Assessment of deaf children's knowledge and practice regarding car accidents protection

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Abstract

Background: Hearing impaired children have static and dynamic balance disabilities and that their physical adaptation is lower than that of nondisabled peers. **Aim:** to assess deaf children's knowledge and practice regarding car accidents protection. **Design:** descriptive research design was used in this study. **Subjects:** The study sample composed of 69 school age and adolescent deaf children. **Setting:** The study was conducted at The Holy Land Institute for the Deaf, Jordan - Salt governorate. **Tools:** Data were collected by utilizing the designed interview questionnaire that consists of sociodemographic data, deaf children knowledge and practice about protection from car accident. **Results:** Deaf children's age ranged 12-18 years, males are more affected with hearing disorder than females and their academic achievement was good (41%). The majority lived in dormitories at school. Deaf children' knowledge and practice scores were unsatisfactory. **Conclusions:** The deaf children's knowledge and practice regarding car accidents were unsatisfactory. The age at which deafness began, degree of deafness were not affecting on studied deaf children academic achievement **Recommendations:** were suggested that ongoing in-service educational program for deaf children to improve their knowledge and practice.

Key words: Deaf children, knowledge and practice, protection, Car accidents.

Introduction:

Hearing is one of our five senses. It gives us access to sounds in the world around us. Hearing loss can have a major impact on the life of a child and his family. Because language and communication develop so rapidly during the first 3 years of life, an undetected hearing loss is likely to interfere with a child's speech, language and communication with others. Hearing loss also can result in learning problems that affect a child's performance at school **(Loss,2006).**

Disabling hearing loss refers to hearing loss greater than 40 decibels (dB) in the better hearing ear in adults (15 years or older) and greater than 30 (dB) in the better hearing ear in children (0 to 14 years) **(WHO, 2012).**

Deafness may be viewed as a condition that prevents an individual from receiving sound in all or most of its forms. In contrast, a child with hearing loss can generally respond to auditory stimuli, including speech **(individual with disabilities educational act (IDEI), 2013)**

About 10. 000 infants are born in the United States every year with sensorineural deafness. While the incidence of sensorineural deafness is similar in most high-income countries and is higher in some low-income countries, the parents have normal hearing and no knowledge of sign language. So they should learn a sign language and begin to communicate with their child by using that sign language **(Mellon et al., 2015).**

Over 5% of the world's population - 360 million people - has disabling hearing loss (328 million adults and 32 million children). Half of all cases of hearing loss are avoidable through primary prevention. **(WHO, 2015)**.

Globally, 150 million children aged 0-18 are estimated to be living with a disability, the majority of those disabled children live in low and middle-income countries **(Devries et al, 2014)**.

In Egypt the number of disabled persons is 0.7% of the total population. Mental retardation resembles (22.6%), while blindness, deafness, dumbness, deafness and dumbness and other disabilities resemble (9.5%), (3.5%), (2.5%), (6.5%), and (55.4%) respectively. In Assiut governorate the disabled children aged between 5 to15 years represent 6.5%. **(The Census of Population and Housing Condition, 2006)**.

In Jordan, hearing disabilities is located in second place in terms of prevalence after mental disabilities, as the number of those who suffer from hearing disability is about 3,500 people, representing 1% of the total disabilities **(Graby, 2015).**

According to **(WHO, 2015)** road traffic crashes resulted in more than 260.000 deaths in children and youth aged 10–19 years. Children accounted for 21% of all road traffic injuries resulting in deaths worldwide. Globally, road traffic injuries are the leading cause of death in 10–19 year olds. About two thirds of child road traffic injury deaths occur in the South-East of Asia and the Western Pacific regions; however Africa and the Eastern Mediterranean regions have the highest rates of fatalities.

Hearing impaired children's posture indicates a process of compensation for lack of auditory. Studies have shown that hearing impaired children have static and dynamic balance disabilities and that their physical adaptation is lower than that of nondisabled peers. Gross motor functions are fundamental to balance and gait while delayed motor development may affect balance and gait in children with hearing impairment.**(Uysal, et. al 2010)**

At school, children may be exposed to a number of risky situations in classrooms, on the playground during recess, or on the sports field during physical education or organized athletics. By law, schools must expose children with disabilities to a range of school activities that promote their physical, emotional, and social development and prepare them for independent living. Individual educational program IEPs and school-wide environmental assessments are mechanisms through which injury prevention strategies can be introduced, maintained, and programmed in school for the greater safety of children with disabilities **(Ramirez , et al 2010).**

Fundamentally, the fulfillment of the basic human rights of children with disabilities depends on genuine acceptance by their families, communities, societies and governments as equal citizens. It is worth noting that the majority of existing laws and policies on disability are not only outdated, but also don't prioritize issues of disability **(The African child policy forum, 2011).**

Aim of the study

To assess deaf children's knowledge and practice car accidents protection

Research Design:

A descriptive research design was used in this study

Setting:

The study was conducted at The Holy Land Institute for the Deaf, Jordan - Salt governorate.

Subjects:

The study sample composed of 69 school age and adolescent deaf children.

Tools:

An interview questionnaire :

was used for collecting the data of the study. It consists of four parts:-

Part I: It was designed to assess personal characteristics of deaf children such as: age stage, sex, birth order, and academic achievement.(Excellent (>= 85.0%), very good (>=75.0), good (>=65.0), passed (>=50.0%) and failed (<50.0%) according to guidance of laws of Jordanian Ministry of Education)

Scoring system:

The scoring system used for knowledge part was divided into three groups of items. In the group one which included definition of injuries, define car accident, light signal, pedestrian light sign, traffic cop, sidewalk, pedestrian tunnel, signal stopped, turn right, turn left and run over; each correct answer received 3 score and each wrong answer or a "don't know" one got zero score. In the group two which included four causes of car accident; the correct answer received 2 score and the wrong answer got zero score. Regarding the group three which included items of street parts, safe transit place, risk transit places and places to play, each correct answer accounted for 1 score and each wrong answer received zero score. The total knowledge score (65) was judged as the following: unsatisfactory <= 33 and satisfactory >= 34.

Part II: characteristics of hearing data is divided into;

the age at which deafness began (at birth, at school) ,

family history (positive & negative) ,

degree of hearing impairment (No impairment & slight impairment & moderate impairment & severe impairment & and profound impairment),

amplification (hearing aid, cochlear implant, no usage of amplification) according to **(Graham, 2014)** who used WHO report grade of the informal working group of deafness and hearing impairment program

Part III: It was designed to determine deaf children knowledge about protection from car accident including:

definition of car accidents and injuries, causes of car accidents, traffic laws, and traffic lights such as light signal, pedestrian light sign, traffic cop, sidewalk, pedestrian walkway, footbridge, pedestrian tunnel, signal stopped, turn right, turn left, run over, street parts, safe transit places, risk transit places, places to play

This information is gained from **central traffic management / Jordan general security directorate, 2016.**

Scoring system:

The scoring system used for knowledge part was divided into three groups of items. In the group one: which included definition of injuries, define car accident, light signal, pedestrian light sign, traffic cop, sidewalk, pedestrian tunnel, signal stopped, turn right, turn left and run over; (correct answer =3 score and wrong answer or a "don't know" one = zero score).

In the group two: which included four causes of car accident; (the correct answer = 2 score and the wrong answer = zero score).

In the group three: which included items of street parts, safe transit place, risk transit places and places to play, (correct answer =1 score and each wrong answer = zero score).

The total knowledge score (65) was judged as the following: unsatisfactory ≤ 33 and satisfactory ≤34.

Part IV: It was designed to assess deaf children practice about protection from accidents including group of skills needed to prevent car accidents and how to decrease exposure to these accidents such as rules and etiquette of walking on the sidewalk, rules of safe passage for roads, etiquette of riding cars and ways to avoid accidents run over.

Scoring system:-

The Scoring system used for practical part was that (correct answer =2 score and every wrong answer or a "don't know" one =zero score).

The total practical score (50) was judged as the following: unsatisfactory ≤ 24 and satisfactory ≥ 25.

Methods

Study was conducted through:

1. Permission was obtained from head of The Holy Land Institute for the Deaf through written letter from the nursing college.
2. A systematic search in institute records were done to see how many of deaf children to estimate the sample size for this current study.
3. Pilot studywas conducted on 10% of sample (7 children) in a selected setting to evaluate the applicability & clarity of the tools. According to this pilot study, the required modifications were made. Those children who were involved in the pilot study were included in the study.
4. The validity of the tools was obtained by experts of Nursing College at Assiut University.
5. The stability reliability of the tool was investigated by test-retest reliability method which indicated by correlation coefficient (coefficient of stability). The correlation between the test and the retest over a 2-week period was estimated ($r = 0.68$, $P < 0.001$). Test–retest reliability demonstrated that the correlation of all domains were very significant. In addition to the internal consistency reliability of tool was investigated by split-half procedure (coefficient alpha or Cronbach's alpha). The correlation coefficient was 0.89.
6. The feasibility of study was checked during pilot study.
7. Oral permission for voluntary participation was obtained from the subjects.

8. The purpose, steps and benefits of study was explained to the subjects.
9. After obtaining a verbal consent by subjects to participate in the study, and reassuring him about the strict confidentiality of any obtained information, and that the study results would be used only for the purpose of research. Then the tools filled by the subjects and the researchers.
10. Subjects were assigned a code number and the data were kept in a secure locker place.

Ethical consideration

The research proposal was approved from ethical committee of the faculty of nursing; confidentiality and privacy of the study were asserted. An written consent was taken from the deaf children's parents. Clarification of the nature and the aim of the study were done in initial interview with each deaf child by the help of teachers, with an emphasis that the study yields no harm to the subjects. The subjects had the right to refuse to participate in the study without any rational.

Statistical design

The Statistical package for social sciences (SPSS) software (Version 16) was used for analysis. The categorical data such as age, gender, the age at which deafness began family history, birth order, academic achievement, and child residence, degree of deaf and used of amplification are presented as frequency and percentage.

Limitations of the study:-

1. Transportation was a problem because the researcher must have to travel to another governorate to collect data from the selected setting.
2. Lack of references related to this thesis.

Results

The results of the current study were presented in three parts:

Part One: - This part concerned with personal characteristics and hearing data of the studied deaf children. Tables (1, 2)

Part Two: - knowledge of studied deaf children about protection from car accidents. Tables (3)

Part Three: - Practice of studied deaf children about protection from car accidents. Tables (4)

Part one: Personal characteristics of the studied deaf children.

Table (1):-Personal characteristics of studied deaf children.

Personal characteristics	Deaf children	
	Total (N.)=69	
	N.	%
Age stage		
School	25	36.2
Adolescent	44	63.8
Sex		
Male	36	52.2
Female	33	47.8
Birth order		
1st	17	24.6
2nd	12	17.5
3rd	17	24.6
4th	23	33.3
Academic achievement		
Excellent	17	24.6
Very good	18	26.1
Good	28	40.6
Pass	6	8.7
Child Residence		
Dormitories at school	63	91.3
With the family	6	8.7

Table (2):- Characteristics of hearing impairment of studied deaf children.

Characteristics of hearing impairment	Deaf children	
	Total N.=69	
	N.	%
The age at which deafness began		
At birth	55	79.7
School	14	20.3
Family history		
Positive	48	69.6
Negative	21	30.4
Degree of hearing impairment		
Slight impairment	4	5.8
Moderate impairment	19	27.5
Severe impairment	28	40.6
Profound impairment	18	26.1
Usage of amplification		
Hearing aid	28	40.6
Cochlear implant	22	31.9
None	19	27.5

<u>Part two:-</u> knowledge of studied deaf children about protection from car accidents.

Table (3):- level of studied deaf children's knowledge about car accidents protection.

Score of knowledge	` N.	%
Satisfactory	20	29
Unsatisfactory	49	71
M±SD	26.55±16.95	

M±SD = mean ± standard deviation

Part three: Practice of studied deaf children about protection from car accidents

Table (4): level of deaf children total practice scores

Score of practice	N.	%
Satisfactory	24	34.8
Unsatisfactory	45	65.2
M±SD	21.72±6.19	

Table (1) showed that; about two- thirds of studies children were adolescents (64%). Near half of them were male. Third birth order was represented by one third of the sample. Their academic achievement was good in 41% of the sample. The majority of the subjects lived in dormitories at school (91%).

Table (2) showed that; the majority of the subjects began deafness at birth (79.7%). About two-thirds The most of subjects had positive family history (69.6).sever and profound impairment were found in 40.6% and 26.1% respectively .Less than a half (40.6%) used hearing aid and third of them had cochlear implant.

Table (3) illustrated level of studied deaf children's knowledge about car accidents, the majority had unsatisfactory knowledge (70%) with 26.55±16.95 mean score.

Table (4) illustrated level of studied deaf children's total practice scores about car accidents. The majority in pre educational program had unsatisfactory practice scores (65%) with total mean practice score 21.72±6.19 .

Discussion

Hearing is the ability to perceive sound. A person suffering from hearing impairment has difficulty in perceiving or identifying sound clearly due to auditory problems. Impairment could be unilateral or bilateral **(Dankbaar & Van Zanten, 2008).**

The aim of this study was to assess deaf children's knowledge and practice regarding car accidents protection.

As for the studied children's age, it was found that the high incidence of deaf children aged between 12- 18 years. This finding disagrees with the results of **(Tobergte & Curtis, 2013)** who found that one third of hearing loss children aged between 5-10 years within school age, and also with **(Gheysen & Waelvelde, 2007)** who investigated the impact of a cochlear implant (CI) on the motor development of deaf children as the studied deaf children aged from 2 - 9 years. **(Abdelghaffar &**

Elshazly, 2011) applied their project on 45 children (21 males and 24 females) between 5 and 6 years of age too.

As for the studied deaf children gender, in the present study results showed that males are more affected with hearing disorder compared to females. This finding is in agreement with a study carried out by **(Tobergte & Curtis, 2013)** who found a higher prevalence of hearing disorder in males than in females. But this result disagrees with the results of a study carried out by **(Ahmed & Tsiga-ahmed, 2015)** who studied 58 patients with hearing disorder and found that hearing disorder was more prevalent in females as compared to males.

According to **Dankbaar & Van Zanten, 2008** the academic performance was affected due to difficulty in receiving the correct messages. If a child does not hear the teacher well, she may not follow instructions well, and be considered either a 'behavior problem' or a withdrawn student**.** This finding was in agreement with the present study regarding academic achievement of studied deaf children were good (40.6%).

This finding also disagreed with the finding of the study carried out by **Andrews et al., (2017)** in hearing loss and its implications for learning and communication which illustrated that children may have; lower scores on achievement and verbal IQ tests, poor reading and spelling performance, greater need for enrollment in special education or support classes, and lower performance on measures of social maturity.

The results of the present study showed that the majority, of the studied deaf children had settled in dormitories at school. This finding disagree with **(Hassan and Abd-Elraouf, (2010)** who found that the studied deaf children had lived with their families. This may be due to in sample characteristics and disease severity in that study.

Regarding the age at which deafness began, three quarters of the studied deaf children had hearing loss at birth. This agree with the findings of academic and social adjustment among deaf and hard of hearing college students in Taiwan by **Roberts et al., 2013** who found that more than one third of hearing loss onset of studied deaf children started at birth, also this finding is consistent with result of **Tobergte & Curtis, 2013** who found that more than half of the studied deaf children were diagnosed as hearing loss onset at birth.

On the other hand, results of this study emphasized that severe impairment was the most degree of hearing impairment in studied deaf children. This finding agrees with the results of **Bishop, (2014)** whose results revealed that the degree of deafness was severe hearing impairment. But **Roberts et al., (2013)** disagree with the finding

of the present study, as more than half studied deaf children had profound impairment.

As regard using amplification in children with hearing impairment, the results of the present study indicated that more than one third of deaf children used hearing aids. This finding agrees with the results of the study carried out by **Roberts et al., (2013)** who found that there was a raised incidence of hearing aids used in children with hearing impairment.

According to the present study results, the majority of studied had unsatisfactory knowledge about car accidents prevention. **DaCoTa (2013**) found that the children who have disability and psychomotor skills deficiency are increasingly risked to traffic crashes.

Based on the result of current study, the majority of studied deaf children had unsatisfactory practice total scores regarding car accidents prevention. This result is in accordance with that of **Taylor et al., (2017)** who found that children's road safety behavior is not sufficient and discusses the size of the problem and the causes and consequences of deafness and hearing impairment. It emphasizes the inadequate state of practice of this subject in developing countries and the importance of collecting valid data. In addition describes the public health route to prevention of deafness and hearing impairment, especially through primary ear and hearing care for prevention of deafness and hearing impairment.

Conclusion:

Based on the results of the current study, it can be concluded that;

The deaf children's knowledge and practice regarding car accidents were unsatisfactory

The age at which deafness began, degree of deafness were not affecting on studied deaf children academic achievement.

Recommendations

Based on the results of this study, the following recommendations are suggested:-

1. Health education of family in rural areas through charities about deafness and types of disability.
2. Apply follow up on studied deaf children in the Holy land institute for the deaf about protection from car accidents.
3. Apply education program in all private and governmental schools at Jordan to increase knowing about protect of deaf child from car accident.

4. Prepare educational program of staff and students in Egypt schools according to curriculum of ministry of education Future researches should be done on large sample of children in different settings focusing on the outcome of children.
5. In-service training programs should be provided to increase knowledge and skills for teachers about car accident to reduce incidence of accidents among deaf children.

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