



Effect of Rehabilitation Guidelines on Mothers' Knowledge, Practice and Functional Recovery of Facial Muscles for Their Children with Bell's Palsy

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ABSTRACT

Children with bell's palsy may experience a partial or complete loss of control over their face muscles on the affected side. It is a serious problem that requires appropriate treatment and rehabilitation. Pediatric nurses, mothers, and children should have the necessary knowledge and attention to address this condition. Aim: evaluate the effect of rehabilitation guidelines on mothers' knowledge, practice and functional recovery of facial muscles for their children with bell's palsy. A quasi-experimental research design was used in order to accomplish the aim of the study. A purposive sampling of 60 mothers and 60 children with bell's palsy were included in the study. **Setting:** It was conducted at Pediatric Physiotherapy Therapy Outpatient Clinic at Tanta Main University Hospital. **Tools: tool I:** Mothers' knowledge regarding bell's palsy, **tool II:** Bell's palsy rehabilitation reported practices check list and **tool III:** House Brackmann scale for functional recovery of facial muscles of children with bell's palsy. **Results:** A statistically significant difference was observed in the mothers' knowledge and reported practice regarding their children with bell's palsy before, immediately, and after one month after rehabilitation guidelines. **Conclusion:** The study found an improvement in mothers' knowledge and reported practice towards their children with bell's palsy after rehabilitation guidelines. Children who received the rehabilitation guidelines showed an improvement in functional recovery of facial muscles. **Recommendation:** Mothers should receive continuous guidelines regarding care for their children with bell's palsy.

Keywords: Bell's palsy, Facial muscles, Mothers knowledge and practice, Functional recovery, Rehabilitation guidelines.

Introduction

Facial nerve is the seventh cranial nerve in the face that coordinates salivary and lacrimal gland secretions, tastes of the tongue and moves the face voluntarily (**Borg et al 2021**). It is a condition that characterized by a unilateral paralysis of the peripheral cranial face nerve's lower motor neurons. It may be idiopathic or due to damage or weakness of this nerve, both sides of the face may be affected and it is equally common. (**Eviston et al 2015, Karaganova et al 2016 & Sarah et al 2023**).

The incidence of Bell's palsy in children under the age of ten is 2.7 cases per 100,000, while in children over this age; it is 10.1 cases per 100,000. The majority of reported cases of facial paralysis are caused by Bell's palsy, which has an incidence rate of 18.8 per 100,000 in children under the age of 18. (**Malik, et al 2021 & Cubukcu et al 2018**). In general, facial nerve palsy can be categorized as acquired or congenital. In 50% of cases, it has an uncertain vital cause, but other conditions may contribute. Type 1 of herpes simplex in the cranial nerve ganglia, adenovirus, varicella zoster, autoimmune disease and vascular causes are some possible viral causes. Congenital facial paralysis is more common than acquired facial paralysis. (**Malik, et al 2021**).

Bell's palsy affects the muscles involved in facial expression, the salivary and lacrimal glands, the hearing muscles, and the taste buds in the anterior two-thirds of the tongue. Inability to completely close the lips

and eye on the face's affected side, leading to trouble in eating, speaking and drying and erosion of the cornea are consider as early symptoms. Other symptoms could be taste abnormalities, involuntary movements of the face, facial spasms, facial contractures, dysfunctional lacrimation and pain in nearby of the ears, occasionally extending to the neck or back of the head, and noise intolerance. During bell's palsy, the ensuing impairment in verbal communication, oral skills, and social engagement can significantly exacerbate psychological distress. (**Babl et al, 2017 & Karp et al, 2019**).

Bell's palsy can be also classified into several degrees. It range from mild dysfunction to total paralysis. There are several degrees between them as moderate dysfunction, moderately severe dysfunction and severe dysfunction (**Abdelatief, 2020**). The treatment of bell's palsy requests accurate rehabilitation guidelines to ensure adequate and complete care without complications. The current guidelines for facial palsy include medical treatment, surgery applying, dynamic and static face reanimation technique and facial neuromuscular reeducation physiotherapy. It needs to be managed by the physiotherapy department using the appropriate rehabilitation guidelines. (**Athawale et al., 2021 & Barth et al., 2020**) Treatments are categorized into acute and maintenance categories.

Corticosteroids and antivirals form up the acute treatment; it should be started within the first three days

following the onset of clinical symptoms. Corticosteroids have been shown to be an effective intervention, and their use is strongly advised. Steroids, like prednisolone, have anti-inflammatory properties that are hypothesized to minimize face nerve damage, edema, and compression to speed up the healing process and enhance the possibility of healing. Antivirals should not be administered in isolation. (Franz et al, 2017). The maintenance treatment of the rehabilitation guidelines includes interventions such as eye care, oral care, physiotherapy such as exercise and massage, hot pack application, injections of botulinum toxin and even alternative therapies like acupuncture. (Madhok et al, 2016 & Peregrino et al, 2020)

Significance of the study

Facial palsy is a condition that can have a significant impact on those who are affected. It can cause a wide range of functional and aesthetic deficits. Most cases of reported facial paralysis are related to bell's palsy. The incidence rate is 18.8 per 100,000 in children under the age of eighteen, (Malik, et al 2021 & Cubukcu et al 2018). Bell's palsy affects more than 52% of children in Egypt. (El-Tallawy et al 2016). Thus, it is crucial to educate mothers of children with bell's palsy in order to ensure early recovery without complications.

Aim of the study

Evaluate effect of rehabilitation guidelines on mothers' knowledge, practice and functional recovery of facial muscles for their children with bell's palsy. **Research Hypothesis:**

H1: Mothers' knowledge and reported practice towards their children with bell's palsy are expected to be improved after implementation of the rehabilitation guidelines.

H2: Children's functional recovery of facial muscles is expected to be improved more quickly after implementation of the rehabilitation guidelines.

Subjects and Method

Research design:

A quasi-experimental research design was used to achieve the aim of the study.

Setting: The present study was carried out at the Pediatric Physiotherapy Outpatient Clinic at Tanta Main University Hospital, which is affiliated to the Ministry of Higher Education and Scientific Research. There were four rooms; one was designated for receiving cases and instructions, the second large room where children received care as physiotherapy and massage. It contained all the necessary equipment and the third room was for a doctor's follow-up. The fourth room was for other neurological diagnoses and adult patients.

Subjects: Purposive sampling of 60 mothers and their children (60 children) with bell's palsy who attended the mentioned facility were included in the study.

Children's inclusion criteria:

- Both sexes
- Age 10-18 years
- Grade III to VI of palsy
- Less than thirty days following bell's palsy's onset were included to ensure early intervention
- Free of any congenital abnormalities

- Hadn't previously attended a bell's palsy program

III. Study Tools

The data was collected using face-to-face interviews using the following tools.

Tool I: Mothers' Knowledge Regarding Bell's palsy:

A structured interview schedule was developed by the researchers after reviewing the relevant literature (Baugh 2013, Barth et al 2020) and Karp et al 2019). It consisted of three parts:

Part (A): Characteristics and family history of children that included; age, sex, level of education and family history of impairment.

Part (B): Characteristics of mothers that included: age, level of education, residence and previous attendance of any training program about bell's palsy.

Part (C): Mothers' Knowledge Regarding Bell's Palsy: The instrument was employed to assess mothers' knowledge about bell's palsy, both before and after the implementation of rehabilitation guidelines. It comprised 13 multiple-choice questions pertaining to the significance and function of the facial nerve, the meaning of bell's palsy, various types and etiologies, manifestations, diagnostic tests, prevention, surgical and medical treatment, complications and follow-up care.

Scoring system:

Each question got a score between 0 and 2. An answer that was both complete and accurate had a score of 2, an answer that was both incomplete and correct had a score of 1 and an

incorrect or wrong response had a score of zero (El-Tallawy et al 2016).

The sum of all questions was 26.

The overall mothers' knowledge scores were categorized as follows:

- Low knowledge was considered from <70 %,
- Moderate knowledge was considered from 70-<85 %,
- High knowledge was considered from 85- 100 %.

Tool II: Bell's palsy Rehabilitation Reported Practices Check list:

It was developed by the researchers after reviewing the related literatures (El-Tallawy et al 2016 & Bawiskar, et al 2021, Vaughan et al 2020 & Fujiwara et al 2018). A checklist was completed by the researchers to assess the mothers' reported practices in relation to their children with bell's palsy as management of pain, care of eye, dental and oral hygiene, preserving muscle tone and facial exercises as (mirror exercises and facial massage technique), resistance training, using of hot packs.

Scoring system: two scores levels were assigned to each step, (Vaughan et al 2020) which are: done was scored (2) and not done was scored (1).

The final total score was categorized into two categories:

- Competent from 70% and more.
- Incompetent from less than 70%.

Tool III: House Brackmann Scale for Functional Recovery of Facial Muscles of Children with Bell's palsy (Abdelatief 2020):

The scale consisted of six grades and was employed to document the grade of bell's palsy before and after the implementation of rehabilitation

guidelines. It was utilized to evaluate functional recovery of facial muscles by determining resting symmetry, measuring eyebrow and mouth movement. The face was divided by two lines: a vertical line representing mouth movement and a horizontal line representing eyebrow movement. Every line had four points with 0.25 cm of movement in each point to make 1 cm. A score of 8 indicated normal functional movement of the face, while a score below 8 indicated dysfunction of the facial muscles, ranging from mild dysfunction to total paralysis.

Grade I – Normal: Normal eyebrow and mouth movement with symmetry at rest and at the movement

Grade II – Mild Dysfunction: Very slight weakness on the affected side with or without synkinesis

Grade III - Moderate Dysfunction: There was a clear distinction between the movements, although they appeared distorted. The child was able to close the eye completely with effort.

Grade IV – Moderately Severe Dysfunction: Visible weakness and/or distorted movement.

Grade V: Severe Dysfunction: Only barely perceptible motion.

Grade VI: Total Paralysis: No eyebrow or mouth movement.

Method

Ethical considerations:-

- Prior to conducting this study, permission was obtained from the Faculty of Nursing of Ethical Research Committee, Tanta University (code number 93-9-2022). All mothers and their children were informed about the study aim and their ethical rights then asked to consent to participate in the study. The requisite approval for data

collection was obtained from the authority of the Faculty of Nursing to the Director of the Pediatric Physiotherapy Outpatient Clinic at Tanta Main University Hospital.

Validity: A group of five professionals, comprising one doctor, one physiotherapist, and three pediatric nurses, determined the content validity and their opinion were requested regarding the format, consistency, and grading system of the tools.

Reliability: Every component of the tools was evaluated for reliability. Results demonstrated that each tool's component parts were primarily composed of homogeneous items. The internal consistency of the knowledge questionnaire was 0.88, the nursing practice questionnaire was 0.87 and Tool III was 0.89.

A pilot study: 10% of the total study participants (6 mothers and their children) were conducted to test the clarity and practicality of the tools and the setting's suitability. The pilot study sample was then subsequently excluded from the main study sample.

Field work: The data was gathered over a six-month period, commencing in October 2022 and concluding in March 2023. The self-administered questionnaire was completed on average in 30 minutes, whereas the reported practice checklist was completed in 20 minutes. The abovementioned settings were visited by the researchers three days a week (Sunday, Monday, and Wednesday) between the hours of 9:30 am and 1 pm. The questionnaire was administered in the same form on three occasions: initially before the implementation of the rehabilitation

guidelines, then after the guidelines were in place, and finally one month later. This process was repeated with similar steps for mothers. The outcomes of the children were assessed before the implementation of the rehabilitation guidelines, one month after, and two months afterwards. The data collection was organized into three phases.

1-Assessment Phase (pre rehabilitation guidelines):

The researchers conducted it for every research's subjects to collect baseline data, mothers' knowledge and practice by using Tool I and II. Tool III was carried out using the House Brackmann scale, which is a grading scale used to evaluate the functional recovery of facial muscles for children in the control and intervention groups at the initial assessment.

2-Treatment Phase (rehabilitation guidelines application): It divided into two phase:

Preparatory phase:

Rehabilitation guidelines were created based on a review of relevant research studies and literature. It was derived from the real needs analysis of mothers with bell's palsy. The researchers prepared the guidelines in an easy-to-understand Arabic language so that any mother can understand it. They were divided into 6 groups with ten mothers in each group. Each mother also received a brief orientation explaining about the purpose, contents, and anticipated results. After the implementation of the guidelines, a handout with the guidelines was prepared and given to the mothers and children as a reference. Each group attended 5 sessions.

Intervention phase: The rehabilitation guidelines were implemented in five sessions:

The first session: related to meaning and function of facial nerve, definition of bell's palsy, types, etiology, manifestation, diagnostic tests,

The second session: focused on prevention, surgical treatment and medical care, complications and care of bell's palsy of children.

The third session: related to practices concerning children with bell's palsy as pain relief by using pharmacological and non-pharmacological methods. For eye care (if child's eye was very dry, use artificial tears. If child's eye cannot completely close, talk to doctor about taping the eye with clear medical tape or using an eye patch at bedtime). For mouth and dental care for chewing and hygiene and to ensure mouth wasn't dry and maintain salivation.

The fourth session: concentrated on summary of the last three sessions and complete practices concerning children with bell's palsy. These exercises included nose, eye, and tongue, mouth, chin and neck exercises.

A-Exercise and resistance training, the researcher trained mothers to the child:

- 1- Put thumb inside the mouth
- 2- Extend the cheek in downward direction for five times.
- 3-Maintain the stretch for 30 seconds.
- 4-Open and close the jaw
- 5-Spell o/e
- 6-Pull the lips forward
- 7- Hold spoon in the mouth and bounce it
- 8-push tongue with spoon forward and backward

9- Push the tongue forward and backward

10-Touch the lip with the tongue

11-Say (oo ee AA)

12- Make circle inside the mouth and touch cheeks ,inner lips, soft palate, angles and bottom of: child should sit in front of a mirror and perform these exercises slowly and carefully 5–10 repetitions of each exercise to perform facial exercises at least 3–4 times per day. Gradually increase the repetitions, duration, and intensity as you get more comfortable.

B-Smiling exercise: The practice of smiling exercises has been demonstrated to facilitate the performance of everyday tasks, such as eating, drinking, and smiling, by strengthening the muscles of the lips, cheeks, and jaw. The following steps are recommended for those wishing to engage in this practice:

1-Spread the lips widely and grin broadly and use a finger to lift the affected portion of the mouth.

2-Stay in the same position for 5 seconds.

3-Repeat this step ten times.

4-Perform a closed-mouth smile, offering support on the affected side when necessary with the finger.

5-Repeat the exercise ten times, for one to three sets.

C-Lip pursing: Lip pursing exercises strengthen the muscles surrounding the lips, facilitating better eating, drinking, and speaking. The exercise involved:

1- Pushing the lips outward as performing kiss or whistle maneuver.

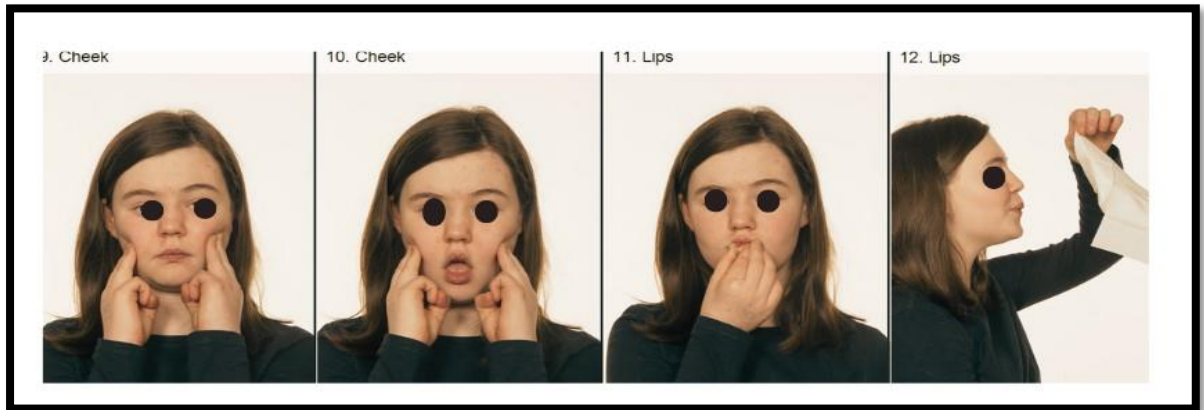
2- Place a finger in the corner of the mouth on the affected side.

3-After a brief interval, the lips are released and returned to their initial position.

4-The exercise should be repeated 15 times for one to three sets

D-Nostril flaring: This exercise helped to restore facial symmetry by activating the muscles surrounding the nose. **1:** Open up the nostrils on both sides. Run your finger along the side of the afflicted nostril to assist in pulling it out. **2:** Repeat 1-3 sets ten times.

E-Tongue movement: The tongue is a muscle that can be exercised to restore function and power, which in turn makes eating, drinking, and speaking easier. **1:** Extrude the tongue and point it upward toward the maximum. Then, push the tongue down to the level of the chin. **2:** Continue lifting and lowering the tongue 10 times. Complete one to three sets. **3:** Put the tongue behind the front teeth on the roof of the mouth. **4:** Move back the tongue toward the molars and along the top of the mouth. **5:** Repeat it 10 times, with the total number of repetitions for each set being 1-3.



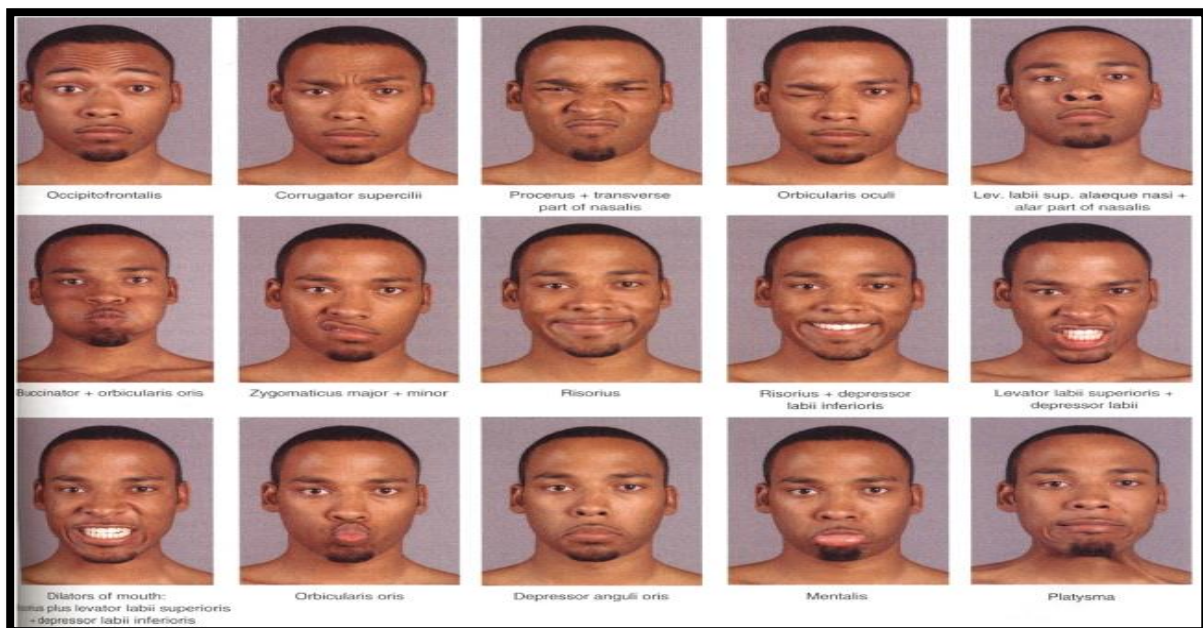
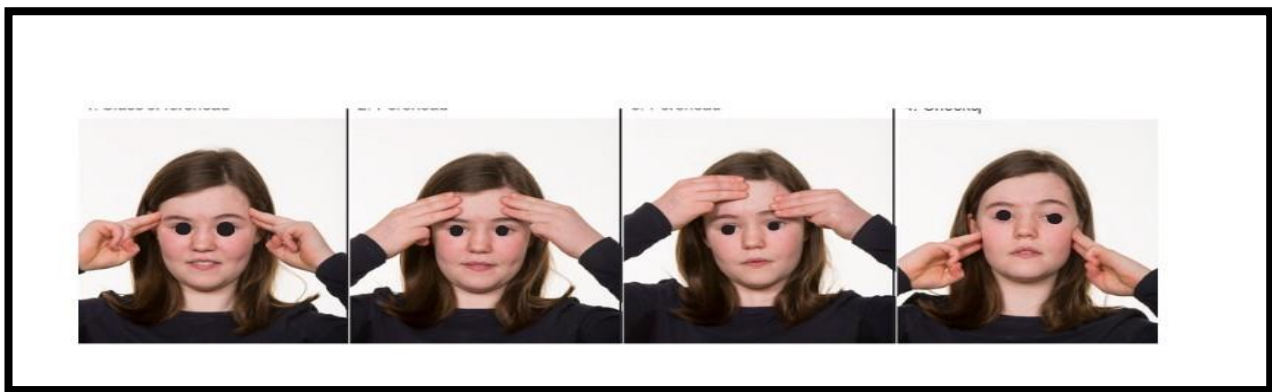
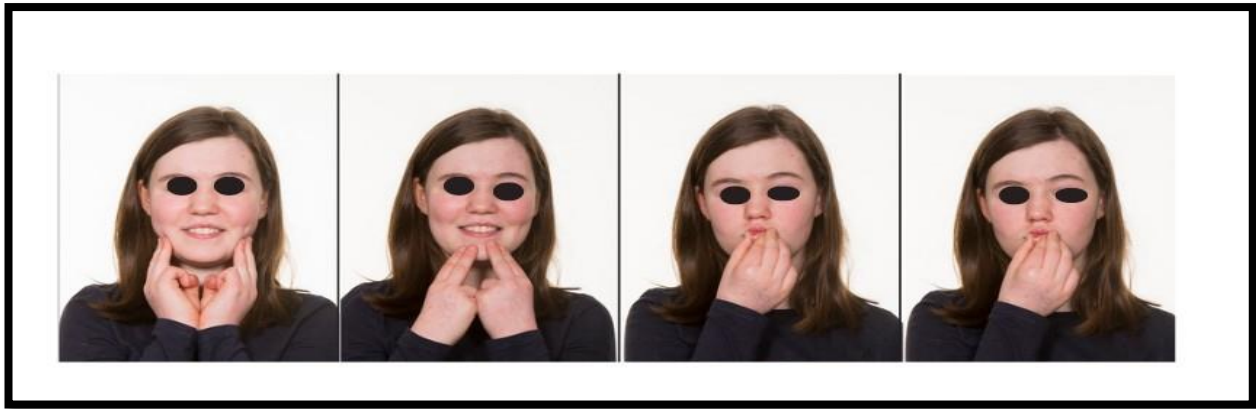


Figure (1): Vaughan, A., Gardner, D., Miles, A., Copley, A., Wenke, R., Coulson, S., (2020). A systematic review of physical rehabilitation of facial palsy. *Journal of Front Neurology*, 31(11), 222.

The fifth session: It concentrated on summary of the last four session and complete practices concerning bell's palsy as massage and hot packs. Massage was performed for 20 minutes; five minutes for general massage and 15 minutes over the cheek area, lower facial area and forehead area by using simulator doll. Hot packs should be applied to both sides of the supine lying child's face for 5 minutes. Sensation was tested prior to application of the warm pack

3-Evaluation phase

- Mothers were evaluated for knowledge and reported practice before, immediately after and one month after implementation of the rehabilitation guidelines.

-Children's functional recovery of facial muscles was evaluated before, one month and two months after implementation of rehabilitation guidelines.

Statistical analysis

SPSS software (Package for the Social Sciences, version 26, SPSS Inc. Chicago, IL, USA) was used for data organization, tabulation, and statistical analysis. Calculation the range, mean, and standard deviation were used for quantitative data. The Chi-square test (χ^2) was utilized to compare two or more groups when dealing with qualitative data, which was a categorical set of data expressed in terms of frequency, percentage, or proportion of each category. To compare the means of two groups with parametric data from independent samples, a t-test was employed. Pearson's correlation coefficient (r) was utilized to perform the correlation between variables. The findings of

statistical tests were interpreted as a significance level of $P < 0.05$, with highly significant results reported at a level of $P < 0.001$. (White 2019).

Results

Table (1): shows the distribution of the studied mothers according to their characteristics. It was found that more than half of them (55%) were between 40 and 50 years old. Regarding their educational level, it was found that 70.0 % of them had secondary education and 60.0% of them were from urban areas. It was found 73.3% of them had not attended any training program on bell's palsy.

Table (2): demonstrates the distribution of the studied children according to their characteristics and family history. It was observed that more than half of the children (53.3%) were female. Regarding their age, it was found that their mean age was 14.58 ± 2.66 years. Regarding their educational level, 38.3% of the children had a university education. Regarding the season of occurrence, it was found that 40% & 35% of the children had bell's palsy in winter and autumn respectively. It was found that 73.3% of the children had no family history of bell's palsy, the right side of the face was most affected in more than half (56.7%) of the children.

Table (3): reveals the total scores of the studied mothers' knowledge regarding Bell's palsy before, immediately and one month after implementation of the rehabilitation guidelines. It was observed that the majority of the mothers (85.0%) had low knowledge scores before the implementation of the rehabilitation guidelines. While immediately and

after one month from implementation of rehabilitation guidelines, 95.0% and 93.3% of them had high knowledge scores respectively with statistically significant difference $P < 0.001$.

Table (4): demonstrates the distribution of studied mothers' reported rehabilitation practices regarding their children with bell's palsy. It was observed that there was a statistically significant difference in mothers' reported rehabilitation practices related to pain relief, eye care, oral and dental care, maintaining muscle tone and superficial heat therapy which $p < 0.001$ in all the items before, immediately and after one month of implementation of rehabilitation guidelines.

Table (5): demonstrates the total score of the studied mothers' reported rehabilitation practices regarding their children with bell's palsy. It was observed that all mothers (100%) were incompetent before implementation of rehabilitation guidelines while all of mothers (100%) became competent immediately and after one month from the implementation of rehabilitation guidelines with statistically significant difference $p < 0.001$.

Table (6): shows the correlation between studied mothers' knowledge and their reported rehabilitation practices. It was found that there was a significant positive correlation between mothers' knowledge and their reported practices before implementation of rehabilitation guidelines.

Figure (2): indicates functional recovery of facial muscles in children with bell's palsy at baseline, 1 month and 2 months after routine and

rehabilitation guidelines. It was observed that there was an improvement in the facial recovery of children at one month and at two months after implementation of rehabilitation guidelines.

Table (1): Distribution of the studied mothers according to their characteristics (n = 60)

characteristics of the mothers	No.	%
Age		
<40	20	33.3
40-50	33	55.0
≥50	7	11.7
Min. – Max.	30.0 – 52.0	
Mean ± SD.	42.07 ± 5.91	
Median	42.0	
Educational level		
Diplom	13	21.7
Secondary	42	70.0
BSC	5	8.3
Min. – Max.	2.0 – 15.0	
Mean ± SD.	7.73 ± 2.53	
Median	8.0	
Residence		
Urban	36	60.0
Rural	24	40.0
Previous attendance of any training program about bell's palsy		
Yes	16	26.7
No	44	73.3

SD: Standard deviation

Table (2): Distribution of the studied children according to their characteristics and their family history (n = 60)

characteristics and family history of the studied children	No.	%
Sex		
Male	28	46.7
Female	32	53.3
Age		
Min. – Max.	12.0 – 18.0	
Mean ± SD.	14.58 ± 2.66	
Median	15.0	
Educational level		
preparatory	18	30.0
Secondary or diplom	19	31.7
At university education	23	38.3
Season of occurrence		
Winter	24	40.0
Summer	11	18.3
Spring	4	6.7
Autumn	21	35.0
Family history of bell's palsy impairment		
yes	16	26.7
No	44	73.3
Affected side of the face		
Right	34	56.7
Left	26	43.3

SD: Standard deviation

Table (3): Total scores of studied mothers' knowledge regarding bell's palsy before, immediate and after one month from implementation of rehabilitation guidelines (n = 60)

Mothers' Knowledge Regarding Bell's Palsy	Before		Immediate		After 1 month		Test of Sig	p
	No.	%	No.	%	No.	%		
Low (<60 %)	51	85.0	0	0.0	0	0.0	Fr= 116.768*	<0.001*
Moderate (60-<75 %)	9	15.0	3	5.0	4	6.7		
High (60-<75 %)	0	0.0	57	95.0	56	93.3		
Total score (0 – 26)							F= 467.971*	<0.001*
Min. – Max.	7.0 – 19.0		18.0 – 26.0		17.0 – 26.0			
Mean ± SD.	13.70 ± 2.06		22.98 ± 2.0		23.92 ± 2.32			
Median	14.0		23.0		25.0			
Median	53.85		88.46		96.15			

SD: Standard deviation

F: F test (ANOVA) with repeated measures

Fr: Friedman test

p: p value for comparing between the studied periods

*: Statistically significant at $p \leq 0.05$

Table (4): Distribution of studied mothers' reported rehabilitation practices regarding their children with bell's palsy before, immediate and after one month from implementation of rehabilitation guidelines.

Bell's palsy Rehabilitation reported practices checklist	Before	Immediate	After 1 month	F	p
Pain relieving					
Total Score (0 – 7)					
Min. – Max.	2.0 – 5.0	3.0 – 7.0	3.0 – 7.0		
Mean ± SD.	3.23 ± 0.72	6.50 ± 0.77	6.55 ± 0.72	583.169*	<0.001*
Median	3.0	7.0	7.0		
Eye care					
Total Score (0 – 7)					
Min. – Max.	2.0 – 6.0	5.0 – 7.0	5.0 – 7.0		
Mean ± SD.	3.95 ± 0.85	6.73 ± 0.55	6.73 ± 0.55	427.279*	<0.001*
Median	4.0	7.0	7.0		
Mouth and dental care					
Total Score (0 – 13)					
Min. – Max.	4.0 – 9.0	11.0 – 13.0	10.0 – 13.0		
Mean ± SD.	5.73 ± 1.07	12.57 ± 0.72	12.50 ± 0.81	1614.412*	<0.001*
Median	6.0	13.0	13.0		
Maintain muscle tone(facial exercise and resistance training))					
Total Score (0 – 14)					
Min. – Max.	4.0 – 11.0	11.0 – 14.0	11.0 – 14.0		
Mean ± SD.	7.67 ± 1.62	13.53 ± 0.65	13.03 ± 0.78	497.226*	<0.001*
Median	8.0	14.0	13.0		
Superficial heat therapy(hot application)					
Total Score (0 – 4)					
Min. – Max.	1.0 – 4.0	3.0 – 4.0	3.0 – 4.0		
Mean ± SD.	2.53 ± 0.72	3.97 ± 0.18	3.95 ± 0.22	210.517*	<0.001*
Median	2.0	4.0	4.0		

SD: Standard deviation

F: F test (ANOVA) with repeated measures

p: p value for comparing between the studied periods

*: Statistically significant at $p \leq 0.05$

Table (5): Total score of the studied mothers' reported rehabilitation practices regarding their children with bell's palsy before, immediate and after one month from implementation of rehabilitation guidelines (n = 60)

Bell's palsy Rehabilitation practices checklist	Before		Immediate		After 1 month		Test of Sig	p
	No.	%	No.	%	No.	%		
Incompetent (<70 %)	60	100.0	0	0.0	0	0.0	Q= 120.0*	<0.001*
Competent (≥70 %)	0	0.0	60	100.0	60	100.0		
Total score (0 – 45)							F= 3379.115	<0.001*
Min. – Max.	19.0 – 28.0		38.0 – 45.0		38.0 – 45.0			
Mean ± SD.	23.12 ± 1.97		43.30 ± 1.39		42.77 ± 1.59			
Median	23.0		43.50		43.0			
Median	51.11		96.67		95.56			

SD: Standard deviation

F: F test (ANOVA) with repeated measures

Q: Cochran's test

p: p value for comparing between the studied periods

*: Statistically significant at $p \leq 0.05$

Table (6): Correlation between mothers' knowledge and their reported rehabilitation practices before, immediate and after one month from implementation of rehabilitation guidelines

	Before		Immediate		After 1 month	
	r	p	r	p	r	p
Mothers' Knowledge vs their reported rehabilitation practices	0.368*	0.004*	0.117	0.373	0.238	0.067

r: Pearson coefficient

*: Statistically significant at $p \leq 0.05$

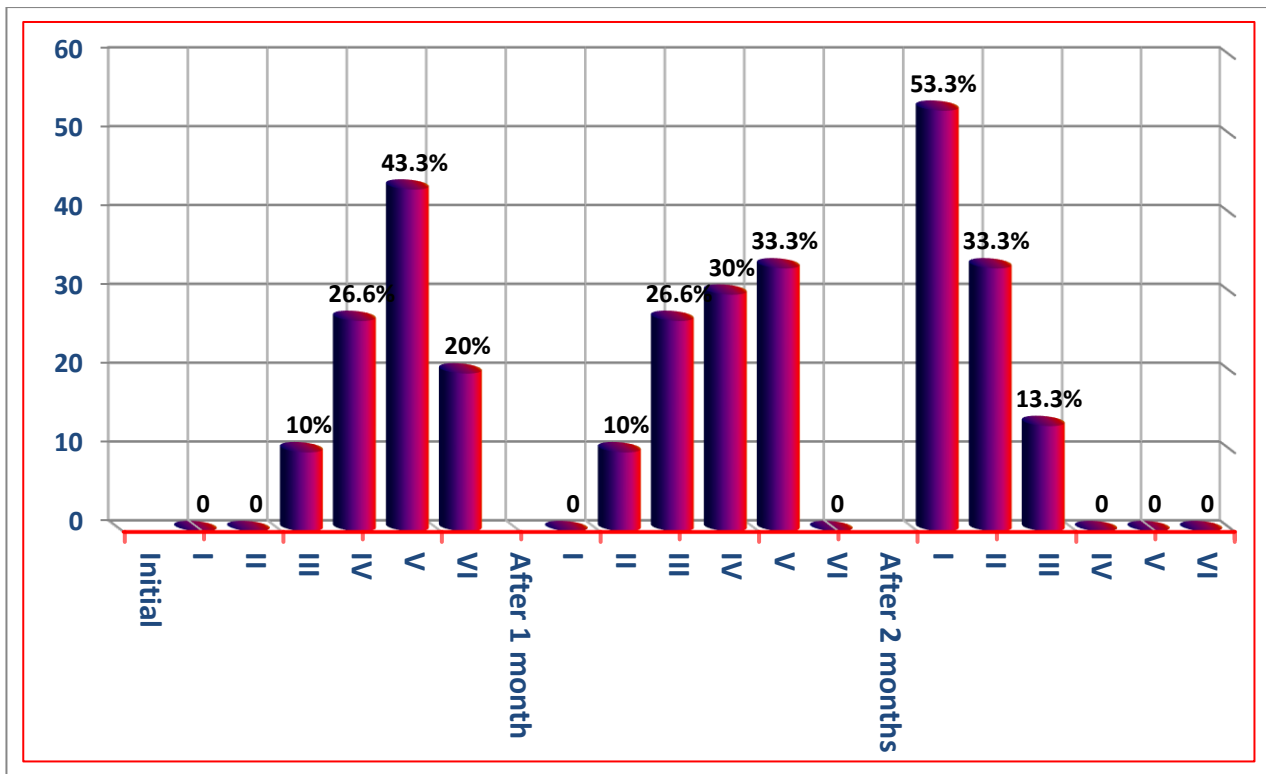


Figure (2): Functional recovery of facial muscles of children with bell's palsy at the initial assessment, after 1 month and 2 months after rehabilitation guidelines

Discussion

Bell's palsy is a neuromuscular condition characterized by an idiopathic weakening or facial peripheral nerve paralysis. It has a significant impact on children's overall wellbeing, self-image, and physical function. In addition to the variety of modalities utilized to either promote recovery or prevent degeneration in the nerve and muscle, several tools assist in the documentation of recovery as rehabilitation guidelines (Peregrino et al, 2020).

The current study indicated that more than half of the children were female. This could be attributed to the fact that females are more sensitive and nervous than males, which makes them more susceptible to this condition. A

total of three-quarters of the children developed the disease during the winter months and autumn. This suggests that the nerves are more affected by the cold. These results were in agreement with the findings of Faheim et al. (2021), who found that the majority of children studied were female and affected in autumn and winter. In contrast, the results of the current study were in contradiction with Prabasheela et al (2017) and El-Tallawy et al. (2016), who found that bell's palsy affected both males and females equally. The findings of Cubukcu et al. (2013), disagreed with this research finding which indicated that the majority of children had the disease in spring.

The current study observed that the mean age of the affected children was 14.58 years. **Prabasheela et al. (2017)** demonstrated that bell's palsy can affect any individual, regardless of age, and is experienced by both genders in equal numbers. However, the current findings indicated that this condition is generally less prevalent before the age of 10. In the current study, the right side of the face was found to be most affected in more than half of the children. This finding is supported by **El-Tallawy et al. (2016)**, who reported that most of the studied children in the study, their affection was on the right side

The present research presents that the majority of mothers had low scores of knowledge before the implementation of rehabilitation guidelines. This might be due to almost of the children had no family history of bell's palsy and this reflects on the mothers' knowledge. This was supported by the findings of **Faheim et al. (2021)** who mentioned that the majority of the mothers studied had unsatisfactory knowledge before the implementation of the guidelines. **Fawcett (2013)**, was also in agreement with the current study who emphasized that knowledge of mothers improved after rehabilitation guidelines and also their practice. It was supported by the result of **Alherabi (2021)** who found that the majority of the studied population had a poor level of knowledge regarding bell's palsy.

It was observed that mothers had a high levels of knowledge immediately and one month after implementation of the rehabilitation guidelines in the current study. This

may be due the needs of mothers to know about this disease for proper care to their children. Improving mothers' knowledge was the main **objective of Kieckhefer et al.'s (2014)** study, which helps to gain more experience and more support, and this was consistent with the current study.

Regarding mothers' reported practice; it was found that all mothers were incompetent before the implementation of rehabilitation guidelines. This may be due to the fact that most of the mothers had not received any training on the disease before the implementation of the rehabilitation guidelines, while all of them became competent immediately and after one month of implementing the rehabilitation guidelines. As reported by **El-Sheikh (2021)**, the majority of mothers in the study demonstrated suboptimal practices prior to utilizing the rehabilitation guidelines. However, following the implementation of these guidelines, the majority of mothers exhibited competent practices, which were in alignment with the current study.

It was found that there was a significant positive correlation between mothers' knowledge and their reported practice before the implementation of the rehabilitation guidelines. This may be due to the fact that improved knowledge is mainly associated with improved practice. This finding is supported by **Faheim & Amer (2019)**, A study was conducted to assess the level of knowledge of mothers about certain aspects of child healthcare. The results demonstrated a positive correlation between the level of

education, the knowledge of mothers and the practices provided to children.

Regarding the recovery of facial function in children with bell's palsy after implementation of the rehabilitation guidelines, it was observed that there was an improvement in the facial recovery of the children at one month and at two months after implementation of the rehabilitation guidelines. This could be due to the improvement in the mothers' practice in caring for their children. Facial exercises performed by the children in front of the researcher and their mothers and repeated at home can also help to maintain muscle tone, reduce stiffness, increase flexibility, develop muscle control, improve relaxation response, reduce discomfort, increase mobility and improve coordination, resulting in better grading of the disease and faster healing .

The results of **Abdelatif (2020)** showed that there was a statistically significant improvement in House Brackmann score grading after one month and after two months for the group that received comprehensive modalities and techniques in their care.

Cubukcu et al (2018) reported that muscle stiffness can be reduced and facial movements can be facilitated by rehabilitative techniques such as physical treatment, coordination exercises and facial expression exercises.

Conclusion:

There was an improvement in mothers' knowledge and reported practice with their children with bell's palsy, with statistically significant differences before, immediately and one month

after implementation of the rehabilitation guidelines. There was an improvement in the functional recovery of facial muscles in children who received rehabilitation guidelines.

Recommendation:

- Provide ongoing guidance to mothers on rehabilitation guidelines regarding care of their children with bell's palsy and prevention of its serious complications.
- Ensure the application of rehabilitation guidelines in the care of children with Bell's palsy in all pediatric outpatient clinics and hospitals.

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