



# Work stress: Its components and its association with self-reported health outcomes in a garment factory in Bangladesh—Findings from a cross-sectional study<sup>☆</sup>



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## ABSTRACT

Bangladesh is one of the leading exporters of ready-made garments (RMG) worldwide producing at very low cost almost exclusively for Western markets. Empirical evidence on psychologically adverse working conditions and their association with health in the RMG setting remains sparse. Drawing on insights from previous ethnographic research, we conducted a cross-sectional epidemiological study among 332 RMG workers in Dhaka, Bangladesh. High work-related demands and poor interpersonal resources represented key components of work stress and were important determinants of poor health. The key work stress components observed in this study partly differed from those identified in Western work place settings.

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## 1. Introduction

Bangladesh is one of the leading exporters of ready-made garments (RMG) worldwide (World Trade Organization, 2011), producing almost exclusively for markets in Europe and North America (Ahmed and Ahmed, 2011). It is estimated that 3.6 million workers are employed in the garment sector in Bangladesh (BGMEA, 2009). Bangladesh's importance in the global garments

economy is rising as indicated by a recent increase of its share in the worldwide clothing export by 25% (World Trade Organization, 2011). The working conditions in RMG factories have been increasingly featured by Western media as being characterized by low wages, exposure to violence, and a high work load (Bajaj, 2010; Ethirajan, 2012; Yardley, 2012). It is well known that physically and psychologically taxing working conditions are important determinants of employees' health (Nieuwenhuijsen et al., 2010; Rosengren et al., 2004). While physical work-related hazards (e.g. respiratory diseases in relation to occupational exposures) have been explored in a limited number of earlier studies in RMG settings (Ahasan et al., 2000; Khanam et al., 2008), psychologically adverse working conditions and their potential health effects have been addressed insufficiently.

The only previous epidemiological study from Bangladesh on psychosocial working conditions relied on single items to measure general job satisfaction (along with reasons for dis-/satisfaction), workers' perception of “prestige and honour in the society”, and adverse events (e.g., like sexual harassment), respectively (Paul-Majumder, 2003). Using a single item on job satisfaction

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may be useful in quantifying the overall psychological burden experienced by workers. However, reasons for dissatisfaction were only specified by 20% of the respective workers and were thus not explored systematically. Therefore, the construction of experienced “work stress” – as a broader concept comprising various psychologically adverse working conditions – in that specific setting remains unexplored. In addition, potential associations of psychologically demanding working conditions with health outcomes have not been explored in that previous study. Thus, it is still unknown whether work stress is actually associated with workers' health in RMG settings in Bangladesh, and if so, which psychological components are the main drivers of this association. Such insights could provide a starting point for policy action and the development of interventions to improve the working conditions and health of RMG workers in Bangladesh. To date, the only study which systematically addressed components of work stress and their associations with health in a RMG factory was conducted in Thailand (Buapetch et al., 2008). In that study, work stress was assessed by means of a work stress scale widely used in Western occupational settings (Siegrist et al., 2004), which had previously been translated into Thai. It is plausible however, that a culturally embedded entity such as *work stress* might manifest itself differentially across cultures, thereby requiring to (a) explore work stress individually for each cultural setting as findings cannot be readily transferred from one culture to the other and (b) to develop items that capture stress from an *emic* perspective (Brislin, 1990; Sanchez et al., 2006).

Our research therefore set out with two objectives: The first objective was to identify the main components of work stress as experienced in a RMG factory in Dhaka, Bangladesh. Second, we aimed to investigate associations of the work stress components with self-reported health outcomes. In addition to these research aims, the interdisciplinary methodology used in our study may be of interest to future studies attempting to approach work stress as a culturally embedded phenomenon.

## 2. Methods

### 2.1. Study population and setting

The study was an interview-based cross-sectional study among workers of a RMG factory in Dhaka, the capital of Bangladesh. Three criteria were employed to select the factory: (1) relatively fast traffic-related accessibility and close vicinity to the Independent University Bangladesh, and (2) a size of the work force between 300 and 600 employees, which was considered both statistically sufficient and logistically feasible and, (3) the factory owner's willing to cooperate (e.g., granting unrestricted access on pre-specified dates).

The chosen factory employed a total of 553 men and women working as helpers, machine operators, cutters, folders, iron men/women, packing men/women, supervisors, quality inspectors, technical staff, finance personnel, and managers. This range of occupations represents the common structure in RMG factories in Bangladesh (Murayama, 2006; Paul-Majumder, 2003). Each individual working in the factory (including the management) was considered eligible and was approached for participation. No exclusion criteria were applied based on the assumption at the outset of the study that all potential participants would be adults.

Written informed consent was obtained from all interview participants. Detailed standardized explanations with information on, amongst others, the involved parties, the background of the study, survey procedures, and anonymity of participants were slowly read out to each individual. Participants indicated consent by placing either their initials or a symbol (cross or tick) below the

study information sheet. The study received ethical approval by the Bangladesh Medical Research Council.

The factory selected for data collection declared not to employ minors (e.g., workers need to confirm that they are 18 years or older when hired). However, upon completion of the study, it was found that a total of 17 participants specified an age below 18 years, which would necessitate provision of consent for participation by the respective parent(s) or guardian. Data of those minors was therefore destroyed and excluded from the present analysis. Of the 553 employees at the study site, 531 gave written informed consent (response rate 96%). *Post-hoc* exclusion of the 17 participants reporting an age of less than 18 years reduced the sample to 514 participants.

Interviews were conducted in February and March 2012 by three research assistants, who were fluent in Bangla and supervised by the local study coordinator (MS). The research assistants were trained in multiple sessions prior to the study according to interviewing training guidelines (McCrossan, 1991; Schnell, 2012).

### 2.2. Measuring work stress—conceptual model

There are several established interview instruments to assess psychologically adverse working conditions that are assumed to contribute to the construction of work stress (Tabanelli et al., 2008). One of the most widely used instruments is the effort-reward imbalance (ERI) questionnaire. The ERI questionnaire is based on the theoretical model of social reciprocity assuming that failure of reciprocity of “efforts” and “rewards” in work life exerts detrimental effects on the health of workers (Siegrist, 1996). The ERI questionnaire has been translated and psychometrically evaluated for many languages, including Asian languages (Buapetch et al., 2008; Li et al., 2005). To date, previous work has been based on the assumption that the key components of work stress are shared and therefore explorable with translated versions of the ERI across cultural settings. Given that *stress* is a subjectively felt entity, its perception may be highly determined by multiple contextual factors including the cultural environment (Chun et al., 2006). Therefore, there is reason to believe that – while it may be generally appropriate to apply the ERI model in an Asian working environment – the ERI may not capture the full range of key components contributing to workers' experience of work stress. Accordingly, in our study we employed a short version of the ERI interview and complemented it with culture-specific items potentially capturing additional dimensions of work stress.

### 2.3. Work stress measures

We used a seven-item version of the ERI, which has been previously used in the Survey of Health Aging and Retirement in Europe (SHARE) (Dragano et al., 2011). *Efforts* are measured by two items covering perceived physical demands and time pressure. *Reward* is measured using five items that capture perceptions of social support, salary, recognition, promotion prospects, and job security. For the current study, this short ERI scale was translated from English into Bangla and was independently back-translated into English. Inconsistencies between the English versions were discussed in the study team, and revisions were made until consensus was reached. This approach is in line with the approaches used in earlier studies that applied the ERI in Asian work settings (Buapetch et al., 2008; Li et al., 2005; Tsutsumi et al., 2001).

The ERI translation was supplemented with culture-specific items: Previous ethnographic fieldwork was conducted in a RMG factory in Dhaka, Bangladesh, by a member of the research team over the period of ten months (Ashraf and Strümpell, 2011). Potential themes related to work stress were identified in the

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