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Research Article

Knowledge, Attitudes, and Practices Regarding COVID-19 among Parents of Children with Type 1 Diabetes During the Pandemic: A Cross-Sectional Study

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Abstract

Background: Adequate knowledge, positive attitude and correct practices towards Covid-19 are associated with better control of the diabetes mellitus. Though risk of covid-19 related mortality is low among children, those having an underlying co-morbidity are at an increased risk for mortality.

Objective: To evaluate the precautions and practices adopted by parents, based on their knowledge and attitudes, to protect their children with type 1 diabetes from COVID-19 infection.

Study Design: Cross-sectional survey.

Place and Duration of Study: The study was done at the pediatric department, district head quarter hospital, Rawalpindi, and children hospital, Pakistan institute of medical sciences Islamabad, from April to September 2021.

Materials and Methods: A total of 96 parents of type 1 diabetes children were enrolled using convenient consecutive sampling technique. Data was recorded on a pre-designed proforma and analyzed by SPSS version 22.0.

Results: Out of total 96 parents, 77 were mothers and 19 were fathers. Basic education was only primary in 18 and secondary school in 32 parents. Mean knowledge score 6.0 regarding COVID-19 pandemic was found to be 'average' (good knowledge range 8-10). Attitude score of parents was also 'average' 4 (good attitude score 5-6). Practice towards prevention of COVID-19 infection was found to be 'poor', as most of the parents were not taking enough safety precautions like wearing face masks, using hand sanitizers to keep their children safe.

Conclusion: Parents of type 1 diabetes children have an average knowledge and attitude regarding COVID-19 infection. Although parents are anxious for their child's wellbeing, but their practices are not sufficient to protect their child during pandemic. These results highlight the need for more educational and social interventions to promote healthy lifestyle practices for children with chronic ailments in the wake of emerging variants of covid-19.

Keywords: *Knowledge; Attitude; Practice; COVID-19; Type 1 Diabetes; Safety Precautions*

Introduction

Novel corona virus has been declared a pandemic affecting people globally. It has a massive impact on the lifestyle of people and their psychosocial behavior. The underlying causative organism of COVID-19 is SARS-CoV-2 (Severe acute respiratory syndrome corona virus 2) [1]. Presentation of covid-19 varies widely ranging from asymptomatic infection to mild respiratory illness which sometimes includes fever and cough to severe ARDS (acute respiratory distress syndrome) [2]. The overall mortality also varies widely, reported to be from 0.7% - 10.8% of all diagnosed cases [3]. Covid-19 in children with underlying co-morbidities tends to be severe with poor prognosis [4]. Diabetes mellitus has emerged as a distinctive co-morbidity and is associated with severe disease, acute respiratory syndrome, and increased mortality in covid-19 infection [5].

Incidence of type 1 diabetes is on the rise every year. Worldwide incidence varies widely, being lowest in China and highest in Finland [6]. Incidence of type 1 diabetes is reported as 1.02 per 100,000 per year in Pakistan however this low incidence can be result of under-reporting due to lack of national registry. Studies have shown that there is 3.5 times the odds of in-hospital deaths of patients with type 1 diabetes relative to people without the disease, after the adjustment of race, age, gender and locality [7].

As there is no definitive therapy against covid-19, it becomes necessary that people with type 1 diabetes and other chronic illnesses take extra precautions, stringently abide by advisories of social distancing, hand hygiene and ensure good glycemic control [8]. People's adherence to these control measures will be largely affected by their knowledge, attitude and practices (KAP) towards covid-19, in accordance with KAP theory.

"KAP theory is a health behavior change theory wherein the change in human behavior is divided into three successive processes, namely, acquisition of right knowledge, generation of attitudes and adoption of behavior (practice)" [9].

Several studies have shown that good KAP level in individuals is associated with effective prevention and management of illness and promotion of one's own health [10]. On the contrary, deficiencies in KAP are linked to poor health and maladaptive disease prevention behavior [11]. Thus, KAP levels of parents of children with type 1 diabetes mellitus is the deciding factor in their battle against covid-19 infection.

The basic rationale of this study is thus, to assess the knowledge, attitude and practice of parents of patients with type 1 diabetes towards covid-19 during first wave of pandemic in Pakistan.

Materials and Methods

Settings

This cross-sectional survey was conducted in pediatric outpatient department of Pakistan Institute of Medical sciences, Islamabad, from April to September 2021.

Sample size and technique

Inclusion criteria was set to include all parents of children already diagnosed with type 1diabetes and presenting in pediatric outpatient follow-up clinic of district headquarter hospital, Rawalpindi and Pakistan institute of medical sciences, Islamabad. Parents who gave consent of being included in study were included. Exclusion criteria was decided that parents who didn't consent to participate or didn't complete the questionnaire were excluded. Continuous convenient sampling was done, 96 parents were enrolled during 6 months study period.

A structured questionnaire was developed for this survey. This questionnaire was validated by consultation with senior faculty of pediatric endocrinology. Questionnaire was developed using previous studies as reference with minor changes according to local context.

It consisted of two sections. One section was regarding details of demographic variables like gender, age, education, rural or urban descent, monthly income and employment status. The knowledge, attitude and practices (KAP) section consisted of questions related to both covid-19 infection and type 1 diabetes. There were 10 'knowledge questions' to assess parents' knowledge towards the ongoing COVID-19 pandemic, based on the education material propagated by the world health organization (WHO) and ministry of health, Pakistan. Questions K1 to 4 were pertaining to symptoms and severity, K5 to 9 were pertaining to transmission, while K10 was pertaining to Covid-19 in type 1 diabetes patients. There were 6 'attitude questions' to assess the attitude of parents towards COVID-19, how they felt and perceived risk of disease and fear associated with it. There were 7 'practices questions' to assess the necessary lifestyle changes during COVID-19 pandemic. Each question carried one mark for correct answer, and zero mark for wrong/ don't know responses.

Consent was taken from parents for participation in the study. Questionnaires were completed and all the data was analyzed using SPSS version22. Demographic data was expressed as frequency and percentage.

Results

A total of 96 parents were enrolled in the study. Of these 80.2% were mothers and 19.8% were fathers who attended follow-up clinics. Similarly, 54.1%parents belonged to rural while 45.9% belonged to urban areas. 18.7% parents had primary level education, 33.3% secondary school education, 31.2% higher secondary education while 20.8% had graduation/masters level education. Basic family income of 68.7% families was less than 50,000 rupees per month and 31.3% families had income of more than 50,000 rupees per month (Table 1).

	No of cases	% age
Parents		
Mother	77	80.2%
Father	19	18.7%
Residence		
Rural	52	54.1%
Urban	44	45.9%
Education		
Primary	18	18.7%
Secondary level	32	33.3%
Higher secondary level	30	31.2%
Graduation/masters	20	20.8%
Family income		
< 50000/month	66	68.7%
≥ 50000/month	30	31.3%

Table 1: *Socio-demographic characteristics of parents of T1DM children regarding COVID-19 (n = 96).*

Average percentage of correct responses was 49.1% in knowledge domain as a whole. Out of total, 72.9% parents had good knowledge that T1DM children can develop serious illness with covid-19 infection. Total 58.3% parents had knowledge that covid-19 spread is by droplet infection and 83.3% parents knew that their child can get infected from others with infection. However, 64.5% parents had no knowledge that asymptomatic carriers of covid-19 can cause spread of disease. 66.6% parents had knowledge that all patients would not develop a serious disease while 33.3% parents thought that all patients of covid-19 would develop serious illness.

Attitude of parents was assessed using six questions towards COVID-19, where 77.0% parents believed that COVID-19 is a serious disease and that they should act on SOPs (standard operating procedures) advised by the government. Similarly, 79.1% parents believed that diet will help to build a person's immunity. Total 58.3% parents believed that their child with diabetes is at high-risk but they didn't think that maintaining good diabetic control will help their child. Also, 56.2% parents were not clear about effects of strict lockdown on covid-19 and type 1 diabetes.

Practice towards prevention of covid-19 infection was evaluated by using seven questions regarding adoption of safe practices to help prevent exposure of their child with type 1 diabetes to covid-19 (Figure 1). During the lockdown 91.6% of parents left home. Although the reason for leaving the house was different every time but, main reason was job and other main reason was to bring medicines. Only 18 parents wore masks all the time they were outside the house, while 81.2% either did not wear mask or wore mask for some time only. Only 25.0% parents maintained a safe distance from others while they were outside house and 75.0% parents did not maintained a safe distance. Of the total, 79.1% parents were regularly washing their hands while at home or when they used to comeback from outside but were not using any sanitizers while they were outside their homes. Similarly, 89.6% parents were not disinfecting the things coming from outside and were not disinfecting their homes with disinfectant sprays (Table 2).

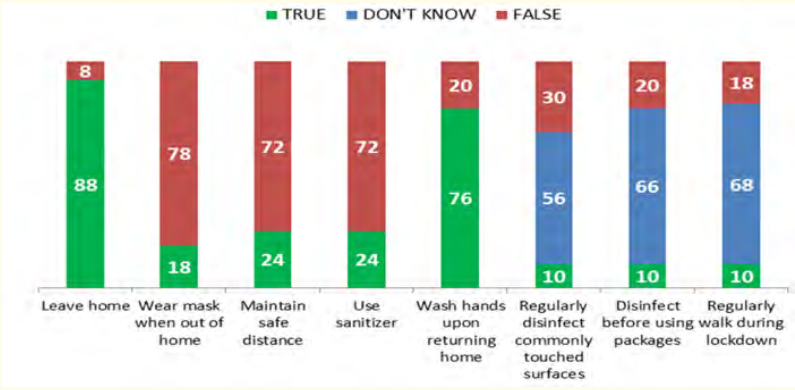

Figure 1: *Practices of parents of type 1 DM children during COVID-19 (n = 96).*

	Knowledge	Yes	Don't know	No	Correct response
K1	All people infected with COVID-19 feel unwell & develop symptoms.	72 (75.0%)	--	24 (25.0%)	24 (25.0%)
K2	All individuals infected with COVID19 develop serious or severe disease.	32 (33.3%)	--	64 (66.6%)	64 (66.6%)
K3	Patients with T1DM are more likely to develop more serious disease.	70 (72.9%)	18 (18.7%)	08 (8.3%)	70 (72.9%)
K4	All patients with COVID19 have fever, dry cough and sometimes shortness of breath.	74 (77.1%)	--	22 (22.9%)	22 (22.9%)
K5	People can catch infection from others who have the COVID-19 disease.	80 (83.3%)	--	16 (16.6%)	80 (83.3%)
K6	COVID19 spreads when you breathe in the respiratory droplets that are exhaled by an infected person.	56 (58.3%)	08 (8.3%)	32 (33.3%)	56 (58.3%)

K7	Corona virus in respiratory droplets can land on surrounding surfaces and objects and can remain alive for a long time.	18 (18.7%)	20 (20.8%)	58 (60.5%)	18 (18.7%)
K8	You can catch infection if you touch your face, eyes, nose and mouth with unclean hands after touching objects or surfaces where corona virus is present	54 (56.7%)	10 (10.4%)	32 (33.3%)	54 (56.7%)
K9	People infected with COVID-19 but having no symptoms/ fever cannot cause spread of the disease.	28 (29.1%)	06 (6.2%)	62 (64.5%)	62 (64.5%)
K10	COVID-19 does not spread through use of insulin injection needles.	22 (22.9%)	56 (58.3%)	18 (18.7%)	22 (22.9%)
	Attitude	**Yes**		**No**	
A1	Do you think COVID-19 is a serious disease	74 (77.0%)	--	22 (23.0%)	74 (77.0%)
A2	Do you think your child is at an increased risk of getting severe disease	56 (58.3%)	--	40 (41.6%)	56 (58.3%)
A3	Do you think it is better to act on SOPs advised by government for control of COVID-19	74 (77.0%)	--	22 (22.9%)	74 (77.0%)
A4	Do you think good diet helps to increase immunity against COVID-19 infection	76 (80.2%)	--	20 (20.8%)	76 (80.2%)
A5	Do you think maintaining good control of diabetes will help to control severe disease of COVID-19	18 (18.7%)	22 (22.9%)	56 (58.3%)	18 (18.7%)
A6	Do you think, strict lock down should be implemented by government to control spread of COVID-19 infection	20 (20.8%)	54 (56.7%)	22 (22.9%)	20 (20.8%)
	Practices	**Yes**		**No**	
P1	Have you left home too often since the onset of the lock down	88 (91.6%)	--	08 (8.3%)	
P2	When you are out of home, do you wear face mask all the time.	18 (18.7%)	--	78 (81.3%)	18 (18.7%)
P3	When you are out of home, do you consciously maintain a safe distance from others?	24 (25.0%)	--	72 (75.0%)	24 (25.0%)
P4	Do you wash hands with soap and water when you come back from outside.	76 (80.2%)	--	20 (20.8%)	76 (80.2%)
P5	Do you regularly disinfect your home by spraying disinfectants including the door knobs especially?	10 (10.4%)	56 (58.3%)	30 (31.3%)	10 (10.4%)
P6	Are you regularly disinfecting the things which come from outside before opening and using them?	10 (10.4%)	66 (68.7%)	20 (20.8%)	10 (10.4%)
P7	Are you regularly going for a walk daily during lockdown?	10 (10.4%)	68 (70.8%)	18 (20.8%)	10 (10.4%)

Table 2: *Assessment of knowledge, attitude and practices of parents of T1DM children regarding COVID-19 (n = 96).*

Discussion

Attributed, being the first study of this type in Pakistan, our research aimed at assessing the knowledge, attitudes and practice trends on COVID-19 among parents of diabetic children. Results of this study demonstrated that respondents had only average level knowledge about COVID-19 symptoms, modes of spread and disease severity. Similarly, attitude of people towards presumed risk of infection and

severity of disease was also average. Particularly concerning was inadequate education regarding good glycemic control in diabetic children as a measure to prevent severe COVID-19 infection. Moreover, poor practice was observed in majority of parents with very few practicing preventive measures like wearing masks and avoiding over-crowded places during the pandemic.

Most of our respondents had an adequate knowledge on disease symptoms, spread and severity of disease. This could be attributed to the steps taken by government supported by running awareness campaigns on social media, television and cellular phones [12]. This included playing recorded messages on caller tunes before every call, in various languages including Urdu, Pashto and Sindhi regarding risks and spread of COVID-19, along with narration of SOPs. Several reminders in form of text messages were also sent on mobile number [13]. Also, majority of these people were educated at or beyond secondary school.

In this study although around half of the parents were aware of disease symptoms, 73% had knowledge that T1DM in children puts them at higher risk for severe disease. Our findings were comparable with a study performed in Africa where parents had an average knowledge score of 74% [14]. In contrast to our study, the knowledge score was high, around 90%, in other studies performed in China and Egypt [15,16]. Furthermore, 64% parents believed that infection could not spread from asymptomatic persons. This in turn could have an impact on public health in terms of transmission of infection and increased burden of disease through asymptomatic cases. More than half of the parents were anxious that all COVID-19 patients will develop severe disease, which could further increase apprehension. Reason for this misinformation could be due to global situation with rapid spread of disease and increased number of deaths in developed countries and increased vulnerability of Pakistan to the disease because of lack of adequate resources to fight the pandemic [17].

Attitude of majority of parents was positive in our study, as around 77% believed that COVID-19 is a serious disease and citizens need to abide by SOPs implemented by government. Furthermore, another 79% considered diet as an effective way to build immunity. Earlier reports have also depicted public's satisfactory attitude and realization of importance of SOPs [18,19]. Surprisingly, 58% parents did not consider good glycemic control as an effective measure to curb severe disease. This could pose serious risk to diabetic children and is indicative of the fact that serious efforts by infection control should be directed to target population with comorbidities.

However, a positive correlation was not established between knowledge, attitudes and practice as poor practices ran among the majority. About 91% people left their home during lockdown, primarily for the sake of their jobs and also to buy medicines. Reasons behind this non-compliance could be poverty and financial constraints forcing people to leave home as 68% had an income below PKR 50,000. Unjustifiably, only 18.7% parents wore mask before going outside and kept themselves masked during their outdoor visits. Another 75% did not comply with the advice of maintaining a safe distance. Contrasting results were also seen in another study where 79% people were compliant with wearing masks and using hand sanitizers [20]. This also contrasts with the earlier studies conducted in Pakistan which depicted good practice of acting on SOPs (standard operating procedures) set by government like wearing masks and maintaining a safe distance for containment of COVID-19 infection [21]. Reason for such discrepancy could be inclusion of educated participants with good socio-economic backgrounds in their study who have less financial concerns as compared to our study which was conducted in tertiary care hospitals.

Despite limitations, this study assessed the knowledge of parents of T1DM, their attitude and practices. Parents of T1DM have average knowledge and attitude towards COVID-19 infection. Although parents were anxious for their child's wellbeing still their practices are found poor and not sufficient to keep their child protected in this pandemic.

Conclusion

During and after Covid-19 pandemic, there is need for more educational and social interventions to promote healthy lifestyle practices like hand washing, wearing masks, keeping safe distance and use of hand sanitizers frequently among parents of children with chronic

diseases such as diabetes. Thus, additional innovative strategies for practice changes can be done like provision of free sanitizers and face masks and more awareness campaigns as other variants of covid-19 keep emerging.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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