

# Supplementary Materials for

## SARS-CoV-2 antibody seroprevalence follow-up in Malagasy blood donors during the 2020 COVID-19 Epidemic

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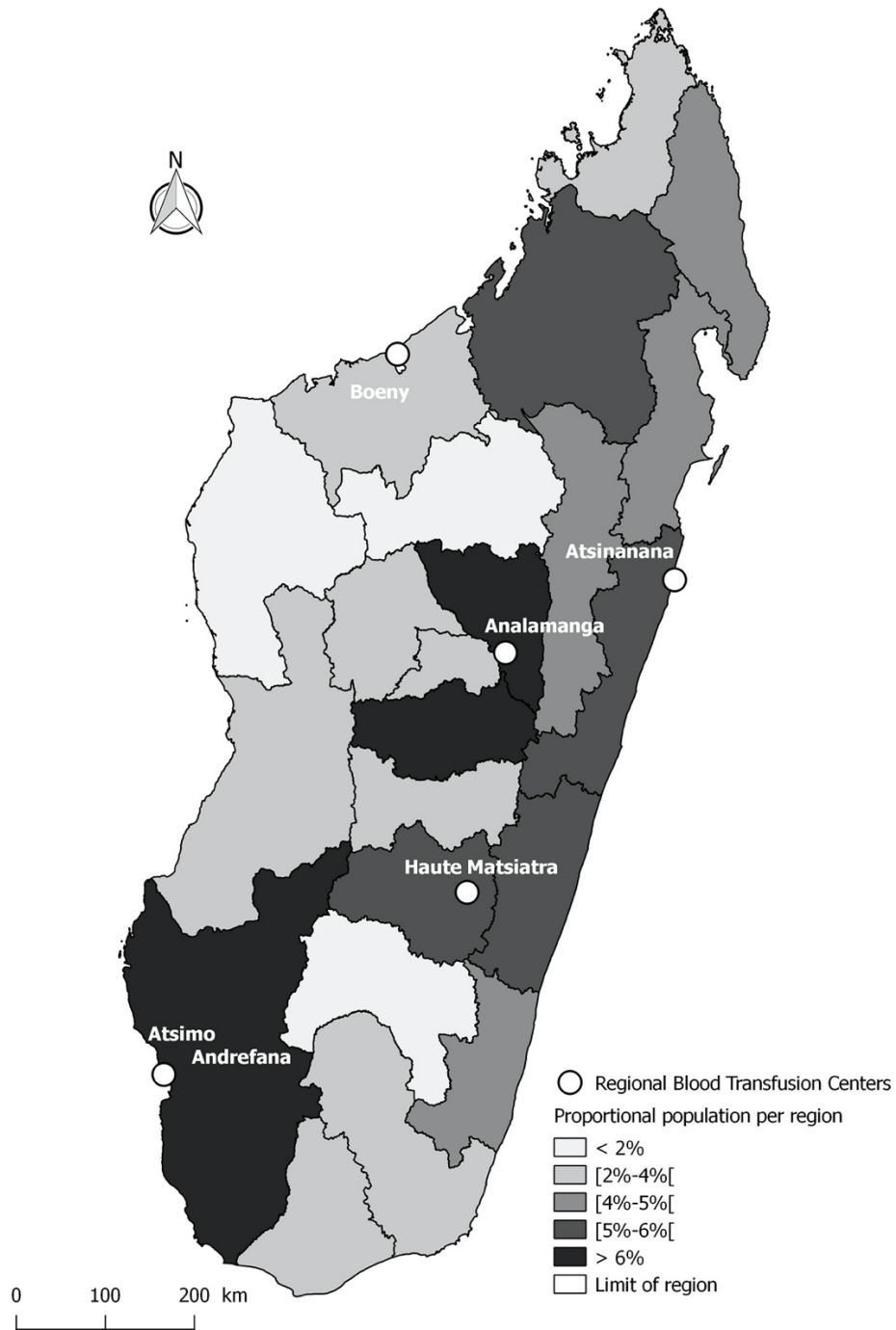
‡ Institut Pasteur de Dakar

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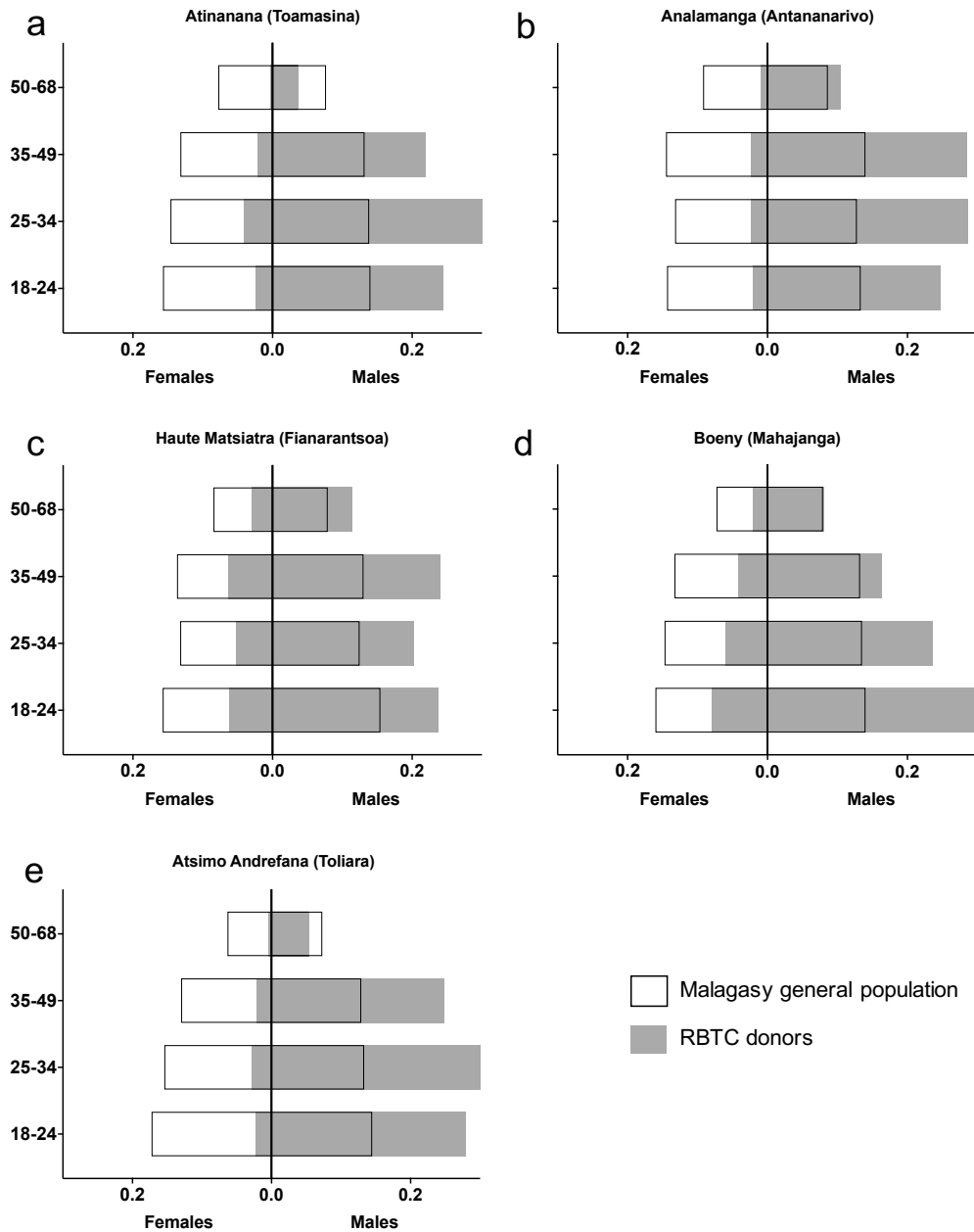
Figs. S1 to S3

Tables S1 to S4

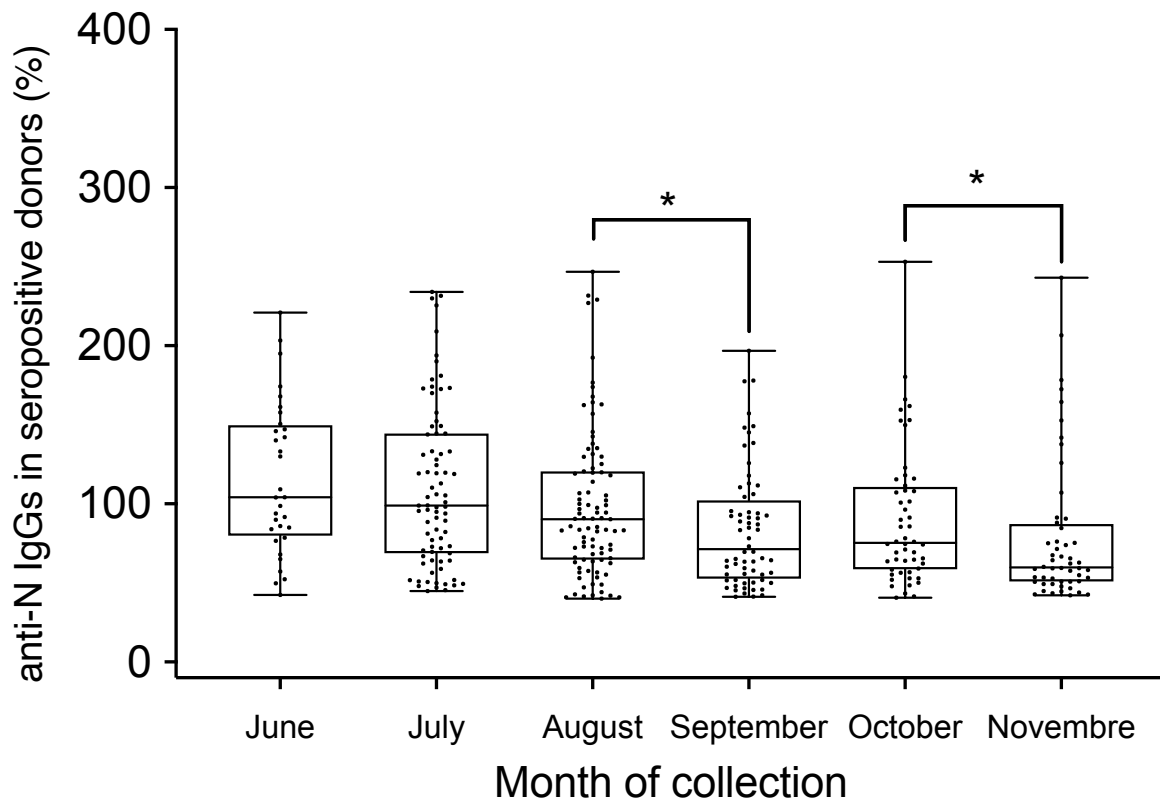
**Fig. S1. Location of the 5 RBTCs for which samples were collected.** Map of Madagascar, showing the location of the 5 RBTCs for which samples were collected, the regions where epidemiological surveillance data was obtained and the populational proportions per region.



**Fig. S2. Regional population distribution (proportion) by age groups (yrs) and gender in the Malagasy Adult general population and in the RBTCs donors.** a – Atinanana (Toamasina), b – Analamanga (Antananarivo), c – Haute Matsiatra (Fianarantsoa), d – Boeny (Mahajanga), e – Atsimo Andrefana (Toliara). (2018 Malagasy Population and Housing Census<sup>9</sup>)



**Fig. S3. Reduction in the level of anti-N SARS-CoV-2 IgG in seropositive donors. (S/P values from donors with  $SP \geq 40\%$ ) from Toamasina from June 2020 to November 2020.**



$P < 0.001$  (Kuskal-Wallis nonparametric test).

\*  $P < 0.05$  (Mann-Whitney nonparametric test).

**Table S1:** Monthly surveillance for COVID-19 cases in the regions corresponding to the 5 RBTCs selected for this study in Madagascar, from March to November 2020

Region (Capital)	Month	Regional COVID-19 Case Confirmation (RT-PCR)			
		Total tests	N confirmed cases	RT-PCR positivity (%)	IC 95%
<b>Analamanga (Antananarivo)</b>	March	584	29	5.0	3.5-7.0
	April	1504	150	10.0	8.6-11.6
	May	3647	255	7.0	6.2-7.9
	June	5658	887	15.7	14.8-16.6
	July	17595	7346	41.8	41-42.5
	August	22580	2224	9.8	9.5-10.2
	September	10061	601	6.0	5.5-6.5
	October	5684	147	2.6	2.2-3
	November	3195	121	3.8	3.2-4.5
<b>Atsinanana (Toamasina)</b>	March	93	6	6.5	3.0-13.4
	April	240	31	12.9	9.3-17.8
	May	2352	706	30.0	28.2-31.9
	June	2376	65	2.7	2.2-3.5
	July	301	18	6.0	3.8-9.3
	August	110	18	16.4	10.6-24.4
	September	99	8	8.1	4.2-15.1
	October	124	1	0.8	0.0-4.4
	November	96	9	9.4	5.0-16.9
<b>Haute Matsiatra (Fianarantsoa)</b>	March	14	1	7.1	0.4-31.5
	April	45	18	40.0	27.0-54.5
	May	257	8	3.1	1.6-6.0
	June	181	3	1.7	0.5-4.8
	July	18	16	88.9	67.2-98
	August	221	44	19.9	15.2-25.7
	September	148	46	31.1	24.2-38.9
	October	5	0	0.0	0.0-43.4
	November	244	60	24.6	19.6-30.4
<b>Boeny (Mahajanga)</b>	March	30	1	3.3	0.2-16.7
	April	6	0	0.0	0.0-3.9
	May	74	0	0.0	0.0-4.9
	June	72	3	4.2	1.1-11.5
	July	298	91	30.5	25.6-36
	August	446	93	20.9	17.3-24.9
	September	153	23	15.0	10.2-21.5
	October	18	9	50.0	29.0-71.0
	November	59	6	10.2	4.7-20.5
<b>Atsimo Andrefana (Toliara)</b>	March	12	0	0.0	0.0-24.2
	April	37	3	8.1	2.8-21.3
	May	34	1	2.9	0.2-14.9
	June	53	1	1.9	0.1-9.9
	July	337	30	8.9	6.3-12.4
	August	354	22	6.2	4.1-9.2
	September	102	25	24.5	17.2-33.7
	October	116	0	0.0	0.0-3.2
	November	33	9	27.3	15.1-44.2

**Table S2:** Monthly anti-N IgG seroprevalences in blood donors from the 5 RBTCs in Madagascar, from March to November 2020. a – Crude values. b – Population-weighted, test-performance-adjusted direct standardization. c – Population-weighted, test-performance-adjusted Bayesian model.

Region (Capital)	Month	RBTC Blood donor Samples		a – crude seroprevalences		b – Direct standardization		c – Bayesian model	
		Total	Positive	%	IC95%	%	IC95%	%	IC95%
Analamanga (Antananarivo)	March	496	4	0.8	0.3 - 2.1	0.1	0.0 - 8.2	0.0	0.0 - 0.0
	April	157	0	0.0	0.0 - 2.4	0.0	0.0 - 24.8	0.0	0.0 - 0.0
	May	598	1	0.2	0.0 - 0.9	0.0	0.0 - 7.7	0.0	0.0 - 0.0
	June	308	10	3.3	1.8 - 5.9	4.3	0.6 - 20.4	2.8	2.7 - 2.9
	July	428	124	29.0	24.9 - 33.4	30.6	18.5 - 46.4	35.4	35.2 - 35.6
	August	432	152	35.2	30.8 - 39.8	34.9	22.9 - 50.6	41.3	41.1 - 41.5
	September	481	185	38.5	34.2 - 42.9	35.4	23.3 - 51.4	43.5	43.3 - 43.8
	October	495	178	36.0	31.9 - 40.3	37.6	24.9 - 52.6	43.2	43.0 - 43.4
	November	502	157	31.3	27.4 - 35.5	32.5	20.8 - 47.6	38.0	37.9 - 38.2
Atsinanana (Toamasina)	March	–	–	–	–	–	–	–	–
	April	–	–	–	–	–	–	–	–
	May	–	–	–	–	–	–	–	–
	June	82	32	39.0	29.2 - 49.9	46.4	10.5 - 72.9	43.7	43.1 - 44.3
	July	182	79	43.4	36.4 - 50.7	46.9	18.0 - 75.2	51.2	50.8 - 51.6
	August	227	91	40.1	33.9 - 46.6	45.5	21.7 - 71.2	49.2	48.9 - 49.5
	September	213	62	29.1	23.4 - 35.5	33.9	14.8 - 62.1	36.2	35.9 - 36.5
	October	199	52	26.1	20.5 - 32.7	33.5	13.7 - 57.6	33.0	32.6 - 33.3
	November	283	52	18.4	14.3 - 23.3	24.2	9.6 - 48.1	23.3	23.1 - 23.5
Haute Matsiatra (Fianarantsoa)	March	–	–	–	–	–	–	–	–
	April	–	–	–	–	–	–	–	–
	May	–	–	–	–	–	–	–	–
	June	129	1	0.8	0.1 - 4.3	0.1	0.0 - 25.8	0.0	0.0 - 0.0
	July	142	0	0.0	0.0 - 2.6	0.0	0.0 - 25.1	0.0	0.0 - 0.0
	August	120	11	9.2	5.2 - 15.7	6.5	1.6 - 47.4	10.4	10.2 - 10.6
	September	173	32	18.5	13.4 - 24.9	16.1	6.5 - 43.8	21.9	21.6 - 22.1
	October	152	23	15.1	10.3 - 21.7	17.5	5.5 - 45.5	18.7	18.5 - 18.9
	November	172	22	12.8	8.6 - 18.6	16.0	5.0 - 40.2	16.2	16.0 - 16.4
Boeny (Mahajanga)	March	–	–	–	–	–	–	–	–
	April	–	–	–	–	–	–	–	–
	May	–	–	–	–	–	–	–	–
	June	50	0	0.0	0.0 - 7.1	0.0	0.0 - 56.1	0.0	0.0 - 0.0
	July	98	1	1.0	0.2 - 5.6	0.9	0.0 - 47.1	0.0	0.0 - 0.1
	August	107	38	35.5	27.1 - 44.9	50.9	20.0 - 83.2	44.5	44.1 - 44.8
	September	53	20	37.7	25.9 - 51.2	17.8	9.7 - 25.2	26.0	25.9 - 26.1
	October	26	7	26.9	13.7 - 46.1	28.1	6.7 - 66.9	29.6	28.9 - 30.2
	November	30	5	16.7	7.3 - 33.6	33.4	3.9 - 76.0	21.5	20.9 - 22.0
Atsimo Andrefana (Toliara)	March	–	–	–	–	–	–	–	–
	April	–	–	–	–	–	–	–	–
	May	–	–	–	–	–	–	–	–
	June	87	1	1.2	0.2 - 6.2	0.1	0.0 - 38.3	0.0	0.0 - 0.1
	July	147	1	0.7	0.1 - 3.8	0.1	0.0 - 42.4	0.0	0.0 - 0.0
	August	167	12	7.2	4.2 - 12.1	3.8	1.2 - 49.9	7.9	7.7 - 8.1
	September	185	38	20.5	15.4 - 26.9	18.2	7.4 - 54.0	24.2	23.9 - 24.4
	October	139	31	22.3	16.2 - 29.9	29.2	8.6 - 67.9	27.7	27.3 - 28.0
	November	199	36	18.1	13.4 - 24	29.5	10.4 - 53.6	23.5	23.2 - 23.8

**Table S3 Blood donor demographics (age. gender) throughout the study.**

	Total	Antananarivo	Fianarantsoa	Mahajanga	Toamasina	Toliara
<i>Samples</i>						
N	7259	3897	888	364	1186	924
p(%) of total	100	53.7	12.2	5	16.3	12.7
<i>Age</i>						
Median (Q1-Q2)	30(24-40)	31(24-42)	31(23-43)	27(22-39)	29(24-36)	29(23-38)
IQR	16	18	20	17	12	15
Mean (IC95%)	32.8(32.5-33)	33.7(33.4-34.1)	33.6(32.8-34.4)	31.6(30.4-32.7)	30.7(30.2-31.2)	31.3(30.6-31.9)
SD	10.8	11.2	11.9	10.8	8.7	9.9
<i>Gender</i>						
Male (IC95%)	80.2(79.3-81.1)	74.9(73.5-76.2)	78.7(75.9-81.3)	78.3(73.8-82.2)	90.1(88.2-91.6)	92.2(90.3-93.8)
Female (IC95%)	19.8(18.9-20.7)	25.1(23.8-26.5)	21.3(18.7-24.1)	21.7(17.8-26.2)	9.9(8.4-11.8)	7.8(6.2-9.7)

**Table S4** Bivariate seropositivity analysis according to the demographic characteristics of the population and the month of sample collection in the 5 RBTCs from March to November 2020

	Samples (N)	proportion (%)	Seropositives (n)	seroprevalence (%)	p-values	
Antananarivo	<i>Gender</i>				0.298	
	Male	2917	74.9	619		21.2
	Female	980	25.1	192	19.6	
	<i>Age</i>				0.189	
	18-24	1062	27.3	205		19.3
	25-34	1201	30.8	239		19.9
	35-49	1204	30.9	270		22.4
	50-68	430	11	97	22.6	
	<i>Months</i>				0.001	
	Mar	428	11	124		29
	Apr	496	12.7	4		0.8
	May	432	11.1	152		35.2
	Jun	308	7.9	10		3.2
	Jul	598	15.3	1		0.2
Aug	157	4	0	0		
Sept	502	12.9	157	31.3		
Oct	495	12.7	178	36		
Nov	481	12.3	185	38.5		
Toamasina	<i>Gender</i>				0.815	
	Male	1068	90.1	333		31.2
	Female	118	9.9	35	29.7	
	<i>Age</i>				0.199	
	18-24	332	28	117		35.2
	25-34	524	44.2	159		30.3
	35-49	285	24	78		27.4
	50-68	45	3.8	14	31.1	
	<i>Months</i>				0	
	Jun	227	19.1	91		40.1
	Jul	182	15.3	79		43.4
	Aug	82	6.9	32		39
	Sept	283	23.9	52		18.4
	Oct	199	16.8	52		26.1
Nov	213	18	62	29.1		
Fianarantsoa	<i>Gender</i>				0.904	
	Male	699	78.7	71		10.2
	Female	189	21.3	18	9.5	
	<i>Age</i>				0.707	
18-24	290	32.7	26	9		



	25-34	227	25.6	21	9.3	
	35-49	249	28	27	10.8	
	50-68	122	13.7	15	12.3	
	<i>Months</i>					0.001
	Jun	120	13.5	11	9.2	
	Jul	142	16	0	0	
	Aug	129	14.5	1	0.8	
	Sept	172	19.4	22	12.8	
	Oct	152	17.1	23	15.1	
	Nov	173	19.5	32	18.5	
	<i>Gender</i>					0.023
	Male	285	78.3	48	16.8	
	Female	79	21.7	23	29.1	
	<i>Age</i>					0.02
	18-24	139	38.2	36	25.9	
	25-34	108	29.7	13	12	
	35-49	80	22	12	15	
Mahajanga	50-68	37	10.2	10	27	
	<i>Months</i>					0.001
	Jun	107	29.4	38	35.5	
	Jul	98	26.9	1	1	
	Aug	50	13.7	0	0	
	Sept	30	8.2	5	16.7	
	Oct	26	7.1	7	26.9	
	Nov	53	14.6	20	37.7	
	<i>Gender</i>					0.653
	Male	852	92.2	108	12.7	
	Female	72	7.8	11	15.3	
	<i>Age</i>					0.939
	18-24	282	30.5	39	13.8	
	25-34	330	35.7	41	12.4	
	35-49	259	28	33	12.7	
Toliara	50-68	53	5.7	6	11.3	
	<i>Months</i>					0.001
	Jun	167	18.1	12	7.2	
	Jul	147	15.9	1	0.7	
	Aug	87	9.4	1	1.1	
	Sept	199	21.5	36	18.1	
	Oct	139	15	31	22.3	
	Nov	185	20	38	20.5	

\*: Chi<sup>2</sup> test or Fisher's exact test were used.