“Clinical characteristics and outcomes of children and adolescents admitted with Coronavirus disease 2019 at the Port Moresby General Hospital, Papua New Guinea”

Presenter: Justin Kali (Masters in Child Health Thesis, 2022)

COVID- 19 Timeline

Global COVID-19 cases: >600 million
Global COVID-19 deaths: > 6.49 million

31st December 2019 – China reported an outbreak of pneumonia cases in Wuhan, Hubei Province-No deaths

5th January 2020, WHO officially published the first disease outbreak news

10th January 2020, WHO issued a comprehensive guidelines to all countries on how to detect, test and manage potential cases

11th January 2020, China reported 1st known COVID-19 death

13th January 2020, 1st confirmed case of COVID-19 outside of China, Thailand

11th March 2020, WHO declares COVID-19 outbreak a global pandemic

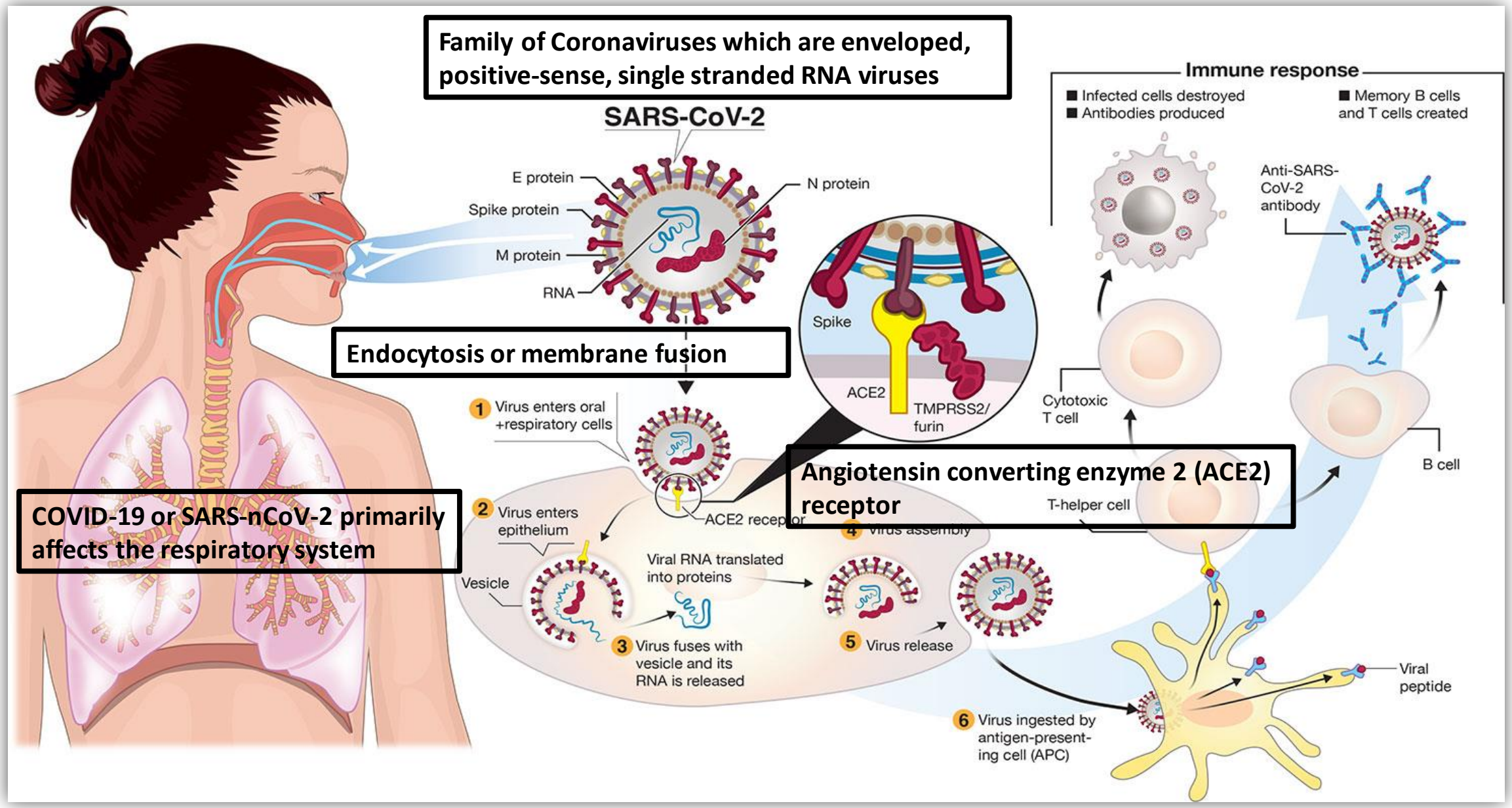
20th March 2020, First COVID-19 case in PNG- expatriate who recently travelled to Spain

COVID-19 cases: 44,876
PNG COVID-19 Deaths: 664

PNG COVID-19 Timeline

7th of April 2020, Second confirmed case, PNG National

PMGH:Children-120 positive COVID-19 cases (2020 -2021)
PMGH COVID-19 Deaths: 11
CFR: 18.3%



(Dennis. I, 2021, Transmission and Life-cycle of SARS-CoV-2 causing COVID-19), JPEG, accessed 31 August 2022)

- Studies have shown that fewer children are infected by COVID-19 have had less severe cases compared to adults
  - Several proposed hypothesis (Expression level of ACE 2 receptors)
- Limited study on the epidemiology, clinical characteristics and outcomes of children with COVID-19

(Wu Z Et al, 2020, Adeyinka Et al, 2021))

AIM

- The aim of this study is to describe the clinical characteristics and outcomes of children and adolescents admitted with a positive test of COVID – 19 at the Port Moresby General Hospital

Methods

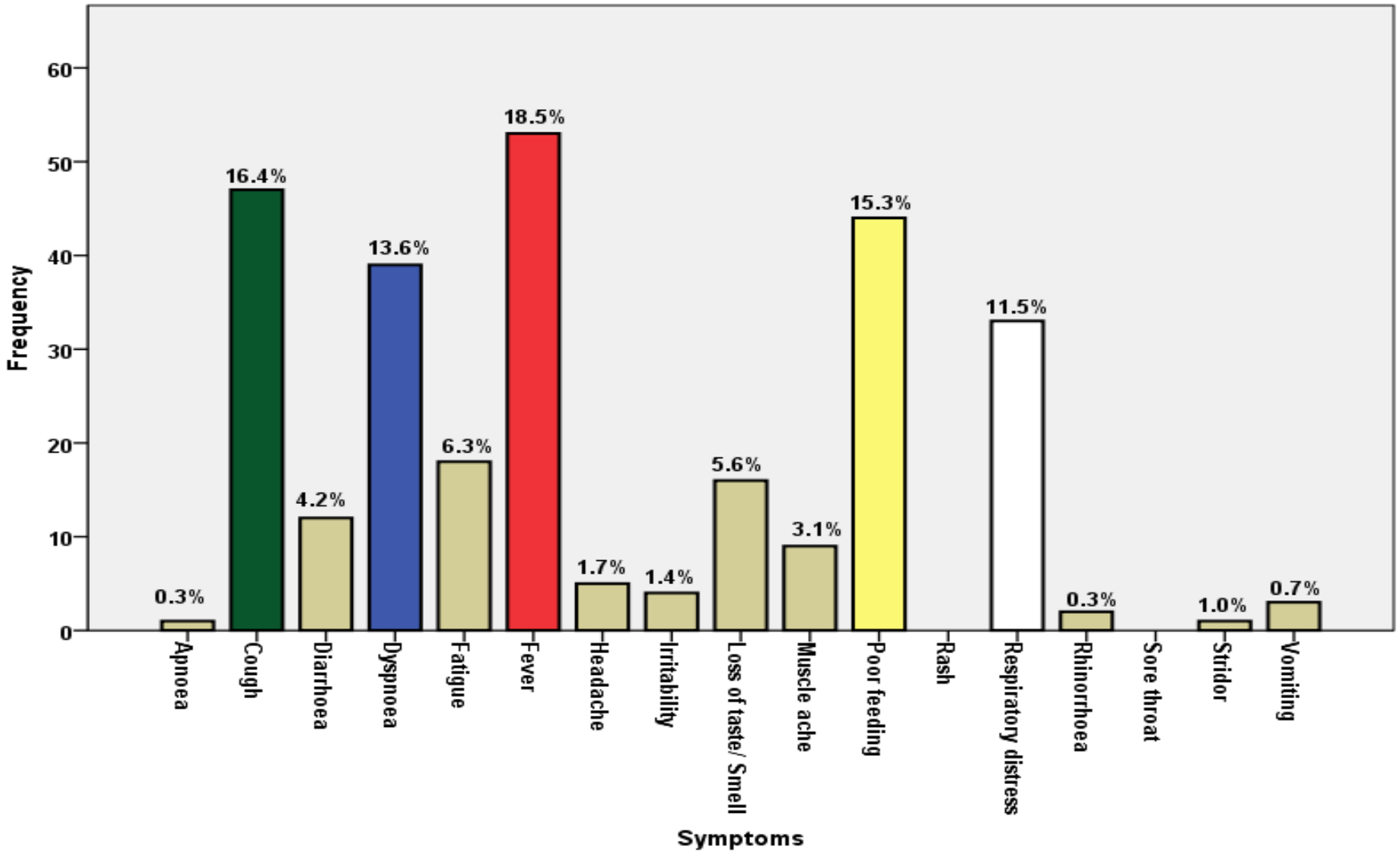
- Retrospective descriptive study
- Time duration: 6 months (1st of July 2021 to 31st of December 2021)
- Location: Pediatric department, PMGH
- Inclusion criteria:
  - Between the ages 0 and 18 years of age
  - Symptomatic
  - Admitted to the hospital
  - Positive COVID-19 test (RDT/PCR)

- Demographic and clinical data for this study was extracted from
  - (1) PMGH Pathology Laboratory COVID-19 data
  - (2) Admission charts
- Data was collected according to a modified form derived from case information forms
- Descriptive analysis using Microsoft excel and SPSS software

Results

Demography		
Characteristics		**Values**
Total number of children		**60**
Sex, No. (%)	**Male**	**34 (56.7%)**
	Female	**26 (43.3%)**
Age (Months)	**Median, IQR**	**17 (1.73 – 105.00)**
Nationality	**PNG (Melanesian)**	**60**
Residence, No. (%)	**Within city limits**	**33 (52.9%)**
Contact with positive COVID-19 case, No. (%)	**Family contact+Covid-19 positive**	**31 (51.7%)**

Clinical Symptoms



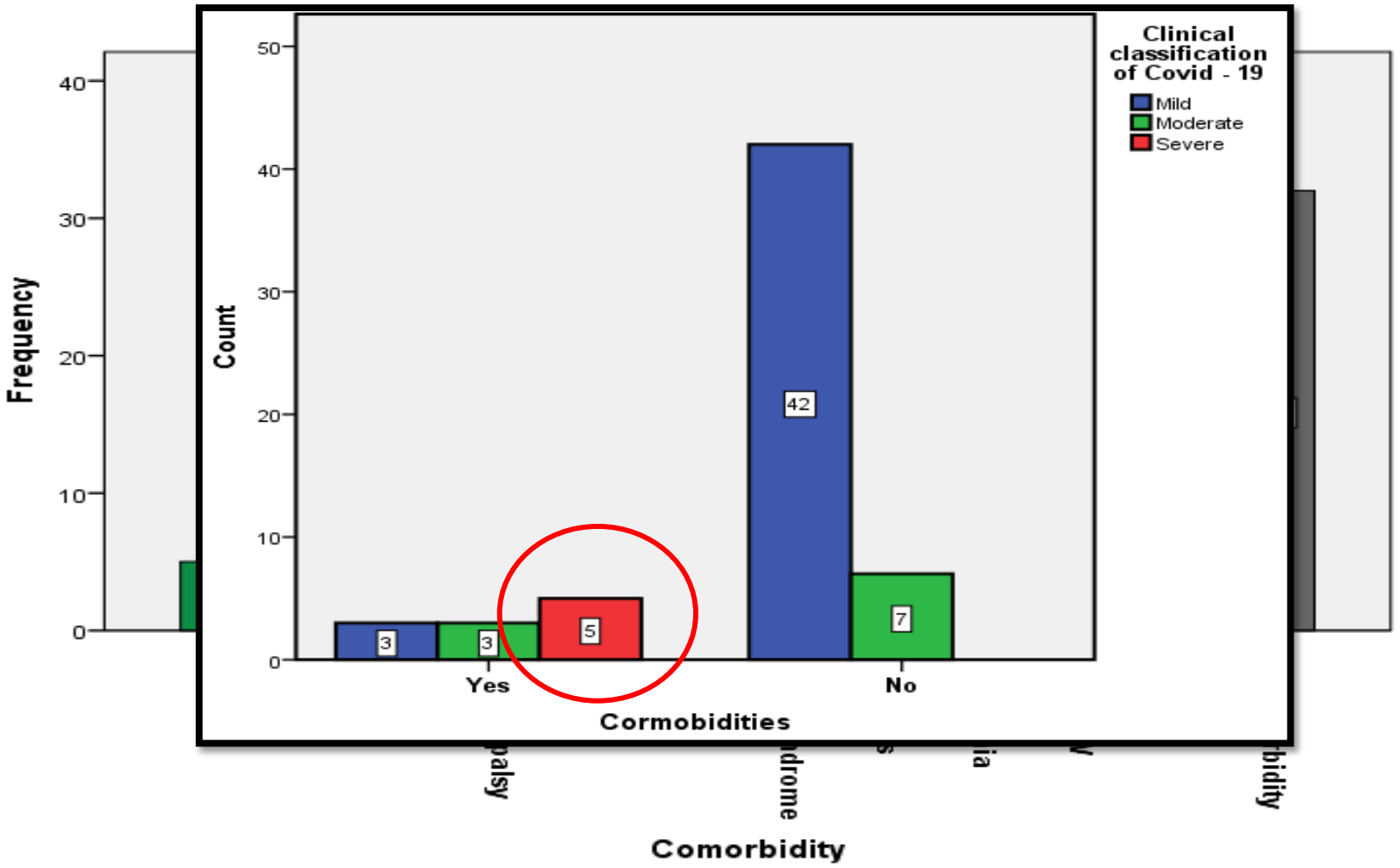
Clinical Signs

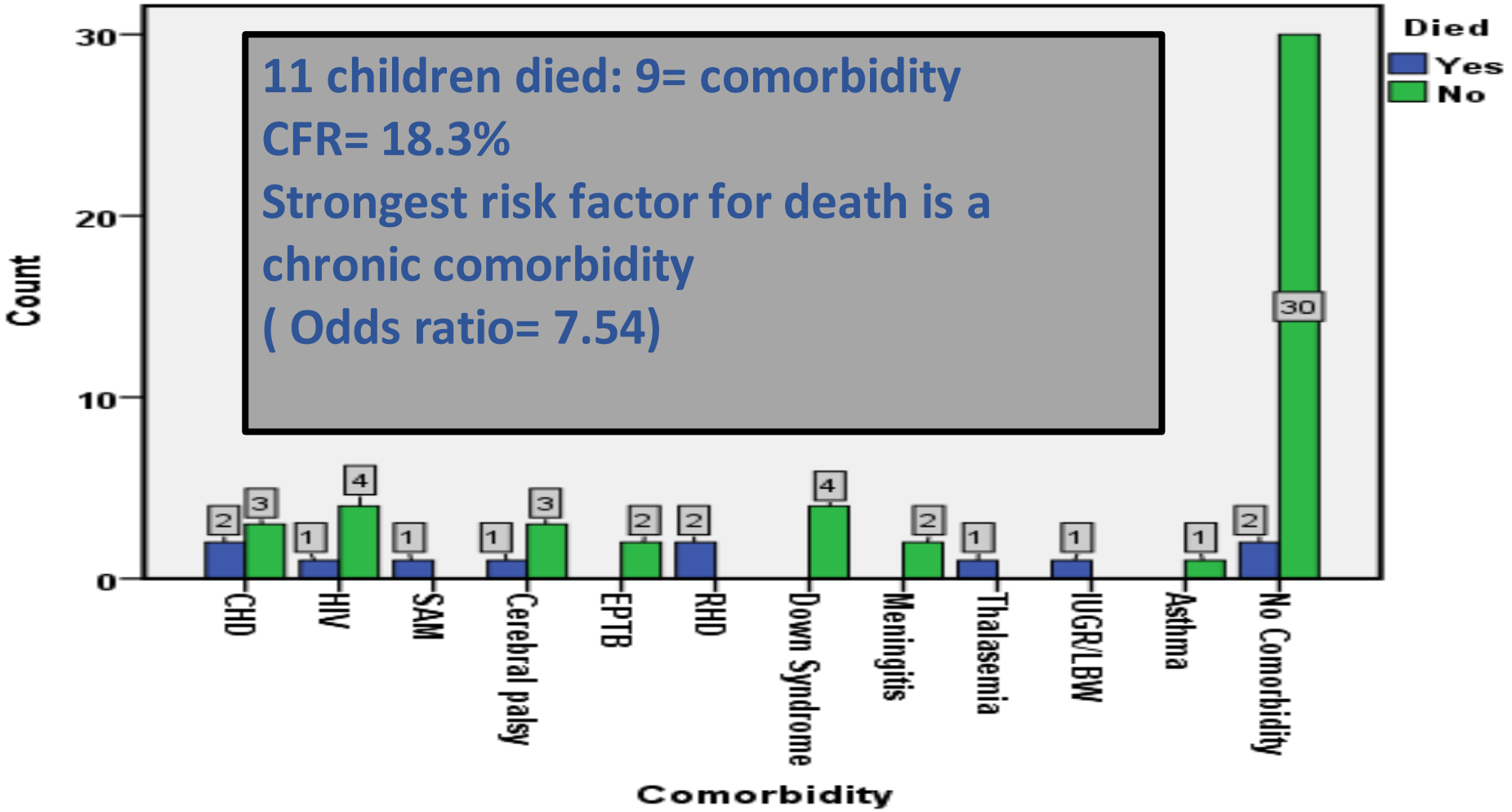
Characteristics		Value
Clinical signs		
Oxygen saturation (%)	Mean, SD	90.55, 8.88
Respiratory rate (bpm)	Mean, SD	37.97, 13.32
Heart rate (bpm)	Mean, SD	27.47, 25.70
Temperature (degree Celsius)	Mean, SD	37.42, 0.77
Chest indrawing, No. (%)		35 (44.9)
Nasal flaring/grunting, No. (%)		19 (24.4)
Pallor, No. (%)		15 (19.2)
Reduced level of consciousness, No. (%)		5 (6.4)
Signs of shock, No. (%)		2 (2.6)
Auscultation, No. (%)	Crepitations	41 (68.3)
	Wheezing	2 (3.3)

Laboratory and Radiology

Characteristics		Value
White blood cells (x 10^9/L)	(Median, IQR)	10.40 (8-16)
Lymphocytes (%)	(Median, IQR)	24 (13-34)
Chest X-ray Findings, No. (%)	Consolidation	12 (20)
	Perihilar infiltrate	9 (15)
	Pleural effusion	2 (3.3)
Severity of COVID-19 cases, No. (%)	Mild	45 (75)
	Moderate	10 (16.7)
	Severe	5 (8.3)
Comorbidities, No. (%)		28 (46.7)

Comorbidity




11 children died: 9= comorbidity
CFR= 18.3%
Strongest risk factor for death is a chronic comorbidity
(Odds ratio= 7.54)
Died
Yes
No
Count
30
20
10
0
CHD
HIV
SAM
Cerebral palsy
EPTB
RHD
Down Syndrome
Meningitis
Thalasemia
IUGR/LBW
Asthma
No Comorbidity
Comorbidity

Discussion

- Other countries have reported that most COVID-19 cases in children are mild, the most common symptoms were cough and fever and most were family cluster cases.
- Children with comorbidities have a higher risk of mortality
- Multisystem Inflammatory Syndrome in Children (MIS-C) is a new occurrence reported worldwide in children with COVID-19
- Experience in management of COVID-19 children at PMGH was challenging

(Yasuhara Et al 2020, Tsankov Et al, 2020 Adeyinka Et al, 2021, Wu et al,2020, Radia et al, 2020)

Conclusion

- This study provided a description of the clinical characteristics and outcomes of children and adolescents admitted with COVID-19 at the Port Moresby General Hospital in Papua New Guinea which were similar to other countries.
- Proper management of COVID-19 in children with comorbidities

Limitations

- Missing data in admission charts and CIF forms
- No proper data for COVID-19 cases in PMGH

Acknowledgments

- Pediatric Department at PMGH
- Pathology Department at PMGH
- COVID-19 Committee at PMGH
- Professor Trevor Duke
- Dr. Rupert Marcus
- Mr. James- Ward Clerk

References

- Colaneri, M., Sacchi, P., Zuccaro, V., Biscarini, S., Sachs, M., Roda, S., Pieri, T.C., Valsecchi, P., Piralla, A., Seminari, E. and Di Matteo, A., 2020. Clinical characteristics of coronavirus disease (COVID-19) early findings from a teaching hospital in Pavia, North Italy, 21 to 28 February 2020. Eurosurveillance, 25(16), p.2000460
- Covid, C.D.C., Team, R., COVID, C., Team, R., Bialek, S., Boundy, E., Bowen, V., Chow, N., Cohn, A., Dowling, N. and Ellington, S., 2020. Severe outcomes among patients with coronavirus disease 2019 (COVID-19)—United States, February 12–March 16, 2020. Morbidity and mortality weekly report, 69(12), p.343
- Docherty, A.B., Harrison, E.M., Green, C.A., Hardwick, H.E., Pius, R., Norman, L., Holden, K.A., Read, J.M., Dondelinger, F., Carson, G. and Merson, L., 2020. Features of 20 133 UK patients in hospital with covid-19 using the ISARIC WHO Clinical Characterization Protocol: prospective observational cohort study. bmj, 369
- Guan, W.J., Ni, Z.Y., Hu, Y., Liang, W.H., Ou, C.Q. and He, J.X., 2019. & Zhong, NS (2020). Clinical characteristics of coronavirus disease, pp.1708-1720
- John Hopkins University and Medicine 2022, Coronavirus resource center, 25 July 2022, https://coronavirus.jhu.edu/map.html

- Viner, R.M., Mytton, O.T., Bonell, C., Melendez-Torres, G.J., Ward, J., Hudson, L., Waddington, C., Thomas, J., Russell, S., Van Der Klis, F. and Koirala, A., 2021 Susceptibility to SARS-CoV-2 infection among children and adolescents compared with adults: a systematic review and meta-analysis. JAMA pediatrics, 175(2), pp.143-156
- World Health Organization 2021, Covid-19 in Papua New Guinea satiation report 63, viewed 25 July 2022, https://www.who.int/papuanewguinea/internal-publications-detail/covid-19-in-papua-new-guinea-situation-report-63
- World Health Organization 2022, WHO coronavirus (Covid-19) Dashboard, viewed 25 July 2022, https://covid19.who.int/
- Team, E., 2020. The epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19)—China, 2020. China CDC weekly, 2(8), p.113
- Tsankov, B.K., Allaire, J.M., Irvine, M.A., Lopez, A.A., Sauve, L.J., Vallance, B.A. and Jacobson, K., 2021. Severe COVID-19 infection and pediatric comorbidities: a systematic review and meta-analysis. International Journal of Infectious Diseases, 103, pp.246-256.

- Wu, Z. and McGoogan, J.M., 2020. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention. jama, 323(13), pp.1239-1242.
- Yang, X., Yu, Y., Xu, J., Shu, H., Liu, H., Wu, Y., Zhang, L., Yu, Z., Fang, M., Yu, T. and Wang, Y., 2020. Clinical course and outcomes of critically ill patients with SARS-CoV-2 pneumonia in Wuhan, China: a single-centered, retrospective, observational study. The Lancet Respiratory Medicine, 8(5), pp.475-481.
- Yasuhara, J., Kuno, T., Takagi, H. and Sumitomo, N., 2020. Clinical characteristics of COVID-19 in children: a systematic review. Pediatric pulmonology, 55(10), pp.2565-2575.
- Yuki, K., Fujiogi, M. and Koutsogiannaki, S., 2020. COVID-19 pathophysiology: A review. Clinical immunology, 215, p.108427.
- Zhu, N., Zhang, D., Wang, W., Li, X., Yang, B., Song, J., Zhao, X., Huang, B., Shi, W., Lu, R. and Niu, P., 2020. A novel coronavirus from patients with pneumonia in China, 2019. New England journal of medicine.

THANK YOU!