

Effect of Bullying on Self-esteem among Adolescents with Hearing Impairment: A Comparative study

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Abstract

Background: Bullying becomes a major problem facing school-aged children world-wide and those with visible cues of disability may be of greater risk. **Aim of the study:** Was to assess effect of bullying on self-esteem among adolescents with hearing impairment. **Subjects and Methods; Research design:** A case control design was utilized in that study. **Settings:** The study was conducted at audiometry unit, ENT outpatient clinic at Zagazig university hospital and four preparatory and secondary schools at Fakous city. **Subjects:** A purposive sample composed of 50 hearing impaired adolescents with hearing aids or cochlear implant and 50 control, aged 12-18 years. **Tools of data collection:** Three tools were used for data collection. Tool (I): A structured interview questionnaire. Tool (II): Retrospective Bullying Questionnaire (RBQ). Tool (III): Rosenberg Self-Esteem Scale. **Results:** The study revealed a significant negative correlation between bullying victimization and self-esteem in hearing impaired adolescents ($r = -0.470$) and control group ($r = -0.280$). **Conclusion:** Hearing impaired adolescents were more prone to bullying victimization than control group that negatively affected their self-esteem. **Recommendations:** Educational programs are required to raise awareness of children, parents and the whole community members about the phenomena of bullying and how to deal with it.

Key words: Bullying, Self-esteem, Hearing impairment, Adolescents

Introduction:

Bullying is the most prevalent type of youth violence that becomes a major significant concern for students and a global public health issue. Bullying is defined as a kind of aggressive behavior in which someone else induces injury or discomfort intentionally and repeatedly to another one in which there is a power imbalance between the bully and the victim ⁽¹⁾.

Bullying includes two forms: direct and indirect. Direct bullying as physical attacks, verbal harassment, aggressive tactics and ridiculing. Indirect bullying includes social exclusion, spreading rumors, and any similar passive or aggressive behaviors in order to hurt someone socially, get others to avoid them, and keep others in the dark about who did it ⁽²⁾.

Bullying behavior has negative consequences which may be immediate such as being injured from a physical attack and immediate psychological effects in form of depressed mode, anxiety, and excessive stress or long term consequences as feeling insecure, lack of trust, avoidant personality disorder, and post-traumatic stress disorder ⁽³⁾.

Childhood-onset hearing impairment is very common and about 5 of every 1000 infants are born with or develop disabling hearing impairment in early childhood. Disabling hearing impairment in children is known as a hearing loss greater than 30 decibels in the better hearing ear ⁽⁴⁾. Hearing Loss may occur due to a wide range of causes as inherited or congenital problems, infections, diseases or traumatic events that affect several parts of the ear or hearing mechanism ⁽⁵⁾.

Hearing loss includes three main types: Sensorineural hearing loss occurs as a result of damage to the cochlear or vestibulocochlear nerve, Conductive hearing loss is caused by impairment in conduction due to a physical or mechanical obstruction to air conduction which prevent transmission of sound waves from the outer or middle ear to the inner ear. There can also be a combination of the previous two types known as mixed hearing loss ⁽⁶⁾.

Adolescents and youths are the most vulnerable groups to bullying because of their high dependence on others. In addition, they have less autonomy. Also, they are at the transition stage where peer influence plays a significant role in well-being ⁽⁷⁾. Self-esteem is defined as one's general evaluation or appraisal of the self, including feelings of self-worth and also refers to how one values self. This basic appreciation of the self has effects on multiple dimensions in our lives including our friendships, our successes and our academic career ⁽⁸⁾.

Self-esteem is considered one of the most important indicators of psychological wellbeing in adolescents. A meta-analysis study showed that traditional bullying victimization and self-esteem were negatively associated in adolescents ⁽⁹⁾. Adolescents with hearing-impairment are facing many difficulties and challenges regarding their self-esteem as speech and language delays or communication problems that make them more exposed to bullying ⁽⁸⁾.

One of the effects of bullying on self-esteem is refusal or self-criticism. Children who are always deprecated about something come to believe that it's true. Second effect of bullying is loss of self-confidence or trust as bullied children feel that they are not acceptable at something and failing in every work ⁽¹⁰⁾.

Anyone may be vulnerable to bullying and abusive behaviors but

those who at greater risk include those who are different in appearance, cultural, social status and who have health issues or disabilities ⁽¹¹⁾.

School nurses play important role in reducing the incidence of bullying and its negative consequences among students through nursing interventions using several methods including preventive, curative and rehabilitative actions ⁽¹²⁾. Also, school nurses can empower student's self-esteem and resilience. In addition, they can use the network with charities and clinician supervisors in order to choose the best kind of support to follow the case up ⁽¹³⁾.

Significance of the Study:

About 17-32.5% of children and adolescents with hearing impairments are involved in bullying ⁽¹⁴⁾. Hearing impaired children who have visible cues of their disability as using hearing aids or cochlear implant may be at greater risk of bullying due to perceived difference so the present study was conducted to assess bullying and its effect on self-esteem among adolescents with hearing impairment.

Aim of the study:

The aim of the study was to assess bullying and its effect on self-esteem among adolescents with hearing impairment.

Research questions:

- Are hearing impaired adolescents more vulnerable to bullying?
- What is the effect of bullying on self-esteem among hearing impaired adolescents?

Subjects and Methods:

Research design:

Case- control research design was adopted to carry out the present study.

Study Setting:

The present study was conducted at:

- Audiometry unit and ENT outpatient clinic at Zagazig University Hospital.

- Four schools which were randomly selected from Fakous city. These schools were El-Azazy mixed preparatory school, El-Azazy mixed secondary school, El-Shahid Gamal Hafiz El-Jinde preparatory school and El-Shahid Ibrahim Safa secondary school.

Study Subjects:

The study was conducted on a **purposive sample** of 50 adolescents with hearing impairment used hearing aids or cochlear implant and were able to communicate orally and 50 control of normal hearing adolescents aged 12- 18 years who agreed to participate in the study and their parents.

Sample size:

The sample size was calculated to be 50 cases (Hearing impaired adolescents) and 50 control (adolescents able to hear) assuming that percent of vulnerability to bullying for children who stuttered was 61% and 22% among control group confidence level is 95% two side with power of study 95% ⁽¹⁵⁾. Sample size was calculated using Open Epi.

$$r = \frac{1 + (p^*)(1 - p^*)(Z_B + Z_{\alpha/2})^2}{(P_1 - p_2)^2}$$

Tools for data collection:

In order to fulfill the objectives of the study three tools were used to collect the necessary data:

Tool I: A structured interview questionnaire was developed by the researcher after reviewing pertinent scientific literature and articles in periodicals to collect the required data. It composed of two main parts:

- Part 1: Demographic data of the studied adolescents.**

This part of the questionnaire is concerned with socio- demographic data and composed of 8 closed-ended questions about child's age, gender, residence, and family type, number of siblings, birth order, educational grade and type of school.

- Part II: Data about medical history of Hearing impaired adolescents (cases):**

This part of questionnaire is concerned with medical history of the disability and composed of 5 closed-ended questions about age of diagnosis of hearing impairment, causes, type of hearing loss, degree of hearing loss and assistive listening devices.

Tool II: Retrospective Bullying Questionnaire (RBQ):

This scale was adopted from **Schäfer et al.** ⁽¹⁶⁾ and utilized to identify victims and non-victims of bullying including three types physical, verbal and indirect bullying.

Scoring system:

Victims are identified from their responses about frequency and intensity of reported physical, verbal, and indirect bullying. A respondent is considered a victim if they report being bullied in one or more ways "sometimes" or more often (frequency) and classified the experience as "quite serious" or "extremely serious" (intensity).

The participants were classified from their responses regarding types of bullying victimization as **not exposed** to bullying victimization, exposed to **physical** bullying only, exposed to **verbal** bullying only, exposed to **indirect** bullying only and **combined** exposed to more than one of the three types of bullying together.

This questionnaire was translated into Arabic by the researcher, validated and reliability test was done (Cronbach's Alpha was 0.76 with acceptable consistency).

Tool III: Rosenberg Self-Esteem Scale:

The scale was adopted from **Rosenberg** ⁽¹⁷⁾. It is a 10-item scale that measures global self-worth by measuring both positive and negative feelings about the self. All items were answered using a 4-point Likert scale format ranging from strongly agree to strongly disagree.

Scoring system:

Strongly Agree =3, Agree=2, Disagree =1, Strongly Disagree=0

Negative Items with an asterisk are scored reversely as Strongly Agree =0, Agree=1, Disagree =2, Strongly Disagree=3.

The scale scores range from 0-30. Scores between 15-25 are within normal range, scores below 15 suggest low self-esteem and scores above 25 suggest high self-esteem.

Content Validity and Reliability:

Content validity for Tool (I), (II) and (III) was established by three experts (one professor of community health nursing, one assistant professor of psychiatric health nursing and one professor of psychiatric medicine). The recommended modifications were done and the final form was ready for use.

Reliability of tools was done by using Cronbach's Alpha test reliability coefficient to measure the internal consistency for the final scales.

Tool (II): Cronbach's Alpha was 0.76 and tool (III): Cronbach's Alpha was 0.77 with acceptable consistency

Field work:

The fieldwork for the current study was done through the following steps:

The aim of the study was explained and oral consent was obtained from hearing impaired adolescents and their parents who accepted to participate in the study after that the researcher interviewed hearing impaired adolescents to collect the necessary data. It took about 25-40 minutes of each child for data collection.

The researcher attended the Audiometry unit and ENT outpatient clinic at Zagazig University Hospital for 3 days/week (Saturday, Monday and Wednesday) for data collection from 10 A.M to 1:30 P.M. The data was collected from hearing impaired adolescents (cases) during 3 months and half, starting from July 2022 to mid-October 2022. After collecting the

data from the cases, the researcher went to the selected schools and explained to directors the study aim and clarified the tools used for data collection, gave them a copy from the tool and approved letters from Fakous Educational Administration.

The researcher selected the number of students (control) from each school with matchmaking of the studied hearing impaired adolescents (cases) regarding the same age, gender, residence and educational grade. Then the researcher explained to the selected students the aim of the study and the nature of the tools after taking oral consents from them. After that the researcher interviewed the control children individually for 4 days/week (Sunday, Monday and Tuesday, Wednesday) from 9.30 A.M. to 12 P.M. The process of data collection for each child took about 20-30 minutes. It took one month to complete data collection from selected students starting from mid-October 2022 to the mid-November 2022.

Pilot study:

The pilot study was carried on 10 % of adolescents (5 hearing impaired and 5 control) to assess applicability, feasibility and practicality of the tools. The children involved in the pilot study were excluded from the study sample.

Administration and Ethical consideration:

The study was approved by the Research Ethics Committee (REC) in the Faculty of Nursing Zagazig University. An official permission was got by submission of formal letters derived from the dean of Faculty of Nursing, Zagazig University to:

- The responsible authorities of Audiometry unit and ENT outpatient clinic at zagazig university hospitals to attain their permission for data collection.
- The Sharkia Education Directorate at Zagazig city that referred the researcher to the director of the Educational Administration at Fakous city who directed the

researcher to the selected schools with approval letters.

Statistical Analysis:

All data were collected, tabulated and statistically analyzed using SPSS 20.0 for windows (SPSS Inc., Chicago, IL, USA 2011). Quantitative data were expressed as the mean \pm SD and qualitative data were expressed as absolute frequencies (number) and relative frequencies (percentage). Chi-square test (χ^2) or Fisher's exact test (FET) were used to assess percent of categorical variables and were compared using Chi-square test or Fisher's exact test when appropriate. The Mann-Whitney U-test was used for comparison of means of two independent groups of quantitative data which were not normally distributed. Spearman correlation coefficient (r) was calculated to assess relationship between study variables, (+) sign indicates direct correlation & (-) sign indicates inverse correlation, also values near to 1 indicate strong correlation & values near 0 indicate weak correlation.

Results:

Table 1: Shows characteristics of the studied adolescents. Regarding the age, 62 % of both hearing impaired and control groups were 12 to 14 years with a mean age of 14.24 ± 2.16 . Also, 60% of both groups were males. In addition to, 52% of both groups were from rural areas.

The same table presents that 96% of hearing impaired adolescents live with both parents compared to 90% in the control group. Also, 34% and 36% of hearing impaired and control groups respectively were the first birth order in the family. Regarding the educational grade, 70% of both groups were in preparatory grade.

Table 2: Medical history of hearing impaired adolescents is represented in table (2). It was found that 54% of hearing impaired adolescents was diagnosed with hearing impairment since birth. Regarding the causes of hearing impairment, 50% were related to congenital causes followed by

frequent otitis media that constituted 26% from the acquired causes.

The same table reveals that 64% of hearing impaired adolescents had Sensorineural hearing loss and 32% had conductive type. As regards the degree of hearing loss, 42% had profound degree and 34% had a sever degree).

Table (3): Shows types of current bullying victimization experiences among the studied adolescents. It was found that hearing impaired adolescents were more exposed to bullying victimization than control group with a mean value 1.20 ± 0.75 and 0.80 ± 0.65 for both groups respectively and the difference was statistically significant ($p=0.016$).

Table (4): Shows total self-esteem score of the studied adolescents. It was shown that control group had more self-esteem with a mean score 19.10 ± 3.91 than hearing impaired adolescents with a mean score 16.88 ± 3.33 . It was revealed that 84% of control group had normal self-esteem compared to 72% of hearing impaired adolescents. Low self-esteem constituted 28% in hearing impaired adolescents compared to 10% of control group .The difference was statistically significant ($P=0.021$).

Table (5): Reveals the relation between bullying victimization experience and total self-esteem score of the control group. There was a highly statistically significant relation between bullying and self-esteem in control group as 100% of children with high self-esteem reported not exposed to bullying at all. In contrast, 80% of control group with low self-esteem exposed to indirect bullying and ($p=0.001$).

Table (6): Illustrates the relation between bullying victimization experience and total self-esteem score of the hearing impaired adolescents. It was revealed a statistically highly significant relation between bullying victimization and self-esteem as 78.6% of hearing impaired

adolescents with low self-esteem reported exposure to combined types of bullying ($p < 0.001$).

Table (7): Shows the correlation coefficient between bullying victimization and total self-esteem score of the studied adolescents. It was found a statistically highly significant negative correlation between bullying victimization and self-esteem in hearing impaired adolescents ($r = -0.470$) and control group ($r = -0.280$). This means that the more increasing to bullying victimization exposure, the more decreasing self-esteem would be.

Table (8): Exhibits step wise multiple linear regression for predicting factors which affect total self-esteem score of the control group. Bullying victimization was statistically significant independent negative predictor of total self-esteem score of the control group. This means that total self-esteem decreases by increasing exposure to bullying victimization at school ($p = 0.049$). The model explains 12.8% of the variation in this score as the value of r-square.

Table (9): Shows step wise multiple linear regression for predicting factors which affect total self-esteem score of the hearing impaired adolescents. Bullying victimization was highly statistically significant independent negative predictor of total self-esteem score of hearing impaired children. This means that total self-esteem decreases by increasing exposure to bullying victimization at school ($p = 0.001$). Where the value of r-square = 24.6%.

Discussion:

Bullying becomes a significant public problem that negatively affects school-aged children worldwide⁽¹⁸⁾. Bullying is a form of aggressive behavior that occurs among school-aged children and becomes quite prevalent among teenagers all over the world that leads to low self-confidence and self-esteem⁽¹⁹⁾.

Children and adolescents with hearing loss are more likely to experience bullying than children with typical hearing. However, studies that have assessed bullying in adolescents with hearing impairment are few⁽²⁰⁾. Adolescents with hearing-impairment facing many difficulties and challenges regarding their self-esteem as speech and language delays, communication problems exposed them to less stable friendships and more bullying⁽⁸⁾.

Hearing impaired adolescents are viewed as being different from the majority due to observable hearing aids or cochlear implants in addition to language problems and impaired socially skilled behaviors⁽²¹⁾. The mean age of the studied adolescents was 14.24 ± 2.16 years old and more than half of the studied adolescents were males and slightly more than half of both groups were from rural area. It was in the same line with **Akram and Munawar**⁽²²⁾ who conducted a study about Bullying victimization: A risk factor of health problems among adolescents with hearing impairment, found that (64%) of studied children were males.

The results of the present study revealed that half of the studied hearing-impaired adolescents were diagnosed since birth. Also, more than half used hearing aids and the rest used cochlear implant. Despite their disability, that didn't hinder them from entering schools; early like their normal peers as most of the studied adolescents were in preparatory schools. All students in both groups attended regular schools but hearing-impaired adolescents joined regular schools with integrated systems. This may be due to that with early detection and diagnosis of hearing loss, early auditory intervention and rehabilitation either by hearing aids or cochlear implants provided hearing impaired children great benefits for early language acquisition, better communication skills and good educational outcomes.

As regards the causes of hearing impairment, the current study showed that half (50%) of cases were related to congenital causes followed by frequent otitis media that constituted more than quarter (26%) of the acquired causes. On contrary **Abdel Hamid et al.** ⁽²³⁾ who performed a national household survey about prevalence and patterns of hearing impairment in Egypt found that the commonest cause of hearing impairment was otitis media with effusion constituted (30.7%).

Regarding the type of hearing loss, the findings of the current study showed that less than two thirds (64%) of hearing impaired adolescents had sensorineural hearing loss and less than one third (32%) had conductive type. These findings came in the same line with **Abdel-Rhman et al.** ⁽²⁴⁾ who conducted a study about Prevalence and risk factors for hearing disorders in secondary school students in Ismailia, Egypt, found that (70.0%) of students had sensorineural hearing loss and (14.2%) had bilateral conductive hearing loss.

The current study revealed that hearing impaired adolescents were more prone to bullying victimization than control group with a mean value 1.20 ± 0.75 and 0.80 ± 0.65 for both groups respectively with a statistically significant difference ($P=0.016$). These results agreed with **Broekhof et al.** ⁽²⁵⁾ who conducted a study to assess the longitudinal associations of emotional experiences with bullying and victimization among hearing impaired adolescents as compared to their hearing peers, found that hearing impaired adolescents were victimized more often than hearing peers in hierarchical regression analysis.

On contrary, **Akram and Munawar** ⁽²²⁾ conducted a study about Bullying victimization: A risk factor of health problems among adolescents with hearing impairment, found that children with hearing impairment experienced bullying just like those without an impairment and concluded that bullying is a significant problem

and should be treated effectively. Self-esteem is one of important factors required of an individual's mental health it represents a person's judgment regarding the self, so low self-esteem may lead to poor self-confidence and negative thoughts which affects one's personality ⁽²⁵⁾.

The present study found that adolescents in control group had more positive self-esteem with a mean score 19.10 ± 3.9 than hearing impaired adolescents with a mean score 16.88 ± 3.33 with statistically significant difference ($P=0.021$). These results contrasted with a study conducted by **Warner-Czyz et al.** ⁽²⁷⁾ to assess self-esteem in children and adolescents with hearing loss, found that children and adolescents with hearing loss had global self-esteem ($M = 22.52$, $SD = 5.26$) significantly more positively than hearing peers ($M = 20.75$, $SD = 5.06$) and ($p = .02$).

The current study revealed that there was a highly statistically significant negative correlation between bullying victimization and self-esteem in hearing impaired adolescents ($r = -0.470$) and control group ($r = -0.280$). As, the more increasing to bullying victimization exposure, the more decreasing self-esteem would be.

This finding was congruent with, **Hammad and Awed** ⁽²⁸⁾ in Saudi Arabia who found that there was a statistically significant correlation between self-esteem and traditional bullying victimization ($r = -0.26$) and ($p = 0.26$). In addition, **Ahmed and El-slamoni** ⁽¹⁰⁾ in Egypt who conducted a study to assess the effects of school bullying on self-esteem of preparatory school students among rural area in El sinbellawein city, found a statistically significant negative correlation among the studied students regarding total bullying score and self-esteem score as increasing bullying score associated with decrease self-esteem score ($r = -0.152$) and ($p = 0.035$).

Also, **Tsaousis** ⁽⁹⁾ who performed a meta-analytic review to assess the

relationship of self-esteem to bullying perpetration and victimization among school children and adolescents agreed with the results of the current study and found that bullying victimization is negatively associated with self-esteem ($r = - 0.27$).

The current study revealed that bullying victimization was statistically significant independent negative predictor of total self-esteem score of hearing impaired adolescents, where r -square= 24.6% and in control group, where r -square= 12.8%. This means that total self-esteem decreases by increasing exposure to bullying victimization.

Conclusion:

Based upon the findings of the current study, it could be concluded that hearing impaired adolescents were more likely to experience bullying than their hearing peers that negatively affected their self-esteem.

Recommendations:

Based on findings, the following recommendations are suggested:

1. The importance of orientation and training for teachers and other school staff about the needs of students with disabilities especially hearing impaired adolescents who are educated in integrated schools and implementation of support strategies in mainstream schools.
2. Further researches are needed to assess bullying among adolescents with disabilities and its effects on their physical and psychological health.
3. Implement anti-bullying campaigns at schools to reduce bullying among students and its negative outcomes especially on self-esteem.

Table (1): Characteristics of the studied adolescents (n=100)

| Child characteristics | Groups | | | |
|---------------------------------------|-------------------|-------|-------------------------|-------|
| | Control (n=50) | | Hearing impaired (n=50) | |
| | No | % | No | % |
| Age (years) | | | | |
| 12- | 31 | 62.0 | 31 | 62.0 |
| 14- | 8 | 16.0 | 8 | 16.0 |
| 16-18 | 11 | 22.0 | 11 | 22.0 |
| Mean ± SD | 14.24±2.16 | | 14.24±2.16 | |
| Gender | | | | |
| Male | 30 | 60.0 | 30 | 60.0 |
| Female | 20 | 40.0 | 20 | 40.0 |
| Residence | | | | |
| Rural | 26 | 52.0 | 26 | 52.0 |
| Urban | 24 | 48.0 | 24 | 48.0 |
| Family Type | | | | |
| Live with both parents | 45 | 90.0 | 48 | 96.0 |
| One parent | 5 | 10.0 | 2 | 4.0 |
| Others | 0 | 0.0 | 0 | 0.0 |
| Number of siblings | | | | |
| 1 | 3 | 6.0 | 6 | 12.0 |
| 2 | 17 | 34.0 | 19 | 38.0 |
| 3 | 17 | 34.0 | 13 | 26.0 |
| 4 or more | 13 | 26.0 | 12 | 24.0 |
| Birth order | | | | |
| The first | 18 | 36.0 | 17 | 34.0 |
| The second | 9 | 18.0 | 17 | 34.0 |
| The third | 12 | 24.0 | 11 | 22.0 |
| More | 11 | 22.0 | 5 | 10.0 |
| Educational grade | | | | |
| Preparatory | 35 | 70.0 | 35 | 70.0 |
| Secondary | 15 | 30.0 | 15 | 30.0 |
| Type of school | | | | |
| Regular school | 50 | 100.0 | 0 | 0.0 |
| Regular school with integrated system | 0 | 0.0 | 50 | 100.0 |
| Special school | 0 | 0.0 | 0 | 0.0 |

Table (2): Medical history of hearing impaired adolescents (n=50)

| Medical history | No | % |
|---|----|------|
| Age of diagnosis of hearing impairment | | |
| Since birth | 25 | 50.0 |
| less than 5 years | 7 | 14.0 |
| More than 5 years | 18 | 36.0 |
| Causes of hearing impairment | | |
| a. Congenital | 25 | 50.0 |
| b. Acquired | | |
| Frequent otitis media | 13 | 26.0 |
| Infections | 0 | 0.0 |
| Head injury | 1 | 2.0 |
| Ototoxic drugs | 0 | 0.0 |
| Neoplasm | 0 | 0.0 |
| Other | 11 | 22.0 |
| Type of hearing loss | | |
| Sensorineural hearing loss | 32 | 64.0 |
| Conductive hearing loss | 16 | 32.0 |
| Mixed hearing loss | 2 | 4.0 |
| Degree of hearing loss | | |
| Mild | 0 | 0.0 |
| Moderate | 12 | 24.0 |
| Severe | 17 | 34.0 |
| Profound | 21 | 42.0 |
| Assistive listening devices | | |
| Hearing Aid | 26 | 52.0 |
| Cochlear Implant | 24 | 48.0 |

Table (3): Types of current bullying victimization experiences among the studied adolescents (n=100)

| Bullying-victimization | Groups | | | | MW (p value) |
|--|----------------|------|-------------------------|------|-----------------|
| | Control (n=50) | | Hearing impaired (n=50) | | |
| | No | % | No | % | |
| Types of current bullying victimization experiences | | | | | |
| Not exposed | 24 | 48.0 | 10 | 20.0 | |
| Physical | 4 | 8.0 | 2 | 4.0 | |
| Verbal | 3 | 6.0 | 4 | 8.0 | 2.413 |
| Indirect (social) | 5 | 10.0 | 14 | 28.0 | (0.016*) |
| Combined | 14 | 28.0 | 20 | 40.0 | |
| Mean± SD | 0.80±0.65 | | 1.20±0.75 | | |

MW: Mann-Whitney U, *: statistically significant (p<0.05)

Table (4): Total self-esteem scores of the studied adolescents (n=100)

| Self-Esteem scores | Groups | | | | χ ² (p-value) |
|--------------------|----------------|------|-------------------------|------|-----------------------------|
| | Control (n=50) | | Hearing impaired (n=50) | | |
| | No | % | No | % | |
| Low | 5 | 10.0 | 14 | 28.0 | |
| Normal | 42 | 84.0 | 36 | 72.0 | 7.725 |
| High | 3 | 6.0 | 0 | 0.0 | (0.021*) |
| Mean ± SD | 19.10±3.91 | | 16.88±3.33 | | |

χ² : Chi square test, *: statistically significant (p<0.05)

Table (5): Relation between bullying victimization experience and total self-esteem score of the control group (n=50)

| Parameter | Self-esteem score of control group | | | | | | χ^2 (p-value) |
|-------------------------------|------------------------------------|------|---------------|------|------------|-------|-----------------------------|
| | Low (n=5) | | Normal (n=42) | | High (n=3) | | |
| | no | % | no | % | no | % | |
| Bullying victimization | | | | | | | |
| Not exposed | 0 | 0.0 | 21 | 50.0 | 3 | 100.0 | 35.780 ($<0.001^{**}$) |
| Physical | 1 | 20.0 | 3 | 7.1 | 0 | 0.0 | |
| Verbal | 0 | 0.0 | 3 | 7.1 | 0 | 0.0 | |
| Indirect | 4 | 80.0 | 1 | 2.4 | 0 | 0.0 | |
| Combined | 0 | 0.0 | 14 | 33.3 | 0 | 0.0 | |

χ^2 : Chi square test, *: statistically significant ($p<0.05$), **: statistically highly significant ($p<0.001$)

Table (6): Relation between bullying victimization experience and total self-esteem score of hearing impaired adolescents (n=50)

| Parameter | Self-esteem score of hearing impaired group | | | | χ^2 (p-value) |
|-------------------------------|---|------|---------------|------|-----------------------------|
| | Low (n=14) | | Normal (n=36) | | |
| | no | % | no | % | |
| Bullying victimization | | | | | |
| Not exposed | 0 | 0.0 | 10 | 27.8 | 13.754 ($<0.001^{**}$) |
| Physical | 0 | 0.0 | 2 | 5.6 | |
| Verbal | 0 | 0.0 | 4 | 11.1 | |
| Indirect | 3 | 21.4 | 11 | 30.6 | |
| Combined | 11 | 78.6 | 9 | 25.0 | |

χ^2 : Chi square test, *: significant ($p<0.05$), **: statistically highly significant ($p<0.001$)

Table (7): Correlation Coefficient between bullying victimization and total self-esteem score of the studied adolescents

| Parameter | Self-esteem score | | | | |
|-------------------------------|-------------------|---------------|--------|------------------------|---------------|
| | | Control group | | Hearing impaired group | |
| | | (r) | P | (r) | P |
| Bullying Victimization | Control | -0.280 | 0.049* | | |
| | Hearing impaired | | | -0.470 | $<0.001^{**}$ |

*: significant ($p<0.05$), **: statistically highly significant ($p<0.001$), r: correlation coefficient

Table (8): Step wise multiple linear regression for predicting factors which affect total self-esteem score of the control group

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | 95.0% Confidence Interval for B | |
|------------------------|-----------------------------|------------|---------------------------|--------|--------|---------------------------------|-------------|
| | B | Std. Error | Beta | | | Lower Bound | Upper Bound |
| | (Constant) | 10.719 | 3.261 | | | | 3.287 |
| Bullying victimization | -0.063 | 0.031 | -0.280 | -2.018 | 0.049* | -0.127 | 0.001 |

*: significant ($p < 0.05$)

R-square=0.128, ANOVA: F= 6.889, P<0.01

Variables entered and excluded: child age per years, gender, residence, family type, number of siblings, birth order, educational grade, attention in classroom, consanguinity of parent, father age, father educational level, father occupation, mother age, mother educational level, mother occupation, and family income.

Table (9): Step wise multiple linear regression for predicting factors which affect total self-esteem score of the hearing impaired adolescents

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | 95.0% Confidence Interval for B | |
|------------------------|-----------------------------|------------|---------------------------|--------|---------|---------------------------------|-------------|
| | B | Std. Error | Beta | | | Lower Bound | Upper Bound |
| | (Constant) | 15.795 | 3.795 | | | | 4.162 |
| Bullying victimization | -0.139 | 0.038 | -0.470 | -3.690 | 0.001** | -0.215 | -0.063 |

*: significant ($p < 0.05$), **: statistically highly significant ($p < 0.001$).

R-square=0.246, ANOVA: F= 7.325, P<0.01

Variables entered and excluded: child age per years, gender, residence, family type, number of siblings, birth order, educational grade, consanguinity of parent, father age, father educational level, father occupation, mother age, mother educational level, mother occupation, and family income.

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