CAHIERS MAGELLANES-NS
Volume 07 Issue 1
2025

ISSN:1624-1940
http://magellanes.com/

SAUDI ARABIA POPULATION'S UNDERSTANDING AND CONSCIOUSNESS OF BELL'S PALSY: CAUSES, RISK FACTORS, AND MANAGEMENT

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Abstract:

Background: Sudden unilateral weakness or paralysis of the facial muscles is due to dysfunction of the seventh cranial nerve (Bell's palsy). Although its etiology is unknown, environmental and infectious factors, and inflammatory responses have been linked to it. Bell's palsy is a significant disease with limited knowledge regarding its knowledge in Saudi Arabia and limited regional studies showing discordant incidence rates. The aim of this study is to evaluate understanding and awareness of the Saudi population about Bell's palsy with its causes, risk factors and available management strategies. **Methods:** This is observational cross-sectional study; a self-administered quality was given to Saudi citizens who were fifteen years of age and older in Saudi Arabia from July to December 2024. Qualtrics calculator was used to determine a minimum sample size of 385. SPSS version 20 was used to perform statistical analysis. **Results:** A mean age of 34.2 years was reached by the 579 participants in the questionnaire. We found 35.4% erroneously linked bell's palsy with stroke, and 21.9% were unsure as to bell's palsy causes. Although 77.4% agreed cranial nerve VII plays a role, misconceptions in treatment still existed with 56.6% defining Bell's palsy as not self-limiting, and 50.6% believing recovery would take a long time. Highly notable of all, 53.9% of respondents had low knowledge about the condition while 8.8% had high knowledge. Knowledge had significant correlation with demographic factors like age, marital status and employment status ($P < 0.01$). **Conclusion:** Knowledge of Bell's palsy and misconceptions concerning its nature and management are a critical gap in this Saudi population. The results highlight the need for targeted educational interventions to increase public understanding and encourage timely recognition and management of this not always well understood condition. Enhances awareness and may result in improvements in the health outcomes of those affected by Bell's palsy in Saudi Arabia.

Keywords: Awareness, Bell's palsy, Saudi population.

ISSN:1624-1940
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Introduction:

Bell's palsy is an initial unilateral paralysis of the seventh cranial nerve that causes a patient to lose the capacity to actively move facial muscles on the afflicted side of their face [1]. The cause is unknown, however, it is thought to be linked to severe cold exposure, herpes virus infection, nerve ischemia, and inflammation [2]. Bell's palsy can lead to the loss of important facial functions, including blinking, nasal breathing, lip sealing, smiling, and speaking [3].

While incidence has been recorded at levels as low as 8 and as high as 240 cases per 100,000 people annually, the majority of published series exhibit oscillations between 11 and 40 occurrences per 100,000 inhabitants annually. The prevalence of Bell's palsy in Saudi Arabia is unknown overall, yet a few studies have shown regional incidence and frequency [4]. In the Qurayyat area of Saudi Arabia, the incidence rate of Bell's palsy was 25.7 per 100,000 people annually [5]. According to another study conducted by King Abdulaziz Medical City in Jeddah and Riyadh, Saudi Arabia, the prevalence is 16.4 cases per 100,000 people annually [6]. The Aljouf region has 26.3–27.8 cases per 100,000 people annually [7]. The Arar region has 26.3 cases per 100,000 people annually [8].

A 2023 cross-sectional study aimed to assess the awareness of the population of Al-Qassim, Saudi Arabia, regarding Bell's palsy. The findings revealed that the mean knowledge score of Bell's palsy was reported to be 7.02 ± 2.03 out of a total of 13 points. So, most respondents were reported to be less than the average regarding knowledge and awareness [9]. Another study conducted in Saudi Arabia, regarding Knowledge and Awareness of Bell's Palsy, showed that Previous Bell's palsy history was markedly linked to a high awareness level: 38.1% of participants with prior facial palsy history had a high awareness level, compared to 17.6% of those who did not [10]. In 2020, research was conducted on the Awareness of the general adult population of Saudi Arabia toward Bell's palsy, involving 420 Participants revealed that 24.8% of participants had a good awareness level and 75.2% of participants were found to have a poor awareness level of Bell's palsy [11]. A Study published on the Awareness of the Hail Region Population about Facial Nerve Palsy (Seventh Cranial Nerve Palsy), reported that the majority of participants exhibit inadequate knowledge of the causes of facial nerve palsy and the best course of treatment [12].

Recent research has shown inadequate knowledge regarding the management of Bell's palsy in Saudi Arabia, as not all patients adhere to the standard corticosteroid treatment, and some may use traditional herbs or cauterization, which can cause severe burns and complications [5]. Furthermore, previous studies in different regions of Saudi Arabia demonstrated contradictory results for levels of awareness of the etiology, risk factors, and management of Bell's palsy [10,12].

Objective:

Our study was designed to assess the level of understanding and consciousness among the Saudi population regarding Bell's palsy, focusing on their knowledge of its causes, risk factors, and management. Additionally, we aimed to evaluate their perceptions and attitudes toward the condition, including awareness of available treatment options and preventive measures.

Methodology:

Study Design and Setting:

An observational cross-sectional study based on a self-administered questionnaire was conducted in Saudi Arabia between July - December 2024.

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Subject: Participants, recruitment and sampling procedure:
The research involved Saudi adults over the age of 15, residing in various major cities across Saudi Arabia. Participants were recruited throughout the year 2024. Individuals under 16 years of age and non-Saudi residents were excluded from the study.

Sample size:
Using the Qualtrics calculator, the minimum sample size was estimated to be 385 individuals, considering a confidence level of 95% and a margin of error of 5%.

Inclusion and Exclusion Criteria:
The inclusion criteria for this study were as follows: males and females of the Saudi population who live in Saudi Arabia and are aged 15 years old or above.
We excluded: Males and females who are younger than 15 or not a part of the Saudi population, and those who refused to participate.

Method for data collection, instrument, and score system:
A structured questionnaire was utilized as a working tool. This tool was used in a relevant study conducted in Saudi Arabia. The final version of the questionnaire consisted of 20 items and three parts. Part 1 begins with a brief description of the study and a consent question. Part 2 includes demographic characteristics such as age, gender, marital status, occupation, place of residence, and level of education. Part 3, participants were asked about their knowledge and awareness of treatment, sources of information, causes, and symptoms of Bell's palsy. They were also asked how they perceived the improvement of facial palsy.

Scoring system:
A total of 19 statements were used to evaluate the participants' level of awareness along with personal questions. Socio-demographic: 6 statements, Awareness level: 13 statements. One point is given for the correct answer and zero points are given for the incorrect answer and “I don’t know”. For scoring we used Dichotomous and multiple choice. The maximum score was 18 and divided as follows: the original bloom cut-off points,80.0%-100.0%,60.0%-70.0%, and 59.0% the participants was divided into groups depending on their score.
Awareness scores varied from 0-18 points and were classified into three levels as follows: those with a score of 9 or below were classified have a low level of awareness, those with a score of 10-12 were classified as having a moderate level of knowledge, those with score 13-18 were classified having a high level of knowledge.

Pilot test:
The questionnaire was given to 20 people and asked for them to answer questions on it. This was done to assess the questionnaire's simplicity and viability for the study. The pilot research's data was not included in the final study results.

Analyzes and entry method:
Data was input on a computer using Microsoft Excel (2016) for Windows. Data was uploaded to the SPSS version 20 application. To undergo statistical analysis.

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Results:

Table (1) displays various demographic parameters of the participants with a total number of (579). Participants ranged in age from 23 years to over 45 years (mean, 34.2 years; SD, 12.6) with 26.9% under 23 years, a significant 28.8% between 23 and 35 years, and an equal distribution in both the 36 to 45 and >45 years groups respectively. The breakdown shows gender representation of 70.6 per cent that of females and 29.4 per cent of males. We find the Western region mainly represented geographically with 35.4% of participants, and Northern (2.6%) and Eastern (16.4%) regions in lesser proportion. In comparison, only 0.3% do not have a formal education and 65.1% have received a bachelor's degree. Marital status also has slight majority of married members at 55.1 %. The main quests of the data are of a student population of 33 per cent and of unemployment of 24.4 per cent of participants which point to different social challenges.

Table (1): Sociodemographic characteristics of participants (n=579)

Parameter		***No.***	***Percent (%)***
Age (Mean:34.2, STD:12.6)	Less than 23	156	26.9
	23 to 35	167	28.8
	36 to 45	128	22.1
	More than 45	128	22.1
Gender	Female	409	70.6
	Male	170	29.4
Residential region	Northern region	15	2.6
	Southern region	139	24.0
	Central region	125	21.6
	Eastern region	95	16.4
	Western region	205	35.4
Educational level	Primary school	5	.9
	Middle School	10	1.7
	High school	144	24.9
	Bachelor	377	65.1
	Postgraduate degree	41	7.1
	None	2	.3
Marital status	Single	250	43.2
	Married	319	55.1
	Divorced	7	1.2
	Widowed	3	.5
Occupational status	Student	191	33.0
	Employed	181	31.3
	Freelancer	25	4.3
	Unemployed	141	24.4
	Retired	41	7.1

As shown in figure 1, The causes of Bell's palsy as reported by 579 respondents provide interesting data on the public opinion of this condition. About 14.2% of the total (i.e. 82 individuals) attribute the condition to idiopathic (i.e. no identifiable) reasons. A total of 72 respondents cited viral infections,

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which is 12.4 %, as a probable area of concern. Of particular note, 205 of these 579 (35.4%) were associated with stroke, presumably owing to some form of misperception about neurological disorders. Additionally, 93 people (16.1 percent) also identified trauma as the cause, and a very large 21.9 percent (127 respondents) reported being uncertain about the cause.

Figure (1): Illustrates the cause of bell's palsy among participants.

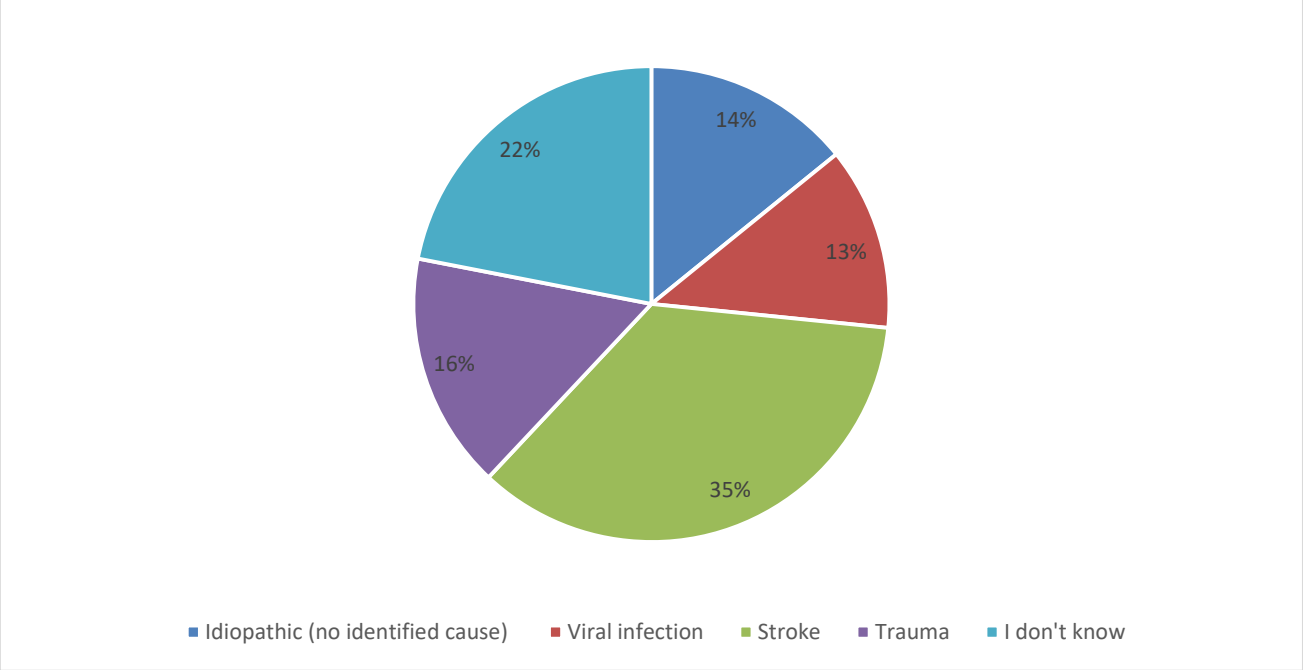

Table 2 presents data of interest that include parameters of the knowledge and awareness of Bell's Palsy among a sample size of 579 respondents. What was most noteworthy was that over 35.4% of people were positively incorrect with thinking this was a stroke, and 21.9% were uncertain why it happened. This underlines a large ignorance gap considering that Bell 's palsy is ponderably idiopathic and for little purposeful viral infection (12.4%) or trauma (16.1%). In addition, the perception of demographic susceptibility indicates that most (58.2%) believe the condition affects both genders equally, however differentiation between awareness is still minimal. However, on a critical note the overwhelming knowledge of cranial nerve 7's involvement in facial nerve palsy (77.4%) implies that the anatomical aspect is well known. Similarly, different symptoms of Bell's Palsy indicated varying recognition levels with inability to eat or smile rated at 66.5%.

Table (2): Parameters related to knowledge and awareness of Bell's Palsy (n=579).

Parameter		***No.***	***Percent (%)***
What causes Bell's palsy?	Idiopathic (no identified cause)	82	14.2
	Viral infection	72	12.4
	Stroke	205	35.4
	Trauma	93	16.1
	I don't know	127	21.9
Which group does Bell's palsy affect more?	Equally affected	337	58.2
	Men	66	11.4

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	Women	84	14.5
	I don't know	92	15.9
Which nerve is affected in facial nerve palsy?	Cranial nerve 1	22	3.8
	Cranial nerve 9	11	1.9
	Cranial nerve 5	70	12.1
	Cranial nerve 7	448	77.4
	Cranial nerve 2	28	4.8
What are the symptoms of Bell's palsy?	Absence of tears	87	15.0
	Convulsions	231	39.9
	Inability to eat or smile	385	66.5
	Dry mouth	87	15.0
	Headache	131	22.6
	Pain in or behind the ear	131	22.6
	Fever	45	7.8
	Vomiting	11	1.9
	Weakness of one side of the face	453	7.8
	I don't know	64	11.1

As shown in figure (2), The data of the affected cranial nerves in facial nerve palsy suggests overwhelming answer to cranial nerve VII (the facial nerve itself). Among a total sample size of 579, 448 cases (77.3%) represent direct cranial nerve VII implication in facial nerve palsy. On the other hand, cranial nerve V (12.1% (70 cases)), is the second most injured nerve. Cranial nerves I, II and IX show minimal involvement and there was a total of 22 (3.8%), 28 (4.8%) and 11 (1.9%) cases with cranial nerves VII only.

Figure (2): Illustrates the nerve affected in facial nerve palsy among participants.

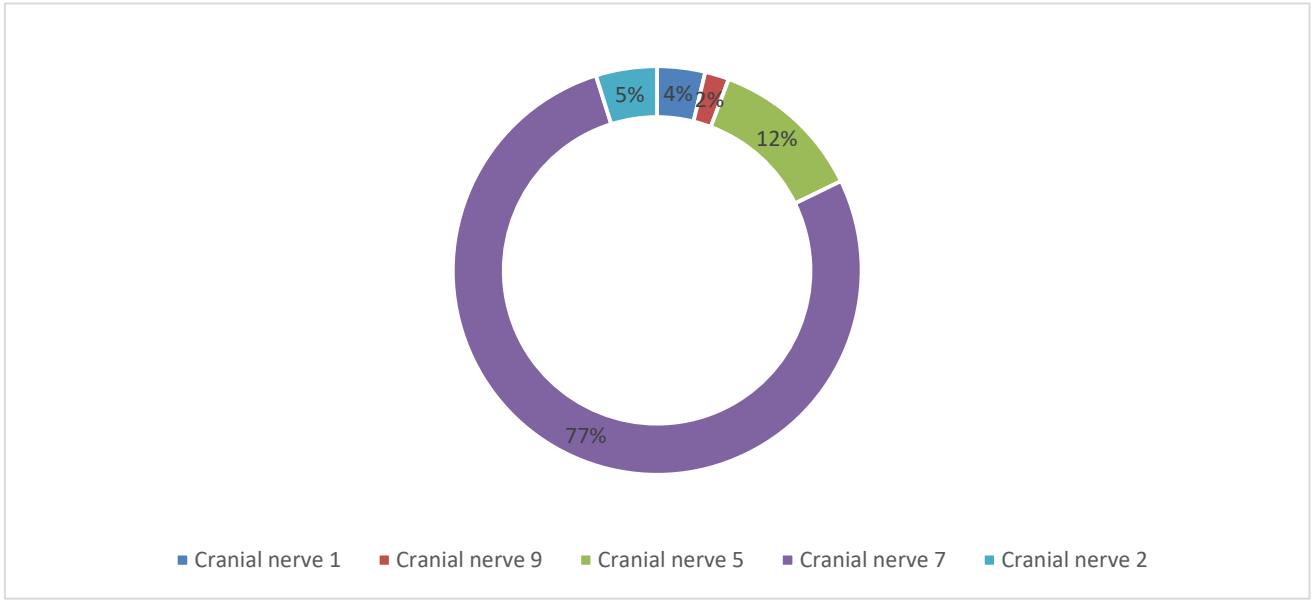

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Table (3) provides insight as to participants awareness and thought on Bell's Palsy. Interestingly, many people (56.6 per cent), were wrong to assert that Bell's Palsy is not a self-limited disorder. Moreover, 50.6% of participants believe Bell's Palsy will be persistent for weeks to months, and another 24.4% are unsure. Favorably, it is overwhelmingly perceived (87.7%) as a remediable illness, with dearth in knowledge about treatment techniques, as only 63.7% confirmed physiotherapy as a choice. As for traditional medicine, 64.6 percent of women believe they play a role in it as well.

Table (3): participants' awareness of Bell's Palsy (n=579).

Parameter		***No.***	***Percent (%)***
Bell's palsy is generally a self-limiting disease	True	115	19.9
	False	328	56.6
	I don't know	136	23.5
For how long Bell's palsy persists in an affected individual?	Hours to days	19	3.3
	Days to week	67	11.6
	Weeks to months	293	50.6
	It is a lifelong disease	59	10.2
	I don't know	141	24.4
Do you think Bell's palsy is a treatable disease?	True	508	87.7
	False	20	3.5
	I don't know	51	8.8
What is the treatment of Bell's palsy?	Antibiotics	86	14.9
	Herbal medicine	81	13.9
	Pain killers	118	20.4
	Physiotherapy	369	63.7
	Steroids	75	12.9
	Antivirals	72	12.4
	I don't know	152	26.3
Do you think traditional medicine has a role in treating Bell's palsy?	No	205	35.4
	Yes	374	64.6
Have you ever been diagnosed with facial palsy?	No	557	96.2
	Yes	22	3.8
Have you ever heard about someone you know who had been diagnosed with facial palsy?	No	162	28.0
	Yes	417	72.0
What is your relation to the person who had been diagnosed with facial palsy?	A friend	109	18.8
	Family	228	39.4
	Neighbor	58	10.0
	Other	242	41.8
Do you think Bell's palsy is a contagious disease?	No	542	93.6
	Yes	11	1.9
	I don't know	26	4.5

Table 4 display the knowledge and awareness levels regarding Bell's Palsy according to the surveyed

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population and provides the needed insight of the amount of public understanding of a condition often incorrectly understood. It was found as there was an 8.8 percent of participants with a high level of knowledge, and a 37.3 percent of the participants with a moderate understanding of it. Of note, a significant 53.9% of these in the low knowledge category.

Table (4): Shows knowledge and awareness about Bell's Palsy score results.

	Frequency	**Percent**
High level of knowledge	51	8.8
Moderate knowledge	216	37.3
Low knowledge level	312	53.9
Total	579	100.0

Table (5) shows that knowledge and awareness level of bell's palsy has statistically significant relation to age (P value=0.0001), marital status (P value=0.0001), and occupational status (P value=0.038). It also shows statistically insignificant relation to gender, residential region, and educational level.

Table (5): Relation between knowledge and awareness level and sociodemographic characteristics.

Parameters		***Knowledge and awareness level***		***Total (N=579)***	***P value****
		High or moderate knowledge	**Low knowledge level**		
Gender	Female	197	212	409	0.124
		73.8%	67.9%	70.6%	
	Male	70	100	170	
		26.2%	32.1%	29.4%	
Age	Less than 23	55	101	156	0.0001
		20.6%	32.4%	26.9%	
	23 to 35	69	98	167	
		25.8%	31.4%	28.8%	
	36 to 45	72	56	128	
		27.0%	17.9%	22.1%	
	More than 45	71	57	128	
		26.6%	18.3%	22.1%	
Residential region	Northern region	10	5	15	0.061
		3.7%	1.6%	2.6%	
	Southern region	67	72	139	
		25.1%	23.1%	24.0%	
	Central region	50	75	125	
		18.7%	24.0%	21.6%	
	Eastern region	36	59	95	
		13.5%	18.9%	16.4%	
	Western region	104	101	205	
		39.0%	32.4%	35.4%	
Educational	Primary school	3	2	5	0.288

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level		1.1%	0.6%	0.9%	
	Middle school	5	5	10	
		1.9%	1.6%	1.7%	
	High school	56	88	144	
		21.0%	28.2%	24.9%	
	Bachelor's degree	183	194	377	
		68.5%	62.2%	65.1%	
	Postgraduate degree	20	21	41	
		7.5%	6.7%	7.1%	
	Uneducated	0	2	2	
		0.0%	0.6%	0.3%	
Marital status	Single	88	162	250	0.0001
		33.0%	51.9%	43.2%	
	Married	175	144	319	
		65.5%	46.2%	55.1%	
	Divorced	1	6	7	
		0.4%	1.9%	1.2%	
	Widowed	3	0	3	
		1.1%	0.0%	0.5%	
Occupational status	Student	72	119	191	0.038
		27.0%	38.1%	33.0%	
	Employed	85	96	181	
		31.8%	30.8%	31.3%	
	Freelancer	15	10	25	
		5.6%	3.2%	4.3%	
	Unemployed	74	67	141	
		27.7%	21.5%	24.4%	
	Retired	21	20	41	
		7.9%	6.4%	7.1%	

P value was considered significant if ≤ 0.05.

Discussion:

The seventh cranial nerve is damaged which, when there is a temporary condition called Bell's palsy, leaves a person with sudden weakness or paralysis of the face on one side [13]. Facial discomfort, deformity, psychological effects (hemifacial spasm) and muscle weakness, especially on the affected side, follows [14]. Bell's palsy is the most common cause of lower motor neuron facial palsy, an acute form of peripheral facial neuropathy that may progress in 48 hours [15]. With both bilateral and only unilateral involvement rare, the muscles of facial expression become temporarily or permanently weak, and paralyzed on one side in individuals with Bell's palsy. They may become particularly sensitive or numb to functions such as speech, chewing, sucking, swallowing and lip movement and have functional impairments. This is also associated with other issues of taste, saliva production and tear production [16]. It presents clinically most often as a loss of facial creases and nasolabial folds, a smooth brow, and a drooping mouth corner. However, several risk factors for Bell's palsy have been recognised [17]. Pregnant people, people with severe preeclampsia, those with obesity, hypertension (including chronic

ISSN:1624-1940
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forms), diabetes and upper respiratory infections are at a greater risk of Bell's palsy [18]. The more people know about the condition, the more likely affected people will seek medical treatment. Having the awareness about Bell's palsy among Saudi population, this was the objective of this study.
Several important trends emerge in comparison between our study findings in knowledge and awareness of Bell's palsy and previous research. A research found that a large number of the population misconceive about Bell's palsy – 35.4% think this is the same as a stroke, 21.9% do not know how it develops. These results are consistent with earlier finding of Ruba M Altowayan et al. [19], who also observed that a highly proportional (54.3%) of participants had bad knowledge relating to this condition. Additionally, their research revealed that almost one third of respondents were uncertain about what causes Bell's palsy (29.5%) and the trend of people not believing something is tied into our finding that having misconceptions around causality. Our data demonstrated overall awareness of cranial nerve 7's role of 77.4%, much higher than that reported by Altowayan who reported an accuracy of 46.9% and uncertainty of 43.8% regarding which cranial nerve is affected. This difference could mean a regional feature or a time period difference in awareness levels. Of interest, particularly, we observed that 56.6% wrongly believed that Bell's palsy was not self-limiting in comparison to previous research suggesting that Saudi population has historically had deficient awareness regarding the overall condition, especially their sign and symptom of Bell's palsy [20]. Our study also identified that 87.7% of participants viewed a Bell's palsy as a potentially curable condition, despite the fact treatment options were deeply misunderstood as only 63.7 % of participants identified physiotherapy and steroids (49.6 %). In contrast to our study — that showed a relatively high level of optimism about treatment — other studies have revealed that many patients preferred traditional herbal treatments to existence medical treatments [22]. Our study shows the disparity in our study between recognition of Bell's palsy as treatable condition and poor awareness found in earlier studies may lead to an evolving awareness which needs further exploration. We found that 8.8% of participants had high knowledge about the condition, 53.9% were labelled as showing low knowledge and 37.3% had intermediate knowledge about the condition. In the western region of Saudi Arabia, a study showed that 85% of Makkah, Jeddah, and Taif cities participants were aware of Bell's palsy, while only 21% were unaware of Bell's palsy [23]. Secondly, our results are consistent with previous studies, which likewise discovered an association of knowledge levels with demographic characteristics such as age (P=0.001) [24]. Similarly, we did not find a significant association with gender or education level in our findings, despite another study finding large differences in knowledge and awareness by gender [25]. Our comparative analysis of our results with previous studies shows a clear need for further educational efforts to increase public clarification on Bell's palsy and its symptoms and treatments, leading to improved outcomes of people affected in the population.

Conclusion:

Finally, the result of our study highlights a notable difference in the Saudi population's knowledge about the Bell's palsy in its causes, its risk factors, and its management. Even though there is foundational understanding of the cranial nerve VII involvement, misconceptions persist; 35.4% of individuals associate Bell's palsy with stroke, and more than half believe it is not a self-limiting disease. The results also show that a large amount of people are not informed about their treatment options, with only 63.7% knowing physiotherapy as a possibility. Although 87.7% regard Bell's palsy as treatable, the low percentages of high (8.8%) and moderate (37.3%) knowledge argue for targeted educational efforts. Since awareness is associated with demographic factors, particularly age and marital status, public health would be best served by concentrating on raising awareness among younger and less married people. Overall, the effectiveness of public understanding is necessary to both facilitate and prompt

ISSN:1624-1940
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timely intervention and to improve the management of Bell's palsy in the Saudi community.

Acknowledgement:

We acknowledge all of the volunteers who provided samples for this research.

Ethical approval:

After fully explaining the study and emphasizing that participation is optional, each participant gave their informed consent. The information gathered was safely stored and utilized exclusively for study.

Funding:

This study was not supported by any outside sources.

Conflict of interests:

The authors declare no conflict of interest.

Informed consent:

Written informed consent was acquired from each individual study participant.

Data and materials availability:

All data associated with this study are present in the paper.

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