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**COVID-19 and its impact on healthcare professionalism:
a qualitative study of paediatric emergency physicians' behaviour
during a global pandemic**

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INTRODUCTION

In recent years, medical educators and organisations have placed emphasis on the term “professionalism”, which is based on the Hippocratic tradition and relates primarily to the role of physician as a healer.⁽¹⁾ There are four domains of professionalism which are described, doctor-patient relationship skills, reflective skills, time management and interprofessional relationship skills which were described to be similar in the Asian context.⁽²⁻⁵⁾

Since the emergence of a new series of pneumonia cases of unknown cause in December 2019, which was later identified as coronavirus disease 2019 (COVID-19),^(6,7) the number of positive cases has rapidly risen and the situation was categorized as a global pandemic in March 2020. As of 11th August 2020 10:00 CEST, more than 19 million cases have been diagnosed and there have been more than 700 000 death globally.⁽⁸⁾ Many studies have been conducted to better understand the nature of the disease, but little is known about how this disease has impacted the front-line care providers.^(9,10)

This outbreak has provided an opportunity to explore the professionalism of paediatric emergency physicians during this global pandemic. Previous history of infectious diseases outbreaks showed us how emerging infectious diseases affect physicians in the front-line. In 1986, the emerging cases of acquired immunodeficiency syndrome (AIDS) posed significant concerns amongst the physicians taking care of the patients.⁽¹¹⁾ Physicians and healthcare workers have shown to display strained professional behaviour as well as persistent stress during and after the outbreak of severe acute respiratory syndrome (SARS) in 2003.⁽¹²⁻¹⁵⁾ Nonetheless, physicians were found to have considerable reserves of resilience during the Ebola outbreak in 2014.⁽¹⁶⁾ In majority of the outbreaks, we noted similarity in paucity of information of the disease affecting physicians’ response to the diseases.⁽¹⁴⁾ Similarly, the current COVID-19 pandemic has demonstrated that majority of physicians are not equipped with the expected preparedness to face a global pandemic.^(10,17,18)

Though studies have been carried out to better understand the impact of infectious diseases on the professional behaviour of physicians, none have been carried out on paediatric emergency physicians up till now. Hence this study will help us improve strategies to prepare physicians for future pandemics and reduce the potential negative impact to physicians.

METHODS

The study design was based upon a phenomenological approach. In phenomenology, reality is comprehended through embodied experience. Through close examination of individual experience, phenomenological analysts seek to capture the meaning and common features, or essences, of an event or experience. We conducted semi-structured interviews to elicit participants' views and experiences working in the children's emergency isolation facility during the global pandemic period in a single centre, KK Women's and Children's Hospital, which is the largest children's hospital in the nation. Physicians of different ages, marital statuses, primary specialty training programs, seniority and years of experience working in the emergency setting were included. To achieve that, as participants accepted the invitations and scheduled interviews, we iteratively adjusted our subsequent participant targets to ensure a balanced representation of participants from all stages. We anchored our study according to the Consolidated Criteria for Reporting Qualitative Research (COREQ) and Standard for Reporting Qualitative Research (SRQR) checklists (Supplementary Data).^(19,20)

The target sample size was 15, adopted from a previous study that looked into the impact of SARS on professionalism.⁽¹⁾ This was subject to the study achieving a critical qualitative quality criterion, data saturation. Participants' recruitment was done by convenience sampling. Moderator LKM invited all physicians who worked in the isolation facility in the department of Children's Emergency in KK Women's and Children's Hospital between February 2020 to June 2020. All interviews were done based on consent, availability and

demographic variation until data saturation was achieved. All participants have a similar exposure level of 12 hours shifts in the isolation facility for 3 to 4 times a week, and were expected to perform history taking, physical examination and procedures such as venipuncture.

In-depth interviews were conducted with the participants either in person in a quiet room or via audio call, complying with social-distancing guidelines mandated by Ministry of Health. All interviews were conducted in English, facilitated by the same moderator as LKM. Each interview lasted approximately 30-60 minutes. All participants were given the same semi-structured questions at the beginning of the interviews but encouraged to elaborate on their experiences working as a paediatric emergency physician during the global pandemic period. Interviews were conducted from March to June 2020 until data saturation was achieved.

All interviews were recorded in an audio format, transcribed verbatim using Microsoft Word and a unique code was assigned for each participant. Data was analysed using thematic analysis with iterative interpretation to strengthen the dependability of the study. Analysis of data was done by CKKY and SG who were both blinded from the participants' identities and backgrounds. In order to ensure research rigor and trustworthiness of findings, confirmability of the study was achieved through maintenance of audit trail; we employed data triangulation and member checking to ensure optimal credibility. Transferability of findings was achieved by purposive sampling to ensure the participants represented majority of the physicians working in the paediatric emergency centre. Data was collected until data saturation was achieved meaning interviews were conducted until no new themes emerged during these interviews.

The SingHealth Centralised Institutional Review Board approved this study (Ref No: 2020/2325). We obtained informed consent from all our participants before the interview.

RESULTS

We enrolled 15 physicians who worked in the KK Women's and Children's Hospital Children's Emergency between February 2020 to June 2020, with an average age of 34.13 ± 5.10 . The working experience of the physicians in our cohort ranged from 3 to 144 months. Out of the 15 physicians interviewed, 8 were senior physicians defined as senior resident and above (Table 1).

Table 1: Baseline characteristics of participants.

Coding	Gender	Marital Status	Number of months working in CE	Position in CE
P01	Female	Married	3 months	Junior Physician
P02	Male	Single	4 months	Junior Physician
P03	Female	Single	3 months	Junior Physician
P04	Male	Married	144 months	Senior Physician
P05	Female	Single	18 months	Junior Physician
P06	Male	Married	3 months	Junior Physician
P07	Female	Married	144 months	Senior Physician
P08	Female	Single	11 months	Junior Physician
P09	Female	Married	23 months	Senior Physician
P10	Female	Married	144 months	Senior Physician
P11	Female	Married	4 months	Senior Physician
P12	Female	Married	12 months	Senior Physician
P13	Female	Single	60 months	Senior Physician
P14	Female	Married	60 months	Senior Physician
P15	Male	Married	12 months	Junior Physician

CE: Children's Emergency

We identified several themes surrounding professionalism amongst paediatric emergency physicians during this global pandemic period.

Theme 1: Professional Responsibilities

During interviews, one key theme that stood out was responsibility. Throughout the pandemic, all the participants displayed positive values surrounding responsible conduct as healthcare workers.

Call of duty

Though the scale and the rapidity of the outbreak caught many people off guard, we could see that the majority of the participants accepted and adapted to the situation promptly. This was seen as a call to duty to most. A need to show collective responsibility as a healthcare worker stood out above most thoughts and emotions.

'I have always realized that part of working in Children's Emergency is being ready for outbreak and being in a pandemic like this and to have life totally changed. (My experience has) prepared me that this is an extraordinary duty that we can do and the others can't. I am ready for this and I am happy if I am called to do this.' - P04

Beneficence, do good

Participants discussed the optimal care delivered to the patients during this global pandemic period, with the fundamental concern of ensuring quality in clinical care as a central expression of professionalism.

'When the patients present to us (in the emergency department) we must do our part to ensure that they are properly assessed, evaluated and treated. I think that has always been the priority.' -P06

Maleficence, do no harm

Participants spoke about the concerns that they had regarding the diagnosis and management of patient's due to the increased personal protective equipment creating a perceived barrier and time constraints of having to see larger number of patients within a shorter period of time. While carrying out their duties, participants always made sure not to put patients at risk of harm.

'I guess personally, the time spent with each patient is definitely lesser but fortunately with the presence of the seniors when they were with us with a very close supervision, I don't think patient care quality is compromised.' -P15

Justice, patients deserve the best

Concern regarding welfare of the patients is one of the elements discussed by the participants, which was described as the least and irreducible expectation that the physician should have of himself or herself. Participants displayed the value of prioritizing patient care before anything else during this pandemic period.

'To me, professionalism means carry out your duty and role as a doctor in a way that you are trained to do so.' -P10

Accountability, I am our doctor

Participants displayed accountability as a doctor, not only to the patients who were anxious regarding their infective status, but their role working at the front-line to protect the community and safety of the nation.

'I remember feeling like "you really don't want to miss a potential COVID-19 case because you knew that there will be such huge implications if a patient that is a suspect case of COVID-19 is being discharged from the Children's Emergency".'
-P11

Participants also described their experiences surrounding putting the needs of the patients and work before the safety of their families. The struggles in balancing the needs of their families, their patients and work in an unprecedented pandemic were indeed felt by many.

'The night when I was informed about the contact with a COVID-19 positive case, I was emotional, but as a team leader I had to sort out the work in the Children's Emergency before I started arranging my family matters...' – P04

Empathy and humanistic, I understand

Participants displayed empathy in their practices during this pandemic period. Even with changes in practices, participants were able to empathize and ensure patients felt heard and their needs addressed.

'I think it is important that even when we are facing a COVID-19 positive patient, we should still show our empathy and we should maintain the professionalism in our practice.' -P12

Theme 2: Social Responsibilities

While being a medical doctor fighting in the front-line, physicians are, at the same time, a parent, son or daughter, or a close friend to their loved ones. Here participants talked about how they balanced the responsibility between work and family. Majority described this as the most significant struggle faced during the pandemic.

Family care, for the loved ones

Despite adhering to the personal protective equipment protocol, participants expressed concerns about safety of their family members.

'The fear of spreading the virus to my family members was there since they are vulnerable. My grandmother who stays with me said she was not concerned about getting the infection but she is (her wellbeing) my greatest fear...' -P03

Faith, hope, love

Participants described how they seek spiritual support from their family and religion amidst the pandemic. Participants expressed their thankfulness with simple gestures delivered to them during this period, restoring their faith in their role and justifying the risks taken.

'This outbreak has made me treasure human touch even more, both with colleagues as well as patients and parents, even through full PPE and social distancing.' -P04

Guilt, I am sorry

Participants described the internal guilt of potentially transmitting the possible infection to the surrounding people unknowingly. While the risk is low, it was very real and created a strong sense of worry and guilt among the participants.

'I think there is a constant sense of guilt and worry in myself that I may pass the virus to my work and family members.' -P07

Managing public fear, all is well

Participants spoke of the challenges in managing public fear as well as the change in health seeking behaviour amongst the patients. This resulted in participants stepping up to reassure and alleviate fear where possible.

'Patients are generally more fearful and stressed during this period for every symptoms they have, whether or not they could catch the illness they could potentially spread it or what complications they might get. It was important to reassure and yet at the same time ensure that they are truly well' -P05

Theme 3: Leadership and Teamwork

While clinical competency plays a major role in patient care, participants displayed effective inter-professional skills in their relationship with each other and worked well as a team to ensure optimal care is delivered to patients.

Effective communication, I hear you

Participants talked about the positive experiences when working with the other team members during this pandemic period with effective communication, to achieve a consensus on efficient workflow and patient care.

'I think the communications from top down was very good and I think we were all given very clear instructions regarding what to do. By keeping the communication channels opened, it is easier to work happily.' -P07

Focus and drive, for the organisation

Participants displayed enormous efforts in crisis management when issues arose. The idea of putting others' needs before one's own and the selflessness are what that made him or her, a leader. Participants were determined and worked hard along the goals of the department.

'My first few hours of knowing the news, was mainly focused on getting the right things done. As co-team leader, I was talking to a few colleagues who were emotionally affected and had questions on family care. I was in work-mode and tried to manage the crisis and not thinking much about myself' -P04

Sense of closeness, we are one

Here participants described how the pandemic has brought everyone together and worked as a team. Participants also expressed gratitude towards the team effort made to create a harmonious work environment amidst of the pandemic.

'I think I am very lucky to work in a good and sensible team with very hardworking members, and I really appreciated the fact that in all circumstances everybody's views will be heard and there was not much of hierarchy in terms of expressing our views.' -P09

Theme 4: Risk balance

Professionalism is expressed in patient-centred interactions that may be impacted during this pandemic period. Here, participants expressed the dilemma of making sure personal risk is acceptable while maintaining optimal patient care.

Personal safety, insecurity

Participants talked about the extra precautionary steps taken to ensure personal safety at work, and the potential impacts that possessed on transmitting the infection to other patients and people surrounding.

'I am always very careful when it comes to face on contact with a patient now. Generally I limit the face to face contact especially if it is very near. Throat examination is also not as liberal and I will be more careful with throat examination.' -P07

Patients' safety, my priority

Participants spoke about the obligation they had in ensuring patients' safety and preventing potential cross infection in the emergency department setting, and the effort put to ensure patient's safety.

'I think we have been deploying tremendous amount of resources to identify and isolate potential patients with COVID-19, and I felt that itself is extraordinary amount of effort just to prevent them from cross-infecting the other patients.' -P06

The human touch

Participants spoke of the difficulty they encountered in establishing rapport with patients during the consultation with the presence of PPE, and the loss of human touch during consultation. This is made more obvious in the setting of paediatric emergency where a strange environment itself created fear to the children.

'The PPE is definitely a barrier to attain therapeutic alliance and because majority of our patients are young children and it added a lot of fear element when they saw us in PPE.' -P12

DISCUSSION

Over the last 2 decades, paediatric emergency medicine has developed around the world as a new subspecialty and there is increasing emphasis on the growing need for its services.⁽²⁰⁻²³⁾ This is the first study that examines the impact of an emerging infectious disease outbreak on paediatric emergency physicians.

Most studies previously done have shown physical fatigue and strained professional behaviour during SARS, MERS-CoV and Ebola outbreaks.^(14,16,24) Our study has shown that though initially the increased workload and introductions of new workflows contributed to transient stress, participants were able to adapt quickly, and demonstrated heightened qualities of professional conduct. This is similar to what was previously described by Niuniu Sun et al.⁽¹⁸⁾ This can be explained by the collective spirit of teamwork and effective communication

amongst the team members that provide clear instructions and guidance throughout the pandemic period.

Similar to previous studies, participants displayed internal guilt with the difficulty of managing social responsibilities on top of professional duties. This was described by Sharon et al during the SARS outbreak and Raven et al during Ebola outbreak.^(14,16) Interestingly, we do not see a discrepancy in the stress level possessed by participants of different genders, marital status or the presence of child at home in our study. In contrary participants who are in constant contact with elderly family members expressed heightened degree of guilt and concerns. This may be explained by the understanding to the nature of the disease which tends to affect population with advanced age and underlying comorbidities.

The importance of effective communication is highlighted by Fong et al.⁽⁴⁾ Our study has demonstrated the theme of leadership and teamwork amongst the participants during the outbreak period as shown by the effectiveness of leaders in guiding workflow and how well participants cooperated as a team during a pandemic.

A few participants in our study described how the use of PPE affected rapport building between doctor-patient during the pandemic period as a price of risk balancing. This was not previously discussed in literatures on previous outbreaks of infectious diseases, which may be related to the targeted patient population of our study being generally young children.

The study was also completed during a rapidly emerging global crisis and we managed to capture the response of the physicians during this short period of time. From this experience, we concluded that effective communication amongst team members, constant updates on new information and peer support are key factors in providing reassurance and building an uplifting work environment.

There are similarly limitations to the study. Although they originated from different training programs, our study included participants working in a single institution during the

time frame, which potentially limits the view on distribution and optimisation of resources, and their experiences may not reflect other physicians working in other institutions.

In conclusion, this study has shown that healthcare workers working in a paediatric emergency department were able to demonstrate necessary professionalism during an emerging infectious disease outbreak. Key learning points include the importance of being professionally and socially responsible; good leadership and teamwork; as well as risk balancing and how this can be used to inform the understanding of professional conduct and its evolution in a pandemic.

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