Case Study

Knowledge, Awareness, and Attitude of Parents about Oral Candidiasis among Infants in Saudi Arabia

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Abstract

A commensal species of Candida yeast called Candida albicans enters the oral mucosa by opportunistic mechanisms to produce candidiasis. This study aims to assess the knowledge and awareness level of Parents in KSA regarding Oral candidiasis causes and management in infants. This is a descriptive cross-sectional study. The questionnaire was distributed online using Google Forms. Data collection included 385 children and was entered on the computer using (the Microsoft Excel 2016) program and then transferred to the Statistical Package of Social Science Software program (SPSS) Version 20 to be statistically analyzed. The study included 410 participants, 82.7% of whom were females. 37.3% acknowledged awareness of this condition. Furthermore, 14.1% of respondents reported that their children had been diagnosed with oral candidiasis. 14.9% of participants had good knowledge scores of oral candidiasis in infants, 12.2% had moderate knowledge and 72.9% had poor knowledge. As for attitude, 40% of participants had a positive attitude towards oral candidiasis in infants, 14.9% had a neutral attitude, and 45.1% had a negative attitude. In conclusion, the knowledge and awareness of parents about oral candidiasis among infants in Saudi Arabia was very poor. The attitude was negative as well. Knowledge scores were significantly associated with age, gender, marital status, and number of children. However, attitude with significantly associated with age and gender.

Keywords: Infants, Oral candidiasis, Parents, Knowledge, Hygiene, Awareness of immunocompromised

Introduction

Candida albicans, a commensal species of Candida yeast, infects the oral cavity by opportunistic ways to cause candidiasis [1]. It's the most species seen in colonized or infected infants [2]. C. glabrata, C. tropicalis, C. parapsilosis, C. krusei, C. dubliniensis, and C. guilliermondii are other species of Candida [3]. It is known that by the end of the first month, Candida has colonized 75% of infants who are admitted to the neonatal intensive care unit (NICU). The most common pathogen in newborns is Candida albicans, with substantial occurrences of C. parapsilosis following. 10–12% of nosocomial sepsis in Very low birth weight (under 1500 g) newborns is caused by candida infections, with an average prevalence of up to 4% among all NICU hospitalizations. In fact, among babies with VLBW who have late-onset sepsis, Candida is the third most often identified microbe [4]. The study found that 106 (70.66%) of 150 isolates were positive for Candida spp. Five different species of this genus were identified, as follows: 71 (66.98 %) C. albicans, 14 (13.21%) C. tropicalism. krusie10 (9.43%), 8 (7.55%) C.parasitosis, and 3 (2.83%) C. glabrata [5].

Thrush was clinically detected in four children (12.5%), yet no CA was detected in them, or any other samples. One (3%) infant was diagnosed having Candida parapsilosis (CP). Maternal mastitis and the use of antibiotics were significantly associated with clinical thrush findings (p= .001). In three cases with white patches on oral mucosa at the baseline, the condition remained after 2 weeks despite the treatment [6]. In November of 2023, an analysis of research showed that there is a relationship between personal hygiene and the incidence of oral thrush in infants 0-6 months at the Cimarga Health Center, LebakRegency. The OR calculation results show that mothers who have babies aged 0-6 months who

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perform personal hygiene 5.167 times do not experience oral thrush compared to experiencing oral thrush (95% CI 1.390 – 19.210) [7].

One study suggests that parent awareness is essential to prevent OC, especially among immunocompromised children [8]. Another study indicates that a lack of personal hygiene is associated with an increased risk of OC [7]. Due to the lack of local studies, parents' awareness of OC and its risks to children is still unknown in Saudi Arabia. The main objective of this study is to assess the knowledge and awareness level of Parents in KSA regarding Oral candidiasis causes and management in infants.

Materials and Methods

Study Design

This research was carried out as a cross-sectional questionnaire survey in Saudi Arabia.

Study Setting: Participants, Recruitment, and Sampling Procedure

This study population will consist of parents of infants invited to participate in the study during 2023.

Inclusion and Exclusion Criteria

The inclusion criteria for this study were as follows: Parents of children male and female aged 17 years old or under and live in Saudi Arabia. Parents of Children above the age of 17 years old, outside of Saudi Arabia were excluded from this study.

Sample Size

The Qualtrics calculator was used to determine the sample size, with a confidence level of 95% we estimated a minimum sample size of 385.

Method for Data Collection and Instrument (Data Collection Technique and Tools)

The survey instrument was a self-administered anonymous questionnaire in English and Arabic. This survey was developed after consulting relevant studies conducted in Saudi Arabia and elsewhere. The final version of the questionnaire is classifieds into main four sections to collect information on the parent's knowledge of oral candidiasis in children. The first section collects demographic information from participants. The second section includes 8 questions to assess parents' knowledge about oral candidiasis like their information about the term, mode of transmission, and the causes. The third section contains 9 questions about awareness and attitude to measure the awareness of symptoms and treatment of oral candidiasis, while the last section number four is to know about the source of their information. The study population included all the parents in Saudi Arabia. Medical students collected the information using an online questionnaire.

Scoring System

Overall, seventeen statements were used to assess the level of knowledge and attitude.

Knowledge Score

Eight statements for knowledge scoring, one point given for correct answers, and zero points for incorrect answers. The scoring system was divided as follows: ≥ 14 for a high level of knowledge, 11-13 for a medium level of knowledge, and ≤ 10 for a low level of knowledge.

Attitude Score

A total of eight statements were used to assess the attitude towards Oral candidiasis in children, Subsequently, respondents' awareness was divided into three categories: low knowledge (0–8), average knowledge (9-11), and good knowledge (12-15).

Pilot Test

The questionnaire was distributed to 20 individuals and asked to fill it out. This was done to test the simplicity of the questionnaire and the feasibility of the study. Data from the pilot study was excluded from the final data of the study.

Analyzes and Entry Method

Collected Data was entered on the computer using (Microsoft Excel 2016) program. Data then was transferred to the Statistical Package of Social Science Software program (SPSS) Version 20 to be statistically analyzed.

Results and Discussion

According to **Table 1**, the majority of respondents fall within the 20-30 and 31-40 age groups, comprising 32.7% and 24.1% of the total sample, respectively. The 41-50 and 51-60 age groups make up 23.7% and 14.9% of the sample, while those below 20 years of age constitute 4.6% of the respondents. The survey sample is predominantly female, with women making up 82.7% of the respondents, while males account for 17.3%. The respondents are distributed across different regions, with the highest percentage in the West (50.0%), followed by the North (21.5%), Middle (21.0%), South (4.1%), and East (3.4%). The majority of respondents hold a Bachelor's degree (65.4%), followed by secondary education (17.6%), postgraduate qualifications (7.1%), diploma (6.6%), middle school education (2.0%), primary education (1.2%), and uneducated (0.2%). The largest occupational group among the respondents is male/female employees (42.4%), followed by housewives (27.1%), students/female students (13.9%), retired/retired (8.0%), not working (4.6%), free business (1.2%), and other occupations (2.7%).

Table 1. Sociodemographic characteristics of participants (n=410)

Parameter		No.	Percent
Age	20_30	134	32.7

	31_40	99	24.1
	41_50	97	23.7
	51_60	61	14.9
	less than 20	19	4.6
Gender	Male	71	17.3
	Female	339	82.7
	East	14	3.4
	Middle	86	21.0
Location	North	88	21.5
	South	17	4.1
	West	205	50.0
	uneducated	1	.2
	primary	5	1.2
	middle	8	2.0
Education Level	secondary	72	17.6
	diploma	27	6.6
	Bachelor's	268	65.4
	Postgraduate	29	7.1
	free business	5	1.2
	Retired / Retired	33	8.0
	Male/female employee	174	42.4
Occupation	not working	19	4.6
	Student/Female student	57	13.9
	housewife	111	27.1
	Other	11	2.7

Table 2 shows the awareness, diagnosis, and management of oral candidiasis in infants. A significant percentage of respondents have heard of oral candidiasis in infants, with 37.3% acknowledging awareness of this condition. Furthermore, 14.1% of respondents reported that their children had been diagnosed with oral candidiasis. The definition of oral candidiasis was well understood by the majority of respondents, with 54.1% correctly identifying it as a condition characterized by the appearance of ulcers in the mouth, usually white and surrounded by a red border, as a result of a fungal infection. When it comes to managing oral candidiasis in infants, the data suggests that prescription medications are the most common treatment option, with 18.8% of respondents reporting that they used these medications. However, it is worth noting that 24.9% of respondents reported using "other" treatment options. In terms of the causes and risk factors for oral candidiasis in infants, bottle feeding was identified as a risk factor by 45.9% of respondents.

The majority of respondents (64.9%) identified contaminated feeding bottles or pacifiers as a mode of transmission, while 17.6% cited direct contact with an infected person. Additionally, 7.6% mentioned transmission from mother to child during childbirth, and 10.0% selected "other" as the mode of transmission. When asked about the potential impact of oral candidiasis on infants, 69.0% of respondents confirmed that it can cause feeding difficulties, while 29.5% were unsure, and only 1.5% indicated that it does not cause feeding difficulties. Regarding preventive measures, 35.6% of respondents claimed to be aware of measures to prevent oral candidiasis in infants, while 64.4% were not. Among those who were aware, the most commonly cited preventive measures included good oral hygiene (31.2%), healthy nutrition (18.0%), and avoiding risk factors such as exposure to passive smoking and consumption of sugars. In terms of treatment, 27.1% of respondents claimed to know how to treat oral candidiasis in infants, while 72.9% did not.

Table 2. Knowledge of participants of oral candidiasis among infants (n=410)

Parameter		No.	Percent
Heard of oral candidiasis in infants	Yes	153	37.3
	No	257	62.7
Have any of your children been diagnosed with oral candidiasis?	Yes	58	14.1
	No	352	85.9
If yes, how did you deal with your child's oral candidiasis? (Bias risk)	Prescription medications	77	18.8
	Consult with a health care provider	25	6.1
	Medicines available without a prescription	16	3.9
	Home remedies	22	5.4
	Other	102	24.9
Definition of oral candidiasis	A condition that causes candida to grow on the teeth.	8	2.0
	A condition characterized by the appearance of ulcers in the mouth, usually white and surrounded by a red border, as a result of a fungal infection.	222	54.1
	A bacterial infection in the mouth that causes the formation of white spots.	166	40.5
	A disease that affects the salivary glands in the mouth and causes excessive secretion of saliva	14	3.4
	Poor oral hygiene	210	51.2

	Use a straw	164	40.0
	Having a family history of oral candidiasis	122	29.8
Common causes/risk factors for oral candidiasis in infants (Bias risk)	Bottle feeding	188	45.9
	Use of antibiotics	75	18.3
	Premature birth	39	9.5
	Low birth weight	40	9.8
	Breastfeeding	28	6.8
	Through direct contact with an infected person	72	17.6
Mode of transmission	From mother to child during childbirth	31	7.6
	Through contaminated feeding bottles or pacifiers	266	64.9
	Other	41	10.0
	Yes	283	69.0
Oral candidiasis can cause feeding difficulties in infants	no	6	1.5
	I'm not sure	121	29.5
Aware of any preventive measures to prevent oral candidiasis in infants	Yes	146	35.6
	No	264	64.4
	Good oral hygiene	128	31.2
	Lack of attention to oral hygiene	31	7.6
If yes, please specify the preventive measures	Healthy nutrition	74	18.0
	Avoid risk factors (children being exposed to passive smoking), eating sugars	11	2.7
	Eating sugars	7	1.7
	Avoid risk factors (exposing children to passive smoking)	26	6.3
Know how to treat oral candidiasis in infants	Yes	111	27.1
	No	299	72.9

Table 3 revealed that 86.6% of respondents considered good oral hygiene to be very important in preventing oral candidiasis in infants. Only 2.2% of respondents believed that maintaining good oral hygiene was not important in preventing oral candidiasis. If a child is suspected to have oral candidiasis, consulting a healthcare professional was the top action recommended by 87.6% of respondents. Cleaning the child's mouth with a clean cloth or gauze was the second most recommended action, with 34.6% of respondents suggesting this course of action. Stopping breastfeeding temporarily and using over-the-counter antifungal medications were also recommended by 10.0% and 10.7% of respondents, respectively. Other actions were recommended by 7.6% of respondents. The survey also revealed that oral candidiasis can be treated effectively, with 68.3% of respondents indicating that it can be treated. Only 1.0% of respondents believed that it could not be treated, while 30.7% were not sure. When it comes to familiarity with the treatment options available for oral candidiasis in infants, 10.2% of respondents were familiar with the options available, while 37.8% were familiar to some extent. A majority of respondents, 52.0%, did not know the treatment options available for oral candidiasis in infants. Educating parents about oral candidiasis in infants was considered very important by 85.4% of respondents, while 12.2% considered it to be fairly important. Only 2.4% of respondents believed that educating parents about oral candidiasis in infants was not important. In terms of receiving information or education about oral candidiasis, only 27.1% of respondents had received such information or education. The most common source of information was the internet/websites, with 21.7% of respondents indicating this as their source. Friends or family members, health care providers, and books or scientific materials were also cited as sources of information by respondents.

Table 3. Attitude of participants of oral candidiasis among infants (n=410)

Parameter		No.	Percent
How important it is for infants to maintain good oral hygiene to prevent oral candidiasis	very important	355	86.6
	Fairly important	46	11.2
	not important	9	2.2

Actions if the suspected child had oral candidiasis (Bias risk)	Consult a healthcare professional	359	87.6
	Clean the child's mouth with a clean cloth or gauze	142	34.6
	I stop breastfeeding temporarily	41	10.0
	Use over-the-counter antifungal medications	44	10.7
	Other	31	7.6
Oral candidiasis can be treated effectively	Yes	280	68.3
	No	4	1.0
	I'm not sure	126	30.7
Familiarity with the treatment options available for oral candidiasis in infants	big	42	10.2
	To some extent	155	37.8
	I have no knowledge	213	52.0
Importance to educate parents about oral candidiasis in infants	very important	350	85.4
	Fairly important	50	12.2
	not important	10	2.4
Received any information or education about oral candidiasis	Yes	111	27.1
	No	299	72.9
If yes, please specify the source of the information	Internet/websites	89	21.7
	Friends or family members	60	14.6
	Health care provider	43	10.5
	Books or scientific materials	21	5.1
	Other	82	20.0

As illustrated in **Figure 1**, 14.9% of participants had good knowledge scores of oral candidiasis in infants, 12.2% had moderate knowledge and 72.9% had poor knowledge.

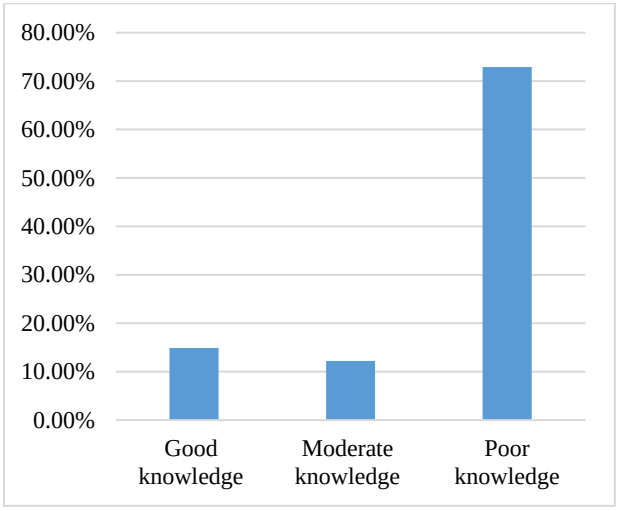

Figure 1. Participants' knowledge scores about oral candidiasis in infants

Figure 2 shows that 40% of participants had a positive attitude towards oral candidiasis in infants, 14.9% had a neutral attitude, and 45.1% had a negative attitude.

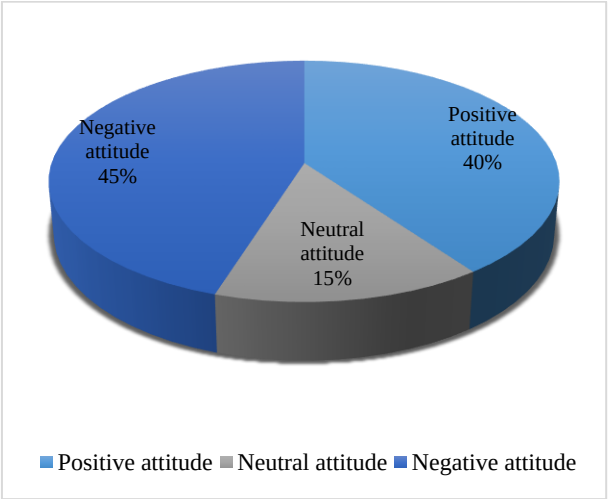

Figure 2. Participants' attitude scores toward oral candidiasis in infants

Table 4 shows that age appears to have a significant association with knowledge scores, as evidenced by the P value of 0.001. Specifically, individuals aged 41-50 and 51-60 seem to have higher proportions of good knowledge compared to those in other age groups. Conversely, individuals aged less than 20 exhibit a notably higher proportion of poor knowledge. Gender is another factor that shows a significant association with knowledge scores (P value = 0.001). Female participants have a higher proportion of good knowledge compared to males, while males have a higher proportion of poor knowledge. Location seems to play a role in knowledge scores, with a P value of 0.031. Participants from the West region have the highest proportion

of good knowledge and the lowest proportion of poor knowledge compared to individuals from other regions. Education level is also associated with knowledge scores, as indicated by the P value of 0.823. Participants with a bachelor's degree have the highest proportion of good knowledge, while those with primary education or below exhibit the lowest proportions of good knowledge. Occupation displays a significant relationship with knowledge scores (P value = 0.031). Housewives and employees have the highest proportion of poor knowledge, while retired individuals have the highest proportion of good knowledge.

Table 4. Knowledge of participants of oral candidiasis in infants in association with their sociodemographic characters (n=410)

		Knowledge scores			Total (N=410)	P value
		Good knowledge	Moderate knowledge	Poor knowledge		
Age	less than 20	1	1	17	19	0.001
		0.2%	0.2%	4.1%	4.6%	
	20_30	7	12	115	134	
		1.7%	2.9%	28.0%	32.7%	
	31_40	13	10	76	99	
		3.2%	2.4%	18.5%	24.1%	
	41_50	24	13	60	97	
		5.9%	3.2%	14.6%	23.7%	
	51_60	16	14	31	61	
		3.9%	3.4%	7.6%	14.9%	
		1.0%	3.2%	21.2%	25.4%	
Gender	Male	3	4	64	71	0.001
		0.7%	1.0%	15.6%	17.3%	
	Female	58	46	235	339	
		14.1%	11.2%	57.3%	82.7%	
Location	East	1	1	12	14	0.031
		0.2%	0.2%	2.9%	3.4%	
	Middle	6	9	71	86	
		1.5%	2.2%	17.3%	21.0%	
	North	9	10	69	88	
		2.2%	2.4%	16.8%	21.5%	
	South	1	3	13	17	
		0.2%	0.7%	3.2%	4.1%	
	West	44	27	134	205	
		10.7%	6.6%	32.7%	50.0%	
Education Level	Uneducated	0	0	1	1	0.823
		0.0%	0.0%	0.2%	0.2%	
	Primary	0	0	5	5	
		0.0%	0.0%	1.2%	1.2%	
	Preparatory	0	1	7	8	
		0.0%	0.2%	1.7%	2.0%	
	Secondary	10	10	52	72	
		2.4%	2.4%	12.7%	17.6%	
	Bachelor	38	34	196	268	
		9.3%	8.3%	47.8%	65.4%	
	Diploma	6	2	19	27	
		1.5%	0.5%	4.6%	6.6%	
	Post-graduate	7	3	19	29	

		1.7%	0.7%	4.6%	7.1%	
	Free Business	1	0	4	5	
		0.2%	0.0%	1.0%	1.2%	
	Housewive	21	21	69	111	
		5.1%	5.1%	16.8%	27.1%	
Occupation	Employee	27	14	133	174	
		6.6%	3.4%	32.4%	42.4%	
	Retired	8	5	20	33	0.031
		2.0%	1.2%	4.9%	8.0%	
	Student	2	7	48	57	
		0.5%	1.7%	11.7%	13.9%	
	No work	1	1	17	19	
		0.2%	0.2%	4.1%	4.6%	
	Other	1	2	8	11	
		0.2%	0.5%	2.0%	2.7%	
	.0	4	13	117	134	
		1.0%	3.2%	28.5%	32.7%	
	1.0	2	4	30	36	
		0.5%	1.0%	7.3%	8.8%	
	2.0	7	4	25	36	
		1.7%	1.0%	6.1%	8.8%	
	3.0	9	7	25	41	
		2.2%	1.7%	6.1%	10.0%	
	4.0	12	7	30	49	
		2.9%	1.7%	7.3%	12.0%	
Number of children	5.0	8	7	31	46	0.001
		2.0%	1.7%	7.6%	11.2%	
	6.0	9	5	26	40	
		2.2%	1.2%	6.3%	9.8%	
	7.0	7	2	7	16	
		1.7%	0.5%	1.7%	3.9%	
	8.0	3	0	5	8	
		0.7%	0.0%	1.2%	2.0%	
	9.0	0	0	2	2	
		0.0%	0.0%	0.5%	0.5%	
	10.0	0	1	1	2	
		0.0%	0.2%	0.2%	0.5%	

Table 5 shows statistically significant differences in attitude scores across different age groups, with the p-value being 0.005, indicating a lower level of significance compared to age, the data still shows variations in attitude scores across marital status categories. Gender-based differences in attitude scores are also evident, with the p-value being 0.004. The data illustrates the distribution of positive, neutral, and negative attitudes among males and females, highlighting potential disparities in attitudes based on gender. The location-based analysis provides insights into how attitudes vary across different regions, with statistically significant differences in attitude scores observed among individuals from various geographic areas. The p-values for location range from 0.001 to 0.050, indicating varying levels of significance. Moreover, the data delves into the relationship between education level and attitudes, showcasing the distribution of attitude scores across different educational backgrounds. The p-value for education level is 0.179, suggesting a relatively lower level of significance compared to other factors. Occupation-based differences in attitude scores are also explored, shedding light on the varying distribution of attitudes among individuals with different occupations. The p-value for occupation is 0.050, indicating a level of significance that warrants further investigation.

Table 5. Attitude of participants of oral candidiasis in infants in association with their sociodemographic characters (n=410)

		Attitude scores			Total (N=410)	P value
		Positive attitude	Neutral attitude	Negative attitude		
Age	less than 20	7	4	8	19	0.005
		1.7%	1.0%	2.0%	4.6%	
	20_30	36	27	71	134	
		8.8%	6.6%	17.3%	32.7%	
	31_40	39	11	49	99	
		9.5%	2.7%	12.0%	24.1%	
	41_50	52	11	34	97	
		12.7%	2.7%	8.3%	23.7%	
	51_60	30	8	23	61	
		7.3%	2.0%	5.6%	14.9%	
		8.0%	4.4%	12.9%	25.4%	
Gender	Male	17	10	44	71	0.004
		4.1%	2.4%	10.7%	17.3%	
	Female	147	51	141	339	
		35.9%	12.4%	34.4%	82.7%	
Location	East	5	5	4	14	0.001
		1.2%	1.2%	1.0%	3.4%	
	Middle	19	14	53	86	
		4.6%	3.4%	12.9%	21.0%	
	North	33	14	41	88	
		8.0%	3.4%	10.0%	21.5%	
	South	6	4	7	17	
		1.5%	1.0%	1.7%	4.1%	
	West	101	24	80	205	
		24.6%	5.9%	19.5%	50.0%	
Education Level	Uneducated	0	0	1	1	0.179
		0.0%	0.0%	0.2%	0.2%	
	Primary	2	2	1	5	
		0.5%	0.5%	0.2%	1.2%	
	Preparatory	3	3	2	8	
		0.7%	0.7%	0.5%	2.0%	
	Secondary	37	8	27	72	
		9.0%	2.0%	6.6%	17.6%	
	Bachelor	96	38	134	268	
		23.4%	9.3%	32.7%	65.4%	
	Diploma	13	5	9	27	
		3.2%	1.2%	2.2%	6.6%	
	Post-graduate	13	5	11	29	
		3.2%	1.2%	2.7%	7.1%	
Occupation	Free Business	3	1	1	5	0.050
		0.7%	0.2%	0.2%	1.2%	
	Housewive	52	18	41	111	

	12.7%	4.4%	10.0%	27.1%
Employee	14	4	15	33
	3.4%	1.0%	3.7%	8.0%
Retired	66	17	91	174
	16.1%	4.1%	22.2%	42.4%
Student	19	11	27	57
	4.6%	2.7%	6.6%	13.9%
No work	5	6	8	19
	1.2%	1.5%	2.0%	4.6%
	5	4	2	11
Other	1.2%	1.0%	0.5%	2.7%
	9.8%	5.4%	17.6%	32.7%

Oral candidiasis, also known as thrush, is a common fungal infection that can affect infants in Saudi Arabia. Parents need to have knowledge and awareness about this condition to prevent and treat it effectively. Additionally, their attitude towards oral candidiasis can impact the way they seek care for their infants [4].

Knowledge about oral candidiasis is crucial for parents in Saudi Arabia. They should be aware of the symptoms, causes, and risk factors associated with the condition. This includes understanding that oral candidiasis is caused by the overgrowth of the Candida fungus in the mouth and that it can present as white patches on the tongue, inner cheeks, and roof of the mouth. Parents should also be aware of the risk factors for oral candidiasis, such as a weakened immune system, antibiotic use, and poor oral hygiene [1-6]. Parents need to be aware of the potential complications of oral candidiasis, such as feeding difficulties and discomfort for the infant. They should also understand the importance of seeking medical care if they suspect their infant has oral candidiasis, as early diagnosis and treatment can prevent the infection from worsening [7].

According to our study results, 37.3% acknowledged awareness of this condition. Furthermore, 14.1% of respondents reported that their children had been diagnosed with oral candidiasis. 14.9% of participants had good knowledge scores of oral candidiasis in infants, 12.2% had moderate knowledge and 72.9% had poor knowledge. Previous studies on the knowledge of parents about oral candidiasis among infants have shown varying levels of awareness and understanding. A study found that only 30% of parents were able to correctly identify oral candidiasis in infants [9]. Similarly, a study revealed that many parents were unaware of the risk factors and symptoms of oral candidiasis in infants. This lack of knowledge often led to misconceptions and ineffective home remedies, further exacerbating the condition [10]. On the other hand, a study reported that parents who received education and information about oral candidiasis were more likely to recognize the symptoms and seek prompt medical attention for their infants, which highlights the importance of parental education and awareness in the early detection and management of oral candidiasis in infants [11]. A more recent study showed that 15% of infants had oral candidiasis, and the infection was more common in infants who were formula-fed, had a history of antibiotic use, and had a low birth weight. The study also found that parents' knowledge about oral candidiasis was poor, with only 32% of parents knowing about the infection. Lack of awareness can have detrimental effects on the health and well-being of affected infants. Therefore, there is a need for targeted educational interventions to improve parental knowledge and understanding of oral candidiasis, ultimately leading to better outcomes for infants.

Regarding attitude, 40% of our participants had a positive attitude towards oral candidiasis in infants, 14.9% had a neutral attitude, and 45.1% had a negative attitude. A study aimed to determine parents' knowledge and attitudes towards oral candidiasis in infants. The study involved 200 parents of infants aged between 1 and 24 months. The results showed that only 25% of parents were aware of oral candidiasis, and only 9% knew the correct cause of the infection. Furthermore, only 35% of parents knew that the infection could be transmitted from mother to child during breastfeeding [12]. Another study showed that only 28% of parents knew about oral candidiasis, and only 11% knew the correct cause of the infection. Furthermore, only 20% of parents knew that the infection could be transmitted from mother to child during breastfeeding [13, 14].

The attitude of parents towards oral candidiasis can impact the way they approach the condition. Some parents may be proactive in seeking medical care and following treatment recommendations, while others may be hesitant to seek help due to cultural or personal beliefs. Healthcare providers need to understand and address any barriers to care that parents may have to ensure that infants receive the necessary treatment for oral candidiasis [4, 5].

In Saudi Arabia, healthcare providers need to educate parents about oral candidiasis and its management. This can be done through antenatal classes, well-baby clinics, and other healthcare settings. Additionally, raising awareness about

oral candidiasis through community outreach and media campaigns can help ensure that parents have the knowledge and resources they need to prevent and treat the condition effectively.

It is important to acknowledge certain limitations that may affect the interpretation and generalization of the findings. Firstly, the study sample may not be representative of the entire population of parents in Saudi Arabia, as it only included those who were willing to participate. This may have resulted in a biased sample. Secondly, the study relied on self-reported data from parents, which may be subject to recall bias or social desirability bias. Parents may have provided answers that they thought were expected or socially acceptable, rather than their true beliefs or behaviors. These limitations should be taken into account when interpreting the results and drawing conclusions.

With increased awareness and understanding of oral candidiasis, parents were better equipped to recognize and address the symptoms of this condition, ultimately leading to earlier diagnosis and treatment. This, in turn, has the potential to reduce the prevalence and severity of oral candidiasis among infants in Saudi Arabia, improving their overall oral health and quality of life. Additionally, increased knowledge and awareness among parents may lead to a greater emphasis on preventive measures, such as proper oral hygiene and regular dental check-ups, which can contribute to long-term oral health outcomes for infants. As such, it is imperative to continue efforts to educate and empower parents with the information and resources necessary to effectively address oral candidiasis in their children, ultimately leading to positive implications for the future health of Saudi Arabia's youngest population.

Conclusion

In conclusion, the knowledge and awareness of parents about oral candidiasis among infants in Saudi Arabia was very poor. The attitude was negative as well. Knowledge scores were significantly associated with age, gender, marital status, and number of children. However, attitude with significantly associated with age and gender. By providing education and support to parents, healthcare providers can help ensure that infants receive the necessary care for oral candidiasis.

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