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Educational and social empowerment interventions for people with cochlear implants

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Abstract: *Introduction:* Subsumed to the numerous conditions that can weigh on human development, the paper highlights the essential role played by both the family and society in promoting the school and social inclusion of people with hearing-verbal impairments. In the reference, the knowledge of the aspects related to the educational and social empowerment interventions of people with cochlear implants can contribute to the development of public and social policies by allocating the necessary resources to support the needs of this category of populations, respectively to maximize the chances of integration into society. *Objectives:* The purpose of the research is to evaluate the impact of educational and social empowerment interventions on people with cochlear implants, with a focus on the development of communication skills, social integration and educational success, in order to identify and recommend effective strategies to improve services for this category of populations. *Hypotheses:* In formulating the hypotheses, we brought into discussion the role of early intervention in maximizing the chances of social and educational integration of the cochlear implanted hearing-impaired person. At the same time, we analyzed the impact that the cochlear implant has on the quality of life of the beneficiaries, respectively the support of the family in the process of auditory-verbal habilitation. *Methodology:* As part of the scientific research activity, we conducted a "Questionnaire for parents of children with cochlear implants", which was applied online, through the "Google Forms" application, to 52 people. The analysis and interpretation of the results were performed using the IBM Statistics SPSS application. *Results:* The objectives of the research have been achieved and the hypotheses formulated have been confirmed, early intervention can have a major impact on the quality of life of cochlear implant recipients. *Discussions:* Regardless of the existing resources at the level of society, maximizing the chances of educational and social integration of cochlear implant recipients cannot be achieved in the absence of family support. *Conclusions:* In order to eliminate the barriers that may arise in providing quality educational-compensatory services, it is necessary that, in support of the effort made by the state to ensure the integration, respectively the educational and social inclusion of the child with cochlear implant, parents play an active role in informing the school environment in order to make teachers and students in the classroom aware of the role that each of us has in the empowerment process auditory-verbal of a colleague or friend with hearing impairment.

Keywords.: *hearing impairment, cochlear implant, family, habilitation, inclusion.*



1. Introduction

Subsumed to the numerous conditions that can weigh on human development, the paper highlights the essential role played by both the family and society in promoting the school and social inclusion of people with hearing and verbal impairments. Thus, the knowledge of the aspects related to the educational and social empowerment interventions of people with cochlear implants can contribute to the development of public and social policies by allocating the necessary resources to support the needs of this category of populations, respectively to maximize the chances of integration into society.

2. Particularities of psycho-social development of people with hearing disabilities

Hearing loss and impairment can be caused by ear disorders (external, medium, internal) or by disorders of the nerve tract or auditory cortex.

Thus, after the onset of the deficiency, we can have hereditary deficiencies (caused by chromosomal dysfunctions or genetic transmission) and acquired deficiencies, respectively prenatal, perinatal (neonatal) and postnatal deficiencies (Verza, E, Verza, F.E., 2011, p. 296).

Depending on the laterality, the deficiencies can be unilateral or bilateral. In most cases, the ear with normal hearing makes up for the deafness of the other, but it does not always ensure a complete and faithful reception of sounds and messages coming from the environment. Thus, in the case of a unilateral hearing impairment, the orientation ability of the person concerned and the correct understanding of messages can usually be affected.

Recent studies reveal that a significant percentage of children between the ages of 7 and 18 experience a decrease in hearing capacity in different ways and degrees, a situation mainly determined by wearing headphones and listening at a high volume.

The detection of hearing disorders and early intervention in such cases are essential conditions for a subsequent good evolution of the child's health, given the need to prevent the appearance of muteness, respectively the lack of language acquisition. The latter is the most important means of communication that contributes to human development, language being an operational tool of thought.

In other words, hearing impairment is not serious due to the type, form of manifestation or degree of hearing loss, the danger situation being represented especially by the negative effects deriving from the impairment of the process of reception and perception of sounds.

Thus, in the conditions of dysfunctions in the perception, discrimination and understanding of sounds coming from the environment, language formation and normal speech development suffer and essentially affect the thinking of the child with hearing impairment.

Also, the more severe auditory dysfunctions are, the more they will influence the normal appearance and development of speech, which is evidenced by the increased frequency of speech disorders in children with different degrees of hearing loss. In addition, due to the absence of communication through language, a deaf child is more disadvantaged than a blind child, in terms of structuring cognitive operations, but in both cases, there are essential changes in the processes of reception, analysis and response for the variety of stimuli in the environment. Through the intervention of the compensation processes, major transformations occur in the structuring of the perceptual dominances and data processing at the brain level, which confer certain particularities



to the way of manifesting their psychic life both qualitatively and quantitatively (Gherguț, 2013, p. 174).

2.1. Mental development in people with hearing impairment

The early stages of studies on hearing impairment are represented by the research carried out by Pinter and Patterson. Those in question applied certain intelligence tests to hearing and deaf people, managing to obtain (1923) a first individual battery of nonverbal testing of the intelligence of people with hearing loss.

Pinter, considered the "father of the psychology of the deaf", found that the deaf were mentally retarded by two years by the hearing and by three years educationally retarded by them. The difference of two years was due to the deficiency that caused the deafness and affected the central nervous system, a context that determined the prejudice "deaf and mentally disabled". The three years of educational delay were due to the non-development of verbal language and the impossibility of accessing information, obviously, also because of hearing loss (Verza, E, Verza, F.E., 2011, p. 330).

Myklebust (1964) showed that in the case of children with hearing impairment it cannot be said that all of them are retarded, but their results must be related to each subject and its characteristics. The performances in the manual and visual tests are the same as in the hearing. The studies carried out have shown that the deaf group possesses a level of intelligence comparable to that of the hearing people, but an educational retardation has been revealed.

Myklebust and Maisonnay concluded that, as a rule, the result of these intellectual delays is due to the educational methods used in education or to the research methods applied to the hearing impaired.

Some researchers have pointed out that certain psychological traits are more pronounced in the situation where there are differences between the child's level of expectation and performance.

Thus, if motivational and adaptation factors intervene in the child with hearing impairment, they implicitly determine changes in the mental structure of the hearing impaired.

Obviously, the adjustment problems of the deaf are much greater and more challenging than those existing in the case of people with natural hearing.

Under these conditions, in the specialized literature it is appreciated, in unison, that the period of time elapsed from the moment of the onset of deafness until the start of the auditory-verbal habilitation process overwhelmingly influences the appearance and manifestation of the elements of specificity possible to be identified in the mental development of the hearing impaired.

Thus, the later the intervention is performed, the more the chances of syncope in the normal mental development of the hearing impaired increase.

From this perspective, if one does not act on the line of carrying out a specialized intervention and early in relation to the moment of the onset of deafness, in the dynamic processes of the psychic development of the hearing impaired, certain specific traits and behaviors will be highlighted that will act as a label on the hearing impaired person.

Obtaining such a psychological model is not desirable, since the hearing-impaired person becomes more dependent and anxious than they would have been under normal conditions, if they did not have this disability.



At the same time, self-esteem will be affected, the hearing-impaired person will set unrealistic goals, will be inclined to depression and the manifestation of hostile attitudes and behaviors, in the situation where he will not benefit from an early intervention in the empowerment process.

2.2. Development of communication and relationships of people with hearing impairment in the hearing society

In the absence of an optimal and timely intervention through early detection, immediate prosthesis and specialized auditory-verbal habilitation therapy, profound hearing loss is likely to affect the quality of life, as the person's ability to communicate and interact in different social and educational environments is significantly diminished.

Under these conditions, an important differentiation must be made between the categories of people with profound hearing impairment in relation to their prosthesis or non-prosthesis.

On the one hand, the category of people with profound hearing loss who are not prosthetic have significant difficulties in perceiving sounds and, implicitly, speech. These people face major syncope in understanding spoken speech, respectively in interacting and participating in conversations carried out in a noisy or crowded environment.

The impairment of the ability to communicate and relate in the hearing society is likely to lead to isolation and social self-isolation, by manifesting limits and restrictions of participation in the daily activities that a person without disabilities usually performs.

Such a circumstance determines, consequently, a decrease in the self-esteem of the person with profound hearing impairment, respectively significant difficulties in achieving interpersonal relationships.

At the same time, people with profound hearing loss who are not prosthetic will experience major syncope in accessing auditory information, namely sound alarms, public announcements or oral instructions, which may affect safety and the degree of autonomy, by increasing the level of dependence on peers, in different situations of daily life (Verza, E, Verza, F.E., 2011, p. 288).

On the other hand, people with profound hearing impairment who benefit from hearing aids or cochlear implants can achieve a significantly improved hearing capacity, essential in maximizing the results obtained in the auditory-verbal empowerment process.

Hearing devices have the role of amplifying sounds, and the cochlear implant can facilitate their complete perception and speech, a context in which people with profound hearing impairment have the opportunity to participate much more effectively in conversations, respectively to interact in different social and educational environments.

Accessing the technical devices developed to compensate for hearing impairment is the necessary basis for optimizing the results that can be obtained through speech therapy and other specialized habilitation interventions, as those with hearing aids learn to use their hearing equipment efficiently, respectively to improve their communication capacity and social interaction skills.

Therefore, the consequences of profound hearing loss are the same for any individual, but people with hearing aids benefit, compared to those without hearing aids, from a significant improvement in quality of life, respectively from a level of communication and social interaction similar or very close to that of hearing people.



The limitations of hearing devices or cochlear implants are those specific to any technical equipment, but all of them are minimal in relation to the benefit obtained because of hearing compensation and verbal empowerment of the person diagnosed with profound hearing impairment.

3. Educational-compensatory services for the educational and social inclusion / integration of people with cochlear implants

3.1. Integration and inclusive education

"The purpose of inclusive education is not only to educate all those who learn in regular schools, but also to keep them in the family and community. Moreover, through the even broader vision of education for all, learning is seen as a holistic concept – something that takes place in the family and community, but also in schools and other education centers. That is why the participation of the family and the community is essential." (UNESCO, 2001, p. 81, apud Vrăsmaș, 2014, p. 310)

Integration represents the assimilation of a student into mainstream school, where he adapts or not, while the educational institution does not know substantial changes, only some aspects being added to meet the needs of children with special educational needs.

In contrast, inclusion emphasizes the need for the education system and educational institutions to change and adapt to meet the needs of students. (Ainscow, 1998, Kisanji, 1999, apud Vrânceanu, Pelivan, p. 34)

Inclusive education is a process of continuous improvement of the school to support the participation of all students in the educational act.

3.2. Cochlear implant, a medical device for compensating for hearing impairment

The cochlear implant is a medical device that patients diagnosed with severe and profound hearing loss can access if conventional hearing aids do not provide them with the expected benefit, the limits of these prosthetic equipment being known only to amplify the sound, but the cochlea is not able to process it.

Basically, the cochlear implant replaces the non-functional part of the cochlea and ensures the transmission of signals captured from the environment directly to the auditory nerve.

In cochlear implantation surgery, a bionic electrode is inserted into the cochlea and the implant becomes functional through electrical stimulation.

A cochlear implant system has two main components, internal and external.

The internal component refers to the implant itself, surgically placed under the scalp, consisting of a technical device that integrates a series of electronic subcomponents (mini-processor), an electrode array and a reference electrode.

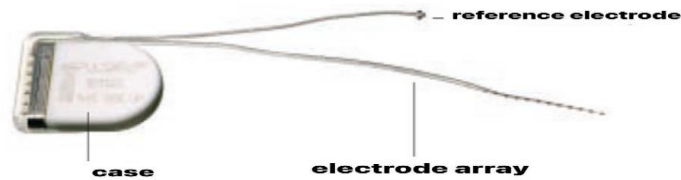


Fig. 1 - Internal component of the cochlear implant (https://ascultaviata.ro/wp-content/uploads/2015/06/Sa_intelegem_implantul_cohlear.pdf)

The external component is represented by the voice sound processor, located behind-the-ear, a technical device consisting of a central unit, power compartment, antenna and connection cable.



Fig. 2 - External component of the cochlear implant (https://ascultaviata.ro/wp-content/uploads/2015/06/Sa_intelegem_implantul_cohlear.pdf)

4. Research methodology

4.1. Research objectives and assumptions

The general objective of the research is to evaluate the impact of educational and social empowerment interventions on people with cochlear implants. At the same time, the paper analyzes the essential role played by both the family and society in promoting the school and social inclusion of children with hearing impairments implanted with cochlear implants, so that they can live a life as close as possible to that of people with normal hearing.

Below we present the proposed hypotheses.

Hypothesis 1: It is presumed that early intervention (diagnosis, prosthesis, implantation, auditory-verbal habilitation) is appreciated as essential for maximizing the chances of social and educational integration of the cochlear implanted hearing-impaired person, regardless of the respondents' studies.

Hypothesis 2: It is presumed that cochlear implantation is perceived as having a positive impact on the quality of life of the beneficiaries by increasing self-esteem and developing interpersonal relationships, regardless of the gender of the respondents.



Hypothesis 3: It is assumed that the family has a major role in the process of auditory-verbal empowerment to facilitate the school and social integration of the child with cochlear implant, regardless of the respondents' background.

4.2. Study participants

The research was carried out using the self-report questionnaire method. The questionnaire used was submitted online and the subjects completed them in the absence of an examiner. The data provided by the study subjects were provided voluntarily. Participants have given their consent to the processing of their personal data for research purposes.

The study involved 52 people from the families of children with cochlear implants in Romania, of which 16 men and 36 women. The origin of the participants was: 11 from rural areas and 41 people from urban areas, aged between 18 and 56 years old, and in terms of level of education, 14 are with a level of secondary education and 38 with a level of higher education.

4.3. Analysis and verification of hypotheses

A. In the first hypothesis, we assumed that early intervention (diagnosis, prosthesis, implant, auditory-verbal habilitation) is appreciated as essential for maximizing the chances of social and educational integration of the cochlear implanted hearing impairment, regardless of the respondents' studies.

To verify this hypothesis, the questionnaire included the following questions:

A.1. Do you think that establishing an early diagnosis of hearing loss contributes to the rapid initiation of the necessary measures to recover hearing impairment and, consequently, increases the chances of educational and social integration?

Table 1: Calculation of the mean and standard deviation according to respondents' studies

Group Statistics					
	Education	N	Mean	Std. Deviation	Std. Error Mean
Do you think that establishing an early diagnosis of hearing loss contributes to the rapid initiation of the necessary measures for the recovery of hearing impairment and, consequently, increases the chances of educational and social integration?	secondary	14	4,86	,535	,143
	higher	38	4,87	,343	,056

Interpretation Statistical Group: The increase in the chances of educational and social integration by establishing an early diagnosis of hearing loss is on average 4.86 for respondents with secondary education compared to an average of 4.87 for those with higher education.



Table 2: Calculation of the T-test for independent samples

		Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
								Lower	Upper		
Do you think that establishing an early diagnosis of hearing loss contributes to the rapid initiation of the necessary measures for the recovery of hearing impairment and, consequently, increases the chances of educational and social integration?	Equal variances assumed	,136	,714	-,090	50	,929	-,011	,125	-,263	,241	
	Equal variances not assumed			-,074	17,095	,942	-,011	,153	-,335	,312	

Interpretation Table 2: From the analysis of the significance threshold, we observe $p=0.929$ greater than 0.05, which means that there is no significant difference between people with secondary education and those with higher education in terms of increasing the chances of educational and social integration by establishing an early diagnosis of hearing loss.

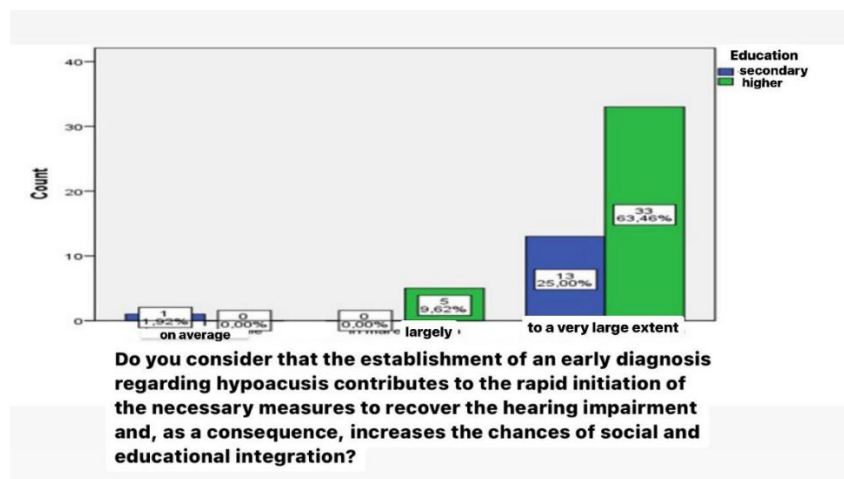


Figure 1: Graphic representation of the answers received by the two groups of participants with secondary and higher education to the question "Do you think that establishing an early diagnosis of hearing loss contributes to the rapid initiation of the necessary measures for the recovery of hearing impairment and, consequently, increases the chances of educational and social integration?".



From the analysis of Figure 1, we can see that 63.46% of respondents with higher education appreciate that an early diagnosis of hearing loss greatly increases the chances of educational and social integration, while 9.62% largely value this item.

Regarding respondents with secondary education, 25% consider that an early diagnosis of hearing loss greatly increases the chances of educational and social integration, while only 1.92% consider the item under analysis to be average.

A.2. To what extent is cochlear implant surgery at an early age decisive for the success of the auditory-verbal habilitation process?

Table 3: Calculation of the mean and standard deviation according to respondents' studies

Group Statistics					
	Education	N	Mean	Std. Deviation	Std. Error Mean
To what extent is cochlear implant surgery at an early age decisive for the success of the auditory-verbal rehabilitation process?	secondary	14	4,86	,363	,097
	higher	38	4,76	,490	,079

Interpretation Statistical Group: The success of the auditory-verbal habilitation process by performing cochlear implant surgery at an early age is on average 4.86 for respondents with secondary education compared to an average of 4.76 for respondents with higher education.

Table 4: Calculation of the T-test for independent samples

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
To what extent is cochlear implant surgery at an early age decisive for the success of the auditory-verbal rehabilitation process?	Equal variances assumed	1,924	,172	,653	50	,516	,094	,144	-,195	,383
	Equal variances not assumed			,749	31,308	,459	,094	,125	-,162	,350

Interpretation Table 4: From the analysis of the significance threshold, we observe $p=0.516$ greater than 0.05, which means that there is no significant difference between people with secondary education and those with higher education regarding the fact that performing cochlear implant surgery at an early age is decisive for the success of the auditory-verbal habilitation process.

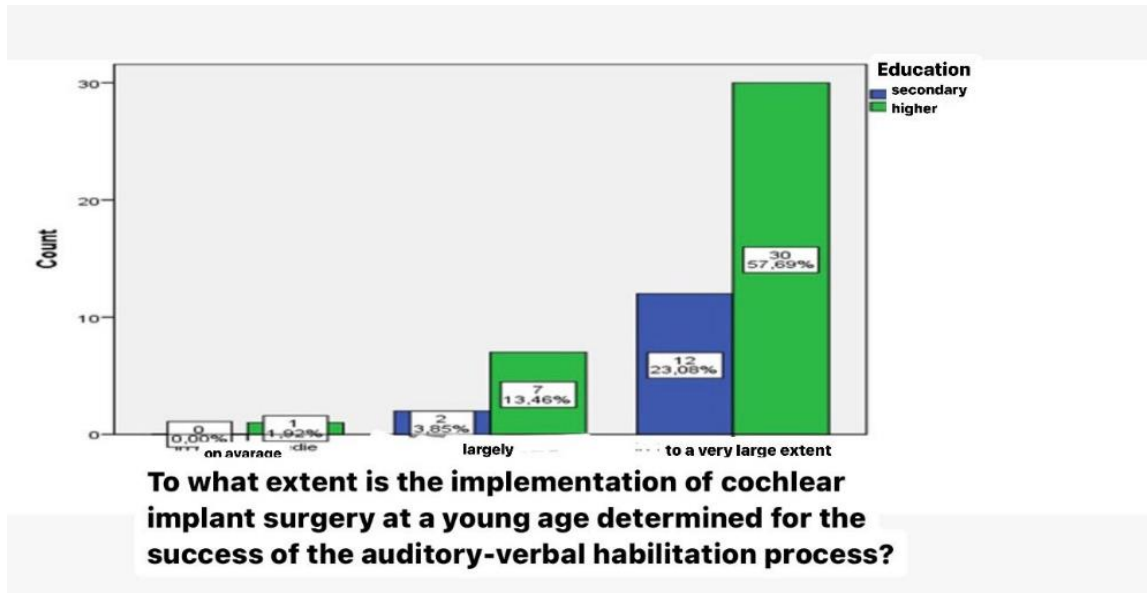


Figure 2: Graphical representation of the answers received by the groups of participants with secondary and higher education to the question "To what extent is cochlear implant surgery at an early age decisive for the success of the auditory-verbal habilitation process?".

From the analysis of Figure 2, we can see that 57.69% of the respondents with higher education consider that performing cochlear implant surgery at an early age is very decisive for the success of the auditory-verbal habilitation process, while 13.46% largely value this item and 1.92% to an average extent.

As for the respondents with secondary education, 23.08% consider that performing cochlear implant surgery at an early age is very decisive for the success of the auditory-verbal rehabilitation process, while 3.85% consider the item in question to largely be.

B. In the second hypothesis, we assumed that the cochlear implant is perceived as having a positive impact on the quality of life of the beneficiaries by increasing self-esteem and developing interpersonal relationships, regardless of the gender of the respondents.

To verify this hypothesis, the questionnaire included the following questions:

B.1. To what extent do you consider that the cochlear implant has a positive impact on the beneficiary's quality of life?

Table 5: Calculation of the mean and standard deviation by gender of respondents

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
To what extent do you consider that the cochlear implant has a positive impact on the quality of life of the beneficiary?	male	16	4,88	,342	,085
	female	36	4,75	,439	,073



Interpretation Statistical Group: The cochlear implant has a positive impact on the quality of life of the beneficiary on average of 4.88 for male respondents compared to an average of 4.75 for female respondents.

Table 6: Calculation of the T-test for independent samples

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
To what extent do you consider that the cochlear implant has a positive impact on the quality of life of the beneficiary?	Equal variances assumed	5,061	,029	1,009	50	,318	,125	,124	-,124	,374
	Equal variances not assumed			1,111	36,657	,274	,125	,112	-,103	,353

Interpretation Table 6: From the analysis of the significance threshold, we observe $p=0.318$ greater than 0.05, which means that there is no significant difference between males and females in terms of the fact that the cochlear implant has a positive impact on the beneficiary's quality of life.

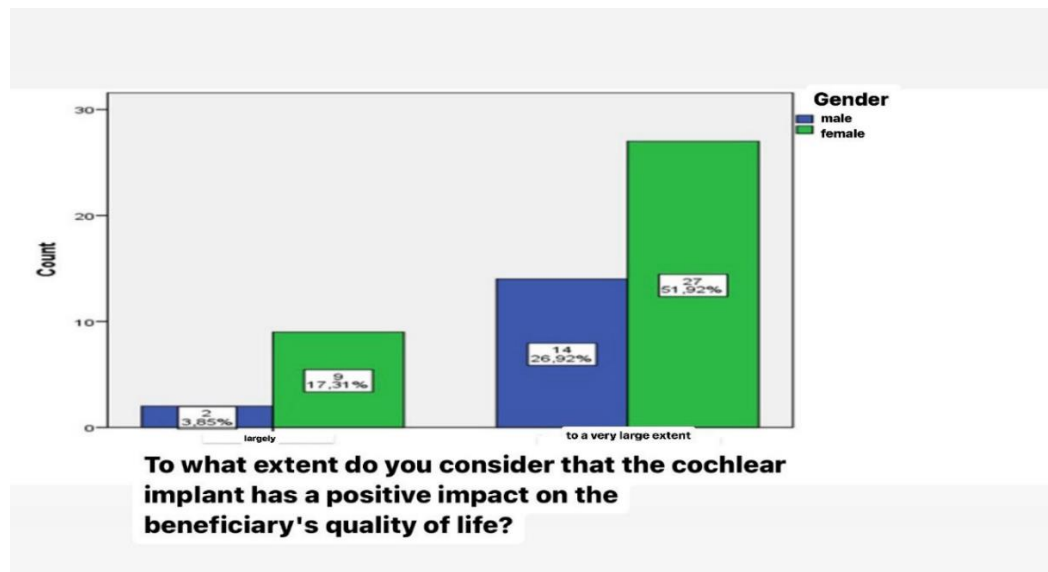




Figure 3: Graphical representation of the responses received on the groups of male and female participants to the question "To what extent do you consider that the cochlear implant has a positive impact on the quality of life of the recipient?".

From the analysis of Figure 3, we can see that 51.92% of the female participants considered that the cochlear implant has a positive impact on the beneficiary's quality of life to a very large extent, while 17.31% consider this item to largely be. As for the male respondents, 26.92% consider that the cochlear implant has a positive impact on the beneficiary's quality of life to a very large extent, and 3.85% consider the item under analysis to largely be.

B.2. Does the use of the cochlear implant contribute to increasing the person's self-esteem?

Table 7: Calculation of the mean and standard deviation by gender of respondents

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
Does the use of the cochlear implant contribute to increasing the person's self-esteem?	male	16	4,50	,632	,158
	female	36	4,64	,487	,081

Interpretation Statistical Group: The use of cochlear implants contributes to an increase in the person's self-esteem by an average of 4.50 for male respondents compared to an average of 4.64 for female respondents.

Table 8: Calculation of the T-test for independent samples

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower		Upper
Does the use of the cochlear implant contribute to increasing the person's self-esteem?	Equal variances assumed	3,585	,064	-,864	50	,392	-,139	,161	-,462	,184
	Equal variances not assumed			-,781	23,260	,442	-,139	,178	-,506	,229

Interpretation Table 8: From the analysis of the significance threshold, we observe $p=0.392$ greater than 0.05, which means that there is no significant difference between female and male participants in terms of the fact that the use of cochlear implants contributes to increasing the person's self-esteem.

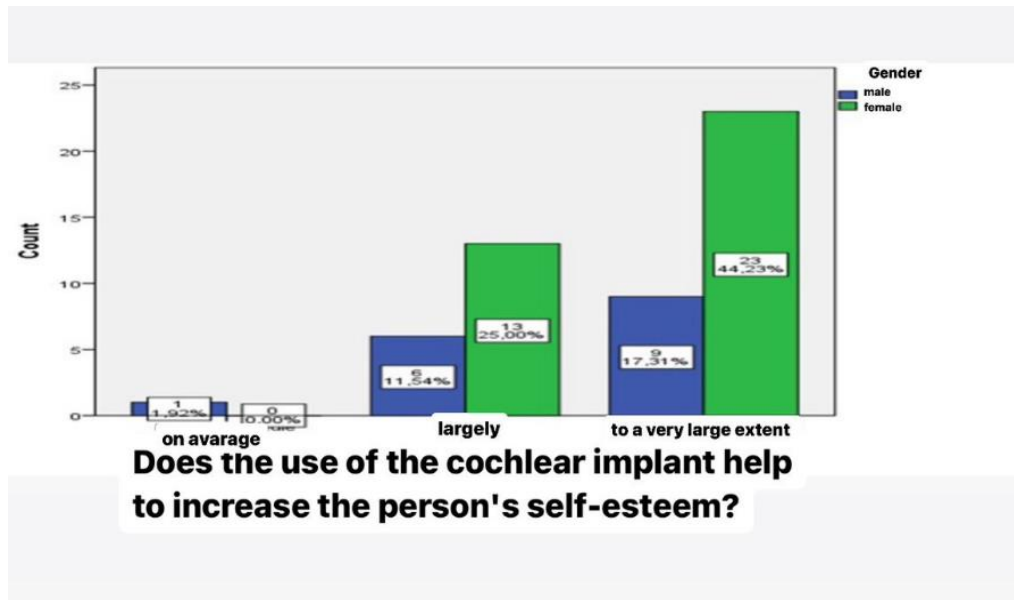


Figure 4: Graphical representation of the responses received on the groups of male and female participants to the question "Does the use of the cochlear implant contribute to the increase of the person's self-esteem?".

From the analysis of Figure 4, we can see that 44.23% of the female people appreciated that the use of the cochlear implant contributes to a very large extent to the increase of the person's self-esteem, while 25% appreciate this item as largely as being. Regarding the male participants, 17.31% consider that the use of the cochlear implant contributes greatly to the increase of the person's self-esteem, while 11.54% largely appreciate this item and 1.92% as being average.

C. In the third hypothesis, we assumed that the family has a major role in the process of auditory-verbal empowerment to facilitate the school and social integration of the child with cochlear implant, regardless of the respondents' background.

To verify this hypothesis, the questionnaire included the following questions:

C.1. In your opinion, does a close collaboration between school, family and professionals play an important role in the educational and social integration of people with cochlear implants?



Table 9: Calculation of the mean and standard deviation according to the environment of origin

Group Statistics					
	Environment of origin	N	Mean	Std. Deviation	Std. Error Mean
In your opinion, does a close collaboration between school, family and professionals play an important role in the educational and social integration of people with cochlear implants?	urban	41	4,80	,401	,063
	countryside	11	4,82	,405	,122

Interpretation Statistical Group: The close collaboration between school, family and professionals has an important role in the educational and social integration of people with cochlear implants in an average of 4.80 for people in urban areas compared to an average of 4.82 for respondents in rural areas.

Table 10: Calculation of the T-test for independent samples

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
										Lower	Upper
In your opinion, does a close collaboration between school, family and professionals play an important role in the educational and social integration of people with cochlear implants?	Equal variances assumed	,039	,844	-,097	50	,923	-,013	,136	-,287	,261	
	Equal variances not assumed			-,097	15,702	,924	-,013	,137	-,304	,278	



Interpretation Table 10: From the analysis of the materiality threshold, we observe $p = 0.923$ greater than 0.05 which means that there is no significant difference between the participants from urban and rural areas regarding the fact that a close collaboration between school, family and professionals has an important role in the educational and social integration of people with cochlear implants.

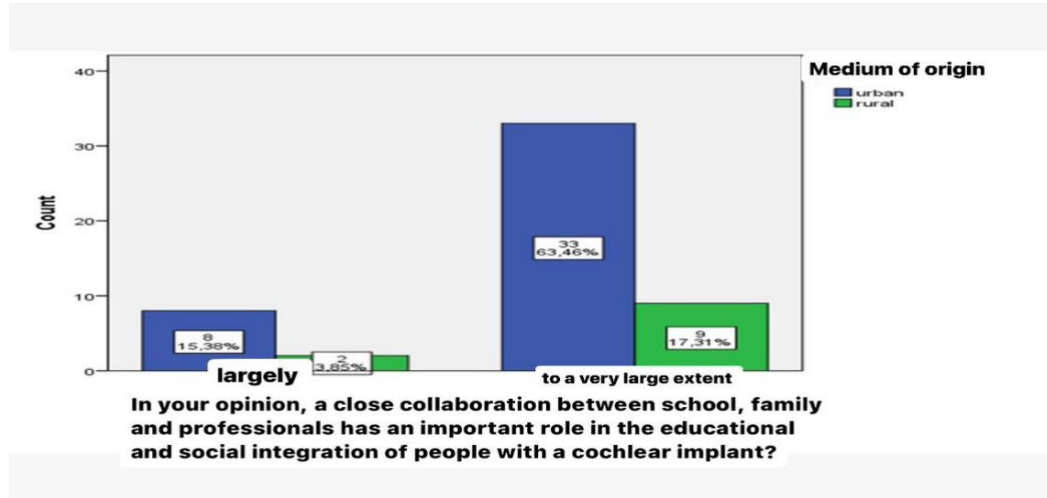


Figure 5: Graphic representation of the answers received on the batches of participants from urban and rural areas to the question "Does a close collaboration between school, family and professionals play an important role in the educational and social integration of people with cochlear implants?".

From the analysis of Figure 5, we can see that 63.46% of the respondents in the urban area appreciate that a close collaboration between school, family and professionals have an important role, to a very large extent, in the educational and social integration of people with cochlear implants, while 15.38% appreciate this item as largely as being.

Regarding the participants from rural areas, 17.31% consider that a close collaboration between school, family and professionals has, to a very large extent, an important role in the process of educational and social integration, while 3.85% appreciate the item as largely as being.

C.2. Is family support important for the psycho-social development of the child with cochlear implant?

Table 11: Calculation of the mean and standard deviation according to the environment of origin

Group Statistics					
	Environment of origin	N	Mean	Std. Deviation	Std. Error Mean
Is family support important for the psychosocial development of the child with cochlear implant?	urban	41	4,98	,156	,024
	countryside	11	5,00	,000	,000



Interpretation Statistical Group: For the psycho-social development of the child with cochlear implant, family support is important on average of 4.98 for people from urban areas, respectively a maximum average of 5.00 for respondents from rural areas.

Table 12: Calculation of the T-test for independent samples

		Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
										Lower	Upper
Is family support important for the psychosocial development of the child with cochlear implant?	Equal variances assumed	1,113	,297	-,514	50	,609	-,024	,047	-,120	,071	
	Equal variances not assumed			-,1000	40,000	,323	-,024	,024	-,074	,025	

Interpretation Table 12: From the analysis of the materiality threshold, we observe $p=0.609$ greater than 0.05, which means that there is no significant difference between people from urban and rural areas on the fact that family support is important for the psycho-social development of the child with cochlear implant.

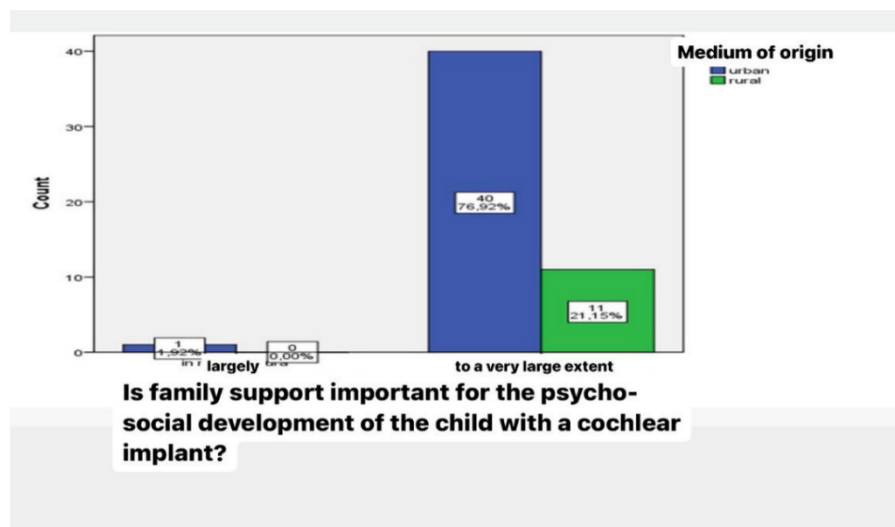


Figure 6: Graphic representation of the answers received on the groups of participants from urban and rural areas to the question "Is family support important for the psycho-social development of the child with cochlear implant?".



From the analysis of Figure 6, we can see that 76.92% of the respondents in the urban area consider that for the psycho-social development of the child with cochlear implant, family support is very important, while only 1.92% consider this item to largely be.

Regarding the participants from rural areas, 21.15% consider that family support is important, to a very large extent, for the psycho-social development of the child with cochlear implant.

Conclusions

The technological progress achieved through the cochlear implantation medical solution ensures, especially for children with severe or profound hearing loss, the opportunity to access the development of receptive and expressive language.

Moreover, implantation at very young ages (under 1 year) is possible and recommended, as the period of auditory deprivation is limited and, consequently, the results of auditory-verbal empowerment are maximized.

Also, bilateral implantation allows a symmetrical development of the auditory pathway and cortex, a better localization of sounds in space, respectively a superior development of language and speech.

Basically, investing in hearing technology contributes to improving the quality of life of the hearing impaired, respectively to optimizing the process of recovery and social integration. In the medium and long term, these aspects bring social and economic added value by fully integrating the person concerned into the workforce, as well as by reducing the expenses that the state incurs as a result of reducing the patient's need to access in the future the medical and social services associated with the permanent loss of natural hearing.

In this context, the process of integration and inclusion of a cochlear implant recipient continues to be a challenge for the educational system in our country, given that the subject, even if it is not of the utmost novelty, reveals the circumstance that working with a child with hearing impairments is not always viewed with confidence by teachers.

Usually, such an approach derives from the prejudice of mistakenly including the child with cochlear implants in the category of deaf people or those who manage to augment their hearing with the help of classic hearing aids.

In order to eliminate the barriers that may arise in providing quality educational-compensatory services, it is necessary that, in supporting the steps taken by the state to ensure the integration, respectively the educational and social inclusion of the child with cochlear implant, parents play an active role in informing the school environment in order to make teachers and students in the classroom aware of the role that each of us has in the process of auditory-verbal empowerment of a child colleague or friend with hearing impairment.

The successful school integration process of students with hearing disabilities can be successfully ensured if the hearing-impaired person does not register a high developmental gap between biological and mental age. In the reference, the optimal interval that should not be exceeded is between 15 and 20 months.

At the same time, a strong personality structure, innate or formed in the family environment or developed during psychological counseling sessions, is likely to contribute to overcoming difficult moments, inherent to interaction with the surrounding world.



Strengthening the hearing capacity (re)acquired with the help of the cochlear implant and the subsequent auditory-verbal habilitation programs, respectively ensuring the necessary conditions for the hearing impaired to use the lip-reading technique, in case of need, punctually and not as a rule, are indispensable in the process of maximizing the benefits of implantation.

The success of the school and social integration of the child with a cochlear implant can be achieved and preserved only if access to specialized support services (medical, psychological, speech therapy, educational and social assistance) is facilitated, respectively to quality audiological equipment, which can ensure the best state of health that the person concerned can achieve in the conditions of hearing impairment.

The objectives of the research have been achieved and the working hypotheses have been verified, early intervention being essential for maximizing the chances of social and educational integration of the hearing impaired, since the cochlear implant contributes to improving the quality of life of the beneficiaries, by increasing self-esteem and developing interpersonal relationships, all the more so as the family is actively involved in the child's verbal auditory empowerment process.

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