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The Effect *of Mirror Exercise* and *Massage* on the Facial Functional Ability of *Bell's Palsy Patients* in the Anugerah Sehat Physiotherapy Practice

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ABSTRACT

Disorders that occur in nerves and muscles are a problem that is often encountered in society and one of them is facial nerve dysfunction that can affect a person's quality of life called *Bell's Palsy*. Improving the functional ability of *Bell's Palsy* patients is managed physiologically, namely patients are given *massage* and education such as *mirror exercises*. The purpose of the study was to determine the effect *of mirror exercise* and *massage* on the facial functional ability of *Bell's Palsy* patients in the practice of Physiotherapy Anugerah Sehat. The type of research used is a quantitative type of research, with the research design used is *Quasi Experimental* with *a pre-test* and *post test one group approach*. This research was carried out at the Anugerah Sehat Physiotherapy Practice in April 2023. The population in this study is *30* Bell's Palsy patients.The sampling technique in this research is *Total Sampling*. Scale used in the assessment of facial functional ability with *Ugo Fisch*. Bivariate analysis uses *the Paired Sample T Test.* The results of the research on the frequency distribution of facial functional abilities *of Bell's Palsy* patients before being given *the Mirror Exercise* and *Massage modalities*, the majority had moderate category facial functional abilities at a value of 30-70 as many as 27 people (90%), the frequency distribution of facial functional abilities *of Bell's Palsy* patients after being given *the Mirror Exercise* modality and *Massage*, the majority of whom had normal facial functional abilities at a value of 70-100 as many as 25 people (83.3%), there was an effect *of mirror exercise* and *massage* on the facial functional ability of *Bell's Palsy patients* in the Anugerah Sehat Physiotherapy Practice with a significant value (2-tailed) 0.000<0.05.

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INTRODUCTION

Disorders that occur in nerves and muscles are a problem that is often encountered in society. One of them is facial nerve dysfunction which can affect a person's quality of life. Meanwhile, the human face is the focal point for communication and expression. Dysfunction of the facial nerve results in imperfection of facial shape, decreased muscle function in the face, interferes with the patient's daily life when eating and drinking using glasses, disturbances when speaking, the inability of the patient to close the eyes tightly while sleeping, to the onset of pain around the ears and neck. This problem is one of the nerve disorders that occur in the facial nerves. This condition is commonly referred to as *Bell's Palsy* (Mujadidah, 2018).

Bell's Palsy is an acute peripheral nerve palsy in one half of the face. This condition causes sufferers to be unable to move half of their face voluntarily (Mujadidah, 2018).

The prevalence *of Bell's Palsy* in the United Kingdom and the United States is 22.4% and 22.8% respectively per 100,000 inhabitants per year. In the Netherlands (1987) 1 patient per 5000 adults and 1 patient per 20,000 children per year (Abdul, 2021). The annual incidence of *Bell's Palsy* is 20 per 100,000 people regardless of gender or ethnicity. This incident does not take into account age but tends to be higher when over the age of 40. The prevalence in Indonesia based on data at the Cililin Regional General Hospital, especially *Bell's Palsy* disease, is still quite large, recorded in 2021 the number of Bell*'s Palsy* patients is more through outpatient service programs, it can be from 4 to 6

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examinations a month, even depending on the severity or severity of the disease. It was recorded that in 2021 Bell*'s Palsy sufferers* reached 5 to 10 patients per month (Pratiwi, 2021).

The first look on the face gives the impression of the person. A person's character, mental state, health condition, and others can be seen from the look on their face. *Bell's palsy* can cause excessive stress during a private relationship due to the obvious manifestations of the face. Clarity leads to depression in most cases. Given the public's interest in aesthetics, the importance of early recovery from *Bell's Palsy* is increasing (Mujaddidah, 2017). Overcoming the problems caused by *Bell's Palsy* condition can be given physiotherapy intervention. Physiotherapy is a form of health service aimed at individuals and/or groups to develop, maintain and restore movement and body function throughout the life span by using manual handling, improvement of movement, equipment (physical, electrotherapeutic and mechanical), functional training, and communication (PMK No. 65 of 2015)

Physiotherapy plays an important role in the rehabilitation process. Some of them are helping to reduce the pain experienced by patients, increasing muscle strength on the weak side of the face. Improving the functional abilities of patients who are limited due to pain and weakness, to improve the patient's quality of life. There are many ways that can be done in realizing patient recovery such as using several physiotherapy interventions, an example is *electrical stimulation*. Meanwhile, in the case *of Bell's Palsy*, the patient is given *massage* and education such as *mirror exercise* so that the patient can practice at home.

Mirror exercise is a form of exercise therapy that uses a mirror whose implementation uses exercises of movements on the face both actively and passively. Patients are asked to perform movements from the face such as: raising the eyebrows and forehead up, closing the eyes, smiling, pulling the corners of the mouth to the right or left side, whistling and pricking, closing the eyes tightly, exposing incisors and raising the lips up, inflating the nostrils, saying labial words: l, m, n. The exercise is carried out for 10-20 minutes with repetition 4-5 times each exercise, and is done 2-3 times a day (Patil, 2017). *Massage* to relax and improve blood circulation and maintain muscle tone and *electrical stimulation* to increase the strength of the facial muscles and the functional ability of the facial muscles (Yuliani, 2016). The provision *of massage* in the case *of Bell's Palsy* aims to reduce stiffness, thickening, as well as improve the functional ability of facial muscles and increase the strength of facial muscles (Zainal, 2017).

Based on the results of the initial survey of researchers at the research location that patients who experienced *Bell's Palsy* were given *Massage* without *Mirror Exercise*, supported by the number of patients who attended the Anugerah Sehat Physiotherapy Practice amounting to 60 people in the last 6 months (June 2022-December 2022), so the researcher was interested in conducting research on how the Influence *of Mirror Exercise* and *Massage* on the facial functional ability of *Bell's palsy patients* in the Anugerah Sehat Physiotherapy Practice.

METHOD

The type of research used is a quantitative type of research, with the research design used is *Quasi Experimental* with a *pre-test* and *post test approach of one group*, namely making a comparison before and after being given treatment with *one group*. The research was carried out in April 2023. The population in this study is *30* Bell's Palsy patients.The sampling technique in this research is *Total Sampling*, which uses all *Bell's Palsy patients* as a sample of respondents (Sugiyono, 2019). Bivariate data analysis was used to analyze *the Paired Sample Test.*

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RESULTS AND DISCUSSION

Univariate Results

Table 1. Frequency Distribution of Demographic Data

Data	n	%
Age		
Early Teens 12-16 Years	7	23,3
Late Teens 17-25 years old	13	43,3
Early Adult 26-35 Years	10	33,4
Total	**30**	**100**
Gender		
Man	11	36,7
Woman	19	63,3
Total	**30**	**100**

Based on the age of the respondents with *Bell's Palsy*, the majority of respondents aged 17-25 years (Late Adolescence) were 13 people (43.3%), followed by respondents aged 26-35 years (Early Adult) as many as 10 people (33.4%) and 12-16 years old (Early Adolescence) as many as 7 people (23.3%). Based on the gender of Bell*'s Palsy* sufferers , the majority of respondents were female as many as 19 people (63.3%), followed by male respondents as many as 11 people (36.7%).

Table 2. Frequency attribution of facial functional abilities of *Bell's Palsy* patients before and after *mirror exercise* and *massage*

Facial Functional Capabilities	Before		After	
	n	**(%)**	***n***	**(%)**
Rest				
Value 6	9	30	-	-
Value 14	18	60	2	6,7
Value 20	3	10	28	93,3
Total	**30**	**100**	**30**	**100**
Frowning				
Value 0	12	40	-	-
Value 3	12	40	-	-
Value 7	6	20	3	10
Value 10	-	-	27	90
Total	**30**	**100**	**30**	**100**
Close Eyes				
Value 9	12	40	-	-
Value 21	18	60	3	10
Value 30	-	-	27	90
Total	**30**	**100**	**30**	**100**
Smile				
Value 9	12	40	-	-
Value 21	18	60	3	10
Value 30	-	-	27	90
Total	**30**	**100**	**30**	**100**
Whistle				

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Value 3	27	90	-	-
Value 7	3	10	6	20
Value 10	-	-	24	80
Total	**30**	**100**	**30**	**100**

Based on the results obtained by the researcher in table 2 about the frequency distribution of the facial functional abilities *of Bell's Palsy* patients before being given *the Mirror Exercise* and *Massage modalities*, in the resting position the majority had a score of 14 for 18 people (60%), the majority of people frowning their foreheads with a value of 0 and 3 each as many as 12 people (40%), the majority of closed eyes got a score of 21 for 18 people (60%), The majority of smiling had a score of 21 as many as 18 people (60%) and whistled the majority of 3 scores as many as 27 people (90%).

During 8 meetings on the research sample*, Mirror Exercise* and *Massage modalities were carried out*, then the functional ability of the sample face was reassessed, the following results were obtained in the resting position the majority had a score of 20 as many as 28 people (93.3%), frowning the forehead of the majority with a score of 10 as many as 27 people (90%), closing the eyes of the majority got a score of 30 as many as 27 people (90%), the majority smile had a score of 30 as many as 27 people (90%) and whistled the majority of 10 scores as many as 24 people (80%).

Table 3. Facial Functional Abilities of *Bell's Palsy* Patients Before and After *Mirror Exercise* and *Massage*

Facial Functional Capabilities	**Before**		**After**	
	n	**(%)**	***n***	**(%)**
<30: Signs	3	10	-	-
30-70: Sedang	27	90	5	16,7
70-100: Normal	-	-	25	83,3
Total	**30**	**100**	**30**	**100**

Based on the results obtained by the researcher in table 3 about the facial functional ability of *Bell's Palsy* patients before being given *the Mirror Exercise* and *Massage* modalities, the majority had moderate facial functional ability at a value of 30-70 as many as 27 people (90%). After being given the *Mirror Exercise* and *Massage* modalities, the majority had normal facial functional abilities at a score of 70-100 as many as 25 people (83.3%).

Table 4. Normality Test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		30
Normal Parameters	Mean	,0000000
	Std. Deviation	12,18076519
Most Extreme Differences	Absolute	,154
	Positive	,118
	Negative	-,154
Test Statistic		,154
Asymp. Sig. (2-tailed)		,200

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. This is a lower bound of the true significance.

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Based on the results of the normality test, it is known that the significance value is 0.200 > 0.05, so it can be concluded that the residual value is normally distributed.

Table 5. Effect *of Mirror Exercise* and *Massage* on Facial Functional Ability of *Bell's Palsy Patients*

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Before - After	-1,100	,316	,100	-1,326	-,874	-11,000	9	,000

Based on the results of the *Paired Sample Test*, it was considered significant < 0.05 so that the results of this study were the Effect *of Mirror Exercise* and *Massage* on the Facial Functional Ability of *Bell's Palsy Patients* in the Anugerah Sehat Physiotherapy Practice with a significant value (2-tailed) 0.000<0.05.

Discussion

Facial Functional Ability of *Bell's Palsy* Patients Before *Mirror Exercise* and *Massage*

The results of the research conducted by the researcher were obtained as a result of a decrease in activity and functional ability before being given *the Mirror Excercise* and *Massage modalities* in the form of resting or silent the face looks *asymmetrical*, unable to frown, close eyes, smile and whistle or pluck perfectly with a result of 54 out of 100 points. Where 54 points are included in degree III or moderate paralysis.

In line with the results of research conducted by Handita et al, (2018) that before being given infrared modality therapy , *massage* and *mirror exercise* experienced a decrease in activity and functional ability in the form of resting or silent faces looking *asymmetrical*, unable to close eyes, unable to smile and whistle or pluck perfectly and unable to wrinkle their foreheads.

Facial Functional Ability of *Bell's Palsy* Patients After *Mirror Exercise* and *Massage*

After being given the *Mirror Exercise* and *Massage* modalities At the first meeting, the results obtained have not changed the functional ability of the face. However, in the 6th meeting, there was a change in the results and then continued to 8 meetings and obtained significant results of 70-100 points. These results show that the patient's current condition is towards a normal value, this can occur because it is influenced by the increasing strength of the facial muscles so that it can increase the patient's activity and functional ability.

In line with the results of research conducted by Handita et al, (2018) that after being given infrared modality therapy , *massage* and *mirror exercisei* , the results were obtained that there was no change or increase in muscle strength at T1 and T2, at T3 and T4 there was only an increase in facial muscle strength in *m. nasalis* and *m. zigomaticum* major-minor, in T5 and T6 the results were obtained more significantly where the facial muscles experienced an increase in muscle strength.

Effect *of Mirror Exercise* and *Massage* on Facial Functional Ability of *Bell's Palsy Patients*

Based on the results of the *Paired Test*, it was considered significant < 0.05 so that the results of this study were the Effect *of Mirror Exercise* and *Massage* on the Facial Functional Ability of *Bell's Palsy* Patients with a significant value (2-tailed) of 0.000<0.05.

The results of the study of Lokawati et al, (2018) from the evaluation of the MMT of the facial muscles and the Ugo Fisch scale after 6 times of therapy were found to have an increase in the strength

of the left side of the facial muscles and an increase in the functional ability of the left side of the face muscles. The results of the functional ability examination in the first therapy (T1) were obtained 42 points which means moderate paralysis, increasing at T6 to 91 points which means normal. The results of the waja muscle strength test in the first therapy (T1) facial muscle strength have values that vary between 0, 1, to 3. Then after being given physiotherapy measures, the result was an increase in the strength of the facial muscles at T6, a value of 5 was obtained.

Physiotherapist intervention by providing *massage* on the face, in patients *with Bell's palsy* with the aim of increasing flexibility, providing a relaxing effect, and reducing spasm on the face by stimulating sensory receptors in the skin (Prentice, 2012). In patients with *Bell's palsy,* the facial muscles are stretched towards the healthy side (right), this condition can result in stiffness on the lesion side of the face (left). Acupressure massage stimulates sensory receptors and subcutaneous tissues in the skin, thus providing a relaxation reflex and reducing stiffness in the face (Lee & Chung, 2015). Sensory receptor stimulation in the form of light pressure will affect the tissue under the skin that vasodilates blood vessels so that it will increase tissue metabolism, with the improvement of metabolism it will give a relaxing effect by reducing stiffness on the face in this condition, massage is given for about 10 minutes on both sides of the face using *stroking, efflurage, finger kniding techniques, and tapotement* (Alakram & Puckree, 2011).

Physiotherapist interventions with *mirror exercise* in Bell*'s palsy* patients aim to improve symmetry and biofeedback, so as to maintain the physiological properties of facial muscles (Alakram & Puckree, 2011). By performing some functional movements as instructed by the physiotherapist. If any abnormal movements are produced, the patient will try again with little effort (Alacram & Puckree, 2011).

Based on the results of the study, the researcher assumes that the provision of *Mirror Exercise* and *Massage* to Bell*'s Palsy* patients can be communicated as physiotherapy management to improve the functional ability of the face of *Bell's Palsy* patients because of the treatment with functional movements on the face so that the face gets a relaxation effect and increases muscle strength on the face. *Mirror Exercise* and *Massage* must also be done continuously so that the effects of *Mirror Exercise* and *Massage* stimulate sensory receptors and get maximum results.

CONCLUSION

There is an Effect *of Mirror Exercise* and *Massage* on the Facial Functional Ability of *Bell's Palsy Patients* in Anugerah Sehat Physiotherapy Practice with a significant value (2-tailed) 0.000<0.05.

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