

Awareness of Hail Region Population about Facial Nerve Palsy (Seventh Cranial Nerve Palsy)

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Abstract

Background: Facial nerve palsy (seventh cranial nerve palsy) is a common neurological problem. The etiology is not fully understood but it is thought to be due to injury or compression throughout the seventh cranial nerve course. The study aimed to evaluate the awareness of the Hail region population about facial nerve palsy, its risk factors, methods of treatment, and prognosis. **Methodology:** This cross-sectional descriptive study was conducted in the Hail region from March to June 2022. The study involved 224 participants in the age group 18 - 65 years and data was collected through Google self-administered questionnaire. **Results:** 65.2% of the participants were 18 - 25 years, 20.1% were 26 - 35 years and 14.7 were above 35 years. 91.9% think that exposure to cold air is the leading cause followed by viral infections (30.4%), stroke (27.6%), and genetic factors (13.8%). diabetes (8.5%), evil eye (7.1%), magic (4%), pregnancy (0.4%) and vitamins deficiency (0.4%). 92% of participants think that facial nerve palsy is not contagious and 8% have no clear idea. 89.7% think that facial nerve palsy is curable, 83.9% think that physiotherapy is the treatment of choice, 94.6% agree that early medical assessment is essential for good outcomes and 92.9 believe that avoidance of cold air is the best method of prevention. **Conclusion and Recommendations:** The majority of participants show poor awareness regarding the etiology and the preferable treatment of facial nerve palsy. Public medical education and further wider studies are highly recommended.

Keywords

Facial Palsy, Causes, Treatment, Hail, Awareness

1. Introduction

Facial nerve palsy is a lower motor neuron lesion characterized by unilateral pa-

ralysis of the facial muscles and it could be partial or complete [1]. It can lead to numbness in the face, changes in taste sensation, and increased sensitivity to sounds [1]. Facial nerve palsy is usually idiopathic, though some risk factors are thought to have a role [2]. The pathogenesis of facial nerve palsy involves malfunction of the facial nerve (cranial nerve VII), which controls the muscles of the face leading to the inability to move the muscles of facial expression. The idiopathic most common form of paralysis, so-called Bell's palsy, is of the infranuclear/lower motor neuron type [1]. It is thought that as a result of inflammation of the facial nerve, pressure is produced on the nerve where it exits the skull within its bony canal (the stylomastoid foramen), blocking the transmission of neural signals or damaging the nerve. Patients with facial palsy for which an underlying cause can be identified are not considered to have Bell's palsy *per se*. Possible causes of facial paralysis include tumors, meningitis, stroke, diabetes mellitus, head trauma, and inflammatory diseases of the cranial nerves (sarcoidosis, brucellosis, etc.). In these conditions, the neurologic findings are rarely restricted to the facial nerve. Babies can be born with facial palsy due to prolonged labor or forceps delivery [3]. In a few cases, bilateral facial palsy has been associated with acute HIV infection.

In some research, Herpes simplex virus type 1 (HSV-1) has been identified in a majority of cases diagnosed as facial nerve palsy through endoneurial fluid sampling [4]. Other research, however, identified, out of a total of 176 cases diagnosed as Facial nerve palsy, HSV-1 in 31 cases (18%) and herpes zoster in 45 cases (26%) [5].

In addition, HSV-1 infection is associated with the demyelination of nerves. This nerve damage mechanism is different from the above-mentioned—that edema, swelling, and compression of the nerve in the narrow bone canal are responsible for nerve damage. Demyelination may not even be directly caused by the virus, but by an unknown immune response [5].

Signs and symptoms of facial nerve palsy depend on the site of facial nerve that has been affected. They include loss of stapedial reflex, loss of taste from the anterior 2/3 of the tongue, lack of salivation, paralysis of muscles of facial expression, and loss of lacrimation [6].

The muscular weakness of the facial nerve palsy is classified into 6 grades clinically according to the **HOUSE-Brackman scale** [7]:

Grade 1: Normal function without weakness.

Grade 2: Mild dysfunction with slight facial asymmetry with a minor degree of synkinesis.

Grade3: Moderate dysfunction, but not disfiguring, asymmetry with contracture and/or hemifacial spasm, but residual forehead motion and complete eye closure (with effort).

Grade 4: Moderately severe dysfunction-obvious, disfiguring asymmetry with lack of forehead motion and incomplete eye closure.

Grade 5: Severe dysfunction-asymmetry at rest and only slight fascial movement.

Grade 6: Total, paralysis-complete absence of tone or motion [8] [9].

Treatment of facial nerve palsy can be surgical, medical, or physiotherapy. [10]. Medical treatment: Corticosteroids can be used for medical treatment if the patient was seen within 1 to 3 days of the onset of symptoms. Oral Prednisolone 1 mg/kg/day for 10 to 14 days had been recommended with gradual tapering. With steroid treatment, lubricant drops for eyes (artificial tears) are recommended to avoid dryness and scarring [11]. After 3 days of onset of symptoms, steroid therapy appears to be of less value [12].

Physiotherapy can be beneficial to some individuals with facial palsy as it helps to maintain the muscle tone of the affected facial muscles and stimulate the facial nerve [13]. It is important that muscle re-education exercises and soft tissue techniques be implemented prior to recovery in order to help prevent permanent contractures of the paralyzed facial muscles [13]. To reduce pain, heat can be applied to the affected side of the face [14]. There is no high-quality evidence to support the role of electrical stimulation for facial palsy.

Surgical management in the case of parotid gland tumors involves removing part or the entire glands so as to relieve the compression on the nerve and that will be enough to restore the function [15]. In the case of injuries, nerve anastomosis of the facial nerve with hypoglossal nerve results in a good prognosis [16].

Partial paralysis always resolves completely within a few weeks. While recovery from complete paralysis takes longer (months) and is complete in only about 60% - 70% of cases [17].

Approximately 15% of patients are left with residual palsy and/or synkinesis [18] [19].

2. Literature Review

Erased according to reviewer instructions, important data is integrated into the introduction section above.

3. Materials and Methods

This observational analytical cross-sectional study was conducted in the Hail region, Kingdom of Saudi Arabia, during the year 2022 as a part of the social accountability of the University of Hail towards local community of Hail region among residents of Hail aged from 18 to 65 years for both excluding adults below 18 years, above 65 years and those residing outside Hail region, excluding those below 18 years or above 65 years and those residing outside Hail. A standardized questionnaire was formulated and distributed as an electronic self-administered questionnaire. A standardized consent was done and provided with the questionnaire. Data were analyzed using SPSS (version 23) and expressed in numbers and percentages.

4. Results

A Google online questionnaire was distributed widely among target population

to insure a sample size of minimum 384 participants as no previous similar studies were done in the same geographical area. In addition to that, the age distribution of participants show marked decrease with age and zero participation from the age group 56 - 65 which may reflect technical difficulties and lack of online work skills among the older groups. Out of 224 participants, 138 (61.6%) were males and 86 (38.4%) were females. 146 (65.2%) belong to age group 18 - 25 as indicated in **Table 1**.

Regarding the etiology of facial nerve palsy, 91.5% of participants believe that exposure to cold air is the leading cause of facial nerve palsy. Other mentioned causes involved viral infections (30.4%), stroke (27.6%), genetic factors (13.8%), diabetes (8.5%), evil eye (7.1%), elderly (6.7%), magic (4%), autoimmunity (0.89%), pregnancy (0.4%) and B vitamins deficiency (0.4%) (see **Table 2**).

Regarding the symptoms of facial nerve palsy, 218 participants (97.3%) think that mouth tilt is a symptom. Other mentioned symptoms were dry eyes (34.8%), headache (30.4%), dry mouth (18.3%), and loss of sense of taste (13.4%) (see **Table 3**).

On inquiring about the organs affected by facial nerve palsy, facial muscles are affected according to 219 participants (97.8%), followed by eyes (44.6%), tongue (33.5%) and salivary glands (23.7%) (see **Table 4**).

Table 1. Age and gender distribution of the participants.

		N	%
Age	18 - 25	146	65.2
	26 - 35	45	20.1
	36 - 45	15	6.7
	46 - 55	18	8.0
	56 - 65	0	0
Gender	Female	86	38.4
	Male	138	61.6

Table 2. Causes of facial nerve palsy.

Cause	N	%
Exposure to the cold air	206	91.9
Viral infections	68	30.4
Stroke	62	27.6
Genetic factors	31	13.8
Diabetes	19	8.5
Evil eye	16	7.1
Elderly	15	6.7
Magic	9	4
Pregnancy	1	0.4
Vitamin B deficiency	1	0.4

Table 3. Symptoms of facial nerve palsy.

Symptom	N	%
Mouth Tilt	218	97.3
Dry Eyes	78	34.8
Headache	68	30.4
Dry Mouth	41	18.3
Loss of Taste Sensation	30	13.4

Table 4. Organs affected by facial nerve palsy.

Organ	N	%
Facial muscles	219	97.8
Eyes	100	44.6
Tongue	75	33.5
Salivary glands	53	23.7

About 92% of participants believe that facial nerve palsy is not contagious, zero% think that it is contagious and 8% don't know whether it is contagious or no (see **Figure 1**).

89.7% of participants believe that facial nerve palsy is curable, 1.8% think that it is not curable while 8.5% are not sure (see **Figure 2**).

The responses related to the best treatment option for facial nerve palsy showed that physiotherapy was the most commonly chosen (83.9%), followed by drug therapy (38.8%), traditional medicine (21%), surgery (14.3%) and exorcism (11.4%) (see **Table 5**).

94.6% of the participants think that visiting doctor at an early stage is important for recovery of facial nerve palsy (see **Figure 3**).

29.9% of the participants believed that it is never possible for a patient with facial nerve palsy to recover without receiving treatment, 3.1% believe that it is always curable without treatment and 67% think that it is sometimes self-limiting (see **Figure 4**).

Regarding prevention of facial nerve palsy, 92.9% of participants think that avoidance of direct exposure to cold air is the best method of prevention. Other mentioned prophylactic methods involved sports regular medical follow up and to quit smoking (see **Table 6**).

5. Discussion

This study assessed the awareness of people in Hail's region, KSA, about the facial nerve palsy. Out of 224 participants, 65.2% belong to the age group 18 - 25 years and the number of the participants decreases gradually with age. This may reflect the interest and familiarity of youth with modern technologies which makes them more able to respond to Google questionnaires. 91.9% of participants believe that exposure to cold air is the major cause of facial nerve palsy

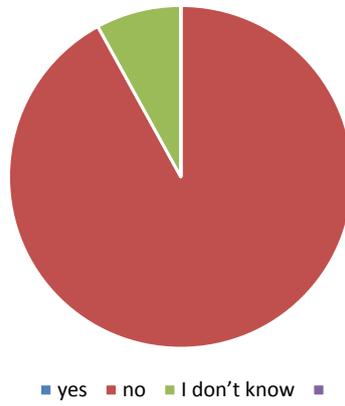


Figure 1. Is facial palsy contagious?

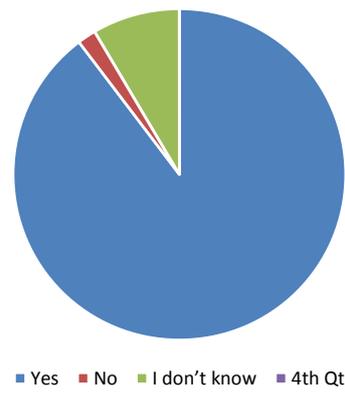


Figure 2. Is facial nerve palsy curable?

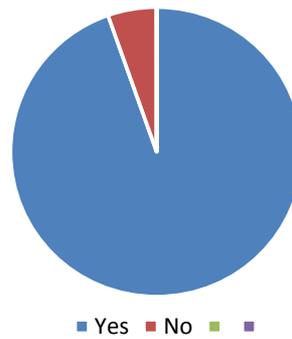


Figure 3. Importance of early medical assessment and care.

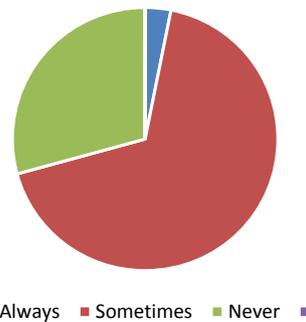


Figure 4. Possibility of recovery without treatment.

Table 5. Best treatment of facial nerve palsy.

Treatment	N	%
Physiotherapy	188	83.9
Drug therapy	87	38.8
Traditional Medicine	49	21.9
Surgery	32	14.3
Exorcism	26	11.4

Table 6. Preventive measures of facial palsy.

Prevention Method	Number	%
Avoidance of Direct exposure to cold air	208	92.9
Playing Sports	52	23.2
Regular Medical Checkup	46	20.5
Stop Smoking	26	11.6

while viral infections and stroke are less important causes. This result is not consistent with the international scientific literature about facial nerve palsy and reflects poor awareness about the common etiological and predisposing factors of the disease.

Regarding the symptoms of facial nerve palsy, there is good awareness about mouth tilt (97.3%), moderate awareness about eye dryness and headache (34.8 and 30.4 respectively) and relatively poor awareness about mouth dryness and loss of test (18.3 and 13.4 respectively).

The majority of participant (89.7%) think that facial nerve palsy is curable, a result which reflects good awareness about the prognosis of the disease.

206 participants (92%) assumed facial nerve palsy is not contagious, 8% are neutral and 0% thinks that it is contagious, a result reflects good awareness.

Regarding the treatment of facial nerve palsy, the majority of participants (94.6) think that early medical attention is essential for speedy good outcomes. This belief is consistent with scientific literature. At the same time, the majority of participants (83.9) think that physiotherapy alone is the treatment of choice and it is more efficient than steroids therapy, a belief which is inconsistent with scientific literature and reflects poor awareness about the best method for treatment. Also, vast majority (92.9%) think that avoiding cold air is the method of choice for the prevention of facial nerve palsy, a wrong belief that is compatible with the above wrong belief concerning the etiology of the disease.

6. Conclusion

The majority of participants have good awareness regarding the curability and non-transmissibility of facial nerve palsy and the importance of early medical assessment and intervention but have poor awareness and wrong beliefs regarding the etiology and the best methods for treatment and prevention.

Recommendations

Based on our key findings in this study, we recommend the health authorities and the University of Hail to conduct an educational program in public areas in the Hail region, such as malls, schools, hospitals, colleges, and gardens to educate the community about the etiology and treatment of facial nerve palsy. The main shortage of the current study is the restricted geographical area, further studies that cover different areas and climatic regions of the kingdom are highly recommended.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Appendix

Reason of choosing Hail region population to conduct the research: The research was done by staff members of Hail University as a part of the social accountability of the university towards local population and its needs.

Sample size determination: The questionnaire was distributed widely and after two weeks the responders were calculated and analyzed.

Possible shortages and limitations: The restricted geographical area. Further studies that cover the whole kingdom are recommended.