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DISPARITIES IN ANTI-SARS-CoV-2 REACTIVITY ACCORDING TO VACCINES ADMINISTERED IN THE ERA OF OMICRON IN CAMEROON

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BACKGROUND

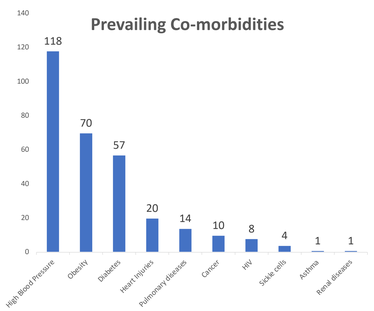
Anti-SARS-CoV-2 vaccine is a global health priority, but evidence on its significance within tropical settings like Cameroon remains limited. Our objective was to assess the overall rate of COVID-19 antibodies, its disparity according to vaccine-status and types of vaccines administered in Cameroon during the active phase of Omicron variants.

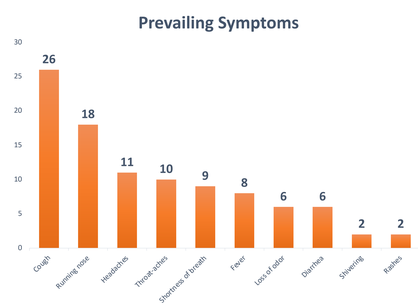
METHODS

A cross-sectional sero-survey was conducted from February throughout July-2022 (active circulation of omicron) among individuals tested for Covid-19 in Yaoundé-Cameroon. Anti-SARS-CoV-2 antibodies were tested on plasma, while SARS-CoV-2 real-time PCR was performed on nasopharyngeal swabs. Statistical analyses were performed with p<0.05 statistically significant.

RESULTS

Overall, 2449 participants were enrolled: median [IQR] age was 40 [31–49], 56.4%(1382/2449) men, 2.2%(54/2449) with flu-like symptoms and 19.6%(481/2449) reporting previous Sars-CoV-2 positivity. Regarding Covid-19 vaccination, 67.5%(1652/2449) had received at least one dose, with 55.0%(909/1652) fully vaccinated and 37.1%(613/1652) who received additional boost-doses. Median duration from vaccination to phlebotomy was 5 [4–9] months (min:1; max:20).





Global rate of anti-SARS-CoV-2 antibodies was 81.1%(1987/2449), with 1.2%IgM, 73.9%IgG and 6.5%IgM/IgG. High prevalence of antibodies was associated to vaccination (OR=1.9 [95%CI:1.6-2.4]; p<0.0001). Among the vaccinated, those who received boosters, post-vaccination time (≤5months) and Pfizer-vaccine had higher proportions of antibodies (OR=2.5[1.9-3.4]; OR=2.6[2.0-3.4]; and OR=2.4[1.8-3.1] respectively, all p<0.0001).

Key findings:

* There was an overall **high prevalence of anti-Sars-CoV-2 antibodies** during the circulation of omicron in Cameroon;
* **Vaccination** was a determinant of high rates of anti-Sars-CoV-2 antibodies;
* Pfizer and Moderna vaccines (**mRNA based**) were more immunogenic in our country;
* **Rapid waning of vaccine efficacy (~5months)** may call for revised strategies and continuous vaccine improvement in the frame of an evolving virus.

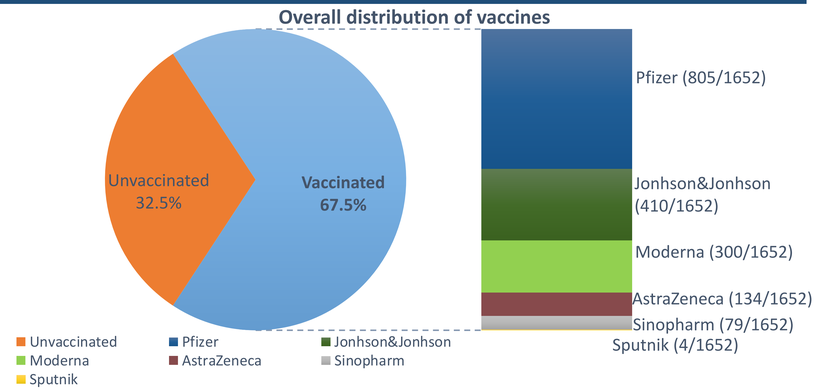


Table 1: General distribution of anti-SARS-CoV-2 antibodies

Variables		Anti-SARS-CoV-2 antibodies		p-value	OR [95CI]
		Yes	No		
Gender	Male	1115	267	0.5	0.9 [0.8 – 1.1]
	Female	872	195		
Age	≤40 years	1044	251	0.5	0.9 [0.8 – 1.1]
	>40 years	933	210		
Symptoms	Yes	45	9	0.9	1.2 [0.6 – 2.4]
	No	1942	453		
Co-morbidities	Yes	187	51	0.3	0.8 [0.6 – 1.2]
	No	1800	411		
Previous positivity	Yes	397	84	0.4	1.1 [0.9 – 1.5]
	No	1590	378		
Current Infection *(CT<37)	Yes	61	23	**0.047**	**0.6 [0.37 – 0.98]**
	No	1926	439		
Vaccine-status	Yes	1398	254	**<0.0001**	**1.9 [1.6 – 2.4]**
	No	589	208		

Table 2: Determinants of anti-SARS-CoV-2 antibodies

Variables		aOR [95CI]	p-value
Current Infection	(Yes/No)	0.67 [0.41 – 1.11]	0.119
Vaccine-status	**(Yes/No)**	**1.95 [1.57 – 2.43]**	**<0.0001**
Type of Vaccination	Partial/Complete	1.17 [0.69 – 1.96]	0.564
	Boost-doses/Complete	1.36 [1.0 – 1.85]	0.046
Post Vaccination time	**(≤5 months / >5 months)**	**1.64 [1.24 – 2.18]**	**0.0006**
Type of vaccines	**Pfizer**	**2.07 [1.61 – 2.65]**	**<0.0001**
	J&J	1.31 [0.98 – 1.74]	0.064
	Moderna	**1.52 [1.08 – 2.15]**	**0.017**
	AstraZeneca	1.28 [0.81 – 2.04]	0.291
	Sinopharm	1.46 [0.81 – 2.66]	0.209

Legend: aOR= adjusted odd ratio; CT= cycle threshold; 95CI= 95% confidence intervals; P-values and OR in bold are those of variables associated with high prevalence of anti-SARS-CoV-2 antibodies.

Following regressions, **vaccine-status**, boost-doses, post-vaccination time, Pfizer and Moderna vaccines all remained statistically associated with high prevalence of anti-SARS-CoV-2 antibodies (aOR=1.95, aOR=1.36, aOR=1.64, aOR=2.07 and aOR=1.52 respectively; with all p<0.05).

CONCLUSIONS

The high-rate of anti-SARS-CoV-2 antibodies suggests herd immunity at community-level in Cameroon during active Omicron wave, with Pfizer and Moderna inducing greater immunogenicity. However, rapid antibody waning (~5months) calls for vaccine update with novel variants.

ADDITIONAL KEY INFORMATION

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