Prediction of severity of disease & COVID-19 mortality in children
SARS-CoV-2, an RNA virus that appeared in December 2019 in the city of Wuhan in China and took hold of the whole world, affects children as well as all age groups.

The mortality rates of COVID-19 continue to rise across the world.

Based on studies, frequency of severe COVID-19 infection in children is very low and it has been shown few mortality in children.
Evidence indicates that children seldom develop a severe clinical presentation of SARS-COV2 infection and are less prone to transmit it than adults.

For example, in China, more than 90% of infected children had a mild or moderate clinical presentation, a finding consistent with later reports.

During the first 3 months of the pandemic, Mexico reported a case-fatality rate of 1.9%.
direct impact of COVID-19 on child and adolescent mortality to be very limited

**the indirect effects:**

- strained health systems
- household income loss
- disruptions to care-seeking
- preventative interventions like vaccination
EXPERIENCE FROM EBOLA, 2014

Many of these indirect effects and the ability to mitigate them will also depend on country.
University of Bristol, University College London, University of York and the University of Liverpool found that this risk of mortality is extremely low, however catching Covid-19 increases the likelihood of serious illness in the most vulnerable young people, those with pre-existing medical conditions and severe disabilities, although these risks remain low overall.
Risk factors for hospitalization due to COVID-19

- age, sex
- severity of disease
- increasing BMI
- co-existing comorbidities and severe kidney disease, diabetes type I, heart failure
- ongoing chemotherapy
- severe immunodeficiency
- Down syndrome
risk factors for ICU admissions due to COVID-19,

increasing age

male sex

morbid obesity (BMI>40)

heart failure

diabetes
Risk factors for death due to COVID-19

Male
Kidney disease
diabetes mellitus type I and II
dementia
ongoing chemotherapy, organ transplant, severe immunodeficiency
major psychiatric disorder with antipsychotics
cerebral palsy and Down syndrome
Based on other study

the COVID-19 mortality rate is U-shaped in childhood:

it initially decreases, reaching the minimum at the ages 3-10 years, and then increases throughout life.

All-cause mortality and mortality from other diseases, such as pneumonia and influenza, show a similar pattern; however, childhood mortality rates from COVID-19 are considerably lower than from other diseases, with the best relative protection achieved at the youngest ages.
A study was performed from March 2020 to October 2020, on 238 hospitalized confirmed COVID-19 children. The total number of events consisting of death, taking vasoactive drug or corticosteroid, need for oxygen with reservoir or ventilation, considered as predictions of severe patient.
underlying disease have been mentioned in this study that 38% of all patients had this item.

41% of patients had contact before hospitalization and 11% participated in gatherings.
<table>
<thead>
<tr>
<th>SGOT (P value=0.024)</th>
<th>Ferritine (P value=0.045)</th>
<th>LDH (P value=0.047)</th>
<th>WBC (P value=0.038)</th>
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## Probability of event in children without underlying disease

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Death from covid19

Based on Bhopal, from UK, research on weekly mortality, find that the peak of cases and deaths in children mainly matched that of adults.
Based on CDC report on Aguste, the percentage of ICU admission was similar among children (33.2%) and adults (32.0%) reported to COVID-NET based on a report from USA 1/3 of hospitalized children were admitted to the ICU.
However, the epidemiological and clinical patterns of pediatric COVID-19 remain unclear.

In this regard, we aimed to evaluate medical file of confirmed and suspected pediatric COVID-19 cases who deceased
Method

This cross-sectional study, was conducted in Mofid children’s hospital, Tehran, Iran. Between February 2020 to February 2021.

According to recorded files of these expired children, data collection forms were completed.

These data included information about age, sex, underlying diseases, and length of stay (LOS)…..

All statistical analyses were performed using SPSS software (v. 26.0, Chicago, IL). P-value < 0.05 was considered statistically significant.
Demographic Data

During 12 mo, 626 children hospitalized to COVID-19 ward

46 cases passed away, The mortality rate was 7.5%

18 (39.1%) female and 28 patients (60.9%) were male.

The median age was 5.2 (1.8 -10.3) years.

The median length of stay in hospital, was 9.5 (3.8 -23) days

21/46 dead case (45.6) definitely was covid cases
Chief complaint

Altered mental status and fever were the most common sign and symptom in this group (24%)
The manifestations during hospitalization included:

Respiratory distress (N=41, 93.2%)
dyspnea (N=39, 88.6%)
GI disorders (N=28, 60.9%)
Fever (N=25, 55.6%)
Cough (N=23, 53.5%)
Imaging and procedure

90.9% had CT patterns in favor of COVID-19
41(89.1%) of these children admitted to ICU
95.3% had been intubated
No of death in definite and probable group

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<tr>
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<tr>
<td>Positive PCR</td>
<td>413</td>
<td>23</td>
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<tr>
<td>Negative PCR</td>
<td>213</td>
<td>23</td>
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</table>
Number of death in different age group

- <1 year: 10 deaths
- 1-5 yr: 10 deaths
- 5-10 yr: 13 deaths
- 11-18 yr: 13 deaths
Underline disease

- 42 pos
- 4 neg
42 (91.3%) of these patients had underlying diseases.
NOTICE
Children can develop severe COVID-19 illness

These data help us to be careful for cases with underline disease and it shows the Para clinical data will be helpful for prediction of outcomes.

Continued surveillance will allow for further characterization of the burden and outcomes of COVID-19–associated hospitalizations among children