

## Original Article

# Knowledge and Awareness Regarding Bell's Palsy Among the General Population in the Western Region of Saudi Arabia

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### Abstract

**Background:** Bell's palsy is a paralysis of the seventh cranial nerve that controls the muscles of the face, leading to sudden weakness on one side of the face. Of the total, 60–75% of Bell's palsy cases are considered idiopathic. Thirty percent of the patients have poor recovery as they may experience facial muscle weakness, facial disfigurement, psychological trauma, and facial pain.

**Methods:** This study aimed to examine the awareness level regarding Bell's palsy among the general population of the Makkah, Jeddah and Taif regions of Saudi Arabia. A cross-sectional study design was undertaken from June to September 2021, included 418 participants, and data were collected using an Arabic self-administered online survey. Institutional review board approval and informed consent were obtained.

**Results:** There was a significant association between sex and the knowledge of Bell's palsy ( $P=.022$ ). In addition, a previous history of Bell's palsy was significantly associated with a good knowledge level: 38.1% of participants with a previous history of facial palsy had a good awareness level compared with 17.6% of those who did not ( $P=.019$ ).

**Conclusion:** The overall awareness regarding Bell's palsy was unsatisfactory. More efforts, including health education programs, should be made to improve public awareness regarding this disorder and to achieve favorable outcomes and avoid future complications of the condition.

**Keywords:** Bell's palsy, clinical features, Saudi Arabia, Bell's palsy association, public health awareness, epidemiology.

## Introduction

Bell's palsy is an acute peripheral, unilateral paralysis (or paresis) of the facial nerve that results in muscle weakness on one side of the face (1). Inability to furrow the brow, drooping of the eyelid, inability to close the eyelid, sagging of the lower lid on attempted closure, changes in the amount of tear and lacrimation and drooping of the corner of the mouth are common presentations (1,2). The etiology of this condition is mostly idiopathic, with approximately 60–75% of the cases considered idiopathic, while other uncommon causes include head and neck tumors, infections, neurologic conditions, neoplasia, trauma, and congenital cases (3). Several risk factors are related to this condition, such as diabetes, pregnancy, preeclampsia, obesity, and hypertension (1). Bell's palsy can be misdiagnosed if history and examination are not carefully taken, and the misdiagnosis rate can be up to 10.8% (2). It is classified as a relatively rare condition; according to the UK's National Health Service, Bell's palsy affects 25–35 individuals out of 100,000 population, with a median age of 40 years. It has a lower incidence among children. There is no difference in prevalence between men and women, as it affects both equally (4,5). Bell's palsy mostly has a good prognosis, as most patients may recover without any intervention. However, 30% of the patients have poor recovery as they may experience facial muscle weakness, facial disfigurement, psychological trauma, and facial pain (6).

A recent study showed a significant association between participants' awareness and their sex, and the majority of the population (75.2%) had poor awareness toward Bell's palsy (2). In a study conducted in Riyadh, Saudi Arabia, 85% of the participants were aware of Bell's palsy, and 21% lacked knowledge on its progression (7).

The contradictory results of the previous studies prompted us to investigate the awareness level in the general population of our region. The purpose of this study was to examine the awareness level toward Bell's palsy in the general population of Makkah, Saudi Arabia.

## Methodology

This was a cross-sectional study design aimed to examine the awareness level regarding Bell's palsy among the general population of the Makkah, Jeddah and Taif regions of Saudi Arabia. This study was undertaken from June to September 2021. An online questionnaire was designed and derived from a previous study (7). The recruitment was done by several platforms and the questionnaire was distributed

electronically via social platforms, a link to the questionnaire in the google form was initially sent to WhatsApp, Telegram, Twitter then Google saved each questionnaire that was filled in the researcher's google drive. A convenience sampling method was used to collect the data during the study period. The questionnaire contained demographic data and general information about the knowledge, awareness, and attitude toward Bell's palsy. The questions were translated by the forward-backward method. In the validity assessment, a panel of three experts reviewed the questionnaire items to assess their validity. The assessment was first performed independently, and then disputed items were discussed in detail until a consensus was reached. All suggested modifications were applied to improve the questionnaire's validity until the final format used in the current study was obtained. Regarding reliability, the questionnaire showed an acceptable level of reliability with a Cronbach's alpha of 0.73. Removing any of the questionnaire items did not improve the questionnaire's reliability, thus, all items were retained. Informed consent was obtained from all participants by informing them about the purpose and benefits of the study and data were collected from the online questionnaire platform. The survey comprised multiple-choice questions, with single or multiple answers. Two different individuals performed the data entry. After verification, the data were transferred to the statistical database directly. In the validity assessment, a panel of three experts reviewed the questionnaire items to assess their validity. The minimum sample size required for this study was calculated using OpenEpi © software ([www.openEpi.com](http://www.openEpi.com)). Statistical analysis was performed using IBM SPSS version 22 (SPSS, Inc. Chicago, IL). All statistical analyses used two-tailed tests and statistical significance was set at  $p < 0.05$ . For awareness items, each correct answer was scored one point, and the total summation of the discrete scores of the different items was calculated. A patient with a score less than 60% (7 points) of the maximum score was considered to have poor awareness, while good awareness was considered if the patient had a maximum score of 60% (8 points or more). Descriptive analysis based on the frequency and percentage distribution was performed for all variables. Participants' awareness items are shown in the frequency table. Crosstabulation was used to assess the distribution of awareness level according to the participants' personal data and sources of information. Relationships were tested using the Pearson's chi-squared test and exact probability test for small frequency distributions. Ethics and confidentiality: Informed consent was obtained from all participants by informing them about the purpose and

benefits of the study. Ethical approval was obtained from the ethics committee of the Faculty of Medicine, Umm Al-Qura University. No. (HAPO-02-K-012-2021-090739).

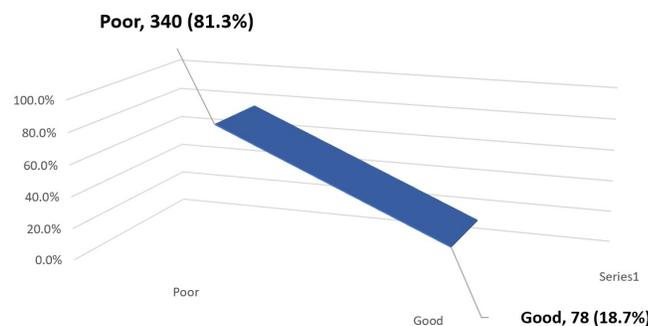
**Results**

A total of 418 participants fulfilled the inclusion criteria, agreed on participating and completing the study questionnaire. The age of the participants ranged from 18 to 50 years, with a mean age of 36.1 years. A total of 219 (52.4%) participants were women. The number of married participants was 242 (57.9%). A total of 139 (33.3%) participants were employed, 273 (65.3%) were university graduates, 42 (10%) had a lower secondary level of education, and 103 (24.6%) had a secondary level of education (Table 1).

Personal data		N	%
Age in years	< 20	32	7.7%
	20–35	189	45.2%
	36–50	132	31.6%
	> 50	65	15.6%
Sex	Male	199	47.6%
	Female	219	52.4%
Marital status	Single	151	36.1%
	Married	242	57.9%
	Divorced / widow	25	6.0%
Employed	Yes	139	33.3%
	No	279	66.7%
Education	Below secondary	42	10.0%
	Secondary	103	24.6%
	University	273	65.3%

The history of Bell’s palsy among the study participants is shown in Table 2. Bell’s palsy awareness among study participants showed that 33.5% of the participants correctly reported that it was an idiopathic disease. The awareness parameters are listed in Table 3. Overall awareness regarding Bell’s palsy showed that only 18.7% of the study population had a good awareness level, while 340 (81.3%) had a poor knowledge level. The mean knowledge score was  $5.6 \pm 2.3$  out of 13 points (Figure 1).

History of Bell’s palsy	N	%
<b>Have you ever been diagnosed with facial palsy?</b>		
Yes	21	5.0%
No	397	95.0%
> 50	65	15.6%
<b>Have you ever heard about someone you know who had been diagnosed with facial palsy</b>		
Yes	288	68.9%
No	130	31.1%
<b>Relation to the person who had been diagnosed with facial palsy</b>		
Friend	87	30.2%
Family	167	58.0%
Neighbor	35	12.2%
Others	33	11.5%

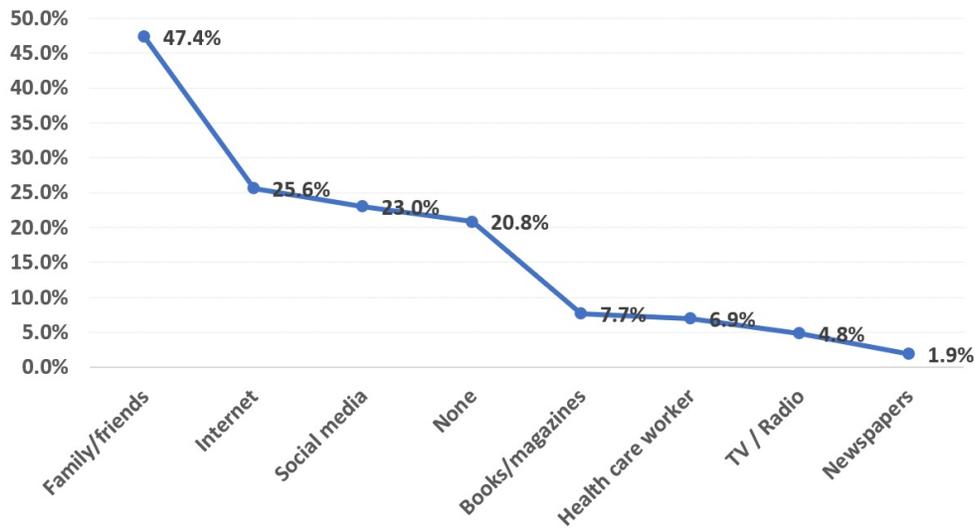


**Figure 1:** Overall awareness regarding Bell’s palsy among the general population in the western region, Saudi Arabia

**Table 3: Bell's Palsy awareness among study participant**

BP awareness items	N	%	
<b>What causes Bell's palsy?</b>	Idiopathic	140	33.5%
	Viral infection	41	9.8%
	Stroke	97	23.2%
	Trauma	108	25.8%
	I don't know	109	26.1%
<b>Most affected sex</b>	Equally affected	162	38.8%
	Men	66	15.8%
	Women	48	11.5%
	I don't know	142	34.0%
<b>Which nerve is affected in facial nerve palsy?</b>	Cranial nerve 7	174	41.6%
	Cranial nerve 1	10	2.4%
	Cranial nerve 5	20	4.8%
	Cranial nerve 11	11	2.6%
	I don't know	203	48.6%
<b>What are the symptoms of Bell's palsy?</b>	Absence of tears	68	16.3%
	Inability to eat or smile	219	52.4%
	Weakness on one side of the face	271	64.8%
	Convulsions	106	25.4%
	Dry mouth	42	10.0%
	Headache	57	13.6%
	Pain in or behind the ear	62	14.8%
	Fever	10	2.4%
	Vomiting	1	0.2%
	I don't know	62	14.8%
<b>Bell's palsy is generally a self-limiting disease</b>	True	90	21.5%
	False	189	45.2%
	I don't know	139	33.3%
<b>For how long does Bell's palsy persist in an affected individual?</b>	Days to week	45	10.8%
	Hours to days	6	1.4%
	It is a lifelong disease	39	9.3%
	Weeks to months	184	44.0%
	I don't know	144	34.4%
<b>Bell's palsy is a treatable disease?</b>	Yes	346	82.8%
	No	16	3.8%
	I don't know	56	13.4%
<b>Treatment of Bell's palsy?</b>	Physiotherapy	244	58.4%
	Steroids	32	7.7%
	Antibiotics	65	15.6%
	Herbal medicine	69	16.5%
	Pain killers	36	8.6%
	Spiritual treatment	16	3.8%
	I don't know	112	26.8%
	<b>Do you think traditional medicine has a role in treating Bell's palsy?</b>	Yes	245
No		173	41.4%
<b>Bell's palsy is a contagious disease?</b>	Yes	7	1.7%
	No	380	90.9%
	I don't know	31	7.4%

Sources of information regarding Bell’s palsy in the general population are shown in **Figure 2**.



**Figure 2:** Source of information regarding Bell’s palsy

Good awareness was detected among 24.9% of participants aged 20–35 years compared with 10.8% of those aged more than 50 years, with a statistically significant difference (P=.022). In addition, 24.2% women had good awareness of facial palsy in comparison with 12.6% men (P=.002). Of the total participants with good awareness, 43.8% reported

receiving information from books, 41.4% from health care workers, 30.8% from the internet or social media, and 3.4% did not mention a specific source (P=.001). The other parameters of the distribution of study participants’ awareness regarding Bell’s palsy by their data and source of information are presented in **Table 4**.

**Table 4:** Distribution of study participants’ awareness regarding Bell’s palsy by their personal data and source of information

BP awareness items		Awareness level				p-value
		Poor		Good		
		No	%	No	%	
<b>Age in years</b>	< 20	26	81.3%	6	18.8%	<b>.022*</b>
	20–35	142	75.1%	47	24.9%	
	36–50	114	86.4%	18	13.6%	
	> 50	58	89.2%	7	10.8%	
<b>Sex</b>	Male	174	87.4%	25	12.6%	<b>.002*</b>
	Female	166	75.8%	53	24.2%	
<b>Marital status</b>	Single	116	76.8%	35	23.2%	.116
	Married	205	84.7%	37	15.3%	
	Divorced/widowed	19	76.0%	6	24.0%	
<b>Employed</b>	Yes	121	87.1%	18	12.9%	.034
	No	219	78.5%	60	21.5%	

**Table 4:** Distribution of study participants' awareness regarding Bell's palsy by their personal data and source of information

BP awareness items		Awareness level				p-value
		Poor		Good		
		No	%	No	%	
<b>Education</b>	Below secondary	35	83.3%	7	16.7%	.151
	Secondary	90	87.4%	13	12.6%	
	University	215	78.8%	58	21.2%	
<b>Have you ever been diagnosed with facial palsy?</b>	Yes	13	61.9%	8	38.1%	<b>.019<sup>§§</sup></b>
	No	327	82.4%	70	17.6%	
<b>Have you ever heard about someone you know who had been diagnosed with facial palsy</b>	Yes	226	78.5%	62	21.5%	<b>.025<sup>*</sup></b>
	No	114	87.7%	16	12.3%	
<b>Source of information</b>	Health care worker	17	58.6%	12	41.4%	<b>.001<sup>§§</sup></b>
	Family/friends	156	78.8%	42	21.2%	
	Social media	67	69.8%	29	30.2%	
	Books/magazines	18	56.3%	14	43.8%	
	TV/Radio	17	85.0%	3	15.0%	
	Internet	74	69.2%	33	30.8%	
	Newspapers	5	62.5%	3	37.5%	
	None	84	96.6%	3	3.4%	

P: Pearson X2 test

§: Exact probability test

\* P &lt; 0.05 (significant)

## Discussion

Bell's palsy is the most prevalent cause of acute facial paralysis, accounting for 60–80% of cases, with an annual incidence of approximately 15–30 cases per 100,000 population (8-11). It is a benign ailment with 85% recovery rate, and its high occurrence may contribute to physicians' failure to notice more subtle manifestations of this benign and idiopathic condition (12). The main aim of this study was to measure the awareness toward Bell's palsy in the Western region of Saudi Arabia. Previous studies correlated the level of awareness to sex, suggesting that women have a higher level of awareness regarding Bell's palsy than men (2), which is consistent with the findings of the present study, showing that 24.2% of women had good awareness compared with 12.6% men (P=.002). Better knowledge and awareness were noted among 24.9% of the participants aged 20–30 years, compared with 13.6% of those between the age group of 30–50 years and 10.8% of those aged more than 50 years, with a statistical significance (P=.022). This result is contrary

to the findings of the cross-sectional study conducted by Alamrani et al., in five main regions of Saudi Arabia from March to the end of May 2020 who reported that 32.6% of the participants aged 30–50 years had a good awareness of the disease(13). Another descriptive study conducted in Riyadh city through August 2018 showed that a higher Bell's palsy knowledge was significantly associated with advanced age (P=0.001) (7). Unilateral paralysis of the face is the most common presenting symptom of the disease (13,14). In our study, the most common symptom of Bell's palsy was the weakness on one side of the face (64.8%). In this study, 41.6% of participants correctly recognized the main damaged facial nerve (the seventh cranial nerve) in Bell's palsy condition which is better than that previously reported (24.5%) in a study done in 2020 among the general population of five main regions of Saudi Arabia (13). Nonetheless, worse than 87% was reported by Al Meslet et al. in Saudi Arabia, Riyadh, regarding awareness of Bell's palsy; the participants of the study were dentists with a superior understanding of the anatomical and medical background (15). A higher level of awareness was

noted in our study of those who had health care workers (41.4%) and books/magazines (43.8%) as their primary source of information, compared with those who obtained their information through family and friends. Also in our study, a good awareness was detected among participants aged 20–35 years compared with those aged more than 50 years, with a statistically significant difference ( $P=.022$ ). In contrast, a study conducted by Almutairi et al. in Riyadh revealed those who obtained information via the internet and the older individuals exhibited significantly higher mean Bell's palsy knowledge scores (7). These findings are consistent with those found in a previous study (8), which emphasizes the importance of obtaining accurate information from credible sources. Among the studied participants in our study, the total prevalence of Bell's palsy was 5%, and the correlations between overall knowledge of Bell's palsy and the other variables were significantly higher than anticipated. In 2017 a study conducted by Alanazi et al. in the northern region of Saudi Arabia reported that the prevalence of facial palsy among the studied participants was 26.3% (61% females and 39% males) (16). A previous survey of the literature done by Peitersen includes 2,570 cases of peripheral facial nerve palsy studied during 25 years, which revealed a substantially greater prevalence of idiopathic facial palsy (17). The prevalence of Bell's palsy varies around the world, which could be due to changes in the frequency of occurrence in the geographical regions analyzed, as well as variances in the diagnostic criteria utilized and the methods used to collect and analyze data (18). However, in this study, the knowledge and awareness of Bell's palsy in the Western region of Saudi Arabia were mostly unsatisfactory, as 81.1% of the participants had poor awareness of this condition which was worse than the study conducted in Riyadh region, Saudi Arabia, reported that 85% of the general population was aware of Bell's palsy (7). Alamrani et al., reported that approximately 75% of the general Saudi population has a poor understanding of Bell's palsy, particularly in terms of signs and symptoms with a relative better understanding of the causes and treatment of Bell's palsy (13). In addition, more factors that could be associated with the occurrence of Bell's palsy, such as smoking and cold air exposure, were missed, and these should be evaluated in further studies. Furthermore, more studies on the knowledge of Bell's palsy and its associations among the general population in different regions of Saudi Arabia are needed because this study was conducted only among the general population residing in the Western region.

## Conclusion

The overall awareness regarding Bell's palsy was unsatisfactory. More efforts, including health education programs, should be made to improve public awareness regarding this disorder and to achieve favorable outcomes and avoid future complications of the condition.

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## Disclosure:

### *Statement:*

The authors declare that they have no conflict of interest.

### *Funding:*

None

### *Ethical Consideration:*

The study protocol was approved by the institutional review board of UQU. Informed consent was obtained from all participants prior to their participation in the study.

### *Data Availability:*

All the data is presented within the paper or available upon request from corresponding author of this manuscript.

### *Author Contribution:*

All authors equally contributed to the manuscript.

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