

Effect of Parents' Knowledge and Practice regarding Safety Measures on Safety Threats of their Children with Mental Impairment

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Abstract: Mentally disabled children have higher safety threats so safety measures guidelines education for their parents is very important in order to reduce them. The purpose of this study was to evaluate effect of parents' knowledge and practice regarding safety measures on safety threats of their children with mental impairment. **Study design:** A quasi experimental design (pre and posttest) was used to fulfill the aim of the study. **Setting:** The study was conducted in Eltarbia Elfekria School for children with special needs, at Shebein El.kom City-Menoufia Governorate. **Sample:** A purposive sample of 200 parents' of children with special needs was selected to carry out this study. Three instruments were used in this study including: Parents' Knowledge about Safety Measures, Parents' Practice about Safety Measures Guidelines and Children Safety Threats Scale. The results of this study showed significant improvement in the mean total scores of parents' knowledge about safety measures on posttest than pretest. Also, mean total parents' practice scores regarding safety measures guidelines were significantly different immediately post intervention than pre intervention. Moreover, mean total score of parents' practice regarding their children safety threats were significantly improved post intervention. The study concluded that implementation of educational program about children safety measures improved parents' knowledge and practice on posttest than pretest. So, this study recommended that educational program about children safety threats should be implemented to parents at all special education schools to help them adapt and cope better with their children impairment.

Key words: Knowledge, Practice, Safety Measures, Safety Threats, Children, Mental Impairment.

Introduction

Safety of children with special needs is nowadays the main concern for health care professionals worldwide. One of the most complex forms is mental disability which refers to their mental abilities and self-care skills that are below the expected level of an individual's age with an intelligence quotient (IQ) score of 70 or less. However, it is not only affects

performance on tests of general mental functioning, but also causes limitations on child's capacity for self-care, language and speech ability as well as social educability and vocational proficiency (Nicholas, 2018).

Worldwide, the prevalence rate of children diagnosed with mental impairment is 26.3% in every 10000 children. There are almost 10.2 million

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affected children in the United States (Kogan et al., 2021).

Children with mental impairment are particularly vulnerable to life-threatening behavior due to their innate desire to explore their world and their ability to perceive the dangers of their actions such as aggression, self-injurious behavior and home injuries includes drowning, falls, fires, poisoning, suffocation and transportation related injuries (Megahed et al., 2017). For these reasons, parents of these children have an intense need for safety measures based on evidence to deliver care (first aid) to these vulnerable children. This care can make a big difference to children's health outcome (Taylor et al., 2020).

Parents have unique influence on their child's acquisition of new skills through their continual and powerful presence in their child's life (Dunst et al., 2017). This can decrease stressful parent-child interactions and increase their child's independence (Singer, 2019). Moreover, improving parent coping and empowering their adjustment in addressing their child's safety behavior needs may improve child outcomes and parents' training (Shurr, 2018).

Consequently, health care providers should have a vital role in providing support to families and enhancing safety care for their children with mental impairment to optimize proper adjustment through creative strategy with high quality care for their child across a family-centered care approach (Coyne, 2021).

Children with mental impairment are considered unsafe because they are vulnerable to an existing safety threats which means clearly observable child behavior or circumstances that could result in harm to a child such as drowning, falls, wounds, poisoning,

suffocation and burns as well as their parents are unable or unwilling to provide protection. So, they need to gain information and skills about safety threats and the most important safety measures for their children (Taylor et al., 2020).

The newly implemented 2030 Agenda for Sustainable Development Goals (SDGs) holds a deep promise for children with disabilities everywhere. The year 2016 marks as the first year of implementation. Vision of 2030 will work to promote the mainstreaming of disability and the implementation of the SDGs. So, the current study will be conducted to evaluate the effect of Parents' knowledge and practice on safety threats of their children with mental impairment.

Purpose

The purpose of this study was to evaluate effect of parents' knowledge and practice regarding safety measures on safety threats of their children with mental impairment.

Research Hypothesis:

Parents' who receive educational program about children's safety measures and safety threats are expected to have higher level knowledge and had better practice on posttest than on pretest.

Methods

Research Design: A quasi-experimental design (pre, post and follow up tests) was used to fulfill the purpose of the study.

Research Setting: This study was conducted in Eltarbia Elfekria School for children with special needs, at Shebein El.kom City- Menoufia Governorate.

Sampling: A purposive sample of 200 parents' of children with special needs was selected from total 277 of mentally disabled children, meeting the inclusion criteria.

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Inclusion Criteria:-

Parents were selected according to the following criteria:

1. All parents' who had mentally disabled children were included.
2. All parents of children with mental disability aged from 6 -16 years.

Exclusion criteria:

1. Mental disabled children with other sensory or physical handicap.
2. Parents' who didn't attend school with their children regularly.

Instruments:-

Three instruments were utilized for data collection:

Instrument one: Parents' Knowledge about Safety Measures Questionnaire.

Structured Interviewing Questionnaire sheet:

It was developed by the researcher to collect data about parents' characteristics, children's characteristics and parents' knowledge about safety measures. It was divided into three parts:

1. **Part one:** Characteristics of studied parents. It included 6 questions about age, gender, level of education, job, marital status and socioeconomic level.
2. **Part two:** Characteristics of children. It included 11 questions about child age, sex, IQ, birth order, diagnosis, residence and educational level as well as type and degree of mental disability.
3. **Part three:** It was developed by the researcher guided by Alison Harvey (2008) to assess knowledge of parents regarding safety measures. It contained 16 questions about injuries, its causes, prevention and management (fracture, cutting wound, bleeding, suffocation & choking, drowning, poisoning, burn and electrical shock).

The Total Scoring System for parents' knowledge

Level of knowledge (0-32)	Total Score
Unsatisfactory $\leq 60\%$	0 – 19
Satisfactory $> 60\%$	20 – 32

Reliability

The reliability of the instrument two was tested to determine the extent to which items in the tool were related to each other by Cronbach's co-efficiency Alpha ($\alpha = 0.97$). Pearson correlation co-efficiency was done to test the internal consistency ($r = 0.96$) of all items of the tool.

Instrument two: Safety Measures Guidelines checklist.

It was developed by the researcher guided by Mary Yearns (2020) to assess parents' practices of safety measures for their children. It contained 67 questions about feeding (7 questions) , bathing (7 questions), toilet using (5 questions), dressing (5 questions) and safety handling of various objects (4 questions) as well as questions about falls (10 questions), poison (9 questions), choking (6 questions), burn (8 questions), drowning (3 questions) and cutting or punctures (3 questions).

Total scoring system for parents' practice

Practice(0 – 67)	Total Score
Incompetent practice $\leq 80\%$	0–54
Competent practice $> 80\%$	55–67

Reliability

The reliability of the instrument three was tested to determine the extent to which items in the tool were related to each other by Cronbach's co-efficiency Alpha ($\alpha = 0.97$). Pearson correlation co-efficiency was done to test the internal consistency ($r = 0.98$) of all items of the tool.

Instrument three:

Children Safety Threats Scale.

It was developed by the researcher guided by Oregon (2001) to assess parents' knowledge about safety

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threats of their mentally disabled children. It included 21 questions about incidence of injuries, use of preventive measures and level of children's safety, leaving the child without observation, excessive use of violence with the child and inability of the parents to fully understand the mental condition of their child.

The Total Scoring System for children safety threats

Threats (0-42)	Total Score
No safety Threats $\leq 60\%$	0 - 25
Safety Threats $>60\%$	26 - 42

Reliability

The reliability of the instrument four was tested to determine the extent to which items in the tool were related to each other by Cronbach's co-efficiency Alpha ($\alpha = 0.97$). Pearson correlation co-efficiency was done to test the internal consistency ($r = 0.95$) of all items of the tool.

Validity

For validity assurance purposes, the four instruments were submitted to a jury of three experts in the pediatrics field (two professors and one assistant professor in pediatric nursing). The modifications were done to ascertain their relevance and completeness.

Ethical considerations

A written approval was obtained from ethical and research committee of the Faculty of Nursing, Menoufia University. For protection of human rights, written consent was obtained from parents' of mentally disabled children. An initial interview was done to inform parents and their children about the purpose of the study, its importance, safety, duration, program and confidentiality. Parents were informed that their participation was voluntary and they had the right to participate or withdraw at any time. Parents were assured that

confidentiality and anonymity was respected through coding all data and put it in a closed cabinet.

Pilot study

A pilot study was carried out on 20 children (10% of the sample) after developing the instruments and before starting the data collection to test the practicability, applicability, consistency, clarity and the feasibility of the study tools to estimate the needed time to fill the tools. No modifications were done. Therefore, the sample of the pilot study was included in the total sample.

Procedure

1- Written permission:

- Prior to data collection, explaining the purpose of the study and methods of data collection. Meeting was conducted first with the director of the setting to obtain permission for conducting the research explaining the aims and expected outcomes. Parents of children who fulfilled the inclusion criteria were invited to participate in the study and the purpose of the study was explained to each parent to gain his\her cooperation during the study.

2- Assessment phase:

- Data was collected over a period of 6 months started from the first of November to the first of May 2021. The data were collected according to the timetable of parents' attendance.
- At the beginning of the study, the researcher introduced herself and explained the aim and nature of the study to the parents.
- Characteristics of parents and their children were fulfilled by using instrument one (pretest).

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- Parents' knowledge about safety measures was assessed by using instrument two (pretest).
- Assessment of parents' skills and practices regarding safety measures were assessed by using instrument three (pretest).
- Children safety threats were assessed by using instrument four (pretest).

3- Planning phase:

- A planned educational program was designed and applied for parents' of children with mental impairment through face to face approach as follow:
- Parents were divided into small groups. Each group contained from five to seven parents.
- Each parent received 5 sessions (1session/week) over a period of 40 days.
- Each session lasted from 30 to 45 minutes and was given in school waiting area.

4- Implementation phase:

- Session 1: This session begin with clear brief definition of injuries, its causes, definition of safety measures and how to prevent road and school injuries. This session lasted for 30 to 45 minutes. Oral presentation, discussion and booklet were used.
- Session 2: In this session parents were received clear brief explanations about household safety. The household safety such as child safety in the bed and bathroom, toys safety, safe handling and preservation of medication and so on. This session lasted for 30 to 45 minutes. Oral presentation, discussion and booklet were used.
- Session 3: In this session parents were received information about how to prevent injuries such as poison, burn and bleeding in clear

and consistent manner. This session lasted for 30 to 45 minutes. At the end of this session parents given handouts to help them remember the instructions at home as colorful booklet and brochures.

- Session 4: Parents given clear information about how to prevent injuries about choking, electrical shock and falls as well as all necessary safety measures about feeding, bathing, using toilet, dressing and safety handling of various objects. Colorful booklet and brochures were used. This session lasted for 30-45 minutes.
- Session 5: In this session the researcher demonstrate the first aid steps in each procedure in front of the parents such as burn, choking, fracture, poison and bleeding using the suitable model for practice supported by colorful booklet. This session lasted for 60 minutes.

5- Reassessment phase:

- An immediate posttest was done after completion of educational program to reassess parents' knowledge and practice regarding safety measures by using the same instruments (posttest).

6- Follow up phase:

- Follow- up was done 3 months later using the same instruments to test parents' knowledge and practice retention as well as children evaluation for the presence signs of safety threats as reported by their parents (follow up test).

Statistical analysis:

Data was coded and transformed into specially designed form to be suitable for computer entry process. Data was entered and analyzed by using SPSS (Statistical Package for Social Science) statistical package version 22.

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Graphics were done using Excel program. Qualitative data were presented in the form of frequency distribution tables, number and percentage. Friedman Test (type of Chi square test for repeated procedures for qualitative data) for comparison of knowledge and practice levels between the three time points of intervention. The Kolmogorov-Smirnov test was used to verify the normality of distribution quantitative data were described using range (minimum and maximum), mean, standard deviation and median. Pearson correlation was used for explaining relationship between normally distributed quantitative variable.

Results:

Table 1 shows characteristics of the studied mothers. It was obvious from this table that more than quarter of studied mothers were less than 30 years old and the majority of them were married (60.1%). Concerning mother's education, one third of them had secondary education (33%) and not working (63.9%). Regarding family income / month, it was found that more than half of them didn't have enough income (52.6%).

Table 2 shows characteristics of the studied fathers. It was obvious from this table that more than one third of studied fathers were 50 or more years old and the majority of them were married (52.2%). Concerning father's education, one third of them had read and writes level (34.3%) and working (59.7%). Regarding family income / month, it was found that more than half of them didn't have enough income (58.2%).

Table 3 illustrated characteristics of the studied children. It was obvious that about one quarter of studied children (36%) were 12 years old or

more and more than half of them (52%) were males and live in town (64.5%). In relation to children's diagnosis, this table reflects that 55% suffered from mental retardation and 66% of them in educational phase. Concerning degree of mental disability, more than three quarters of studied children (85%) had mild mental retardation and don't receive other educational support outside their school (83%).

Table 4 shows mean total scores of parents' level of knowledge about safety measures on pre, post and follow-up tests. . It was obvious that the mean total scores of parents' knowledge on pre, post and follow up test were 11.58 ± 3.21 , 23.92 ± 3.31 & 20.18 ± 3.85 respectively. Therefore, there were very highly statistical significant differences between levels of parents' knowledge on pre, post and follow up tests ($P < 0.0001$).

Table 5 indicated mean total reported parents' practice score regarding safety measures guidelines on pre, post and follow-up tests. The table illustrated that parents had higher mean score of their practice on post and follow-up intervention (40.32 ± 4.0 & 38.27 ± 4.04 respectively). Therefore, there were highly statistical significant differences between parents' practices on pre, post and follow-up tests ($P < 0.001$).

Table 6 shows mean total scores of reported parents' practice regarding their children safety threats on pre, post and follow- up tests. The table illustrated that parents had higher mean score of practice on post and follow-up intervention (20.86 ± 2.55 & 20.13 ± 3.70 respectively). Therefore, there were highly statistical significant differences between

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parents' practices on pre, post and follow-up tests ($P < 0.001$).

Figure 1 reflected Pearson correlations between total parents' knowledge and reported parents' practice regarding safety measures on posttest. This figure clarified that there were highly positive statistical significance correlation between total parents' knowledge and practices regarding safety measures.

Table 7 reflected Pearson correlations between children safety threats and parents' knowledge & reported practice about safety measures on pre, post and follow –up tests. This table clarified that there were highly positive statistical significance correlation between children safety threats and parents' knowledge & reported practices concerning safety measures at 5 % level of statistical significance.

Results

Table (1) Demographic characteristics of the studied mothers (n= 133).

Characteristics of studied mothers	No.	%
Age (years)		
< 30 years	55	41.3
30- <40 years	38	28.6
40- <50 years	30	22.6
50 or more years	10	7.5
Mean ± SD	23.6 ± 1.8	
Relation to child		
Mother	133	66.5
Level of education		
Illiterate	24	18.0
Read & write	17	12.8
Preparatory	29	21.8
Secondary	44	33.0
University	19	14.2
Other	0	0.0
Marital status		
Married	80	60.1
Divorced	40	30.0
Widow	13	9.8
Occupation		
Working	48	36.0
Not working	85	63.9
Family income per month		
Enough and saved	20	15.0
Enough	43	32.3
Not enough	70	52.6

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Table (2): Demographic characteristics of the studied fathers (n =67).

Characteristics of studied fathers	No.	%
Age (years)		
< 30 years	6	8.95
30- <40 years	16	23.8
40- <50 years	21	31.4
50 or more years	24	35.8
Mean ± SD	21.3 ±9.7	
Relation to child		
Father	67	33.5
Level of education		
Illiterate	9	13.4
Read & write	23	34.3
Preparatory	5	7.5
Secondary	17	25.4
University	13	19.4
Other	0	0.0
Marital status		
Married	35	52.2
Divorced	17	25.4
Widow	15	22.4
Occupation		
Working	40	59.7
Not working	27	40.3
Family income per month		
Enough and saved	11	16.4
Enough	17	25.4
Not enough	39	58.2

Table (3): Demographic characteristics of the studied children (n = 200).

Characteristics of studied children	No.	%
Age (years)		
6<8years	28	14.0
8<10years	57	28.5
10<12years	43	21.5
12 - 16 years	72	36.0
Mean ± SD	36.11 ± 10.62	
Sex		
Male	104	52.0
Female	96	48.0
Residence		
Village	71	35.5
Town	129	64.5
Diagnosis		
Mental retardation	110	55.0
Down syndrome	63	31.5
Autism	27	13.5
Others	0	0.0
Educational level		
Preparatory	48	24.0
Educational	132	66.0
Occupational	20	10.0
Intelligence Quotient (IQ) and degree of mental disability		
Mild 70-50	170	85.0
Moderate 50-35	22	11.0
Severe 35-20	8	4.0
Profound below 20	0	0.0
Child receives other educational support outside the school.		
No	166	83.0
Yes	34	17.0

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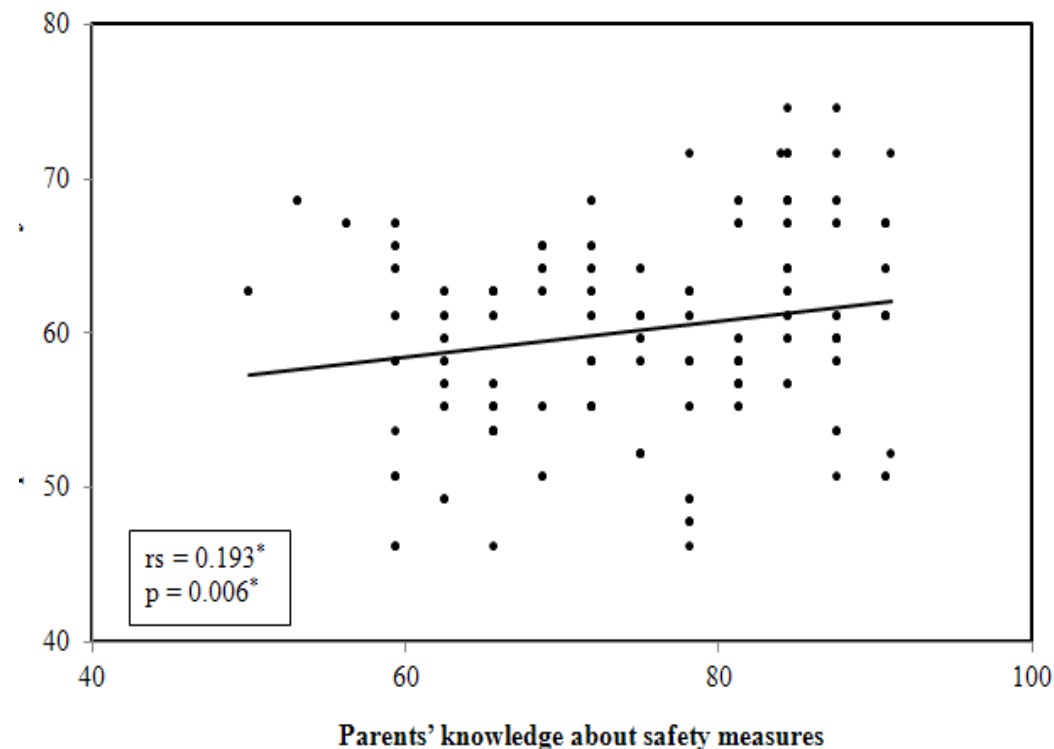
Table (4): Mean total scores of parents' level of knowledge about safety measures on pre, post and follow-up tests.

Items	Pre test	Post test	Follow up test	Fr	P value	Effect size	Level
Total Score (0-32)							
Minimum – Maximum.	3 – 21	16 – 29	11 – 28				
Mean ± SD.	11.58 ± 3.21	23.92 ± 3.31	20.18 ± 3.85				
Median	12.0	24.0	20.0				
% Score				387.386*	<0.0001*	0.836	Large Effect
Minimum – Maximum.	9.38 – 65.63	50.0 – 90.63	34.38 – 87.50				
Mean ± SD.	36.20 ± 10.03	74.75 ± 10.35	63.06 ± 12.04				
Median	37.50	75.0	62.50				

Table (5): Mean total reported parents' practice score regarding safety measures guidelines on pre, post and follow-up tests (N=200).

Items	Pre test	Post test	Follow up test	Fr	P value
Total Score (0 – 67)					
Minimum – Maximum.	16.0 – 41.0	31.0 – 50.0	27.0 – 47.0		
Mean ± SD.	26.67 ± 4.62	40.32 ± 4.0	38.27 ± 4.04		
Median	27.0	41.0	38.0		
% Score				354.164*	<0.001*
Minimum – Maximum.	23.88 – 61.19	46.27 – 74.63	40.30 – 70.15		
Mean ± SD.	39.81 ± 6.90	60.18 ± 5.97	57.11 ± 6.02		
Median	40.30	61.19	56.72		

Figure (1): Pearson correlation between parents' knowledge and reported parents' practice about safety measures on post-test.



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Table (6): Mean total scores of reported parents' practice regarding their children safety threats on pre, post and follow-up tests (n= 200).

Items	Pre	Post	Follow up	Fr	P value	Effect size	Level
Total Score	(0 – 42)						
Min. – Max.	14.0 – 28.0	15.0 – 26.0	14.0 – 27.0				
Mean ± SD.	15.90 ± 2.67	20.86 ± 2.55	20.13 ± 3.70				
Median	14.0	21.0	20.0				
% Score				172.258*	<0.001*	0.500	intermediate effect
Min. – Max.	33.33 – 66.67	35.71 – 61.90	33.33 – 64.29				
Mean ± SD.	37.85 ± 6.35	49.67 ± 6.06	47.92 ± 8.82				
Median	33.33	50.0	47.62				

Table (7): Pearson correlation between children safety threats and parents' knowledge & reported practice about safety measures on pre, post and follow-up tests.

Items		Children safety threats		
		Pre	Post	Follow up
Parents' knowledge about safety measures	rs	-0.035	-0.147*	-0.083
	P	0.619	0.038*	0.242*
Reported parents' practice about safety measures	rs	-0.048	-0.162*	-0.218*
	P	0.501	0.022*	0.002*

DISCUSSION

The care of children with mental disability is a complex and a challenge for their parents because they are considered vulnerable for accidental unintentional injuries inside and outside the home. Accidents are the largest single cause of death among these children and are one of the most serious health problems facing the world today which lead to hospital admission and can result in life long disability (Godson, 2021). Therefore, the purpose of this study was to evaluate effect of parents' knowledge and practice regarding safety measures on safety threats of their children with mental impairment. The current study hypothesized that parents' who receive educational program about children's safety measures and safety threats are expected to have higher level knowledge and had better practice on posttest than on pretest.

In relation to the study hypothesis: Regarding mean total scores of parents' level of knowledge about safety measures on pre, post and follow-up phases. This study showed

that parents had higher mean total scores of knowledge on post intervention than on pre intervention. Such finding was agreed with Bijur et al., (2022) who conducted a study about "Education for mothers to reduce occurrence of preschool children injury". They found that mothers had higher total mean scores of knowledge on posttest than on pre-test. This could be related to the instructions which were given by the researcher about management of injuries. Besides, the researcher used small group instruction of teaching method (e.g good listening, feedback from parents and two way communications), as well as, understand the parents' needs and provide them with the needed information.

In addition, the present study showed that there was a highly statistical significance improvement in all knowledge aspect after implementation of the program. This finding came in line with Doraiswamy and Baig (2020) who conducted a study about "Designing of educational aids for the

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parents of children having special needs". The study noted that there were improvements in the mean score on post-test among the parents following the teaching intervention and using the educational aids. This could be attributed to the influence of the theoretical and practical sessions which were given by the researcher to the parents. As well as the educational aids which were also used in this study such colorful booklets, videos and photos that help to capture the attention of the parents.

Concerning mean total reported parents' practice score regarding safety measures guidelines on pre, post and follow-up phases, this study illustrated that parents had higher mean score of their reported practice on post and follow-up intervention. Such finding was supported by El Seifi et al., (2018) who stated that mean scores of rural mothers practices related to prevention of home injuries improved after intervention implementation.

Regarding Pearson correlation between total parents' knowledge and reported parents practice regarding safety measures. It was clear that there were positive correlation between total parents' knowledge and reported practice regarding safety measures. This result was in line with Jena (2020) who conducted a study about "Knowledge and Self-declared Practices of Parents regarding Home-based accidents and its Prevention among Pre-school Children". This could assure that improvement of parents' practice would be due to improvement of their knowledge about safety measures. In addition, this study was consistent with Kaur et al., (2020) who conducted a study about "Effect of educational program on the knowledge and practices of parents regarding home accidents in children". The study reported that there was a

positive correlation between knowledge and practices after implementing an educational program. Concerning mean total scores of reported parents' practice regarding their children safety threats on pre, post and follow-up phases, the present study revealed that parents had higher mean score of reported practice on post intervention. This result was in line with John (2021) who conducted A Study to assess the knowledge of mothers of preschoolers regarding home accidents and their prevention in a selected rural community of Moradabad. The finding showed that parents had higher mean score of practice regarding home accidents prevention after intervention. This improvement after intervention could be due to proper parents' practices after following the safety measures guidelines.

Regarding Pearson correlation between children safety threats and parents' knowledge & reported practice about safety measures. It was cleared that there were positive correlation between children safety threats and parents' knowledge & reported practices concerning safety measures. This finding was consistent with Akturk and Erci (2020) who conducted a study about "Determination of Knowledge, Attitudes and Behaviors Regarding Factors Causing Home Accidents and Prevention in Mothers with a Child Aged 0-5 Years". The study revealed that parents with better knowledge and attitudes about safety measures become had children with less home accidents.

Moreover, this finding came in line with Santagati et al., (2016) who conducted a study about "Unintentional injuries in children up to six years of age and related parental knowledge, attitudes and behaviors in Italy". The study reported that parents

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who had perfect attitude and behavior they become able to protect their children from unintentional injuries.

Furthermore, this result was consistent with Nour et al., (2019) who showed that mothers who attended first aid training and had history of child injury at home were significantly more knowledgeable and had proper practices. This could be due to the program which provides the information and skills to the parents to help them deal perfectly with their children and improve their quality of life.

Finally, the current study revealed that parents' knowledge and reported practice regarding their children safety measures were improved and got better after implementation of the educational program. Also, children's safety threats were decline after parents following the safety measures guidelines.

Conclusion

Based on the current findings, the present study concluded that implementation of the educational program improved parents' knowledge and practices regarding safety measures guidelines and safety threats on posttests than on pretest.

Recommendations

Based on the conclusion of the present study, the following recommendations can be suggested:

1. Ongoing educational program for parents of mentally disabled children, especially new parents, should be initiated during and after school admission to enhance their knowledge and practices regarding their children disability, safety threats and the ways to prevent accidental injuries.
2. Booklet and brochures regarding safety measures guidelines should be available at each special needs school.

3. Ongoing educational training programs for the teachers about safety measures guidelines.
4. A health education program must be conducted for all parents on injury prevention and first aid management as a routine service at Maternal Child Health (MCH) centers and health units.
5. Further studies are needed to determine the effect of applying educational program regarding safety measures and safety threats for their children in different demographic areas.

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