


## Chapter 6

# Physical School Environment and Infectious Diseases: A Case of Primary School Context in Bangladesh

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### ABSTRACT

*The mechanisms underlying relationships between unhealthy physical environment in schools and infectious disease transmission among students are understudied. Drawing from Bronfenbrenner's ecological systems theory, this chapter analyzes behavioral patterns as mechanisms by which an unhealthy physical school environment transmits infectious diseases to primary students in Bangladesh. For the study, the authors randomly selected 300 students from grade-C primary schools located in disadvantaged areas in Rajshahi City, Bangladesh; over 12 months, they collected data on the physical school environment, children's behavioral patterns, and their infections from infectious diseases in the primary school context. The study found that 20-45% of the students suffered from various infectious diseases during the study period. The results from structural equation modeling suggested that poor qualities of the physical school environment via unhealthy behavioral patterns transmitted infectious diseases, affecting the students' physical health in the primary schools.*

DOI: 10.4018/978-1-7998-9414-8.ch006

## **INTRODUCTION**

Children are part and parcel of the school environment for healthy development and achievement (Ferguson et al., 2013). Ecological systems perspective and research suggests that school as a microsystem plays an important part in promoting children's healthy physical growth and psychosocial development, and performance (Ferguson et al., 2009, 2013; Kagan et al., 2002; Uddin, 2017a). The physical school environment, in which children spend about 4 to 6 hours a day, 180 days yearly, influences their health and success (Wigle, 2003). While a healthy physical school environment positively influences children's health, education, and well-being, the unhealthy school environment negatively influences their health and achievement (Aprihatin et al., 2020; Kuzik et al., 2022; Rohmah et al., 2022; WHO, 2004, 2016, 2020).

In Bangladesh, growing research reveals that unhealthy physical school environments, in which students from low economic backgrounds enroll and learn, transmit various infectious diseases (Asadullah & Chaudhury, 2011; Dreibelbis et al., 2016). Further studies indicate that students in over-crowded classrooms with poor lighting and ventilation face poor physical school (Bangladesh Bureau of Statistics, BBS, 2018, 2020; Jamal et al., 2013). In turn, poor qualities of the physical school environment frequently infect students with transmitted diseases in the primary school context (Afroz et al., 2019; Uddin, 2017b).

Although Rajshahi is a clean and green city, periodical research reveals that due to population growth and urban expansion, the low-quality of the primary schools' physical environment in the city is deteriorating (BBS, 2020). Compared to primary schools of high-quality education, low-quality schools (40-60%) with over-class size have poor physical environment conditions (BBS, 2018). Although poor qualities of the physical school environment in impoverished areas severely affect students' physical health with infectious diseases and increase morbidity and mortality by 10-15%, only a few studies have focused on the city (Karim et al., 2019; Khan et al., 2021; Wadood et al., 2021; Uddin & Ferdous, 2009; 2015). Based on Urie Bronfenbrenner's (1974, 1977) ecological system perspective, this chapter focuses on how the physical school environment affects the spreading of infectious diseases via behavioral patterns among primary school students in Bangladesh. The first part of the chapter mentions Bronfenbrenner's (1974, 1977) ecological systems perspective on which we develop a conceptual framework and its mechanisms by which the physical school environment transmits infectious diseases into primary school students. The second part of the chapter focuses on methodology. The third and last one presents the results and its discussion.

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