

REVIEW ARTICLE

Adolescents with deafness: a review of self-esteem and its components

Seydeh Zeynab Mousavi¹, Guita Movallali^{2*}, Nasrin Mousavi Nare³

¹- Department of Applied Psychology, Faculty of Education and Psychology, Shahid Beheshti University, Tehran, Iran

²- Pediatric Neurorehabilitation Research Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

³- Department of Educational Sciences, Faculty of Humanities, University of Kashan, Kashan, Iran

Received: 27 Feb 2017, Revised: 13 Apr 2017, Accepted: 20 Apr 2017, Published: 15 Jul 2017

Abstract

Background and Aim: Adolescence is an extremely challenging and difficult age for individuals. Notably, adolescents with deafness face greater challenges as their communication skills and access to information, especially the information regarding their social world are limited. Moreover, stereotyped and biased attitudes lead them to focus more on their deafness than their own identities as teenagers. Therefore, in this article, we reviewed self-esteem and its components in the lives of adolescents with deafness.

Recent Findings: According to our review of published articles, various factors might affect the development of self-esteem in adolescents with deafness, including parents' choices about their children's hearing device, choice of educational setting, mode of communication, the relationship of adolescents with deafness with their parents, having a supporting peer group, presence or absence of other disabilities, willingness to search for the etiology of their disease, and so on.

Conclusion: Collecting information regarding self-identity, self-esteem, and psychosocial issues of adolescents with deafness should be

included in their educational programs so that their mental health shaped appropriately and their transition from adolescence to adulthood facilitated and psychosocial issues prevented. The transition from adolescence to adulthood is more complex in deaf and hard of hearing people, and requires special attention.

Keywords: Adolescents; deaf; self-esteem; hard of hearing

Introduction

Hearing is one of the most important sensory abilities that increase the adaptation of human with their environment [1]. According to statistics, approximately 1.5 million Iranians are either deaf or hard of hearing. Out of every 1000 children born, 2 have serious hearing loss [2]. According to the report of Iran Ministry of Health and Medical Education in 2011, every year at least 1000 children are born with hearing loss in our country. About 5% of adolescents in industrial countries are suffering from mild hearing loss [3]. According to the World Health Organization report in 2011, there are approximately 360 million people with hearing impairment; of them, 32 million are deaf children [4]. Based on Erikson theoretical model, adolescents with deafness face challenging problems in personal, family, and social lives during their growth stages [5]. Numerous studies have

* **Corresponding author:** Pediatric Neurorehabilitation Research Center, University of Social Welfare and Rehabilitation Sciences, Daneshjoo Blvd., Evin, Tehran, 1985713834, Iran. Tel: 009821-22180042, E-mail: drgmovallali@gmail.com

reported that adolescents with deafness might experience more problems in a friendly or reliable communication, self-control, and autonomy, and also with regard to their self-esteem when compared to their normal hearing peers [6,7]. Many deaf people cannot benefit from speech, which in turn causes weakness in the early growth stages [8-10].

Decisions made by deaf people in their childhood affect them during their transition to adolescence. Early and timely exposure to language is a very aspect in the life of a deaf person. In general, healthy children learn a language without problems, whereas deaf children cannot learn a language that is one problem of "the lack of a common language between parents and children." Approximately 95% of the deaf children have parents with normal hearing who might have limited knowledge in sign language or may even be totally unaware of it [11]. Consequently, deaf children need special attention for learning and readiness to participate in their social life. They need to find a way to communicate with their peers and to be ready for their presence in the community. Avoiding group (class) games, conduct disorder, and violence are some problems of deaf people [1,12-14]. We reviewed previous studies conducted in Iran and found that numerous studies have been performed on deaf people, but only a few have focused their research on self-esteem in adolescents with deafness. It is possible that few articles regarding hard of hearing adolescents exist but are either unpublished or unavailable to the authors at the time of doing this research. Therefore, we planned to review self-esteem and its components in the lives of deaf adolescents in this article. Along with a review of studies held about self-esteem and its components in deaf adolescents, the objectives of this study are shown and discussed below.

Deaf adolescents and the components of self-concept

Our image about ourselves and the way we describe ourselves have always been of interest to psychologists at least since Erikson EH (1963), and some other researchers proposed

the importance of self-esteem[5]. Therefore, we paid special attention in this research to review self-concept, self-esteem, and psychological well-being in adolescents with deafness. Hindley et al. and Mejstad et al. concluded that low self-esteem and self-image lead to psychological problems [15,16]. Self-esteem is the concept and perception of individuals with respect to their abilities, and includes all aspects of cognitive, perceptual, and emotional development. The evaluation procedures for the aforementioned aspects are based on previous judgments, perceptions, and feedbacks of others and important people in their lives [17]. Deaf students are at a greater risk of exclusion and rejection from others due to their limitations in communication that affects their understanding of themselves [18] negatively [19]. Adolescents with deafness have a lower level of self-esteem, particularly in their social lives compared to their peers [20].

It seems that the first and the most important problem in studying deaf children is difficulty in communication [21-24]. Social reaction, societal attitude toward deaf children, and different emotions such as compassion, pity, and frequently blaming them create difficult situations for these children. This leads to disturbances in their mood and behavior, which contribute to experience low self-esteem, isolation, and loneliness [25-27]. Most studies focus on the quality of life (QOL) that affects the self-esteem of deaf adolescents. Communication skills also play an important role. This is true for communication at home and at school with friends. When communication is made easy, self-esteem grows and develops well just like in normal hearing people [28].

Table 1 summarizes the reviewed articles on self-esteem of adolescents with deafness. Adolescents with deafness, like other adolescents, achieve personal growth primarily through communication with adults such as parents, teachers, and peers in a public areas (e.g. classes) [29,30]. Adolescents with deafness may have limitations in developing a strong social network outside their family due to communication problems. Developing the concept of ego is

Table 1. Summary of reviewed studies on self-concept and its components in deaf adolescents

| Author(s) | Published year | Aim(s) of the study | Samples | Tool | Conclusion |
|---------------------|----------------|---|---|--|---|
| Demehri et al. [1] | 2015 | Relationship between maladaptive schemas happening at an early stage/self-concept and behavioral problems among deaf, young children in comparison with those with visual disabilities. | Sixteen deaf students and 25 students with visual impairment. | Young early maladaptive schemas, Piers Harris children's self-concept scale, and child symptom inventories (CSI-4) | No significant difference between early maladaptive schemas and deaf and blind adolescents. A significant relationship between early maladaptive schemas and behavioral problems. |
| Huber et al. [67] | 2015 | Surveying the relationship between schooling and mental health problems of young adults with cochlear implants and the role that hearing and family variables play in this matter. | One hundred and forty secondary school students with a mean age of 14.7 years. | Hearing parents and teachers completed the strengths and difficulties questionnaire. Audiological tests (speech comprehension tests in quiet and noise) were also performed. | Students of special schools for the deaf showed significantly more problems in conduct and a significantly higher total difficulty score in comparison with other students in mainstream schools. No difference in mental health problems between special schools for the deaf with language education signs and special schools with oral education. Late-implanted students and those with additional handicaps were equally distributed among mainstream schools and special schools for the deaf. Students in special schools for the deaf were more restricted to understand speech in noise, had a lower social background, and probably came from single-parent families. |
| Michael et al. [68] | 2015 | The contribution of hearing loss, social dependency, and career self-effectiveness to adolescents' future understandings was studied. | One hundred and ninety-one participants; 11th and 12th grade students: 60 were deaf, 36 were hard of hearing, and 95 were normal. | Future perceptions Scale, the career decision-Making self-efficacy (CDMSE) scale, and the self-efficacy for the management of work-family conflict scale | Deaf subjects were reported to have significantly higher levels of future clarity and intensity than that of the other categories. No significant differences were found in career self-effectiveness. Hearing status and affiliation and the efficacy to handle future interactions between work and family roles significantly foreseen the participants' future clarity. Career decision-making self-effectiveness was a significant foreseeable factor of future planning as well. |

Table 1. Summary of reviewed studies on self-concept and its components in deaf adolescents - continue

| Author(s) | Published year | Aim(s) of the study | Samples | Tool | Conclusion |
|---|----------------|---|---|---|--|
| Movallali et al. [69] | 2014 | The influence of training of life skills on social skills of students suffering from lack of hearing. | Thirty-eight male students with hearing impairment, between 10 and 12 years of age selected through cluster sampling method. | The Wechsler intelligence test was used. Two groups were matched in their IQs, whereas their social skills rating scale was used for measuring their social skills. | Training of life skills has a vital role in improving the social skills of students suffering from lack of hearing, and they should get more attention. |
| Mahvashe W ernosfaderani and Movallali [70] | 2013 | To discover the efficacy of life skills training on social phobia disorder in students suffering from hearing problems. | Thirty male students with hearing impairment of 8-18 years of age. Their age and IQ were matched and randomly assigned into experimental and control groups. | Social Phobia Inventory (SPIN) | The group suffering from lack of hearing had better results in decreasing their social phobia than the control group. The program for training of life skills for students suffering from hearing impairment can decrease the severity of social phobia. |
| Hamed Sardar and Abdul Kabir [63] | 2012 | The relationship between the attitude of mothers and self-respect among children with hearing disabilities in high schools for the deaf. | Two hundred deaf children (100 boys and 100 girls) and 200 normal hearing mothers. The study was conducted at deaf high schools. | Rosenberg self-esteem scale. Parental attitudes towards deafness scale, parental acceptance, neglect and rejection questionnaire, communication competence scale. | The results showed a relationship between the attitude of mothers and self-confidence of children with hearing disabilities. There was a relationship between the mothers' attitudes and self-esteem in deaf children. Children whose mothers were able to communicate had higher self-esteem scores than mothers of those who could not establish communication. The findings of this study can be helpful for the development of curriculum goals to increase the self-esteem in children with hearing disabilities. |
| Mahvashe – Wernofaderani et al. [71] | 2012 | To determine the efficacy of training life skills on facilitating the social skills of 12–16 years old male students with hearing disabilities studying in inclusive schools. | Thirty 12-16 years old male students with hearing impairment attending inclusive schools were randomly selected and assigned to experimental (n=15) and control group (n=15). | The social skills rating scale (SSRS) | Better performance in social skills of experimental group compared with the control group. Significantly higher scores in cooperation, self-control, and assertion skills in experimental group in comparison with the control group. |

Table 1. Summary of reviewed studies on self-concept and its components in deaf adolescents – continue

| Author(s) | Published year | Aim(s) of the study | Samples | Tool | Conclusion |
|------------------------|----------------|--|---|---|---|
| Mance and Edwards [72] | 2012 | To check the relationship between general psychological health and self-perception in young adults who use hearing device and the relation to the perceptions of hearing, deaf signing, and oral communication among deaf peers. | Twenty-two cochlear implant users aged 12-18 years | Psychological well-being was assessed using the Beck Youth Inventory, a series of five self-report questionnaires assessing anxiety, depression, disruptive behavior, anger, and self-esteem. | Significantly positive association between perceived degree of similarity specifically among hearing peers and their general psychological health. The closer the implanted young adults perceived themselves to be among their peers suffering from the same problem, the better their psychological well-being was. In contrast, perceiving oneself as more similar to deaf signing peers or deaf oral peers was not significantly associated with psychological well-being. |
| van Gent et al. [48] | 2011 | Checking self-concept and psychopathology in deaf adolescents: as preliminary support for moderating effects of deafness-related features and peer related problems. | Deaf adolescents of normal intelligence (n=68) | Self-perception profile for adolescents, semi-structured interview with adolescents and reports by parents, teachers and expert ratings | Problems pertaining to emotional mental health were positively associated with peer rejection and negatively with self-esteem. The association between self-esteem and emotional problems was moderated by deafness, less severe deafness, or acquired or in other cases complicated deafness. Behavioral mental health was positively associated with social acceptance and peer rejection. It is negatively associated with the amount of involvement with people having hearing ability. Peer rejection moderates the association between social acceptance and behavioral problems. |
| Mejsted et al. [16] | 2009 | To examine mental health and self-image among deaf children and those who are hard of hearing. | Hard of hearing children, who were 11-18 years of age, were investigated. The children (n=111) attended special schools for the deaf (n=28), special schools for the hard of hearing (n=23), and regular schools where hard of hearing children were mainstreamed (n=60). | Goodman strengths and difficulties questionnaire (SDQ), "I Think I Am" (ITIA) questionnaire Ouveinen-Birgerstam | This study shows that children who are hard of hearing seem to function just like other children in Swedish society. Mean SDQ and ITIA scores showed that the mainstreamed students and the students in special schools for the hard of hearing had higher levels of rated mental health and self-image than those in schools for the deaf. |

Table 1. Summary of reviewed studies on self-concept and its components in deaf adolescents – continue

| Author(s) | Published year | Aim(s) of the study | Samples | Tool | Conclusion |
|-------------------------|----------------|--|--|--|---|
| Barak and Sadovsky [73] | 2008 | To test the characteristics, power, and types of use of the internet by young children with hearing disability compared to the same group of normal hearing members. | One hundred participants with hearing impairment and 114 normal hearing adolescents who were sampled in schools (including special schools for the hearing impaired) throughout the country. Of the participants with hearing impairment, there were 51 boys, 28 of whom were in early (age 12-15) and 23 in late (age 16-19) adolescence, and 49 girls (24 and 25, in early and late adolescence, respectively). In the hearing participants group, there were 56 boys (34 and 22, in early and late adolescence, respectively) and 58 girls (34 and 24, in early and late adolescence, respectively). The hearing and hearing impaired participants were matched according to socioeconomic status and intelligence as reported by school administrations. All participants (normal hearing and hearing-impaired) were children of hearing parents. All deaf participants were pre-lingual hearing loss. | General internet use questionnaire, Motivation for using the internet questionnaire, Types of use of the internet questionnaire, Revised UCLA loneliness scale, Rosenberg self-esteem scale. | According to the results for both genders and for the young children with hearing problems, participants were encouraged to use the internet more than their normal hearing peers. As well as, those with hearing problems used the internet more than the normal hearing participants for both personal and group communication. The hearing and deaf participants who used internet intensively were similar in the level of well-being, both higher than the well-being of the deaf group that used the internet less-intensively. Internet can be viewed as an important and powerful factor for those with hearing problems. |
| Sahlis and Belgin [37] | 2006 | Comparing the levels of self-esteem of young children with hearing device (before and after cochlear implantation) and children with normal hearing. | Thirty adolescents with cochlear implant between the ages of 12-19 with a control group which consists of 60 adolescents having similar characteristics | Rosenberg self-esteem scale | No significant difference between values of self-esteem between the group with hearing device and the control group was observed. There was a significant difference between the values of self-esteem between the group who used hearing device and the control group. Levels of self-esteem in both groups were higher for young children who attended preschool education, had brothers/sisters, high level of salary, whose mother was working, and whose parents had higher levels of education. Furthermore, the birth order and job of the child's father did not seem to have any effect on the child's level of self-esteem. |

Table 1. Summary of reviewed studies on self-concept and its components in deaf adolescents – continue

| Author(s) | Published year | Aim(s) of the study | Samples | Tool | Conclusion |
|-------------------------|----------------|--|--|--|---|
| Jambor and Elliott [39] | 2005 | To evaluate factor(s) affective on self-concept, such as mode of communication at home, seriousness of hearing loss with hearing support, as well as the coping styles that deaf people get used to manage everyday life in a hearing world. | Deaf students of California State University, Northridge | Rosenberg self-esteem scale. Group identification was measured by a 6-item scale adapted from Ellemers, Wilke, and van Kippenberg. | Recognition with the deaf community had an extremely positive correlation with self-esteem. Deaf students with higher level of hearing loss and with bicultural abilities that help them work in both the hearing and the deaf community generally have higher self-esteem. Suggestions for future research were also discussed. |
| van Grup [34] | 2001 | To test the effects of different educational environments on self-understanding of secondary school students with hearing problems. | Deaf secondary students from three school settings: segregated (institutional), congregated (a new facility housing the previously segregated school for the deaf, and a hearing secondary school), resource programs (in mainstream schools, providing both special class instruction and opportunities for integration). | The self-description questionnaire (Marsh) | A segregated environment results in academic advantages by utilizing resource-based programs and social advantages. In general, deaf students who were with hearing students showed better self-perceptions of reading ability than those in special classes. Further analysis with subsamples of deaf students also showed no outstanding differences between those who used spoken and sign communication in any dimension of self-concept. |
| Desselle [44] | 1994 | To understand how the family communication results in the self-respect of children with hearing problems. | Deaf students aged 13 to 19 years | Modified self-esteem inventory (MSEI) and the Subject Communication Questionnaire | Positive relationship between the families with total communication method (speech, fingerspelling, and communication sign), which results in children with higher score in self-confidence and the family's oral-only method of communication (speech) with lower scores. Consequently, parents with communication ability by using sign language had children with higher self-respect score than those of children of parents with less skill in using sign language. Furthermore, a positive relationship was found between student's self-respect and reading level. |
| Cates [33] | 1991 | To make comparison among teachers' perception of self-concept in normal hearing students and those who were pre-lingual and profoundly deaf.. | A group of 68 deaf students aged 8-19 years and a control group of 68 normal hearing students. | Observer reports of teachers for both groups, completed observer reports of self-concept | Teachers' perceptions of self-concepts were in more agreement for hearing students than that for deaf students. Simultaneously, the results showed that deaf students do not appear to be significantly different from normal hearing students in their own reports of self-concept. |

complicated and complex for adolescents with deafness [31-33].

According to various studies, the type and location of school play an important role in individuals' self-esteem because it determines their peers and friends. If self-esteem is determined as a part of a scale with respect to some social groups, then the group's characteristics are considered important. Van Gurp, in his research focused on the school type, found that ordinary schools had more advantages for practical achievements when compared with special schools, and special schools had more advantage for better social identity when compared with ordinary schools [34]. "However, some studies such as the study of Leigh et al. show social benefit and self-esteem in regular educational settings [16,35,36]. Sahli and Belgin showed that self-esteem improved in patients with hearing impairment after cochlear implantation, and they also showed that after implantation, the self-esteem in such patients did not differ much from their normal hearing peers [37]. Furthermore, Percy-Smith et al. demonstrated that cochlear implants (CIs) enable children to have active participation in hearing society and to gain similar or higher score in terms of self-esteem and social health compared to their normal hearing peers [30].

Leigh et al. reported more complex findings. In their research on adolescents with deafness with and without CIs, they concluded that factors such as location of school, type of school, and acculturation process have effects on their psychosocial issues [35]. However, the initial negative reactions of parents when they face a deaf child increases the probability that parents neglect identification and issues of self-esteem in deaf children [32].

There are some contradictory results in the studies investigating the degree of hearing loss [35, 38,39]. However to the best of our knowledge, no study has so far controlled all variables together. These variables include other disabilities, using CIs, and the type of school. According to what was mentioned, deaf adolescents in ordinary schools have a higher level of educational achievement than that of the students of special

schools, but these results may be misleading [40]. Special programs for deaf students give them the opportunity to access better language environment. These schools include different populations, including the deaf with other disabilities, whereas regular schools enroll deaf students without other problems. Consequently, students of these schools are challenged to reach the acceptable level, and therefore, implementing some compensatory strategies seems necessary. [39,40,41].

Leigh et al. investigated data and results about the adulthood of adolescents with deafness and collected disease variables in order to measure the psychological adjustment of people. They obtained clear and strong evidence for a strong relationship between satisfaction with family relationships at home and self-esteem at school as well as the relationship between self-esteem on one hand and social health and life satisfaction on the other hand [35]. Furthermore, van Gent et al. through a hierarchical regression analysis found that the quality of parentschildren relationship and their sign-language proficiency strengthen self-esteem and self-worth in deaf people [41]. Kushalnagar et al. reported similar results that satisfaction with relationships at home and parents' understanding leads to a better QOL [42]. Other studies also concluded that high parental skills in sign language are related to the high levels of self-esteem in adolescents with deafness [43,44].

Adolescents with deafness would be vulnerable in terms of cognitive development, especially if they grow and learn in a hearing environment [45,46]. In a previous study, adolescents with deafness students exhibited a lower level of educational achievements and successes compared to normal hearing students [47]. But the risk of lack of cognitive development is not just limited to deafness or hearing loss. Some studies have reported that factors such as parents' hearing degree and the primary mode of communication can have impact on cognitive abilities because deaf students with deaf parents showed better educational success than that of deaf students with normal hearing parents [23,31].

In a study conducted in the Netherlands, van

Gent et al. investigated a group of deaf people who had normal cognitive abilities. Their results showed a moderate correlation between self-esteem and self-satisfaction with psychopathy [41]. They looked for other effective mediator variables on this correlation and found that a combination of lack of self-esteem and acquired deafness was the risk factor for decreased cognitive abilities of deaf people. Adolescents with severe hearing loss had a better chance than that of adolescents with less hearing loss. People with simple genetic deafness had a better and healthier growth and progress than that of others. Studies show the importance of self-esteem in the growth of adolescents with deafness and the need to study other relevant factors in deafness in order to achieve a deep understanding of adolescents with deafness and how to manage them [23,31,48].

The important question is whether deaf people have less self-esteem than hearing people. It is noteworthy that deaf people will experience great difficulty in their life to gain positive self-esteem. Data and results of various studies are not very decisive. In some studies, results show that deaf children and adolescents have lower self-esteem than their hearing peers [38,41,49, 50]. Some other studies found no significant differences between self-esteem and its components and also between the groups of deaf and hearing people [51-53]. Although previous studies showed that deaf people have lower self-esteem and self-concept than that of hearing people, it is necessary to keep in mind that adolescents with deafness will have positive self-esteem when they acquire a rich understanding of the language and heritage through belonging to a vital cultural group [43].

In general, low self-esteem has always been linked to mental problems. Evidence of studies also indicates that self-esteem is a worry in adolescents [54,55]. Body image, the person's perception of his or her body, has very important role in our life. Adolescents experience significant cognitive and physical changes during puberty. Our community pays greater emphasis on the physical appearance of adolescents [56]. In addition, people give more importance to their

image and their appearance as they have an effect on psychological and physical health problems, such as eating disorders [5], depression [57], and mood disorders [58]. Studies have also shown that life satisfaction is strongly correlated with self-concept. For example, Moksnes and Espnes revealed that regardless of age and sex, high self-image and self-esteem have a strong positive effect on adolescents' life satisfaction [59]. In addition, a study on rural immigrant adolescents showed a significant relationship between self-concept and life satisfaction [60]. These findings show cohesion and connection among understanding of physical appearance, self-esteem, and life satisfaction. Self-concept in life satisfaction is intimately linked with physical appearance image of an individual.

A recent study was conducted in the field of measurement of factors related to self-esteem among deaf students at the University of California at Northridge who participated in a research program of deaf students. They found that male deaf students who used sign language at home and considered themselves members of deaf community had better self-concept than deaf students who were members of hearing community. Consequently, positive association with the deaf community is a strong supportive factor in the growth and development of self-esteem. However, the highest degree of self-esteem was observed in those who could cope well with both hearing and deaf communities, that is, in those who had a good performance in terms of speech and sign language [39].

In today's world, the family is known as a mutually dependent system whose members interact with each other. Therefore, if some factor affects one member, it would have an effect on other members too and will consequently affect all the family members. In general, the family consists of individuals who have an emotional connection with each other and have mutual emotions, thoughts, memories, and even behavior with each other [61].

Based on Beavers and Hampson model, there are two dimensions given to the structure of a family: family competency and family style. Family competency and quality is related to

flexibility structure of a family and ways of dialogue and awareness within the family team. Families that have a flexible structure will be able to hold conversations and have a better performance in stressful situations. Family style refers to family satisfaction [62].

In deaf people, self-concept and self-esteem (confidence in their abilities and sense of personal value) are initially shaped in the context of families and follow the same pattern. With no doubt, deaf people who have grown self-esteem choose higher goals for themselves in life and are more self-sufficient, more creative, and more productive than that of deaf people with less grown self-esteem. They experience less anxiety and stress; they are less sensitive to failure and criticism and suffer less from the feelings of helplessness. They emphasize on their strong points and are more willing to face problems (Table 1). Therefore, they have a positive attitude about themselves and their abilities; this prevents them from being withdrawn from society and helps them to achieve more success in their education and career. An external motivation changes into an internal one and makes them feel more self-worth and have self-reliance, which is very crucial for a deaf person and guarantees independence, emotional stability, and growth in all aspects of their life [17, 44,63].

Family adaptability, stability, and emotional reactions toward deaf children and adolescents depend on various factors and parameters [64, 65]. Families have problems and challenges in coping and conciliation with adolescents with deafness, and it seems that the degree of hearing loss in children has a profound impact on family relationships [66]. Studies show that parents' proficiency level in sign language is closely related to high levels of self-esteem of their deaf adolescent children [13]. Similar to quality of life, some deaf adolescents also find positive self-esteem. Communication abilities also play a major role in self-concept. This is true for communication both at home and at school with friends. When communication is convenient and frank, self-concept grows and develops similarly to normal hearing people [43,44].

Conclusion

All people during their adolescence encounter the problems such as who they are and what their identities are and they would like to see them from their own perspective and others' perspective. For deaf children, there are additional problems and issues that make this hard-to-pass puberty harder for them. Studies in this field have determined different factors that are important. Parents' decisions to use earphone or CIs, parents' behavior with the problem of deafness, and accepting or rejecting the individual from the family, the type of school, and choosing relationships have a significant impact on future self-esteem and mental health of a deaf child. Good communication at home leads to better results. CI can be useful in promoting individual's self-concept; however, it does not solve all the problems. Having a supportive group in which an individual can coordinate will help him or her to grow better, but this is more complicated for adolescents with deafness. A thorough understanding of deafness identity and belonging to a particular identity (deaf, Deaf or hearing) can help. In addition, having other disabilities along with deafness, which is common among deaf people, affects all aspects of their life.

In general, the differences of opinions in studies regarding self-esteem might result from the differences in gender, culture, race, applying different tests, examiner's awareness with features and communication methods in these individuals, and so on. However, despite all the difficulties, by taking appropriate measures, adolescents with deafness can grow and progress in a healthy way. Proficiency in sign language and the sense of belongingness to the deaf community are often reported to lead to higher self-concept. Furthermore, early successful interventions and language development in deaf children increase their self-esteem. This requires special attention toward deaf children, such as detection and early intervention, and attention to the importance of communication with deaf adults, and friendship with deaf peers. It is necessary to consider the psychosocial components and mental health of deaf children at later ages

in all rehabilitation trainings.

Conflict of interest

The authors declared no conflicts of interest.

REFERENCES

- Demehri F, Movallali G, Ahmadi V. [A study of relationship between early maladaptive schemas self-concept and behavioral problems among deaf adolescences and adolescences with visual impairment in Yazd city]. *JIUMS*. 2015;23(4):191-201. Persian.
- Ajallouyeen M, Amirsalari S, Yousefi J, Raeessi MA, Radfar S, Hassanlifard M. A report of surgical complications in a series of 262 consecutive pediatric cochlear implantations in Iran. *Iran J Pediatr*. 2011;21(4):455-60. PMID: PMC3446130
- Pinquart M, Pfeiffer JP. Attainment of developmental tasks by adolescents with hearing loss attending special schools. *Am Ann Deaf*. 2014;159(3):257-68. doi: 10.1353/aad.2014.0023.
- World Health Organization. World report on disability. 2011. http://www.who.int/disabilities/world_report/2011/en/ Accessed on 23 Apr 2015.
- Erikson EH. *Childhood and Society*. 2nd ed. New York: Norton; 1963.
- Anderson G, Olsson E, Rydell AM, Larsen HC. Social competence and behavioral problems in children with hearing impairment. *Audiology*. 2000;39(2):88-92. doi: 10.3109/00206090009073058.
- Kent BA. Identity issues for hard-of-hearing adolescents aged 11, 13, and 15 in mainstream setting. *J Deaf Stud Deaf Educ*. 2003;8(3):315-24. doi: 10.1093/deafed/eng017.
- Schlesinger HS, Acnee M. Antecedents to achievement and adjustment in deaf adolescents: a longitudinal of deaf children. In: Anderson GB, Watson D, editors. *The habilitation and rehabilitation of deaf adolescents*. Washington, DC: National Academy of Gallaudet College; 1984. p. 46-61.
- Vaccari C, Marschark M. Communication between parents and deaf children: implications for social-emotional development. *J Child Psychol Psychiatry*. 1997;38(7):793-801. doi: 10.1111/j.1469-7610.1997.tb01597.x.
- Calderon R, Greenberg M. Social and emotional development of deaf children: family, school, and program effects. In: Marschark M, Spencer PE, editors. *Oxford Handbook of Deaf Studies, Language, and Education*. 2nd ed. New York: Oxford University Press, Inc; 2011. 188-99.
- Napoli DJ, Mellon NK, Niparko JK, Rathmann C, Mathur G, Humphries T, et al. Should all deaf children learn sign language? *Pediatrics*;2015;136(1):170-6. doi: 10.1542/peds.2014-1632.
- Rostami M, Younesi J, Movallali G, Farhood D, Biglarian A. [The effectiveness of mental rehabilitation based on positive thinking skills training on increasing happiness in hearing impaired adolescents]. *Audiol*. 2014;23(3):39-45. Persian.
- Movallali G, Imani M. [Emotional development in deaf children: facial expression, emotional understanding, display rules, mixed emotions, and theory of mind]. *Audiol*. 2015;23(6):1-16. Persian.
- Bubbico L, Rosano A, Spagnolo A. Prevalence of pre-lingual deafness in Italy. *Acta Otorhinolaryngol Ital*. 2007;27(1):17-21. PMID: PMC2640013
- Hindley PA, Hill PD, McGuigan S, Kitson N. Psychiatric disorder in deaf and hearing impaired children and young people: a prevalence study. *J Child Psychol Psychiatry*. 1994;35(5):917-34. doi: 10.1111/j.1469-7610.1994.tb02302.x.
- Mejstad L, Heiling K, Svedin CG. Mental health and self-image among deaf and hard of hearing children. *Am Ann Deaf*. 2009;153(5):504-15. doi: 10.1353/aad.0.0069.
- Mekonnen M, Hannu S, Elina L, Matti K. The self-concept of deaf/hard-of-hearing and hearing students. *J Deaf Stud Deaf Educ*. 2016;21(4):345-51. doi: 10.1093/deafed/enw041.
- Rath S, Nanda S. Self-concept: a psychosocial study on adolescents. *ZIJMR*. 2012;2(5):49-61.
- Barker DH, Quittner AL, Fink NE, Eisenberg LS, Tobey EA, Niparko JK. Predicting behavior problems in deaf and hearing children: The influences of language, attention, and parent-child communication. *Dev Psychopathol*. 2009;21(2):373-92. doi: 10.1017/s0954579409000212.
- Movallali G, Torabi F, Tavakoli E. [Behavioral problems in deaf populations: a literature review]. *Audiol*. 2014;23(5):14-26. Persian.
- Theunissen SC, Rieffe C, Kouwenberg M, De Raeve L, Soede W, Briare JJ, et al. Anxiety in children with hearing aids or cochlear implants compared to normally hearing controls. *Laryngoscope*. 2012;122(3):654-9. doi: 10.1002/lary.22502.
- Mahvash-Vernosfaderani A, Movallali G. [The effectiveness of social skill training on hearing impaired students]. *Zahedan J Res Med Sci*. 2014;16(9):79-82. Persian.
- Rachford D, Furth HG. Understanding of friendship and social rules in deaf and hearing adolescents. *Journal of applied developmental psychology*. 1986;7(4):391-402. doi: 10.1016/0193-3973(86)90008-0.
- Ataabadi S, Yousefi Z, Moradi A. Investigation of the multiple relations between emotional intelligence, social skills and self-esteem with family communications among deaf and hard of hearing adolescents. *Intl Res J Appl Basic Sci*. 2013;6(11):1600-8.
- Remine MD, Brown PM. Comparison of the prevalence of mental health problems in deaf and hearing children and adolescents in Australia. *Aust N Z J Psychiatry*. 2010;44(4):351-7. doi: 10.3109/00048670903489866.
- Stinson MS, Whitmore KA, Kluwin T N. Self-perceptions of social relationships in hearing-impaired adolescents. *J Educ Psychol*. 1996;88(1):132-43. doi: 10.1037/0022-0663.88.1.132.
- Beckert TE. Cognitive autonomy and self-evaluation in adolescence: a conceptual investigation and instrument development. *N Am J Psychol*. 2007;9(3):579-94.
- Brice PJ, Strauss G. Deaf adolescents in a hearing world: a review of factors affecting psychosocial adaptation. *Adolesc Health Med Ther*. 2016;7:67-76. doi: 10.2147/ahmt.s60261.
- Theunissen SCPM, Netten AP, Rieffe C, Briare JJ, Soede W, Kouwenberg M, et al. Self-esteem in hearing-impaired children: the influence of communication, education, and audiological characteristics. *PLoS One*. 2014;9(4):e94521. doi: 10.1371/journal.pone.0094521.

30. Percy-Smith L, Cayé-Thomasen P, Gudman M, Jensen JH, Thomsen J. Self-esteem and social well-being of children with cochlear implant compared to normal-hearing children. *Int J Pediatr Otorhinolaryngol.* 2008;72(7):1113-20. doi: 10.1016/j.ijporl.2008.03.028.
31. Polat F. Factors Affecting Psychosocial Adjustment of Deaf Students. *J Deaf Stud Deaf Educ.* 2003;8(3):325-39. doi: 10.1093/deafed/eng018.
32. Hintermair M. Self-esteem and satisfaction with life of deaf and hard-of-hearing people--a resource-oriented approach to identity work. *J Deaf Stud Deaf Educ.* 2008;13(2):278-300. doi: 10.1093/deafed/enm054.
33. Cates JA. Self-concept in hearing and prelingual, profoundly deaf students. A comparison of teachers' perceptions. *Am Ann Deaf.* 1991;136(4):354-9. doi: 10.1353/aad.2012.0499.
34. Van Gorp S. Self-concept of deaf secondary school students in different educational settings. *J Deaf Stud Deaf Educ.* 2001;6(1):54-69. doi: 10.1093/deafed/6.1.54.
35. Leigh IW, Maxwell-McCaw D, Bat-Chava Y, Christiansen JB. Correlates of psychosocial adjustment in deaf adolescents with and without cochlear implants: a preliminary investigation. *J Deaf Stud Deaf Educ.* 2009;14(2):244-59. doi: 10.1093/deafed/enn038.
36. Keilmann A, Limberger A, Mann WJ. Psychological and physical well-being in hearing-impaired children. *Int J Pediatr Otorhinolaryngol.* 2007;71(11):1747-52. doi: 10.1016/j.ijporl.2007.07.013.
37. Sahli S, Belgin E. Comparison of self-esteem level of adolescents with cochlear implant and normal hearing. *Int J Pediatr Otorhinolaryngol.* 2006;70(9):1601-8. doi: 10.1016/j.ijporl.2006.05.003.
38. Weisel A, Kamara A. Attachment and individuation of deaf/hard-of-hearing and hearing young adults. *J Deaf Stud Deaf Educ.* 2005;10(1):51-62. doi: 10.1093/deafed/eni003.
39. Jambor E, Elliott M. Self-esteem and coping strategies among deaf students. *J Deaf Stud Deaf Educ.* 2005;10(1):63-81. doi: 10.1093/deafed/eni004.
40. Angelides P, Aravi C. A comparative perspective on the experiences of deaf and hard of hearing individuals as students at mainstream and special schools. *Am Ann Deaf.* 2006-2007;151(5):476-87. doi: 10.1353/aad.2007.0001.
41. van Gent T, Goedhart AW, Knoors HE, Westenberg PM, Treffers PD. Self-concept and ego development in deaf adolescents: a comparative study. *J Deaf Stud Deaf Educ.* 2012;17(3):333-51. doi: 10.1093/deafed/ens002.
42. Kushalnagar P, Topolski TD, Schick B, Edwards TC, Skalicky AM, Patrick DL. Mode of communication, perceived level of understanding, and perceived quality of life in youth who are deaf or hard of hearing. *J Deaf Stud Deaf Educ.* 2011;16(4):512-23. doi: 10.1093/deafed/enr015.
43. Bat-Chava Y. Antecedents of self-esteem in deaf people: A meta-analytic review. *Rehabil Psychol.* 1993;38(4):221-34. doi: 10.1037/0090-5550.38.4.221.
44. Desselle DD. Self-esteem, family climate, and communication patterns in relation to deafness. *Am Ann Deaf.* 1994;139(3):322-8. doi: 10.1353/aad.2012.0295.
45. Macaulay CE, Ford RM. Family influences on the cognitive development of profoundly deaf children: exploring the effects of socioeconomic status and siblings. *J Deaf Stud Deaf Educ.* 2013;18(4):545-62. doi: 10.1093/deafed/ent019.
46. Strong M, Prinz P. A study of the relationship between American sign language and English literacy. *J Deaf Stud Deaf Educ.* 1997;2(1):37-46. doi: 10.1093/oxfordjournals.deafed.a014308.
47. Mosaku K, Akinpelu V, Ogunniyi G. Psychopathology among a sample of hearing impaired adolescents. *Asian J Psychiatr.* 2015;18:53-6. doi: 10.1016/j.ajp.2015.09.014.
48. van Gent T, Goedhart AW, Treffers PD. Self-concept and psychopathology in deaf adolescents: preliminary support for moderating effects of deafness-related characteristics and peer problems. *J Child Psychol Psychiatry.* 2011;52(6):720-8. doi: 10.1111/j.1469-7610.2011.02392.x.
49. Loeb RC, Sarigiani P. The impact of hearing impairment on self-perceptions of children. *Volta Rev.* 1986;88(2):89-100.
50. Tambs K. Moderate effects of hearing loss on mental health and subjective well-being: results from the Nord-Trøndelag Hearing Loss Study. *Psychosom Med.* 2004;66(5):776-82. doi: 10.1097/01.psy.0000133328.03596.fb.
51. Kluwin TN. Coteaching deaf and hearing students: research on social integration. *Am Ann Deaf.* 1999;144(4):339-44. doi: 10.1353/aad.2012.0337.
52. Koelle WH, Convey JJ. The prediction of the achievement of deaf adolescents from self-concept and locus of control measures. *Am Ann Deaf.* 1982;127(6):769-79. doi: 10.1353/aad.2012.1374.
53. Orth U, Robins RW, Roberts BW. Low self-esteem prospectively predicts depression in adolescence and young adulthood. *J Pers Soc Psychol.* 2008;95(3):695-708. doi: 10.1037/0022-3514.95.3.695.
54. Trzesniewski KH, Donnellan MB, Moffitt TE, Robins RW, Poulton R, Caspi A. Low self-esteem during adolescence predicts poor health, criminal behavior, and limited economic prospects during adulthood. *Dev Psychol.* 2006;42(2):381-90. doi: 10.1037/0012-1649.42.2.381.
55. Ata RN, Ludden AB, Lally MM. The effects of gender and family, friend, and media influences on eating behaviors and body image during adolescence. *J Youth Adolesc.* 2007;36(8):1024-37. doi: 10.1007/s10964-006-9159-x.
56. Peat CM, Peyerl NL, Muehlenkamp JJ. Body image and eating disorders in older adults: a review. *J Gen Psychol.* 2008;135(4):343-58. doi: 10.3200/genp.135.4.343-358.
57. Stice E, Hayward C, Cameron RP, Killen JD, Taylor CB. Body-image and eating disturbances predict onset of depression among female adolescents: a longitudinal study. *J Abnorm Psychol.* 2000;109(3):438-44. doi: 10.1037/0021-843x.109.3.438.
58. Johnson F, Wardle J. Dietary restraint, body dissatisfaction, and psychological distress: a prospective analysis. *J Abnorm Psychol.* 2005;114(1):119-25. doi: 10.1037/0021-843x.114.1.119.
59. Moksnes UK, Espnes GA. Self-esteem and life satisfaction in adolescents-gender and age as potential moderators. *Qual Life Res.* 2013;22(10):2921-8. doi: 10.1007/s11136-013-0427-4.
60. Nunes T, Pretzlik U, Olsson J. Deaf children's social relationships in mainstream schools. *Deafness and Education International.* 2001;3(3):123-36. doi: 10.1093/deafed/ent019.

- 10.1179/146431501790560972.
61. Rieffe C, Terwogt MM. Anger communication in deaf children. *Cogn Emot.* 2006;20(8):1261-73. doi: 10.1080/02699930500513502.
 62. Beavers R, Hampson RB. The Beavers systems model of family functioning. *J Fam Ther.* 2000;22(2):128-43. doi: 10.1111/1467-6427.00143.
 63. Hamed Sardar E, Abdul Kadir R. Mothers' attitudes and self-esteem among deaf children in Iranian high schools. *Asian Soc Sci.* 2012;8(2):147-52. doi: 10.5539/ass.v8n2p147.
 64. Hintermair M. Parental resources, parental stress, and socioemotional development of deaf and hard of hearing children. *J Deaf Stud Deaf Educ.* 2006;11(4):493-513. doi: 10.1093/deafed/enl005.
 65. Wallis D, Musselman C, MacKay S. Hearing mothers and their deaf children: the relationship between early, ongoing mode match and subsequent mental health functioning in adolescence. *J Deaf Stud Deaf Educ.* 2004;9(1):2-14. doi: 10.1093/deafed/enh014.
 66. Watkin P, McCann D, Law C, Mullee M, Petrou S, Stevenson J, et al. Language ability in children with permanent hearing impairment: the influence of early management and family participation. *Pediatrics.* 2007; 120(3):e694-701. doi: 10.1542/peds.2006-2116.
 67. Huber M, Pletzer B, Giourgas A, Nickisch A, Kunze S, Illg A. Schooling relates to mental health problems in adolescents with cochlear implants-mediation by hearing and family variables. *Front Psychol.* 2015;6:1889. doi: 10.3389/fpsyg.2015.01889.
 68. Michael R, Cinamon RG, Most T. What shapes adolescents' future perceptions? the effects of hearing loss, social affiliation, and career self-efficacy. *J Deaf Stud Deaf Educ.* 2015;20(4):399-407. doi: 10.1093/deafed/env023.
 69. Movallali G, Ashori M, Jalil-Abkenar SS, Salehy Z. Effect of life skills training on social skills of hearing impaired students. *IOSR Journal of Research and Methods in Education.* 2014;4(5): 28-34. doi: 10.9790/7388-04522834.
 70. Mahvashe Vernofaderani A, Movallali G. Effectiveness of life skills training on the reduction of social phobia in hearing impaired students. *Journal of Practice in Clinical Psychology.* 2013;1(2):105-10.
 71. Mahvashe Vernofaderani A, Adibsereshki N, Movallali G. [The effectiveness of life skills training on enhancing the social skills of hearing impaired boy secondary school students in inclusive schools]. *Journal of Research in Rehabilitation Sciences.* 2012;8(3):477-88. Persian.
 72. Mance J, Edwards L. Deafness-related self-perceptions and psychological well-being in deaf adolescents with cochlear implants. *Cochlear Implants Int.* 2012;13(2): 93-104. doi: 10.1179/1754762811y.0000000017.
 73. Barak A, Sadovsky Y. Internet use and personal empowerment of hearing-impaired adolescents. *Comput Human Behav.* 2008;24(5):1802-15. doi: 10.1016/j.chb.2008.02.007.