### Included Study Characteristics for the Adequate Sanitation and *S. mansoni* Meta-analysis

| **Reference** | **Study design, setting** | **Study population *(selection)*** | **‘Adequate’ sanitation definition** | **Study quality assessment†** | **Data obtained** | **Dataset** | **Sub-analyses categories***(type of sanitation,**continent)* | **Odds of infection in those with ‘adequate sanitation’***(number infected with adequate sanitation /number uninfected with adequate sanitation)* | **Odds of infection in those without ‘adequate sanitation’***(number infected with adequate sanitation /number uninfected without improved sanitation)* | **OR (CI)** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Barbosa, 1966 [[1](#_ENREF_1)] | Descriptive survey in Agua Preta, Brazil | 955\**(people of any age randomly sampled from the village)* | Latrine | **Diagnostics:** +1**Number of samples:** 0**WASH assessment:** 0**WASH definitions:** 0**Confounding assessment:** 0**Reponse rates:** 0**Other:** 0**Total:** +1 | 2x2 table | - | LatrineAdults and childrenSouth America | 492/54 | 369/40 | 0·99 (0·64-1·52) |
| Barreto, 1991 [[2](#_ENREF_2)] | Descriptive survey in Santo Antonio de Jesus, Brazil | 1494\**(all children aged between 12 and 15 years were eligible for inclusion)* | Latrine or flush toilet | **Diagnostics:** +½**Number of samples:** +1/3**WASH assessment:** 0**WASH definitions:** 0**Confounding assessment:** 0**Reponse rates:** +1**Other:** 0**Total:** +15/6 | 2x2 table | - | Latrine or flush toiletChildrenSouth America | 359/915 | 84/136 | 0·64 (0·47-0·86) |
| Coura-Filho et al., 1994 [[3](#_ENREF_3)] | Descriptive survey in Peri-Peri, Brazil | 480 *(everyone in the study areas was eligible for inclusion, except long-term hospital patients, children below 1 year of age, and the disabled)* | Sewer connection and/or latrine | **Diagnostics:** +½**Number of samples:** +1/3**WASH assessment:** 0**WASH definitions:** 0**Confounding assessment:** 0**Reponse rates:** 0**Other:** 0**Total:** +5/6 | 2x2 table | Barbosa | Sewer connection and/or latrineAdults and childrenSouth America | 4/15 | 36/88 | 0·65 (0·2-2·1) |
| Peri Peri | Sewer connection and/or latrineAdults and childrenSouth America | 9/14 | 45/269 | 3·84 (1·57-9·4) |
| Cundill et al., 2011 [[4](#_ENREF_4)] | Baseline from longitudinal study of factors associated with reinfection with *S. mansoni* in Americaninhas, Brazil | 598\**(people included if they were aged over 5 years, included in the baseline survey, and met other inclusion criteria)* | Latrine | **Diagnostics:** +1/2**Number of samples:** +1**WASH assessment:** 0**WASH definitions:** 0**Confounding assessment:** +1**Reponse rates:** 0**Other:** 0**Total:** +2½  | 2x2 table | - | LatrineAdults and childrenSouth America | 39/286 | 30/243 | 1·10 (0·67-1·83) |
| da Silva et al., 1997 [[5](#_ENREF_5)] | Cross-sectional descriptive survey in Serrano, Cururupu, Brazil | 294 *(systematically sampled from the population of Serrano)* | Cesspool/Septic tank | **Diagnostics:** +½**Number of samples:** 0**WASH assessment:** 0**WASH definitions:** 0**Confounding assessment:** 0**Reponse rates:** 0**Other:** 0**Total:** +½  | 2x2 table | - | Septic tank/cesspool Adults and childrenSouth America | 69/213 | 2/10 | 1·62 (0·35-7·57) |
| Farooq et al., 1966 [[6](#_ENREF_6)] | Descriptive survey in the Egypt-49 project area, Egypt | 23,572*(random sample of individuals living in the areas)* | Latrine | **Diagnostics:** +1**Number of samples:** +1/3**WASH assessment:** 0**WASH definitions:** 0**Confounding assessment:** +1**Reponse rates:** +1**Other:** 0**Total:** +31/3 | 2x2 table | Area 1 - Project area | LatrineAdults and childrenAfrica | 1211/6224 | 1475/2876 | 0·38 (0·35-0·41) |
| Area 2 - Rural division | LatrineAdults and childrenAfrica | 223/1357 | 681/1889 | 0·46 (0·39-0·54) |
| Area 3 - Urban division | LatrineAdults and childrenAfrica | 461/3046 | 34/41 | 0·18 (0·11-0·29) |
| Area 4 - Reclamation division | LatrineAdults and childrenAfrica | 177/1346 | 81/201 | 0·33 (0·24-0·44) |
| Area 5 - Control division | LatrineAdults and childrenAfrica | 350/475 | 678/746 | 0·81 (0·68-0·96) |
| Firmo et al., 1996 [[7](#_ENREF_7)] | Case-control survey in Gorduras, Minas Gerais, Brazil | 916\**(households selected randomly and all residents in these households were eligible for inclusion)* | Sewerage | **Diagnostics:** +½**Number of samples:** +2/3**WASH assessment:** 0**WASH definitions:** +1**Confounding assessment:** 0**Reponse rates:** +1**Other:** 0**Total:** +25/6 | 2x2 table | - | SewerageAdults and childrenSouth America | 408/421 | 43/44 | 0·99 (0·64-1·54) |
| Fürst et al., 2013 [[8](#_ENREF_8)] | Descriptive survey as part of the Taabo health demographic surveillance system, in south-central Côte d'Ivoire | 195*(adults in a stratified random sample of approximately 7% of households in the area of the Taabo health demographic surveillance system)* | Latrine with cement floor or flush toilet | **Diagnostics:** +½**Number of samples:** +1/3**WASH assessment:** 0**WASH definitions:** +1**Confounding assessment:** 0**Reponse rates:** 0**Other:** 0**Total:** +15/6 | 2x2 table supplied by the authors | - | Latrine or flush toilet AdultsAfrica | 1/66 | 3/125 | 0·63 (0·06-6·19) |
| Guimarães et al., 1985a [[9](#_ENREF_9)] | Descriptive survey in Tuparece, Brazil | 745\**(all 830 residents registered in the census were eligible for inclusion)* | Latrine | **Diagnostics:** +½**Number of samples:** +1/3**WASH assessment:** 0**WASH definitions:** 0**Confounding assessment:** 0**Reponse rates:** +1**Other:** 0Total: +15/6 | 2x2 table | - | LatrineAdults and childrenSouth America | 198/243 | 129/175 | 1·11 (0·82-1·48) |
| Guimarães et al., 1985b [[10](#_ENREF_10)] | Descriptive survey of school children in Ilha, Brazil | 167\**(all children at the community’s school were eligible for inclusion)* | Latrine | **Diagnostics:** +1**Number of samples:** +1/3**WASH assessment:** 0**WASH definitions:** 0**Confounding assessment:** 0**Reponse rates:** +1**Other:** 0**Total:** +21/3 | 2x2 table | - | LatrineChildrenSouth America | 61/95 | 7/4 | 0·37 (0·10-1·31) |
| Kabatereine et al., 2011 [[11](#_ENREF_11)] | Descriptive survey at Lake Victoria, Uganda | 1784\**(15 children were randomly selected in each village)* | Latrine | **Diagnostics:** +1**Number of samples:** +1/3**WASH assessment:** 0**WASH definitions:** 0**Confounding assessment:** 0**Reponse rates:** +1**Other:** 0**Total:** +21/3 | Odds ratio from multivariate stepwise logistic regresion model | - | LatrineChildrenAfrica | - | - | 0·50 (0·39-0·64) |
| Matthys et al., 2007 [[12](#_ENREF_12)] | Cross-sectional descriptive survey in Man, Côte d'Ivoire | 716 *(households randomly selected and all people in these households were eligible for inclusion)* | Latrine | **Diagnostics:** +1**Number of samples:** +1/3**WASH assessment:** 0**WASH definitions:** 0**Confounding assessment:** 0**Reponse rates:** 0**Other:** 0**Total:** +11/3 | Odds ratio from bivariate model | - | LatrineAdults and childrenAfrica | - | - | 0·51 (0·32-0·81) |
| Mahmud et al., 2013 [[13](#_ENREF_13)] | Survey of schoolchildren in 12 schools in northern Ethiopia | 600*(schoolchildren randomly selected from school rosters)* | Latrine | **Diagnostics:** +1/2**Number of samples:** +2/3**WASH assessment:** 0**WASH definitions:** 0**Confounding assessment:** 0**Reponse rates:** +1**Other:** 0**Total:** +41/3 | 2x2 table | - | LatrineChildrenAfrica | 26/238 | 54/282 | 0·57 (0·35-0·94) |
| Noman et al., 2012 [[14](#_ENREF_14)] | Descriptive survey in schoolchildren in Taiz governorate, Yemen | 210*(not specified)* | Toilet | **Diagnostics:** +½**Number of samples:** 0**WASH assessment:** 0**WASH definitions:** 0**Confounding assessment:** 0**Reponse rates:** 0**Other:** 0**Total:** +½  | 2x2 table | - | Latrine or flush toiletChildrenAsia | 57/115 | 14/24 | 0·85 (0·41-1·77) |
| Palmeira et al., 2010 [[15](#_ENREF_15)] | Survey of schoolchildren in two municpalities in the state of Alagos, Brazil | 329\**(all school children aged 7-15 years in the two municipalities studied were eligible for inclusion)* | Pit latrine or sewerage | **Diagnostics:** +½**Number of samples:** +2/3**WASH assessment:** 0**WASH definitions:** 0**Confounding assessment:** +1**Reponse rates:** 0**Other:** 0**Total:** +21/6 | 2x2 table | - | Latrine or flush toiletChildrenSouth America | 47/171 | 13/38 | 0·80 (0·40-1·63) |
| Rodrigues et al., 1995 [[16](#_ENREF_16)] | Descriptive survey in Itinga, Brazil | 324\* *(all inhabitants of the village of Ponte Do Pasmado were eligible for inclusion)* | Cesspool/Septic tank | **Diagnostics:** +1**Number of samples:** +1/3**WASH assessment:** 0**WASH definitions:** 0**Confounding assessment:** 0**Reponse rates:** +1**Other:** 0**Total:** +21/3 | 2x2 table | - | Septic tank/cesspoolAdults and childrenSouth America | 73/85 | 90/76 | 0·73 (0·47-1·12) |
| Sady et al., 2013 [[17](#_ENREF_17)] | Decsriptive survey in 10 districts in western Yemen | 400*(households randomly selected and all children up to 15 years of age were eligible for inclusion in the study)* | Presence of toilet in house | **Diagnostics:** +1**Number of samples:** 0**WASH assessment:** 0**WASH definitions:** 0**Confounding assessment:** 0**Reponse rates:** 0**Other:** 0**Total:** +1 | 2x2 table supplied by the authors | - | Latrine or flush toiletChildrenAsia | 7/213 | 30/150 | 0·16 (0·07-0·38) |
| Ximenes et al., 2003 [[18](#_ENREF_18)] | Cross-sectional descriptive survey in São Lourenço da Mata, Brazil | 1674 families\**(households randomly selected and all those aged 10-25 years in those households were eligible for inclusion)* | Sewerage | **Diagnostics:** +½**Number of samples:** 0**WASH assessment:** 0**WASH definitions:** 0**Confounding assessment:** +1**Reponse rates:** 0**Other:** 0**Total:** +11/2 | Odds ratios from biavariate models | Pit or septic tank | SewerageAdults and childrenLatrine or flush toilet | - | - | 0·60 (0·44-0·84) |
| Sewerage | SewerageAdults and childrenSouth America | - | - | 0·20 (0·14-0·29) |

\* WASH and schistosomiasis data not available for complete study population. Population reported is the number with WASH and schistosomiasis data available

† Quality of studies was assessed by assigning scores for diagnostic approach (+1 if sedimentation was used for intestinal schistosomiasis or multiple diagnostic approaches used, +1/2forKato-Katzor urine filtration, 0 otherwise); number of samples analysed (+1 if multiple stool/urine samples taken, +2/3 if slides checked by another technician, +1/3 if multiple slides read from the same sample, 0 otherwise); WASH assessment (+1 if household visit and inspection, or at least some spot checks, 0 if questionnaire outside of the home or WASH assessment method not defined); WASH definitions (+1 if they allow for comparison with JMP indicators,[[19](#_ENREF_19)] 0 otherwise); confounding assessment (+1 for data being split according to non-WASH variables found to be predictive of infection, 0 otherwise); response rates (+1 for above 80%, 0 for below 80% or not defined); and other (+1 for additional strengths and -1 for additional weaknesses).

## References

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