The Association of **RT-PCR Cycle Threshold Value** with **Timing of Sample Collection** and Presenting Manifestations of COVID-19 among Pediatric Patients admitted in a Tertiary Hospital in Davao City

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BACKGROUND

- Ct value has gained clinical attention in the study of COVID-19 as it has used as an indirect method of quantifying the viral RNA in a specimen
- Investigating its utility will aid in discovering transmission dynamics and clinical decision-making

Objective:

To determine the association between the RT-PCR Ct value with the timing of sample collection and presenting manifestations of COVID-19 among pediatric patients admitted at a tertiary hospital in Davao City.

METHODOLOGY

Study Design:

Study Setting: Inclusion Criteria:

Exclusion Criteria: Sampling Design: Sample Size: Retrospective, cross-sectional

Private tertiary hospital All pediatric patients with a (+)SARS-CoV-2 RT-PCR done in the study setting, with a Ct value of ≤40

Children with comorbidities

Purposive sampling

Minimum computed sample size is 45



METHODOLOGY

Data Gathering

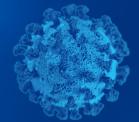


Chart review
Ct value retrieval from Molecular laboratory

48 out of 91 satisfied the criteria

Data analysis

 ✓ Descriptive statistics
 ✓ Independent t-test
 ✓ ANOVA
 ✓ Pearson r



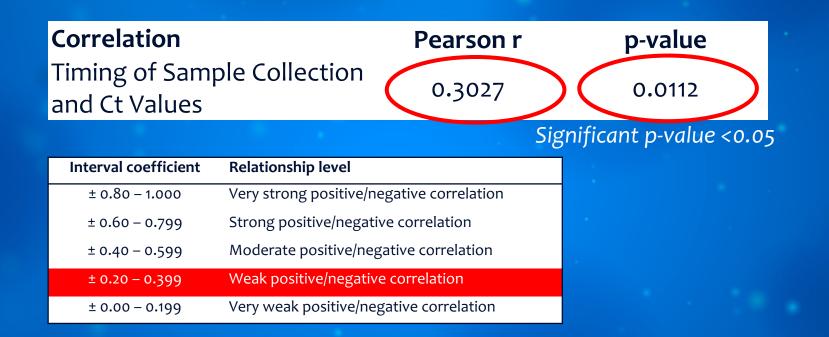
Cycle Threshold Value and Timing of Sample Collection Among Pediatric Patients with Confirmed COVID-19

Day of illness/collection	Ct Value	p-value
Day 1	26.1 ± 4.07	
Day 2	24.29 ± 5.67	
Day 3	22 . 42 ± 4.98	0.020
Day 4	31.86 ± 6.78	0.039
Day 5	33 . 7 ± 7.45	
Day 6 or more	29.93 ± 7.87	

Significant p-value < 0.05

 The mean Ct values showed a downward trend on the first three days of illness.

Correlation Between Cycle Threshold Value and Timing of Sample Collection Among Pediatric Patients with Confirmed COVID-19



 There is a significant difference in the Ct values in relation to timing of sample collection.

✓ Timing of sample collection is positively correlated with Ct value.

Cycle Threshold Value and Presenting Manifestations of Pediatric Patients with Confirmed COVID-19

Type of Manifestations	Ct Value	p-value
Respiratory manifestations	25.13 ± 7.93	
Gastrointestinal manifestations	28.91 ± 9.08	
Non-respiratory and		0.761
non-gastrointestinal	27.94 ± 9.12	
manifestations		

Significant p-value < 0.05

Subjects with respiratory symptoms had the lowest mean Ct value.
 There was no significant difference in the Ct values among the different presenting manifestations.

Correlation between Cycle Threshold Value and Number of Presenting Manifestations among Pediatric Patients with Confirmed COVID-19

Number of Presenting Manifestations	Ct Values	Pearson r	p-value
1	27.7 ± 3.4		
2	27.14 ± 2.98		
3	29.49 ± 2.43	-0.2045	0.012
4	28.55 ± 2.1		
5 and more	22.6 ± 1.3		

 There is an inverse correlation between the number of presenting manifestations and Ct values.

CONCLUSIONS

- Ct value is positively correlated with the timing of sample collection (p value 0.039) and is significantly low during the first three days of illness.
- There is no significant difference in the mean Ct values of the different presenting manifestations.
- There is an inverse correlation between the number of presenting manifestations and Ct value.

RECOMMENDATIONS

Ct values must always be correlated with the patient's exposure history and symptoms

Isolation and early testing for SARS-CoV-2 during the first three days of illness is recommended

Conduction of larger, multi-site, prospective studies