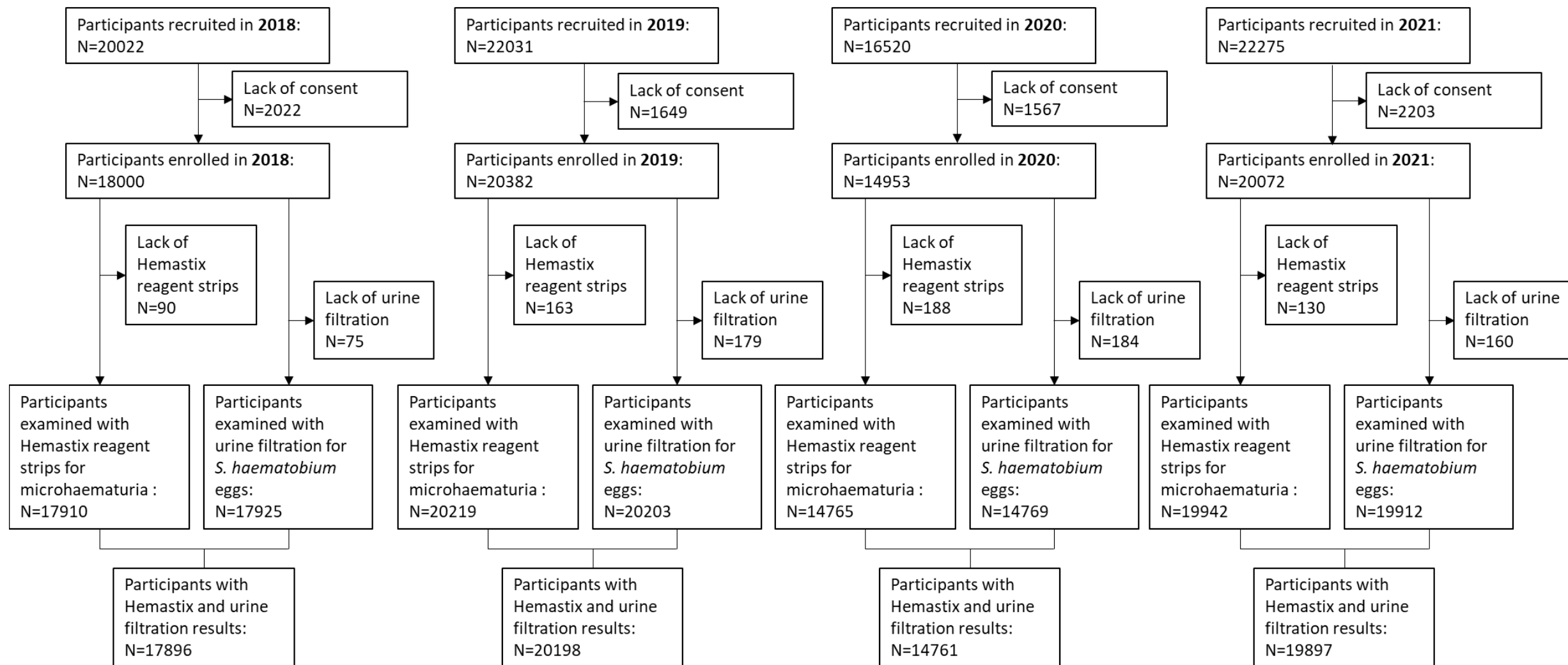
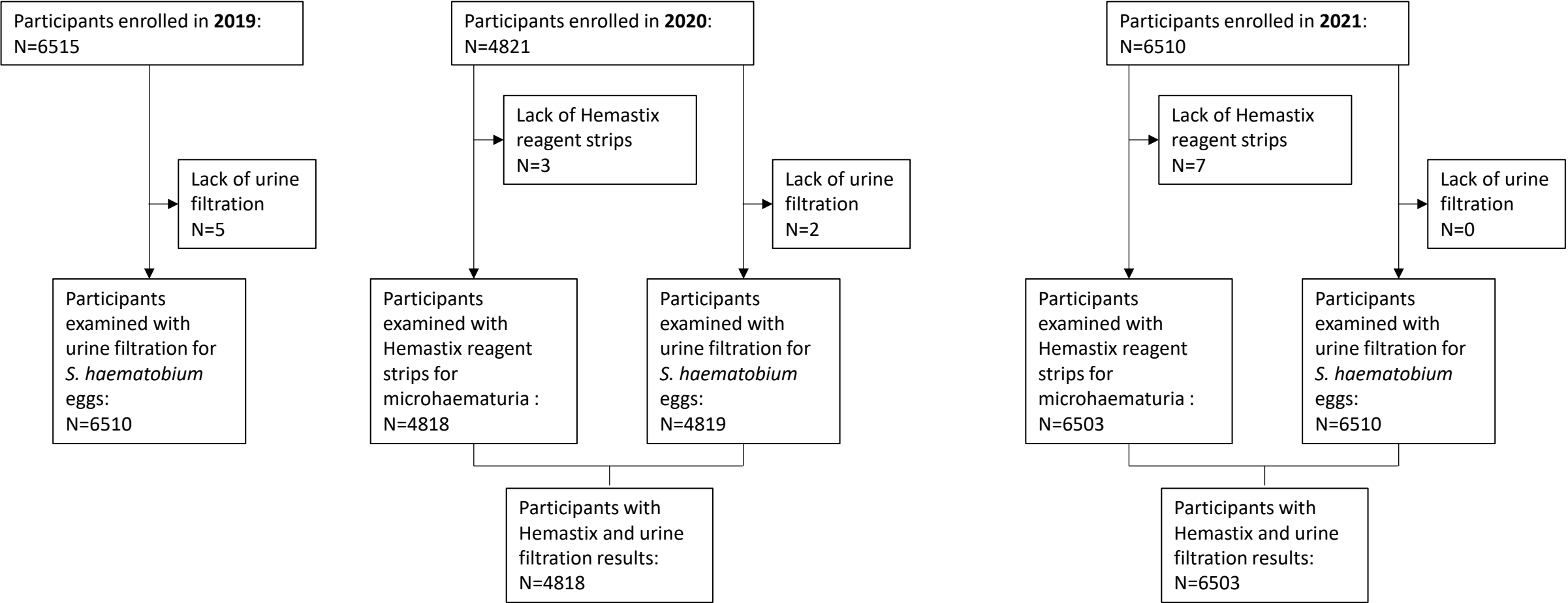


Participant flow: School cross-sectional surveys



Participant flow: Community cross-sectional surveys



Baseline characteristics: School and community cross-sectional surveys

| | | 2018 | | 2019 | | 2020 | | 2021 | |
|-----------|--------------|----------------|-------------------|----------------|-------------------|----------------|-------------------|----------------|-------------------|
| Enrolment | | Schoolchildren | Community members | Schoolchildren | Community members | Schoolchildren | Community members | Schoolchildren | Community members |
| Sex | Female | 9184 | NA | 10237 | 3451 | 7610 | 3045 | 10135 | 4608 |
| | Male | 8816 | NA | 10145 | 3064 | 7343 | 1776 | 9937 | 1902 |
| | Missing data | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| Age | 0-5 | 0 | NA | 1518 | 0 | 1245 | 0 | 1819 | 14 |
| | 6-14 | 17986 | NA | 18542 | 0 | 13489 | 0 | 18013 | 20 |
| | 15-17 | 8 | NA | 301 | 518 | 214 | 197 | 234 | 95 |
| | 18-100 | 0 | NA | 4 | 5988 | 4 | 4589 | 2 | 6831 |
| | Missing data | 6 | NA | 17 | 9 | 1 | 35 | 4 | 0 |

* NA =Not assessed

Outcome measures: School and community cross-sectional surveys

Primary outcome measure

Number of *S. haematobium* infected individuals detected by the urine filtration method (detecting *S. haematobium* eggs in 10 ml urine) and reagent strip method (Hemastix; detecting microhaematuria in urine) applied on a single urine sample per participant in each annual cross-sectional survey in 2018, 2019, 2020, and 2021.

Of note, no community data were collected in 2018.

| | | 2018 | | 2019 | | 2020 | | 2021 | |
|--------------------------------|---------------------------------------|----------------|-------------------|----------------|-------------------|----------------|-------------------|----------------|-------------------|
| Enrolment | | Schoolchildren | Community members | Schoolchildren | Community members | Schoolchildren | Community members | Schoolchildren | Community members |
| Haematuria | Negative | 16966 | NA | 19459 | NA | 14021 | 4501 | 18949 | 5852 |
| | Positive | 944 | NA | 760 | NA | 744 | 317 | 993 | 651 |
| | Missing data | 90 | NA | 163 | NA | 188 | 3 | 130 | 7 |
| <i>Schistosoma haematobium</i> | Negative | 17381 | NA | 19973 | 6474 | 14339 | 4794 | 19453 | 6416 |
| | Positive | 544 | NA | 230 | 36 | 430 | 25 | 459 | 94 |
| | Missing data | 75 | NA | 179 | 5 | 184 | 2 | 160 | 0 |
| | Light intensity infection (1-49 eggs) | 437 | NA | 168 | 26 | 337 | 21 | 376 | 87 |
| | Heavy intensity infection (50+ eggs) | 107 | NA | 62 | 10 | 93 | 4 | 83 | 7 |

* NA =Not assessed

Outcome measures: School and community cross-sectional surveys

Secondary outcome measures

1. Impact of mass drug administration (MDA) with praziquantel (40 mg/kg) over time measured in 2018, 2019, 2020, and 2021 during the annual cross-sectional school-based and community-based surveys using:
 - 1.1. *S. haematobium* prevalence measured by urine filtration (*S. haematobium* egg absence/presence in 10 ml urine) and measured by reagent strips to assess microhaematuria absence/presence
 - 1.2. *S. haematobium* infection intensity measured by urine filtration (*S. haematobium* egg counts in 10 ml urine)
3. Treatment coverage and compliance of MDA with praziquantel (40 mg/kg) preceding the cross-sectional survey, determined with questionnaires in annual cross-sectional surveys (coverage is defined as the percentage of those queried receiving praziquantel tablets during MDA, and compliance is defined as the percentage of those queried swallowing praziquantel tablets in the dose supplied during MDA) in 2018, 2019, 2020, and 2021.

Of note, no community data were collected in 2018.

| Enrolment | | 2018 | | 2019 | | 2020 | | 2021 | |
|---------------------------------|---|----------------|-------------------|----------------|-------------------|----------------|-------------------|----------------|-------------------|
| | | Schoolchildren | Community members | Schoolchildren | Community members | Schoolchildren | Community members | Schoolchildren | Community members |
| Haematuria | Negative | 16966 | NA | 19459 | NA | 14021 | 4501 | 18949 | 5852 |
| | Positive | 944 | NA | 760 | NA | 744 | 317 | 993 | 651 |
| | Missing data | 90 | NA | 163 | NA | 188 | 3 | 130 | 7 |
| <i>Schistosoma haematobium</i> | Negative | 17381 | NA | 19973 | 6474 | 14339 | 4794 | 19453 | 6416 |
| | Positive | 544 | NA | 230 | 36 | 430 | 25 | 459 | 94 |
| | Missing data | 75 | NA | 179 | 5 | 184 | 2 | 160 | 0 |
| | Light intensity infection (1-49 eggs) | 437 | NA | 168 | 26 | 337 | 21 | 376 | 87 |
| | Heavy intensity infection (50+ eggs) | 107 | NA | 62 | 10 | 93 | 4 | 83 | 7 |
| Praziquantel treatment coverage | Did not receive praziquantel | 5684 | NA | 1653 | 2305 | NA | NA | 2649 | 2654 |
| | Received praziquantel | 11509 | NA | 18727 | 4185 | NA | NA | 17417 | 3856 |
| | Missing data | 807 | NA | 2 | 25 | NA | NA | 6 | 0 |
| | Received and took all praziquantel tablets together | NA | NA | NA | 3210 | NA | NA | NA | 3283 |
| | Received but did not take praziquantel as recommended | NA | NA | NA | 975 | NA | NA | NA | 573 |

* NA =Not assessed

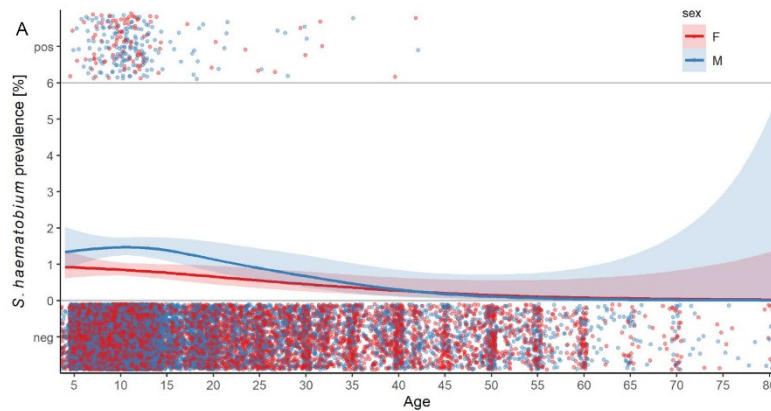
Outcome measures: School and community cross-sectional surveys

Secondary outcome measures

2. Age-prevalence distribution by age and stratified by sex, measured by urine filtration and reagent strips, sex and age will be recorded on enrolment and in 2018, 2019, 2020, and 2021 during the annual cross-sectional school-based and community-based surveys.

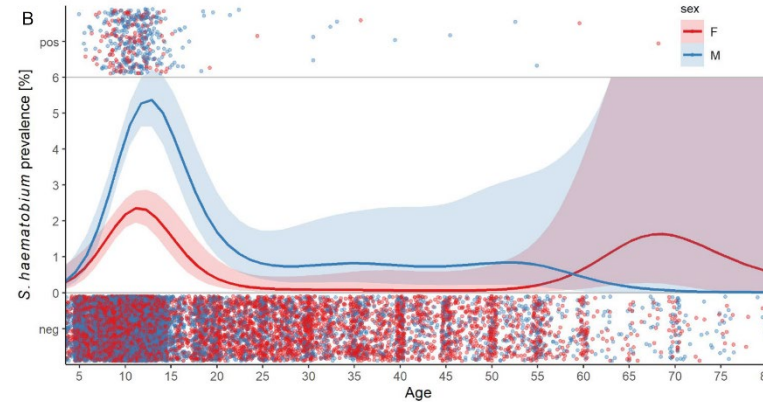
Of note, no community data were collected in 2018.

2019

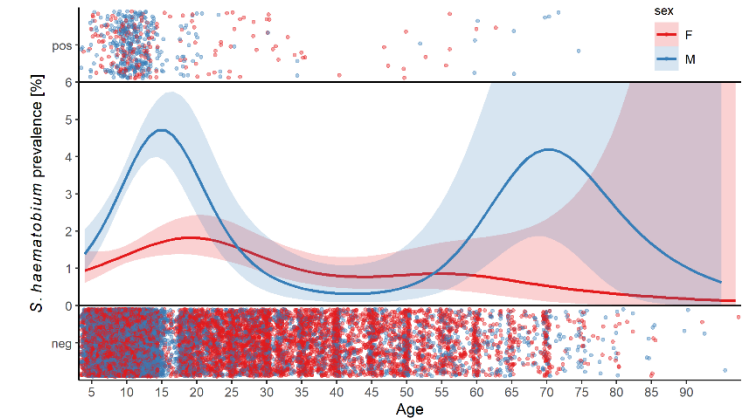


S. haematobium prevalence across all ages, stratified by sex, after 11 rounds of MDA in 2019 (A) and a 16-month treatment gap in 2020 (B).

2020



2021



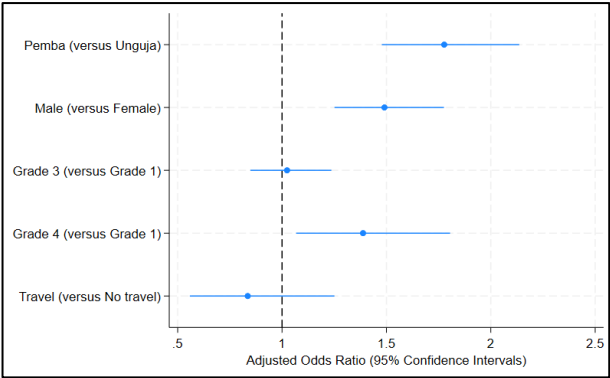
S. haematobium prevalence across all ages, stratified by sex, when assessed in Jan-March 2021, 5-7 months after the last MDA (August 2020).

Outcome measures: School cross-sectional surveys

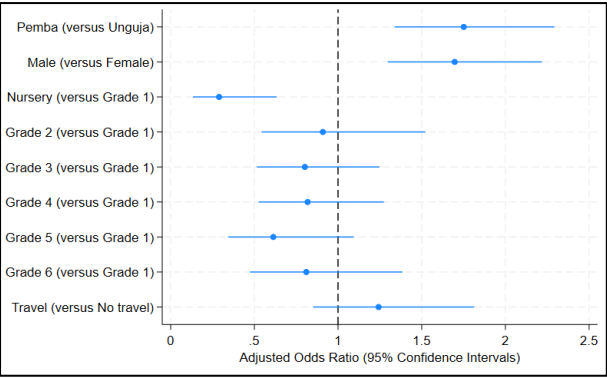
Secondary outcome measures

4. Risk factors for *S. haematobium* infection determined with questionnaires (query the use of natural open freshwater bodies for washing, bathing and household chores, travel, location of residence and demographic factors) during annual cross-sectional surveys in 2018, 2019, 2020, and 2021

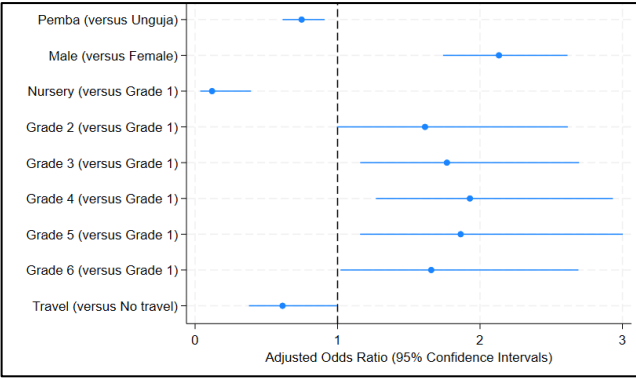
2018



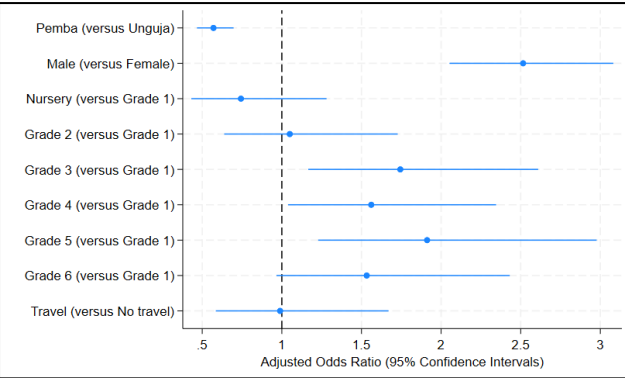
2019



2020



2021



```
. logit shpos isl_num sex_num i.standard1 travel_num if year==2018, or vce(robust)
```

```
Iteration 0: Log pseudolikelihood = -2388.1265
Iteration 1: Log pseudolikelihood = -2359.9483
Iteration 2: Log pseudolikelihood = -2359.2341
Iteration 3: Log pseudolikelihood = -2359.2336
Iteration 4: Log pseudolikelihood = -2359.2336
```

Logistic regression

Number of obs = 17,137
Wald chi2(5) = 66.89
Prob > chi2 = 0.0000
Pseudo R2 = 0.0121

Log pseudolikelihood = -2359.2336

| shpos | Odds ratio | Robust std. err. | z | P> z | [95% conf. interval] |
|------------|------------|------------------|--------|-------|----------------------|
| isl_num | 1.776843 | .1669365 | 6.12 | 0.000 | 1.478011 2.136095 |
| sex_num | 1.490531 | .13308 | 4.47 | 0.000 | 1.251246 1.775576 |
| standard1 | | | | | |
| 3 | 1.024003 | .0983765 | 0.25 | 0.805 | .8482538 1.236165 |
| 4 | 1.388057 | .1860411 | 2.45 | 0.014 | 1.067385 1.805069 |
| travel_num | .835585 | .1720473 | -0.87 | 0.383 | .5581204 1.250989 |
| _cons | .0183837 | .0017675 | -41.57 | 0.000 | .0152264 .0221957 |

Note: _cons estimates baseline odds.

```
. logit shpos isl_num sex_num ib1.standard1 travel_num if year==2019, or vce(robust)
```

```
Iteration 0: Log pseudolikelihood = -1262.6522
Iteration 1: Log pseudolikelihood = -1239.2041
Iteration 2: Log pseudolikelihood = -1237.4932
Iteration 3: Log pseudolikelihood = -1237.4837
Iteration 4: Log pseudolikelihood = -1237.4837
```

Logistic regression

Number of obs = 20,215
Wald chi2(9) = 47.23
Prob > chi2 = 0.0000
Pseudo R2 = 0.0199

Log pseudolikelihood = -1237.4837

| shpos | Odds ratio | Robust std. err. | z | P> z | [95% conf. interval] |
|------------|------------|------------------|--------|-------|----------------------|
| isl_num | 1.75122 | .240768 | 4.08 | 0.000 | 1.337557 2.292814 |
| sex_num | 1.696909 | .232441 | 3.86 | 0.000 | 1.297364 2.219501 |
| standard1 | | | | | |
| 0 | .2894324 | .115695 | -3.10 | 0.002 | .1322196 .6335755 |
| 2 | .909623 | .2390138 | -0.36 | 0.718 | .5434987 1.522384 |
| 3 | .8016665 | .1811057 | -0.98 | 0.328 | .5148699 1.248217 |
| 4 | .8183665 | .1847151 | -0.89 | 0.375 | .5258011 1.273721 |
| 5 | .6131908 | .1810409 | -1.66 | 0.098 | .3437823 1.093724 |
| 6 | .8102023 | .2215518 | -0.77 | 0.441 | .4740567 1.384703 |
| travel_num | 1.242427 | .2401655 | 1.12 | 0.261 | .8506106 1.814727 |
| _cons | .007915 | .0017638 | -21.71 | 0.000 | .005114 .01225 |

Note: _cons estimates baseline odds.

```
. logit shpos isl_num sex_num ib1.standard1 travel_num if year==2020, or vce(robust)
```

```
Iteration 0: Log pseudolikelihood = -1944.4034
Iteration 1: Log pseudolikelihood = -1883.5089
Iteration 2: Log pseudolikelihood = -1874.2745
Iteration 3: Log pseudolikelihood = -1873.5756
Iteration 4: Log pseudolikelihood = -1873.5644
Iteration 5: Log pseudolikelihood = -1873.5644
```

Logistic regression

Number of obs = 14,770
Wald chi2(9) = 94.22
Prob > chi2 = 0.0000
Pseudo R2 = 0.0364

Log pseudolikelihood = -1873.5644

| shpos | Odds ratio | Robust std. err. | z | P> z | [95% conf. interval] |
|------------|------------|------------------|--------|-------|----------------------|
| isl_num | .7476913 | .0750273 | -2.90 | 0.004 | .6141978 .910199 |
| sex_num | 2.132786 | .2213824 | 7.30 | 0.000 | 1.740174 2.613976 |
| standard1 | | | | | |
| 0 | .1189045 | .0724789 | -3.49 | 0.000 | .0360034 .3926929 |
| 2 | 1.614056 | .3978048 | 1.94 | 0.052 | .9957014 2.616424 |
| 3 | 1.767481 | .3806347 | 2.64 | 0.008 | 1.158897 2.695658 |
| 4 | 1.929157 | .4122553 | 3.47 | 0.002 | 1.269019 2.932695 |
| 5 | 1.86437 | .4532419 | 2.56 | 0.010 | 1.157708 3.002378 |
| 6 | 1.657355 | .4098232 | 2.04 | 0.041 | 1.020785 2.690895 |
| travel_num | .6140589 | .151777 | -1.97 | 0.048 | .3782845 .9967852 |
| _cons | .0144123 | .0030131 | -20.28 | 0.000 | .009567 .0217116 |

Note: _cons estimates baseline odds.

```
. logit shpos isl_num sex_num ib1.standard1 travel_num if year==2021, or vce(robust)
```

```
Iteration 0: Log pseudolikelihood = -2192.4895
Iteration 1: Log pseudolikelihood = -2122.6506
Iteration 2: Log pseudolikelihood = -2116.9361
Iteration 3: Log pseudolikelihood = -2116.9247
Iteration 4: Log pseudolikelihood = -2116.9247
```

Logistic regression

Number of obs = 19,950
Wald chi2(9) = 118.19
Prob > chi2 = 0.0000
Pseudo R2 = 0.0345

Log pseudolikelihood = -2116.9247

| shpos | Odds ratio | Robust std. err. | z | P> z | [95% conf. interval] |
|------------|------------|------------------|--------|-------|----------------------|
| isl_num | .5705742 | .0582416 | -5.50 | 0.000 | .4671167 .6969456 |
| sex_num | 2.514949 | .2607411 | 8.90 | 0.000 | 2.052483 3.081618 |
| standard1 | | | | | |
| 0 | .7433495 | .2063215 | -1.07 | 0.285 | .431456 1.280706 |
| 2 | 1.049849 | .2667529 | 0.19 | 0.848 | .63804 1.727452 |
| 3 | 1.743856 | .3586295 | 2.70 | 0.007 | 1.165355 2.609534 |
| 4 | 1.561543 | .3242375 | 2.15 | 0.032 | 1.039468 2.345832 |
| 5 | 1.9122 | .4317673 | 2.87 | 0.004 | 1.228387 2.976674 |
| 6 | 1.532965 | .3607668 | 1.82 | 0.069 | .9665211 2.431383 |
| travel_num | .9890217 | .2645202 | -0.04 | 0.967 | .5855265 1.670572 |
| _cons | .0118886 | .0025122 | -20.97 | 0.000 | .0078571 .0179889 |

Note: _cons estimates baseline odds.

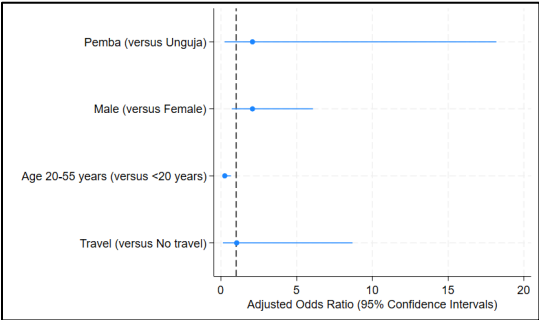
Outcome measures: Community cross-sectional surveys

Secondary outcome measures

4. Risk factors for *S. haematobium* infection determined with questionnaires (query the use of natural open freshwater bodies for washing, bathing and household chores, travel, location of residence and demographic factors) during annual cross-sectional surveys in 2018, 2019, 2020, and 2021.

Of note, no community data were collected in 2018.

2019



```
. logit shpos isl_num sex_num i.agegroup ib1.notravel if year==2019, or vce(robust)
```

note: 3.agegroup != 0 predicts failure perfectly;
3.agegroup omitted and 252 obs not used.

```
Iteration 0: Log pseudolikelihood = -104.17852
Iteration 1: Log pseudolikelihood = -101.59996
Iteration 2: Log pseudolikelihood = -98.335773
Iteration 3: Log pseudolikelihood = -98.322802
Iteration 4: Log pseudolikelihood = -98.322793
```

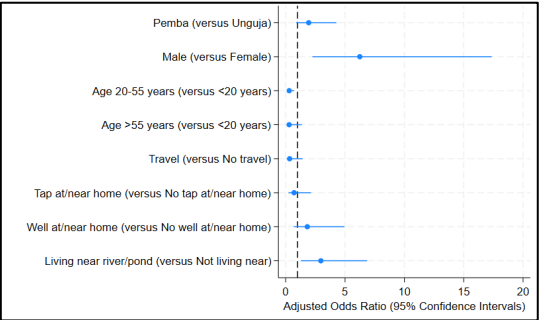
```
Logistic regression               Number of obs = 3,967
                                Wald chi2(4) = 21.16
                                Prob > chi2 = 0.0003
                                Pseudo R2 = 0.0562

Log pseudolikelihood = -98.322793
```

| shpos | Odds ratio | Robust std. err. | z | P> z | [95% conf. interval] | |
|------------|------------|---------------------|-------|-------|----------------------|----------|
| isl_num | 2.078357 | 2.300206 | 0.66 | 0.509 | .2374976 | 18.18784 |
| sex_num | 2.07926 | 1.136799 | 1.34 | 0.181 | .7120807 | 6.071394 |
| agegroup | | | | | | |
| 2 | .2482184 | .1245441 | -2.78 | 0.005 | .0928414 | .6636303 |
| 3 | 1 (empty) | | | | | |
| 0.notravel | 1.038613 | 1.125283 | 0.03 | 0.972 | .1242284 | 8.683332 |
| _cons | .0053083 | .0031761 | -8.76 | 0.000 | .0016431 | .0171497 |

Note: _cons estimates baseline odds.

2020



```
. logit shpos isl_num sex_num i.agegroup ib1.notravel tapyes wellyes rivnear if year==2020, or vce(robust)
```

```
Iteration 0: Log pseudolikelihood = -156.19925
Iteration 1: Log pseudolikelihood = -139.34953
Iteration 2: Log pseudolikelihood = -133.86707
Iteration 3: Log pseudolikelihood = -133.64494
Iteration 4: Log pseudolikelihood = -133.64446
Iteration 5: Log pseudolikelihood = -133.64446
```

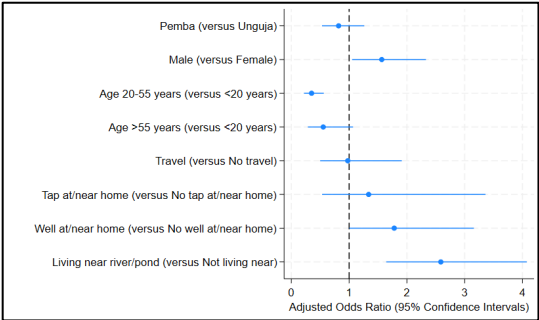
```
Logistic regression               Number of obs = 4,767
                                Wald chi2(8) = 62.77
                                Prob > chi2 = 0.0000
                                Pseudo R2 = 0.1444

Log pseudolikelihood = -133.64446
```

| shpos | Odds ratio | Robust std. err. | z | P> z | [95% conf. interval] | |
|------------|------------|---------------------|-------|-------|----------------------|----------|
| isl_num | 1.940073 | .7824974 | 1.64 | 0.100 | .8800339 | 4.276974 |
| sex_num | 6.248195 | 3.257182 | 3.51 | 0.000 | 2.249176 | 17.35744 |
| agegroup | | | | | | |
| 2 | .2962832 | .1307962 | -2.76 | 0.006 | .1247207 | .7038426 |
| 3 | .2933511 | .2290656 | -1.57 | 0.116 | .0634922 | 1.355362 |
| 0.notravel | .3330184 | .2472007 | -1.48 | 0.139 | .0777354 | 1.426652 |
| tapyes | .7058326 | .3988995 | -0.62 | 0.538 | .2331564 | 2.136761 |
| wellyes | 1.821212 | .92878 | 1.18 | 0.240 | .6702939 | 4.948294 |
| rivnear | 2.963778 | 1.270011 | 2.54 | 0.011 | 1.279666 | 6.864276 |
| _cons | .0016931 | .0015942 | -6.78 | 0.000 | .0002674 | .0107192 |

Note: _cons estimates baseline odds.

2021



```
. logit shpos isl_num sex_num i.agegroup ib1.notravel tapyes wellyes rivnear if year==2021, or vce(robust)
```

```
Iteration 0: Log pseudolikelihood = -487.21208
Iteration 1: Log pseudolikelihood = -470.61343
Iteration 2: Log pseudolikelihood = -462.32807
Iteration 3: Log pseudolikelihood = -462.24948
Iteration 4: Log pseudolikelihood = -462.24944
```

```
Logistic regression               Number of obs = 6,494
                                Wald chi2(8) = 53.13
                                Prob > chi2 = 0.0000
                                Pseudo R2 = 0.0512

Log pseudolikelihood = -462.24944
```

| shpos | Odds ratio | Robust std. err. | z | P> z | [95% conf. interval] | |
|------------|------------|---------------------|-------|-------|----------------------|----------|
| isl_num | .8183587 | .1809393 | -0.91 | 0.365 | .5305701 | 1.262248 |
| sex_num | 1.564518 | .3179981 | 2.20 | 0.028 | 1.050433 | 2.330197 |
| agegroup | | | | | | |
| 2 | .3505651 | .0841757 | -4.37 | 0.000 | .2189691 | .5612475 |
| 3 | .5523536 | .1857722 | -1.76 | 0.078 | .2857156 | 1.067826 |
| 0.notravel | .9771912 | .3346208 | -0.07 | 0.946 | .4994609 | 1.911866 |
| tapyes | 1.338114 | .6286737 | 0.62 | 0.535 | .5328204 | 3.360511 |
| wellyes | 1.780472 | .520631 | 1.97 | 0.049 | 1.003769 | 3.158177 |
| rivnear | 2.586801 | .5995248 | 4.10 | 0.000 | 1.642426 | 4.074178 |
| _cons | .0087132 | .0051917 | -7.96 | 0.000 | .0027101 | .0280132 |

Note: _cons estimates baseline odds.