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Assessment of Knowledge, Attitude, and Practice on Level of Awareness Among Pediatric Emergency Department Visitors-Makkah City, Saudi Arabia: Cross-Sectional Study

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Abstract

Emergency department (ED) is one of the vital and critical areas inside the hospital. Most of the time, it has been over-utilized in providing the essential care services that could be provided by the Primary Healthcare Centers (PHCCs), especially from the pediatric population. Therefore, this research aimed to assess parents' knowledge, attitudes, and practices about healthcare services. A cross-sectional, descriptive study conducted to measure the knowledge, attitudes, and practices of parents regarding their choice to come to ED over the PHCCs at Maternity and Children Hospital – Pediatric Emergency Department in Makkah, from the 3rd to 14th of March, 2020. Data was collected through self-administered KAP questionnaire in English/Arabic languages completed by the parents. A total of 402 Saudi and non-Saudi parents with a child aged 0 – 15 years have participated in this study. The majority of the respondents were Saudis (91.5%), mothers (67.9%), employed (71.9%), uninsured (73.6%), and (14.7%) of their children suffered from a chronic disease. The most common reason for preferring EDs was the quality of the provided services (49.5%). Multi sociodemographic characteristics such as parents' nationality, education level, employment status, relation to the child, gender of the child and if the child has a chronic disease were significantly associated with parents' knowledge, attitudes, and practices. The study presented inadequate parental knowledge of alternative healthcare services and low levels of professional educational activities. Comprehensive parental education programs are essential to enhance medical care and developing strategies to implement policies aimed to reduce the nonurgent use of EDs is highly recommended.

Keywords: *Assessment of Knowledge, Attitude, Pediatric Emergency Department*

1. Inreoducrion

Kingdom of Saudi Arabia, represented by the Ministry of Health, provides free of charge health services for all citizen, expat public sector workers, pilgrims and Umrah visitors at any time and cost (Vision 2030 Report, 2017). Emergency department (ED) is one of the vital and critical areas inside the hospital. Most of the time, it has been over-utilized in providing the essential care services that could be provided by the Primary Healthcare Centers (PHCCs). Enhancement researches regarding EDs are still needed since EDs reported to be overused worldwide, especially from the pediatric population. This phenomenon has linked to nonurgent visits, frequent attendance, and return visits (Riva *et al.,* 2018). According to Ada'a, the local Health Program newsletter, Maternity and Children Hospital is under the process of improving emergency triage systems to improve patient distribution, patient education,

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communication, and do a better collaboration with PHCCs. Urgent care, as defined by the Urgent Care Association of America is health care provided on a walk-in, with the no-appointment basis for acute illness or injury that is not life-threatening, and either beyond the scope primary care (Wilkinson *et al.*, 2016). Nonurgent cases can be handled by other health settings such as outpatient clinics, primary care facilities, family medicine offices, or an urgent care clinics to avoid the burden on any health care system and drain ED resources (Abualenain, 2018). EDs need to be able to focus on the urgent care cases without any other drainage of resources and workforce capacity as much as possible. Likewise, the report of Saudi Arabia vision 2030 indicated that overall quality improvement could be achieved by enhance the quality of preventive and therapeutic health care services, as well as optimize the capacity of all hospitals and health care centers (Vision 2030 Report, 2017).

According to the reviewed articles, lots of efforts are needed about policy improvement projects, promote population health awareness and preventive care initiatives, as well as assuring better PHCCs access. One of the main aspects to make enhancements is understating the human behavior. Therefore, this research meant to assess patients' parents' knowledge, behavior, and preferences about healthcare services and spread knowledge regarding the proper use of Emergency Departments. Makkah city is known to be very busy and crowded most of the time throughout the year since the holy mosque is in its heart beside the seasonal religious rituals of Al-Hajj and Umrah. Maternity and Children Hospital (MCH) considered the only hospital specialized in pediatric medicine. So, a cross-sectional study of the KAP survey determined to measure the knowledge, attitude, and practice of parents regarding the research question of why do parents decide to come to the ER over Primary Healthcare Centers. CS surveys identified at a point in time known to be the most appropriate design when the research question focused on present practice or an opinion (Sullivan, 2018). The assessment is done by conducting a KAP survey to understand parents' health-related behaviors. Generated data from the KAP survey can be used to identify knowledge gaps, cultural beliefs, and behavioral patterns that may help in recognizing the needs, problems, and barriers to make interventions. It's also useful in deepening the understanding of commonly known information, attitudes as well as providing baseline data to perform an intervention (WHO, 2014).

1.1 Objectives

Aim of the study:

1. To understand parents' preferences about healthcare services in relation to the research question of why parents decide to come to the Pediatric Emergency Department over the Primary Healthcare Centers.

Specific objectives:

1. To assess the knowledge, attitudes, and practice (KAP) of parents with children under 15 years of age about the proper use of EDs.
2. To spread the knowledge regarding the suitable use of Emergency Departments.
3. To provide useful suggestions for the policymakers and create the reference value for use in future assessments.

2. Literature Review

Enhancing quality of life required to meet a determined goal by Saudi Vision 2030 to increase the average of life expectancy from 74 years to 80 years. According to the vision report, a quality improvement could be achieved by enhance the quality of preventive and therapeutic health care services, as well as optimize and better use the capacity of all hospitals and health care centers (Vision2030 Report, 2017). Encourage using primary care centers first is needed to support the hospital's workload and use the provided healthcare services efficiently to contain costs and improve ED capacity. Thus, promoting preventive care, reducing infectious diseases, and encouraging citizens to visit the primary care centers as a first step is the focus of the public sector. Alhabdan *et al.* (2019), revealed that the increased use of EDs leads to poor patient satisfaction due to the delay in care delivery and increased waiting times. Yet, understanding the influencing factors of an individual's decision and their knowledge of the triage systems in EDs is important to enhance their satisfaction. The most important thing is uplifting their awareness level about the process that happens inside the triage and how EDs work. Since the majority of participants responded that they do not know the triage means and how it works; also, they do not have a primary care physician in the first place, which emphasizes the importance of increasing their awareness level.

Poropat *et al*. (2017) illustrated that the children group is aged from 0 to 15 years old. For children under one year of age, the most common reasons for ED attendance were due to fever, breathing difficulties, and gastrointestinal problems while older age groups' commonest visits associated with trauma. Also, there were trends and peaks of pediatric ED (PED) use in specific times over others. Holidays such as summertime and Eid Al-Fitr seem to be associated with higher rates of EDs visits of pediatric trauma while having fewer overall EDs visits (Alhusain *et al.*, 2017; Burokienė *et al*., 2017). Moreover of quality of medical care indicators, Ahmed *et al.*, (2018) said most of the 72 hours revisits , reached 11% of overall ED visitors, are commonly linked to respiratory, digestive, genitourinary, symptoms, among the young age of children and external causes such as new health information system implementation in King Abdullah Specialist Children's Hospital, Riyadh.

Triage is the process of categorizing ED patients according to their medical care needs nor their time of arrival or any other factors. Qureshi's study (2010) stressed on the urgent need for public awareness programs about triage systems and their purposes. Triage systems benefit included reducing admission rates, waiting times, improve patients and their family satisfaction as well as the efficiency and effectiveness of the ED and containment of the costs consumed through various ED activities. Therefore, triage systems are highly important in solving problems such as patients' overcrowding and improves the cost-effectiveness of health outcomes quality. The current status of triage in Saudi Arabia includes three-level of triage activities depending on the need for medical care attention: emergent (I), urgent (II), and management (III). Emergent (I) or red area level is where immediate medical intervention is needed. Urgent (II) or yellow area triage level is when patients are stable, and there is no immediate life threat, but they need medical intervention within a few hours. Management (III) or green area is when patients with chronic conditions or minor injuries present in ED with no danger to life and may wait hours until being seen by a physician. International triage scale such as the Canadian Triage and Acuity Scale (CTAS) system is rarely to be used in Saudi health setting especially MOH hospitals but more commonly among non-MOH hospitals and private hospitals (Qureshi, 2010). Even though its rareness, the CTAS system proven to be very effective in making patients with urgent cases able to be seen by the physician promptly (Arafat *et al.*, 2016).

To characterize ED visits, Abualenain (2018) performed a study located in Jeddah. The study showed that 26.17% of triaged patients, who have the initial evaluation by physicians, left the waiting room without being treated due to bed unavailability. While 97.22% of them were lower acuity and stable. The main threat occurs at the time when service demands exceed resource availability. Unwin *et al.* (2016) clarified that nonurgent presentations are frequently attributed to increased service demand complaints. Attending ED with problems perceived as nonurgent, overcrowding, and access block are all themes resulting in poorer patient outcomes, care, higher morbidity, and staff burnout. Regarding the most crowded hours, Gazzaz *et al.* (2012) illustrated that evening shifts – from 15:30 to 23:30 - was the busiest period of the day. Whereas, the young children and nonurgent cases were the most common among ED visits. Understanding the peak hours, on the one hand, helps in managing ED staff and emergency preparedness. Increased visits during evening shifts justified by being the most available time throughout the day for working parents to bring their children and the majority of PHCCs are open only in the morning shift and have limited working hours, services, and resources (Dawoud *et al.*, 2015). On the other hand, is the need to understand the parents' perspectives, because according to Mohammad *et al.* study (2018), only 3.2% of the decision to come to ED was done by PHCC referral, while the parents made 81.3 % of visiting decisions. While during Hajj season, higher rate of patients visited the ED in the morning-afternoon shifts were potentially avoidable visits on the same levels of care (Mirza *et al.*, 2019). The study of Mirza *et al.* recommended extension in PHCCs working periods to better serve the pilgrims and keep on the high level of preparedness for all potential disasters during the season.

Parents' perceptions and decisions regarding bringing their children to the PEDs might differ accordingly to their background, culture, believes, distance from the hospital, and availability of healthcare services. According to Burokienė *et al*., (2017), parents are tending to bring their children to EDs without a referral and five times more likely to bring them through the evening hours and weekends. While ED professionals said only fifth of the visitors were actually in need for urgent care. Furthermore, the age of parents was significantly associated with the number of nonurgent visits. Parents with older age groups – more than 35 years – were more likely by the double to evaluate their child's health unfavorably comparing to parents aged less than 35 years (Burokienė *et al*., 2017).

According to Butun *et al.* (2019), EDs are more preferable due to its faster service, difficulties with getting a general practitioner appointment, lack of facilities in PHCs, and access hardship. Reported reasons in studies conducted in Western countries might not be similar to those reported ones among the local healthcare system due to

the cultural and geographical disparities. However, motive reasons regarding the choice of EDs looked similar since they mainly linked to the excellence of care in an ED and the income level since a considerable portion of ED visits are associated with lower income patients (Alhabdan *et al.,* 2019; Dawoud *et al*., 2015). Huyer *et al.* (2018) noted that physicians need to be more involved as primary educators of caregivers through patients' care journey. However, there might be barriers to their educational goals for reducing nonurgent visits. Barriers could be due to the lack of viable options to the PED, uncertainty about effectiveness, inappropriateness regarding urgent cases, or even the fear of caregivers' unfavorable reactions.

Filling the knowledge gaps and understanding the behavioral patterns in parents can be made by conducting a KAP survey. The World Health Organization (2014) revealed during cholera vaccination campaigns that the KAP survey would provide information that may help with planning and providing baseline data to measure the impact of health-related activities. Also, KAP surveys are mostly cross-sectional surveys that collected at a point in time and more convenient in situations when time and resources to sampling, response, and recall biases are limited. Additionally, random sampling considered the most methodologically rigorous among the three sampling categories – random, purposeful, and convenience sampling. A random sampling includes the simple random sampling technique where participants are chosen by chance for survey participation and have an equal chance of being selected. Simple random is the most preferable due to its ease of use, generalizability, and accurate representation of the larger survey population.

3. Methods

This cross-sectional, descriptive study conducted at Maternity and Children Hospital – Pediatric Emergency Department in Makkah, from the third to the fourteenth of March, 2020. The tool of the study was a self-administered KAP questionnaire determined to measure the knowledge, attitude, and practice of parents regarding their choice to come to ED over the PHCCs. The questionnaire is in both English/Arabic languages and consisted of two main parts; each part had separate instructions. The first part consisted of informed consent and sociodemographic characteristics; the second part included sixteen questions, five questions regarding knowledge, six questions regarding attitude, and five questions regarding the practice or behavior of parents. All these questions were in the "yes/no" answer format. Information regarding the total number of several visits was taken from the MCH Emergency Department database. The sample size estimated to be 384 and determined by using the Cochran's Sample Size Formula as following:

$$n_0 = Z^2 pq / e^2$$

Where:
n: number of times in samples
Z^2: the square of confidence level at 95% from the normal table (1.96).
e^2: the square of maximum allowance for the margin of error, which equals to 0.5
p: the estimated proportion of the success of the population with a probability of 50% = 0.5.
q: (1-p) = 0.5, the estimated proportion of failure.
Computed as:

$$((1.96^2)(0.5)(0.5)) / (0.05^2) = 384.16.$$

Inclusion criteria:
- Pediatric Emergency Department visitors between the age of less than one year to 15 years old and their parents inside the yellow and green area.
- Both gender (Male/Female).
- Saudi and non-Saudi nationality.

Exclusion criteria:
- Pediatric Emergency Department visitors inside the red area.
- Infants born in the hospital.
- Adult Emergency Department visitors.
- ED workers.

4. Results

The first question of the practice section of the survey was asking if they have any reason to choose the ED rather than a PHCC. Participants who choose "yes", optionally directed to another extra part. They were given a chance to select between one or more of the listed reasons collected through the pilot study as well as they can add their specific reason if it exists. The most common reason was the quality of the provided healthcare services (49.5%). The second reason was not knowing if the problem was urgent or not (43.3%). Followed by the limited opening hours of the PHCCs, the cost of the provided services, and the transportation with percentages of 31.2%, 28%, and 7.2%, respectively. Under the choice "other" both of the participants thought that their child's condition was urgent. Figures 1 and 2 show the common reasons for choosing the ED and the preferred place for getting routine medical care. The governmental hospitals were the first favorable place with a percentage of 65.90%, followed by the private hospitals, PHCCs, and private clinics with percentages of 47.50%, 36.10%, and 29.90%, respectively.

Table 1: Frequencies of sociodemographic characteristics of surveyed parents (n=402).

Variables (n=402)	Categories	Count (%)
Age of children	Less than one year	62 (15.4%)
	1-5	240 (59.7%)
	6-10	203 (50.5%)
	11-15	139 (34.6%)
Number of children	1	86 (21.4)
	2	100 (24.9)
	3	92 (22.9)
	4	79 (19.7)
	More than 5	45 (11.2)
Child/ children's gender	Male only	109 (27.1)
	Female only	88 (21.9)
	Both	205 (51)
Parent's nationality	Saudi	368 (91.5)
	Non-Saudi	34 (8.5)
Parent's education level	Elementary school	43 (10.7)
	High school graduate	68 (16.9)
	Diploma	34 (8.5)
	Bachelor's degree	214 (53.2)
	Master's degree	28 (7)
	Doctoral degree	14 (3.5)
	Other	1 (0.2)
Parent's employment status	Employed	289 (71.9)
	Self-employed	30 (7.5)
	Unemployed	83 (20.6)
Insurance status	Insured	106 (26.4)
	Uninsured	296 (73.6)
Relation to the child	Father	102 (25.4)
	Mother	273 (67.9)
	Grandfather/grandmother	11 (2.7)
	Other	16 (4)
Does any of your children suffer from a chronic disease	Yes	59 (14.7)
	No	343 (85.3)
Number of visits last year	1	138 (34.3)

	2	101 (25.1)
	3	76 (18.9)
	More than four times	87 (21.6)

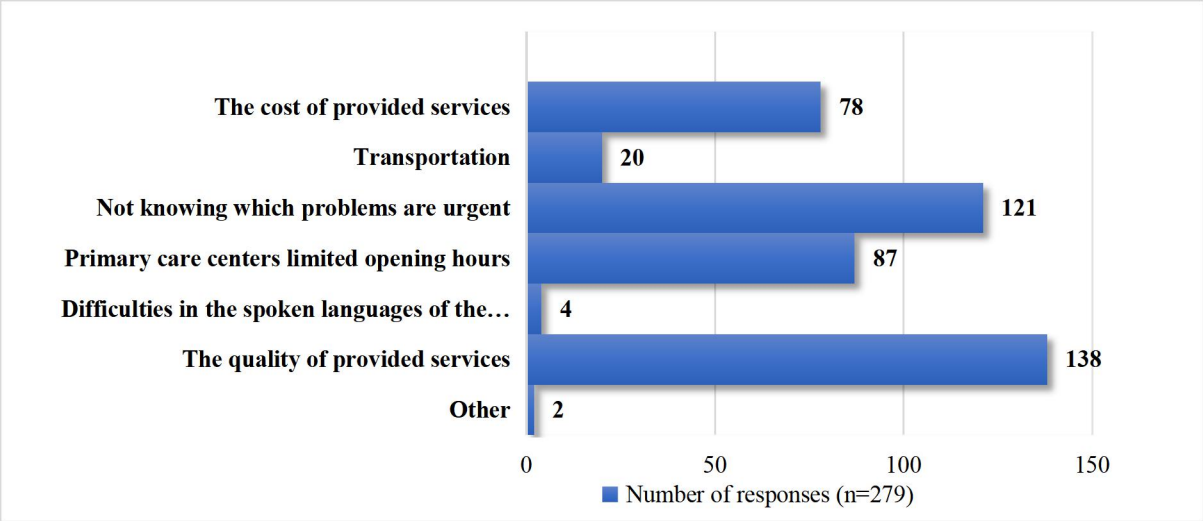

Figure 1: The bar chart shows the common reasons for choosing the Emergency Department rather than a primary care center.

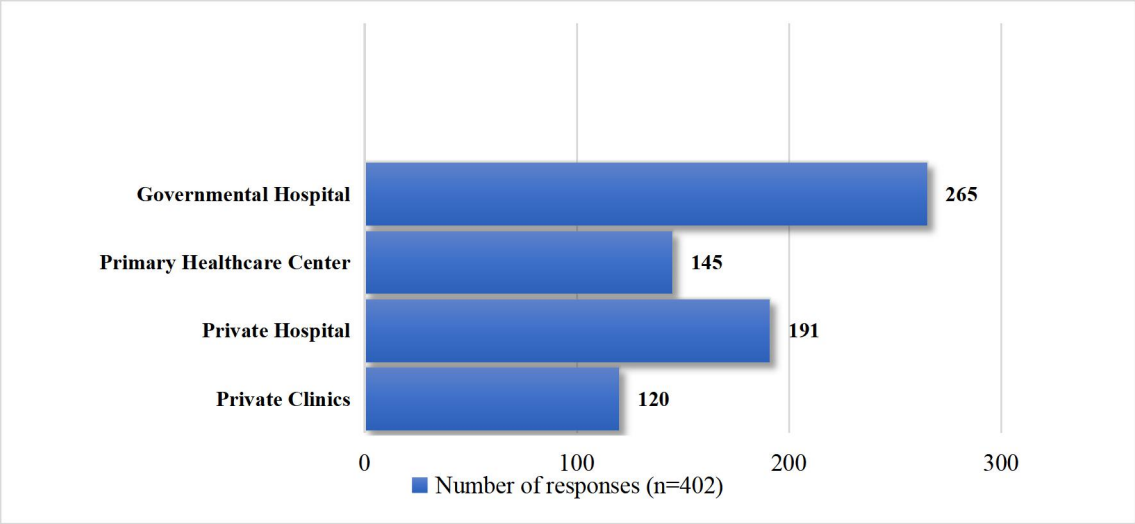

Figure 2: The bar chart shows the preferred places for getting routine medical care.

Association between sociodemographic variables and related survey questions:

Sociodemographic characteristics of surveyed parents were illustrated in table 2. These demographics variables were tested against the knowledge, attitude, and practice scores of parents to measure the association between them. The used statistical test is Chi-Square (χ^2), we notice that when there is a statistical significance χ^2 will be relatively large in value while the level of significance p-value will be < 0.05. In the knowledge part, we found the knowledge of the nearest PHCC is significantly associated with the gender of the child (p = 0.027) and the parent's employment status (p = 0.038). Also, the knowledge of child condition has significantly associated with the gender of the child (p = 0.031) as well as if the child has a chronic disease (p = 0.022). Many variables are statistically significant among the attitude of parents' results. Parent's nationality, education level, employment status, relation to the child and if the child has a chronic disease were significantly associated with the ongoing relationship with the child's physician for advice and routine checkup, as well as sought for help by calling (937) center or even call an ambulance if needed. Lastly, we found considering the ED as the best place to receive medical care for a child in any condition was highly significant among the parent's nationality (p = 0.008), an education level (p = 0.001), and employment status (p = 0.005).

In practice scores, having a reason to visit the ED rather than PHCC was significantly associated with the number of visits (p = 0.030) and parent's nationality (p = 0.044) while the nationality was also associated with the opinion that healthcare practitioners in the ED are highly skilled and competent (p = 0.009). Other tested variables are not reached statistical significance where p > 0.05. Demographics such as the age of children and insurance status didn't reach the statistical significance across all the questions. Therefore, they were removed from tables 3, 4, and 5. As well as question number five from the attitude of parents regarding the experienced difficulties with the primary care physician and was removed to minimize the table size as possible.

Table 3: Total knowledge scores disparities among different sociodemographic characteristics of parents and their children.

Sociodemographic characteristics of parents and their children	1- Do you know where is the nearest Primary Healthcare Center to your house?				2- Do you think your child has an urgent problem that brings him/her to the pediatric emergency department?				3- Do you think something bad would have happened to your child if he/she had waited another 24 hours to be seen by a physician?				4- Do you think the primary care physician's or a pediatrician referral is important?				5- Has anyone of the healthcare practitioners talked to you about what is an urgent medical problem that requires you to bring your child to the Emergency Department?			
	Mean	Median	Chi-Square χ^2	p-value	Mean	Median	Chi-Square χ^2	p-value	Mean	Median	Chi-Square χ^2	p-value	Mean	Median	Chi-Square χ^2	p-value	Mean	Median	Chi-Square χ^2	p-value
Child / children's gender			7.205	0.027*			2.067	0.356			6.937	0.031*			1.917	0.383			2.189	0.335
Male only	1.06	1			1.08	1			1.22	1			1.19	1			1.61	2		
Female only	1.15	1			1.03	1			1.09	1			1.13	1			1.64	2		
Male / Female	1.6	1			1.07	1			1.14	1			1.19	1			1.69	2		
Guardian's nationality			2.307	0.129			0.041	0.839			0.292	0.589			0.966	0.326			0.833	0.361
Saudi	1.07	1			1.07	1			1.15	1			1.17	1			1.67	2		
Non-Saudi	1.15	1			1.06	1			1.12	1			1.24	1			1.59	2		
Guardian's education level			3.018	0.807			3.646	0.724			2.871	0.825			0.894	0.989			9.032	0.172
Elementary school	1.02	1			1.07	1			1.14	1			1.19	1			1.79	2		
High school graduate	1.10	1			1.07	1			1.15	1			1.18	1			1.60	2		
Diploma	1.06	1			1.12	1			1.21	1			1.21	1			1.62	2		
Bachelor's degree	1.08	1			1.06	1			1.15	1			1.17	1			1.68	2		
Master's degree	1.11	1			1.04	1			1.07	1			1.14	1			1.54	2		
Doctoral degree	1.07	1			1.14	1			1.21	1			1.21	1			1.50	2		
Guardian's employment status			6.550	0.038*			0.589	0.745			3.338	0.188			2.345	0.310			4.521	0.104
Employed	1.07	1			1.07	1			1.17	1			1.16	1			1.64	2		
Self-employed	1.20	1			1.10	1			1.10	1			1.13	1			1.83	2		
Unemployed	1.06	1			1.06	1			1.10	1			1.23	1			1.66	2		
Relation to the child			2.885	0.410			2.307	0.511			1.664	0.645			1.335	0.721			0.891	0.828
Father	1.11	1			1.10	1			1.14	1			1.19	1			1.68	2		
Mother	1.07	1			1.05	1			1.16	1			1.17	1			1.65	2		

Table 4: Total attitude scores disparities among different sociodemographic characteristics of parents and their children.

Socio-demographic characteristics of parents and their children	1- Does your child have a primary care physician for a routine checkup or non-emergency medical care?				2- Have you ever called your child's physician for advice before coming to the emergency room?				3- Have you ever tried to call an ambulance and asked for immediate assistance before coming to the emergency department?				4- Have you ever sought any help before coming to the Emergency Department? (e.g., calling (937) center or use one of MOH apps)				6- Do you think the Emergency Department is the best place to receive care for your child in any condition? (Quality of Care)			
	Mean	Median	Chi-Square χ^2	p-value	Mean	Median	Chi-Square χ^2	p-value	Mean	Median	Chi-Square χ^2	p-value	Mean	Median	Chi-Square χ^2	p-value	Mean	Median	Chi-Square χ^2	p-value
Child / children's gender			0.116	0.944			2.096	0.351			2.194	0.334			2.200	0.333			1.104	0.576
Male only	1.77	2			1.61	2			1.96	2			1.61	2			1.47	1		
Female only	1.78	2			1.61	2			1.92	2			1.59	2			1.42	1		
Male / Female	1.77	2			1.68	2			1.96	2			1.67	2			1.48	1		
Guardian's nationality			0.009	0.926			5.207	0.022*			0.065	0.799			5.467	0.019*			7.088	0.008*
Saudi	1.77	2			1.63	2			1.95	2			1.62	2			1.47	1		
Non-Saudi	1.76	2			1.82	2			1.94	2			1.82	2			1.24	1		
Guardian's education level			11.189	0.083			23.539	0.001*			25.806	0.000*			11.071	0.086			22.062	0.001*
Elementary school	1.81	2			1.84	2			1.95	2			1.70	2			1.30	1		
High school graduate	1.84	2			1.79	2			1.93	2			1.65	2			1.38	1		
Diploma	1.88	2			1.59	2			1.91	2			1.74	2			1.26	1		
Bachelor's degree	1.73	2			1.59	2			1.97	2			1.65	2			1.52	2		
Master's degree	1.71	2			1.61	2			1.96	2			1.50	2			1.68	2		
Doctoral degree	1.86	2			1.36	1			1.86	2			1.36	1			1.29	1		
Guardian's employment status			0.529	0.767			7.325	0.026*			7.537	0.023*			2.609	0.271			10.569	0.005*
Employed	1.77	2			1.61	2			1.97	2			1.64	2			1.50	2		

Self-employed	**1.73**	**2**		**1.83**	**2**		**1.90**	**2**		**1.77**	**2**		**1.27**	**1**				
Unemployed	**1.80**	**2**		**1.70**	**2**		**1.90**	**2**		**1.60**	**2**		**1.35**	**1**				
Relation to the child			**7.485**	**0.058**			**11.552**	**0.009***			**1.627**	**0.653**			**4.208**	**0.240**			**0.099**	**0.992**
Father	**1.85**	**2**		**1.77**	**2**		**1.96**	**2**		**1.65**	**2**		**1.44**	**1**				
Mother	**1.74**	**2**		**1.59**	**2**		**1.95**	**2**		**1.62**	**2**		**1.46**	**1**				
Grandfather / grandmother	**1.64**	**2**		**1.73**	**2**		**1.91**	**2**		**1.64**	**2**		**1.45**	**1**				
Other	**1.88**	**2**		**1.69**	**2**		**2.00**	**2**		**1.88**	**2**		**1.44**	**1**				
The child has a chronic disease			**4.752**	**0.029***			**0.089**	**0.766**			**3.946**	**0.047***			**6.549**	**0.010***			**1.104**	**0.293**
Yes	**1.66**	**2**		**1.63**	**2**		**1.90**	**2**		**1.49**	**1**		**1.39**	**1**				
No	**1.79**	**2**		**1.65**	**2**		**1.96**	**2**		**1.66**	**2**		**1.46**	**1**				
Number of visits last year			**2.241**	**0.524**			**5.545**	**0.136**			**7.268**	**0.064**			**2.380**	**0.497**			**7.018**	**0.071**
1	**1.74**	**2**		**1.59**	**2**		**1.98**	**2**		**1.65**	**2**		**1.49**	**1**				
2	**1.79**	**2**		**1.60**	**2**		**1.93**	**2**		**1.62**	**2**		**1.50**	**2**				
3	**1.75**	**2**		**1.72**	**2**		**1.97**	**2**		**1.70**	**2**		**1.45**	**1**				
≥ 4	**1.82**	**2**		**1.70**	**2**		**1.91**	**2**		**1.59**	**2**		**1.33**	**1**				

Table 5: Total practice scores disparities among different sociodemographic characteristics of parents and their children.

Socio-demographic characteristics of parents and their children	1- Do you have any reason to choose the Emergency Department rather than a primary care center?				2- Are you still planning to come to the Emergency Department directly even after hearing professional advice regarding the urgency of care?				3- Are you intending to use any of the MOH E-applications such as «Seha» for medical consultation or «Mawid» App to book an appointment and amend it in the Primary Care Center next time?				4- Do you think healthcare practitioners, physicians, nurses, and others in the emergency department are highly skilled and competent?				5- At the end of your last visit, are you satisfied with your child's diagnosis, treatment and the emergency department visit in general?			
	Mean	Median	Chi-Square χ^2	*p*-value	Mean	Median	Chi-Square χ^2	*p*-value	Mean	Median	Chi-Square χ^2	*p*-value	Mean	Median	Chi-Square χ^2	*p*-value	Mean	Median	Chi-Square χ^2	*p*-value
Child / children's gender			0.546	0.761			3.976	0.137			0.237	0.888			1.189	0.552			2.063	0.356
Male only	1.32	1			1.53	2			1.14	1			1.21	1			1.17	1		
Female only	1.27	1			1.67	2			1.13	1			1.23	1			1.20	1		
Male / Female	1.30	1			1.58	2			1.15	1			1.26	1			1.23	1		
Guardian's nationality			4.068	0.044*			1.094	0.296			0.145	0.703			6.755	0.009*			1.873	0.171
Saudi	1.31	1			1.59	2			1.14	1			1.26	1			1.22	1		
Non-Saudi	1.15	1			1.5	2			1.12	1			1.06	1			1.12	1		
Guardian's education level			9.157	0.165			2.111	0.909			5.064	0.536			3.338	0.765			1.414	0.965
Elementary school	1.30	1			1.53	2			1.16	1			1.26	1			1.21	1		
High school graduate	1.22	1			1.57	2			1.19	1			1.22	1			1.19	1		
Diploma	1.41	1			1.59	2			1.12	1			1.24	1			1.18	1		
Bachelor's degree	1.33	1			1.60	2			1.14	1			1.26	1			1.22	1		
Master's degree	1.18	1			1.61	2			1.04	1			1.21	1			1.25	1		
Doctoral degree	1.14	1			1.57	2			1.07	1			1.07	1			1.14	1		
Guardian's employment status			0.231	0.891			1.444	0.486			2.907	0.234			3.021	0.221			1.835	0.400
Employed	1.30	1			1.57	2			1.12	1			1.26	1			1.22	1		
Self-employed	1.30	1			1.53	2			1.20	1			1.27	1			1.20	1		
Unemployed	1.28	1			1.64	2			1.18	1			1.17	1			1.16	1		
Relation to the			7.416	0.060			5.982	0.113			3.510	0.319			2.127	0.547			0.979	0.806

child																		
Father	1.24	1			1.49	1			1.10	1			1.24	1			1.21	1		
Mother	1.31	1			1.61	2			1.15	1			1.25	1			1.21	1		
Grandfather / grandmother	1.27	1			1.73	2			1.27	1			1.36	1			1.27	1		
Other	1.56	2			1.69	2			1.19	1			1.13	1			1.13	1		
The child has a chronic disease			1.238	0.266			0.021	0.884			0.101	0.751			0.338	0.561			0.652	0.420
Yes	1.24	1			1.59	2			1.15	1			1.27	1			1.17	1		
No	1.31	1			1.58	2			1.14	1			1.24	1			1.22	1		
Number of visits last year			8.955	0.030*			1.577	0.665			1.648	0.649			5.016	0.171			1.051	0.789
1	1.37	1			1.56	2			1.14	1			1.18	1			1.19	1		
2	1.29	1			1.62	2			1.11	1			1.30	1			1.24	1		
3	1.32	1			1.55	2			1.13	1			1.24	1			1.22	1		
≥ 4	1.18	1			1.61	2			1.17	1			1.28	1			1.20	1		

Table 6: Frequencies of surveyed parents' answers.

Knowledge of Parents:	**Yes**	**No**
1- Do you know where is the nearest Primary Healthcare Center to your house?	370 (92%)	32 (8%)
2- Do you think your child has an urgent problem that brings him/her to the pediatric emergency department?	375 (93.3%)	27 (6.7%)
3- Do you think something bad would have happened to your child if he/she had waited another 24 hours to be seen by a physician?	342 (85.1%)	60 (14.9%)
4- Do you think the primary care physician's or a pediatrician referral is important?	332 (82.6%)	70 (17.4%)
5- Has anyone of the healthcare practitioners talked to you about what is an urgent medical problem that requires you to bring your child to the Emergency Department?	137 (34.1)	265 (65.9%)
Attitude of Parents:	**Yes**	**No**
1- Does your child have a primary care physician for a routine checkup or non-emergency medical care?	92 (22.9%)	310 (77.1%)
2- Have you ever called your child's physician for advice before coming to the emergency room?	143 (35.6%)	259 (64.4%)
3- Have you ever tried to call an ambulance and asked for immediate assistance before coming to the emergency department?	20 (5%)	382 (95%)
4- Have you ever sought any help before coming to the Emergency Department? (e.g., calling (937) center or use one of MOH apps)	145 (36.1%)	257 (63.9%)
5- Are there any difficulties you experienced earlier with the primary care physician?	74 (18.4%)	328 (81.6%)
6- Do you think the Emergency Department is the best place to receive care for your child in any condition? (Quality of Care)	220 (54.7%)	182 (45.3%)
Practice of Parents:	**Yes**	**No**
1- Do you have any reason to choose the Emergency Department rather than a primary care center?	282 (70.1%)	120 (29.9%)
2- Are you still planning to come to the Emergency Department directly even after hearing professional advice regarding the urgency of care?	167 (41.5%)	235 (58.5%)
3- Are you intending to use any of the MOH E-applications such as «Seha» for medical consultation or «Mawid» App to book an appointment and amend it in the Primary Care Center next time?	346 (86.1%)	56 (13.9%)
4- Do you think healthcare practitioners, physicians, nurses, and others in the emergency department are highly skilled and competent?	305 (75.9%)	97 (24.1%)
5- At the end of your last visit, are you satisfied with your child's diagnosis, treatment and the emergency department visit in general?	318 (79.1%)	84 (20.9%)

5. Discussion

One of the main aspects to make improvements is understating the human behavior. This study aimed to understand parents' preferences about healthcare services and spread knowledge regarding the proper use of Emergency Departments. Determinants such as different sociodemographic could impact parents' KAP on preferences of healthcare services. According to our study demographic information, the majority of the respondents are Saudis (91.5%), and only 8.5% of them were non-Saudi. Most of the participated parents were mothers, fathers, others of uncles or aunts, then grandfather/grandmother with percentages of 67.9%, 25.4%, 4%, and 2.7%, respectively. 71.9% of them were employed, 7.5%, self-employed, and 20.6% unemployed. While 53.2% of them had a bachelor's degree, and 16.9% were high school graduates. In regards to the insurance status, only 26.4% were insured, while 73.6% were uninsured. We found 53.8% of the surveyed parents had more than two children, and only 14.7% of them suffered from a chronic disease. Also, 15.4% of the children were aged less than one year while 59.7%, 50.5%, and 34.6% were ranged between 1-5, 6-10, and 11-15 years, respectively.

Choosing the governmental hospitals (65.9%) as the first favorable option for getting medical care agrees with Taber *et al.* (2015) results and shows that these barriers can act as motivators and be one of the most common reasons to prefer the emergency department. EDs are known to be providing healthcare services free of charge and equipped with highly skilled workers 24 hours a day (Gazzaz *et al.*, 2012). As noted by Almogbel *et al.* (2019) in parents misconception such as the wrong practice of assessing fever in children can justify why "not knowing if the problem was urgent or not" ranked amongst the main reasons of preferring EDs (43.3%) and the fear of waiting another 24 hours to be seen by a physician (85.1%). On the other hand, People could avoid seeking medical care even when they suspect they should go due to traditional barriers such as the high cost, no health insurance, and time constraints (Taber *et al.*, 2015).

In the knowledge part, 92% of the respondents know where is the nearest PHCC to their houses while they justify their coming to ED by they thought their child's condition is urgent (93.3%). Even though 82.6% thought primary physician referral is important, only 22.9% had a regular primary care physician, and 35.6% sought advice when they need it, which is close to Alhabdan *et al.* (2019) results. This is the opposite of Mohammad *et al.* study results (2018) since only 3.2% of the parental decision to come to ED was done by PHCC referral. While Alyasin & Douglas (2014) revealed that not having a regular healthcare provider is one of the reasons for non-urgent presentations to the ED in Saudi Arabia. On the awareness level, only 34.1% of the parents had heard professional advice about the urgent medical complications that require ED attendance and the availability of alternative services. As reported, one of the barriers to participation in educational activities from physician perception is the fear of negative reactions from parents (Huyer *et al.*, 2018).

As announced by the Ministry of Health, the pilot stage of the first emergency care model has been launched in two of the primary healthcare centers in Makkah to relieve pressure on the emergency sections of Al-Nour Specialist Hospital and Maternity and Children Hospital (MOH, 2018). ECM initiated to facilitate access to emergency care geographically and redistribute resources among health facilities. This step followed by introducing another eight urgent care clinics across multiple PHCCs (MOH, 2020). By linking this information to our study results, it indicates that parents are still in need of awareness and health promotion activities because 63.9% of them never knew or sought help by calling (937) center or using MOH Electronic applications. After educating parents about the urgent conditions and MOH initiatives, 41.5% of them are having a second thought in visiting ED directly next time, and 86.1% are planning to use MOH e-apps such as «Seha» for medical consultation or «Mawid» App to book an appointment and amend it in the PHCCs.

54.7% of parents thought ED is the best place to receive healthcare for their children and found to be significantly associated with parent's nationality, education level, and employment status. Furthermore, 70.1% of them had a reason about their preferences and were significantly associated with parent's nationality and the number of visits where 34.3% had one visit, 25.1% had two visits, 18.9% had three visits, and 21.6% had more than four visits per year. Quality of the provided healthcare services is the most common reason by 49.5% of respondents, which is the same as Butun *et al.* study's results (2019). Comparable to Dawoud *et al.* results (2015), the limited working hours of the PHCCs were one of the main reasons by 31.2% of respondents, followed by the cost of the provided services (28%), and lastly was the transportation (7.2%).

Parent's nationality, education level, employment status, and those who had children with chronic diseases expressed higher significant knowledge and more likely to have ongoing relationships with the child's physician for advice and routine checkup and better knowledge of child condition compared to others. These outcomes match Al-

Johani *et al.* (2018) study outcome that says parents who had experience with incidents among their children expressed higher knowledge compared to their counterparts. Also, there is a significant association between having a chronic disease, child gender and the fear of waiting another 24 hours to be seen by a physician and emphasizing on this result Ahmed *et al.* (2018) study revealed that children with chronic diseases are more likely to revisit the ED within 72 hr. of ED.

6. Conclusion and Recomdeadtion

The main goal of Vision 2030 is to activate the role of Primary Healthcare Centers and sufficiently promote population health through its NTP 2020. Currently, more urgent care units initiated all over the city to reinforce the Emergency Care Model. The continuous high numbers of nonurgent visits of ED indicates a low level of awareness as well as gaps in the hospital policy. The study presented low levels of professional educational activities and inadequate parental knowledge of alternative services such as the (937) center or «Mawid» and «Seha» e-apps, and here where the awareness takes apart. Governmental hospitals had the highest rank among other healthcare settings of being the most preferred to parents. The quality of care provided in EDs and the limited working hours of the PHCCs influenced parents' decisions in conjunction with their low level of awareness and the cost of provided services. The study outcomes indicated a significant association exists between the sociodemographic variables and the knowledge, attitude, and practice of parents. Having a child with a chronic disease is also reflecting their preferences. Because of these relations, corrective measures can be followed accordingly and motivating the workforce to implement effective change to the organizations is emphasized to overcome the barriers.

EDs can't continue to serve as patients' primary care providers, especially that here in Saudi Arabia, we have an efficient number of PHCCs more awareness is needed for the better use of them and KAP surveys are one of the most effective instruments to assess the knowledge and perception of parents. Children and all individuals have the right to health care. But with the massive spread of contagious diseases such as the new invasive coronavirus COVID-19, parents might jeopardize their children's health to danger. A wiser use and knowledgeable attitude about medical care are important during this time more than ever.

Policymakers and health providers have a challenging task to control ED visitors, and this study provided valuable information. Developing strategies to implement policies and procedures aimed to reduce the nonurgent use of EDs is highly recommended as well as making healthcare services more available to the people in other healthcare settings rather than EDs. Consequently, developing different comprehensive parental education programs and awareness campaigns is essential to enhance medical care, improve parents' knowledge and compliance. Patients' perspectives and preferences needed to be demonstrated by applying more researches locally that goes along with the Saudi healthcare setting and a comply with the new vision of continuing to enhance the quality of life and meet the needs of all citizens. Finally, conduct further studies and analysis is advised to get more understanding of the patient's preferences.

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