



Mid-Term Evaluation of Rotavirus Vaccine Effectiveness: Report from Institute of Child Health University of Nigeria Teaching Hospital (UNTH) Rotavirus Sentinel Site, Enugu, Nigeria.

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Presentation Outline

- ❑ Introduction / Background
- ❑ Methods
- ❑ Results
- ❑ Limitations
- ❑ Conclusion
- ❑ Recommendations
- ❑ Acknowledgment

Introduction / Background

- ❑ In my culture, we say: “If you don’t know where the rain began to beat you, you may not know where it stopped”! – this proverb speaks to the heart of this discussion.
- ❑ The “rain” started when we reported *56% Rotavirus (RV) AGE between 2011 and 2012 and average of about # 25–45% pediatric AGE due to rotavirus before vaccine introduction in Enugu, Nigeria.
- ❑ Vaccination is key to reducing rotavirus-related morbidity and mortality.

*Tagbo et al., (2014) The Pediatric infectious disease journal, 33 Suppl 1, S19–S22. <https://doi.org/10.1097/INF.0000000000000004>

#Tagbo et al., (2018) Vaccine 36, no. 51 (2018): 7759-7764. <https://doi.org/10.1016/j.vaccine.2018.03.084>

Background Cont'd

- ❑ Nigeria began phased Rotavac rollout in 22 August 2022
- ❑ Enugu State rollout: December 3, 2022.
- ❑ This study “attempts” to evaluate Rotavac vaccine effectiveness (VE) across diarrhoea severity using Odds Ratio analysis, EIA results for RV antigen, and Vesikari Scores as indicators.

Methods



ICH-UNTH Enugu Rotavirus Impact Data Base (REDCap) was Reviewed



We enrolled Children aged 6 weeks to 23 months, born \geq 22 August 2022*, admitted for AGE in any of our sites, Had RV EIA results and photocopy of Immunization card or health records collected



Vesikari Scores calculated and grouped, VE (%) calculated using $VE(\%) = (1 - OR) \times 100$. EIA= Positive or Negative



Abstract drafted and reviewed by authors

Results

Figure 1: Rotavirus Positivity Rates Enugu Nigeria:2010 - 2024

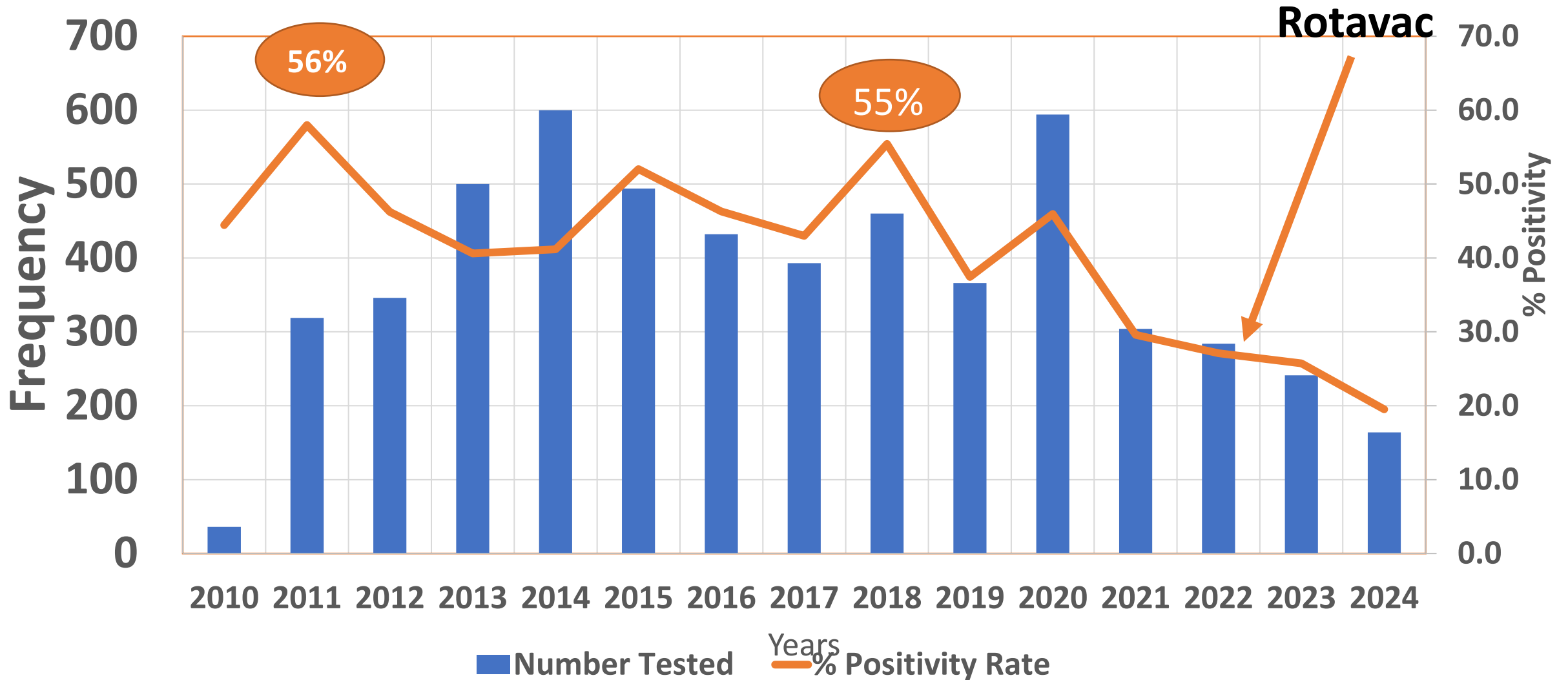


Figure 1: Rotavirus Vaccine Coverage and Dose Attrition Among Eligible Children (n=534)

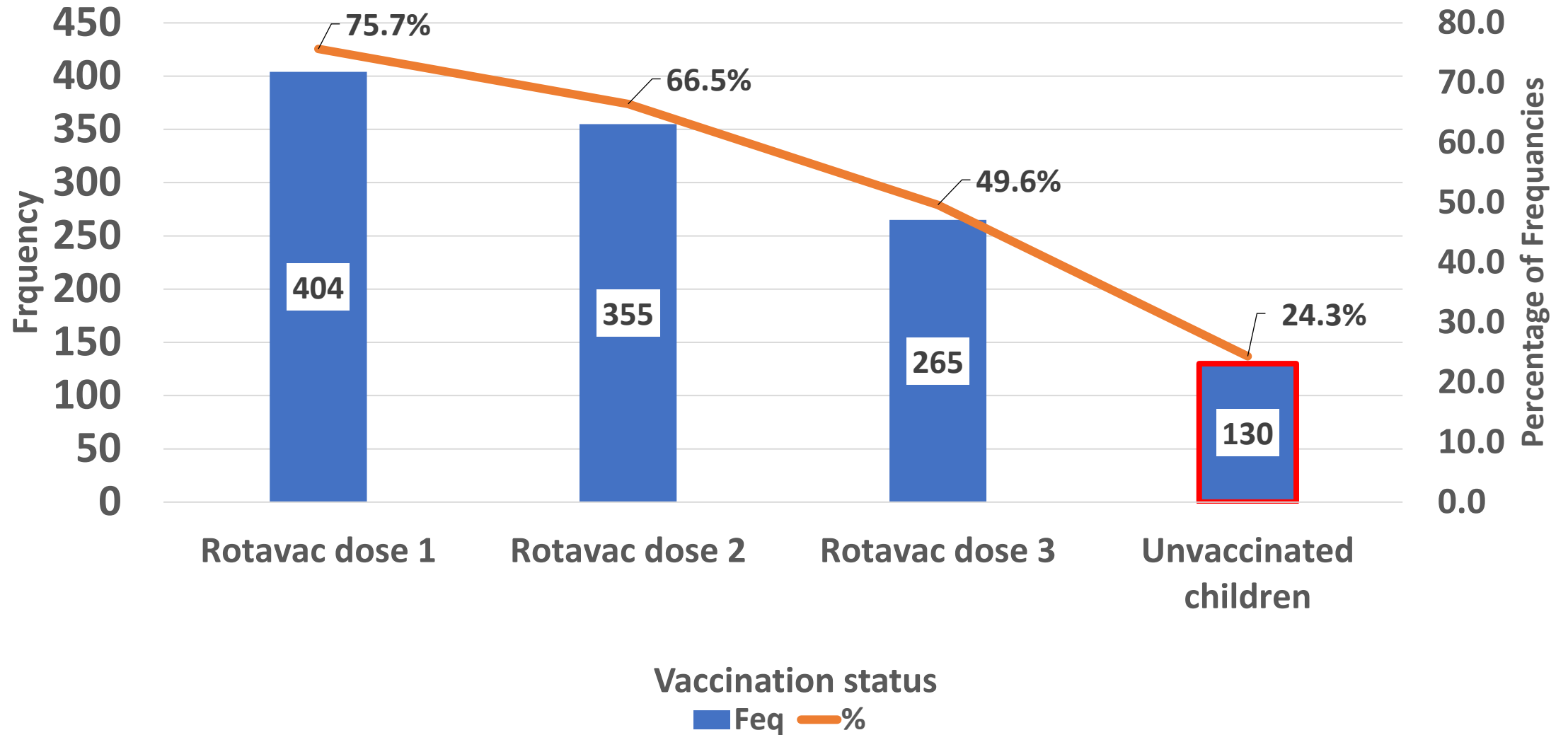


Figure 2: Impact of Rotavirus Vaccination on Diarrhoea Severity (Vesikeri Scale) (n=534)

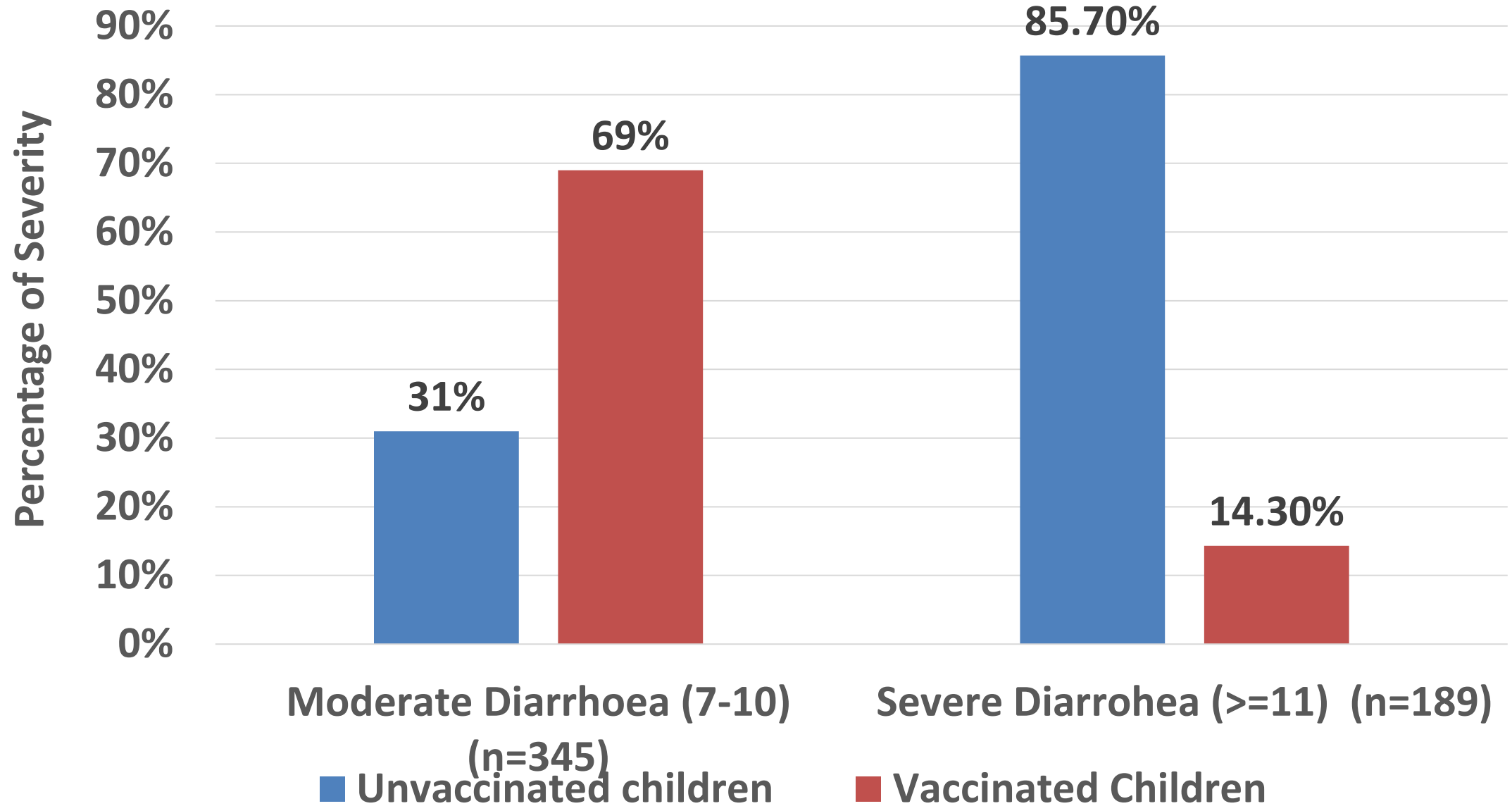
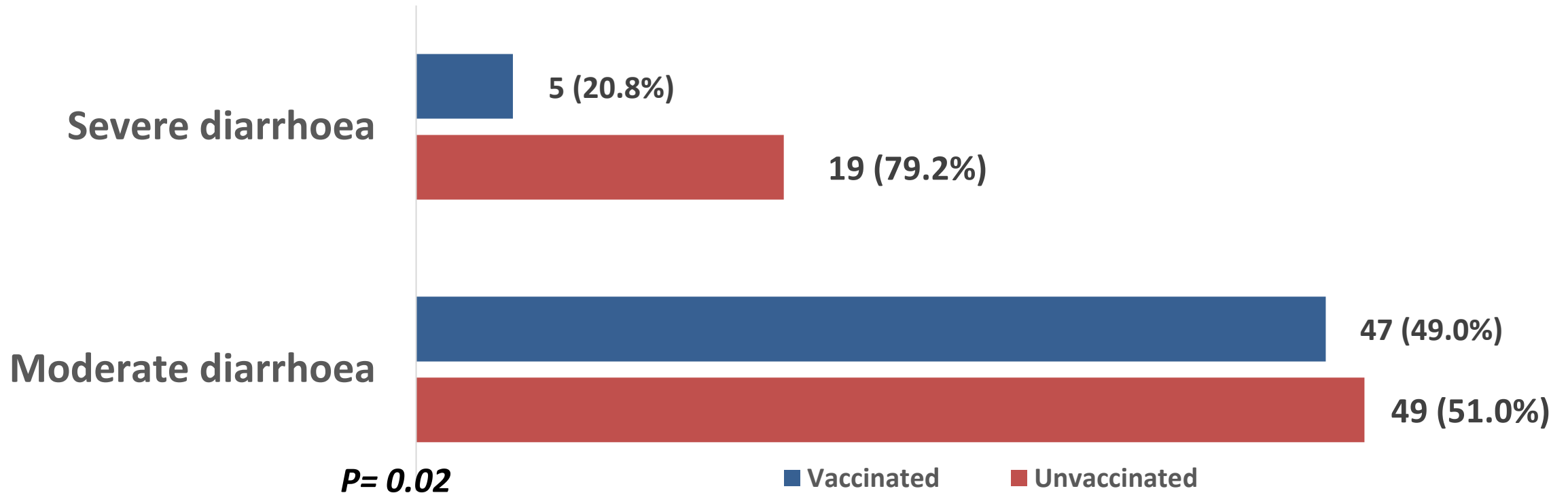


Figure 3: Vaccination Status by Vesikari Scale Severity Among EIA-Positive Cases (n=120 cases; 22%)



- Severe illness was markedly higher in unvaccinated children (79%) compared to vaccinated (~21%), highlighting the protective effect of vaccination.

Table 1: Rotavirus Vaccine Effectiveness by Disease Severity

Disease Severity (Vesikeri scale)	Vaccine Effectiveness (VE)	95% Confidence Interval (CI)	Summary
Severe Diarrhoea (≥ 11)	60.40%	31% - 91%	High Effectiveness. significantly lowers risk of severe disease
Moderate Diarrhoea (7 - 10)	47.00%	30% - 62%	Moderate Effectiveness

- VE against severe RV gastroenteritis: 60.4% (95%CI: 31%-91%)
- VE against moderate cases: 47.0% (95%CI: 30%-62%)

Limitations

- **Single-site design:** Data were collected from one location (Enugu), which may limit generalizability to other regions of Nigeria.
- **VE influenced by vaccine coverage** (~ 73% rollout coverage in Enugu Nigeria).
- **Potential confounders:** age, nutrition, underlying health conditions etc etc.
- **Hospital-based surveillance:** Study likely captured more severe cases (Moderate to Severe Diarrhoea- MSD) that presented to health facilities; mild cases which may be in the community was not represented.

Conclusion

- Rotavirus vaccination substantially reduces the risk of severe gastroenteritis in Nigeria children.
- Severe disease was **markedly higher in unvaccinated children** compared to vaccinated (**79% vs 21%**).
- Findings align with some other reports in Africa[&] and elsewhere[@].

[&] Henschke et al., (2022) <https://doi.org/10.1016/j.vaccine.2022.02.003> , Armah et al., (2016). <https://pmc.ncbi.nlm.nih.gov/articles/PMC7962386/#:~:text=https%3A//doi.org/10.1093/cid/ciw014> .

[@]: Prunas et al., (2025) <https://doi.org/10.1016/j.eclinm.2025.103122>

Recommendations

- Strengthen routine rotavirus immunization in Enugu and increase coverage.
- Implement targeted community outreach and catch-up campaigns.
- Conduct multi-site analyses to assess regional vaccine effectiveness.
- Adjust future analyses for age, nutrition, comorbidities, and time since last dose.
- **Evaluate effectiveness against circulating rotavirus genotypes.**
- Estimate averted hospitalizations, deaths, and perform cost-effectiveness analysis.
- Enhance surveillance and maintain accurate vaccination records.

Thank You for Listening



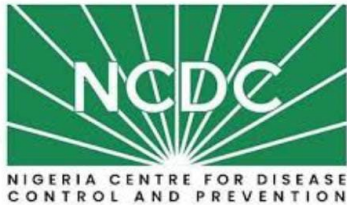
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Acknowledgement



Mother and Child that Participated