Promoting Female (and Male) Educational Participation through School Sanitation

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Gender-Sensitive WASH: Opportunities for Girls' Education

Gender Inequality in Education in Developing Countries

Various attempts to increase female participation in schooling

- Millennium Development Goals (MDGs): achieving universal primary education, promotion of gender equality

The "Menstruation Hypothesis": menstruation is an obstacle to schooling, contributing to high drop-out of pubescent-age girls

- Motivates efforts to provide school sanitation, which could improve girls' health, privacy and safety at school

Research Questions

Are educational decisions influenced by improving the health, privacy, and safety of the school environment?

How does school sanitation in the form of latrine construction impact student enrollment?

- School participation, measured by enrollment
- Impacts on achievement
- Persistence of effects

Are estimates consistent with the "Menstruation Hypothesis?"

- Differential impacts by student sex and age
- Exploration of potential mechanisms

School Sanitation and Hygiene Education Programme (SSHE)

Goal of eradicating open defecation

- Started in 1999 by the Government of India to encourage schools to provide sanitation facilities
- Bolstered by Millennium Development Goals (MDGs)
  - MDG Goals 2 & 3: increase school participation and promote gender equality
  - MDG Goals 6 & 7: combat disease and encourage environmental sustainability

Following low take-up, the government began to increase financial support in 2003

- Large increase in school-latrine construction followed

Large increase in school latrines

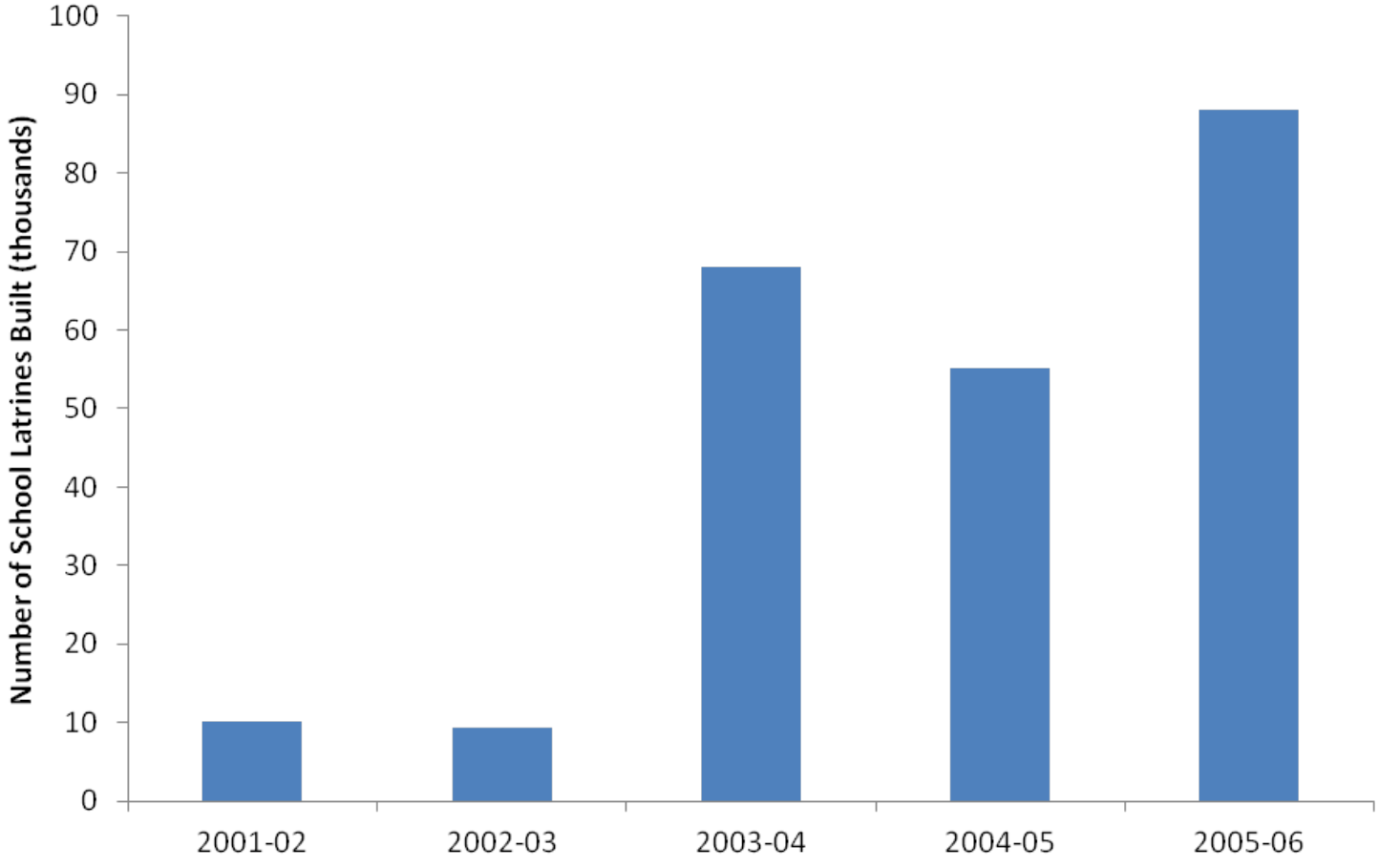

Figure: Number of Indian School Latrines Built Over Time

Source: Ministry of Drinking Water and Sanitation, NIC-MDWS Informatics System Cell

SSHE Implementation

Managed by Ministry of Drinking Water and Sanitation, not education officials

- Roll-out varied by district
- No explicit tradeoff in receiving a latrine for other inputs
- Not likely to have information on initial school characteristics

Component of Total Sanitation Campaign (TSC)

- Not explicitly combined with household-sanitation efforts
- TSC impacts benefited infants (Spears 2012), but early childhood impacts would not appear in sample period

SSHE programs initially in 7 countries (Snel 2003)

- Burkina Faso, Colombia, India, Nepal, Nicaragua, Vietnam, and Zambia

School Sanitation Options

Open Space

Unisex Latrine

Separate Latrine

Potential Mechanisms

Girls may miss or leave school

- Latrines can provide privacy for girls, make school a safer place, and encourage parents to enroll their daughters

Boys may be concerned about safety and privacy

- Children most likely to be victims of bullying, especially younger boys

Poor sanitation can reduce education through health impacts

- Dehydration/malnourishment, water-borne illnesses, incontinence/constipation, blinding eye trachoma, etc.

Female teachers may be less likely to attend

- The presence of female teachers may increase girls' enrollment

Main Findings

School sanitation substantially impacts educational outcomes of girls and boys, both younger and older children
Increased school enrollment

- 12% increase in primary schools (11.8 students)
- 8% in upper-primary schools (5.3 students)
- Overall increase of 607K primary, 75K upper-primary students

Lowered drop-out

- 12.2% decrease in primary, 5.3% in upper-primary

Persistent effects over time (even slightly stronger)

- Primary: 11.9% after 1 year, 12.2% after 3 years
- Upper-primary: 7.3% after 1 year, 8.6% after 3 years

Main Findings

Achievement outcomes as proxy for attendance

- Higher number of students passing state board exams
- No impact on the number of students scoring high marks

Similar impacts across states and districts

- Sample income variation comparable to countries between 5th and 25th percentiles of world income distribution (Rwanda, Nepal vs. Georgia, Ukraine)

Varying impacts by child sex and age

- Girls generally more impacted than boys
- Younger children generally more impacted than older children

Exploring Possible Mechanisms

Female teachers

- Proportion of female teachers?
- Increase in female-teacher attendance?

Latrine type:

- Does it matter if girls and boys share the same facilities?
- Mechanisms: Health vs. privacy

Presence of Female Teachers

Teacher data available for two states

- Rajasthan and Madhya Pradesh (8,003 schools)

Does latrine construction increase the fraction of teachers at a school that are female? Are female teachers more likely to teach at a school with a latrine (or a female-only latrine)?

- Schools that constructed a latrine had a 1.8% increase ($p<0.01$) in the proportion of female teachers, on average
- Smaller effect in schools that only built a unisex latrine (1.1%, $p<0.10$)
- Larger effect from building female-only latrines (4.4%, $p<0.01$) or separate latrines (2.3%, $p<0.01$)
- By contrast, latrine construction had no impact on the share of teachers from any particular caste background
- No change in the average total number of teachers

Enrollment Outcomes by Latrine Type

Differential impacts by latrine type (sex-specific vs. unisex)

- Helps illustrate potential mechanisms like privacy and health
- Important in deciding where to direct scarce resources

There may be differential effects by latrine type

- If privacy concerns are most important, children may not benefit from unisex latrines
- If health concerns are most important, children may benefit from either type of latrine

Useful in understanding factors that influence education decision-making and in deciding where to direct limited resources

Latrine Type Matters

Pubescent-age girls:

- Benefit substantially from female-only latrines
- Very little benefit from unisex latrines
- Importance of privacy in educational decisions
- Consistent with "Menstruation Hypothesis"

Pubescent-age boys and younger children:

- Unisex latrines relatively sufficient
- Smaller additional gains from sex-specific latrines
- Importance of health in educational decisions

Summary and Concluding Notes

School sanitation substantially impacts educational outcomes of girls and boys, both younger and older children (universal benefits)

- Increased school enrollment, lower drop-out
- Higher number of students passing state board exams
- Persistent effects over time
- Similar impacts across states and districts

Privacy and safety matter for pubescent-age girls

- Little benefit from unisex latrines (targeting matters)
- Substantial benefits from separate-sex specific latrines
- Potential benefits from increased share of female teachers

Summary and Concluding Notes

But, broader view needed of factors influencing education decisions

- Substantial impacts on younger children and boys from unisex latrines
- Important for directing scarce resources
- Illustrates varying importance of health, privacy, and safety

Other considerations

- Gender issues matter for both girls *and* boys
- Funding must include maintenance in addition to construction
- Post-COVID, WASH considerations are critical for reopening schools

Thank you!

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