No Shit!

Health, hygiene and behaviour: containing the shit

Ben Fawcett
International WaterCentre, Griffith University, Brisbane, Australia
One gram of human faeces can contain:

- 10,000,000 viruses
- 1,000,000 bacteria
- 100 parasite eggs

We each produce at least 100gm per day.

Human excreta can contain more than 50 pathogenic organisms.
The F-diagram: faecal-oral disease transmission
(Wagner & Lanoix, WHO, 1958)

- Sanitation
- Fluids
- Fields/fomites
- Flies
- Food
- New host
- Water quality
- Hygiene
  - Handwashing with soap before cooking, eating, feeding
  - Handwashing with soap after faecal contact
Faecally-transmitted infections (FTIs)  
[Chambers & von Medeazza, 2014]

Diarrhoea: 509,000 <5yr deaths/year (2015)

“The visible tip of the FTI iceberg”

Soil-based helminths (roundworm, whipworm & hookworm)
Faecally-transmitted infections (FTIs)

Soil-based helminths:
More than 600m children infected with each.
Cause malnutrition, stunting and poor development, asthma and anaemia.
Faecally-transmitted infections (FTIs)

Trachoma:
Bacterial infection transmitted in eye discharge by poor hygiene and by flies that breed on human faeces.
500m cases worldwide, including Australia.
1.8m severely affected.
Diarrhoea: 509,000 <5yr deaths/year (2015)

“*The visible tip of the FTI iceberg*”

Soil-based helminths (roundworm, whipworm & hookworm)

Trachoma

Schistosomiasis: >200m affected, mostly children; 20m with severe consequences.

Plus: Hepatitis A, B & E, giardia, poliomyelitis ...
Environmental enteropathy / environmental enteric dysfunction

Highlighted by Jean Humphrey in 2009.
One gram of chicken shit contains 10 million E coli.

And dogs’?
Environmental enteropathy / environmental enteric dysfunction

Healthy gut wall

Atrophied villi
Stunting in Cambodia (WSP, 2013)

The first 1000 days are crucial

Age in months

Height-for-age z-score

No open defecation

Some open defecation

100% open defecation
### Child stunting (World Bank, 2019)

<table>
<thead>
<tr>
<th>Stunting in pre-schoolers (%)</th>
<th>All pre-schoolers</th>
<th>Poorest quintile</th>
<th>GDP per capita PPP ($)</th>
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(2006)
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<td>17,914</td>
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![Image](image.png)
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“Sanitation, more than many other human rights issues, evokes the concept of human dignity; consider the vulnerability and shame that so many people experience every day when, again, they are forced to defecate in the open ... Dignity closely relates to self-respect, which is difficult to maintain when being forced to squat down in the open, with no respect for privacy, not having the opportunity to clean oneself after defecating and facing the constant threat of assault in such a vulnerable moment.”

“Women and girls experience feelings of fear, shame, helplessness, anger and disgust as they defecate in the open or use distant, unsafe, unlit and unhygienic facilities.

Violence related to sanitary practices, including menstrual hygiene management may be:

• Sexual;
• Psychological, including harassment and bullying;
• Physical;
• Socio-cultural, including ostracism, discrimination & marginalization.”

Sommer et al., 2015.
Social impacts of inadequate sanitation
Social impacts of inadequate sanitation

Handling shit:
At least 800,000 Dalits are obliged to clean latrines for higher caste Indians.
Social impacts of inadequate sanitation
Safia, a young married girl on the streets of Hyderabad, India:

“Everything is a problem on the pavement. There is no privacy ... people are watching all the time. There is no safety ... people are waiting to take advantage.”

Safia’s first baby died after a few months. Her second child is three years old. When we met her, she had just suffered the miscarriage of her third child – on the street.

Joshi, Fawcett & Mannan, 2011.
Global sanitation coverage

Billions

1990

2000

2017

Urban served

Urban unserved

Rural served

Rural unserved

Open defecators

Billions

0 1 2 3

Ministerio de Agricultura y Riego

International Forum on Water Culture,
Lima, 2019

PERÚ
Ministerio de Agricultura y Riego

International Forum on Water Culture,
Lima, 2019

ANA
Autoridad Nacional del Agua
Open defecation

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Data from JMP 2019
## Open defecation

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(9%) (26%) (7%) (2%)

Data from JMP 2019
India and open defecation

Urban India, 2017: 5% open defecation = 23m
“The real problem is promoting a social demand for initial and sustained toilet use. It would be like telling Americans or Europeans that they should now defecate in the street. We’re overlaying our belief system, norms and mindsets on others; this is a very complex development scenario.”

Sue Coates, UNICEF WASH Chief in India.
Open defecation

**India**
- Poorest: 96% (1995) to 95% (2015)

**Nepal**

% open defecators

1995
2015
Conclusion

• There’s a lot of shit in the world; it does a lot of harm.
• We need to do more to contain it, treat it and dispose of it safely.
• Human behaviour change is key.
• We need to focus particularly on densely populated, poor urban areas.
• This is a vital component of WATER CULTURE.
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