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Maternal, Environmental, and Social Context Predicts Diarrheal Infection Incidence in Young Children in Sundarbans, India

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Poverty tourism, referred to as slum tourism, is one of the fastest growing niches in the tourism industry. Tourists travel to less developed areas to view people living in poverty.

Introduction

Diarrheal infection is the third leading cause of childhood mortality in India and is responsible for 13% of all deaths per year in children under 5 years of age(Lakshaminarayan & Jayalakshmy, 2015). The Sundarbans in West Bengal is amongst the poorest regions of India and is the epitome of abject deprivation and the acute struggle against geographical and socioeconomic challenges. The incidence of diarrhea in this region is considerably high; about 42,000 reported cases occur per month (Kanjilal et al., 2013).

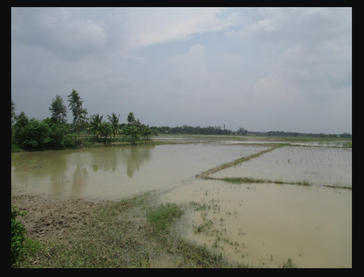
The purpose of the present study was to determine the association of perceived social support by mothers and diarrheal incidence in their children in the Sundarbans. Socioeconomic, environmental, and behavioral determinants were considered as well.

Why Study Mothers?

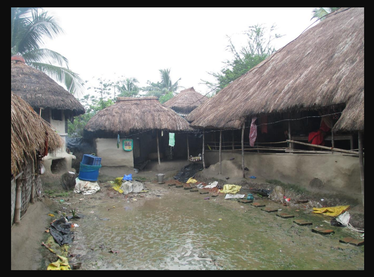
Mothers are the primary caregivers, so interviewing mothers allows us to examine how maternal psychosocial factors influence child health outcomes.

Why Study Social Support?

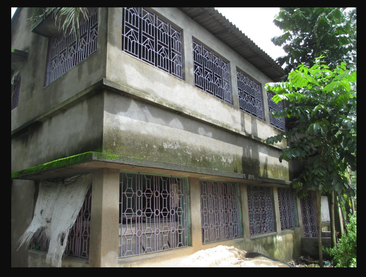
High levels of social support have been associated with positive outcomes for mothers and children such as greater attachment and fewer depressive symptoms (Logsdon, Birkimer, Ratterman, Cahill, & Cahill, 2002; Uchino, 2009).



A rice paddy field. Most people rely on agriculture to sustain a living.



An example of a mud dwelling.



An example of a more protective brick house.

Method

Participants

- 150 women, with at least one child five or under, from a village of Masjidbati, Sundarbans in West Bengal, India.
- Demographic characteristics can be seen in Table 1.

Measures

- Sociodemographic predictors such as religion, level of education, household income.
- Environmental predictors such as type of house (mud vs. brick) and availability of toilet.
- Hygienic handwashing behaviors such as washing hands with soap after defecation or before eating.
- Perceived Social Support was assessed with the Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988) as translated to Bengali by Shimul and Islam (2008). The scale yields an overall social support score as well as scores for support from a significant other, family, and friends.
- Diarrheal incidence in the past year assessed by asking "How many times in the last year did your child suffer from diarrhea?".

Procedure

- The researcher conducted structured interviews from women recruited door to door from 145 households.
- The association between perceived social support and the incidence of diarrhea was assessed with hierarchical regression. Only factors that proved significant ($p<0.1$) for the social support (predictor) and incidence of diarrhea in the past year (the outcome variable) were included in the multivariate analysis.

Results

75% of males and 73% of females had at least one incident of diarrhea in the past year (mean=2.7).

Perceived social support (PSS) was associated with diarrheal disease. Children had fewer incidents of diarrhea when their mothers reported higher

- Overall perceived social support, $r=-.31$, $p<.001$
- PSS from a significant other, $r=-.33$, $p<.001$
- PSS from family, $r=-.18$, $p<.05$
- PSS from friends, $r=-.22$, $p<.05$

Diarrheal incidence was also significantly associated with –

- **Religion**: Children of Muslim women had an average of three episodes in the past year, while the children of Hindu women had two ($p<.05$).
- **Household income**: Children in households with higher income had fewer incidents of diarrhea ($p<.1$).
- **Type of house**: Children living in mud dwellings had an average of three episodes in the past year, while children living in more desirable and protective brick houses had two ($p<.05$).
- **Handwashing behavior before meals**: Mothers who washed their hands with soap before eating ($p<.05$) and feeding their child ($p<.05$) had children with fewer incidents of diarrhea than those who did not use soap or did not wash their hands at all.

Table 2 presents the results of a multivariate regression analysis. The hierarchical regression model revealed that the relationship between overall social support and all subscales and diarrheal disease remained statistically significant when modeled with other covariates (income, religion, and type of house).

Table 1: Sample Characteristics

Incidents of diarrhea in the past year	2.65
Overall PSS	11.78
PSS from significant other	4.44
PSS from family	4.40
PSS from friends	2.93
Age (years)	25
Religion (% Hindu)	37
Marital Status (% Married)	98
Monthly Household Income (USD)	109
Level of schooling (% illiterate)	21
Type of house (% mud houses)	61
Age of child (months)	35
Sex of child (% Female)	45
Washing hands with soap	
After defecation	61
After cleaning child's stool	62
Before eating food	29
Before feeding child	29

Note. PSS = perceived social support
Note. 1 USD =65.53 INR

Table 2: Hierarchical Regression Model

	β	p-value
Overall Social Support	-.30	.00
Significant Other	-.32	.00
Family	-.20	.02
Friends	-.21	.02

Discussion

This study marks an important advancement in the understanding of how maternal psychological well-being relates to the incidence of diarrheal disease in underdeveloped areas like the Sundarbans. The findings demonstrate that mothers who perceive having higher overall social support and from their significant others, family, and friends have children with fewer incidents of diarrhea.

Explaining the Relationship Between Social Support and Diarrheal Incidence

- Women with greater social support live in less stressful environments, as do their children, and these children have higher immune activity (Carlsson, Frostell, Ludvigsson, & Faresjo, 2014).
- Greater social support facilitates more positive maternal health behaviors. Children of women with better social support may engage in more hygienic behaviors and have better nutrition (Umberson, 1987; Ziaei et al., 2015).
- Parents who receive more social support report feeling more effective as parents, so perhaps they are (Uchino, 2009).

Strengths

- Large sample size – associations may be viewed with confidence.
- Focus on the mother– they are primary caregivers and can more accurately report diarrheal incidence and perceived social support.

Weaknesses

- Recall bias – may not remember every incident of diarrhea over the past year.

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