



			standard since they only scored 66.67.	
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## Discussion:

This review article study findings from 12 articles which involves use of Total communication as a treatment approach for children with hearing impairment. The total communication learning model primarily relies on teaching methods rather than the use of hearing aids for children with severely limited hearing abilities. These children require more intensive training to imitate sounds accurately. It is crucial to emphasize that being hearing impaired does not imply an inability to speak rather, the challenge lies in the clarity of their words, making them less easily understood by others. The total communication approach incorporates all available methods of communication to ensure that children's perception and understanding are not confined to a single mode. By embracing diverse communication methods, children can receive stimuli, information, and materials without being restricted to any one communication ability. In line with the total communication concept, which advocates for the use of multiple communication modalities such as reading, speaking, gesturing, visual images, and pantomime, this approach promotes interaction and communication through a variety of means. Utilizing a range of communication methods enhances the smoothness of interaction and communication processes. Almost all the researches that are reviewed shows that total communication is an effective approach in hearing impaired children although there are various factors which influence total communication approach include teacher training and competence as the proficiency of educators in employing diverse communication methods is crucial. Teachers trained in total communication techniques can effectively integrate various modes such as sign language, speech, visual aids, and written communication to cater to the diverse needs of children. Another important factor is parental involvement and support. The involvement and support of parents or guardians are vital components. Collaboration between educators and parents ensures consistency in communication strategies both at school and home, enhancing the overall effectiveness of total communication for the student. In the digital age, Total Communication has evolved to incorporate technological advancements.

## Conclusion:

It is concluded that the impact of Total Communication on hearing-impaired students is multifaceted and extends beyond the academic realm. This holistic approach not only supports academic advancements but also nurtures social integration and personalized learning experiences.

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