



# The effect of affordable daycare on women's mental health: Evidence from a cluster randomized trial in rural India



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## ABSTRACT

Access to affordable daycare might improve population mental health. However, evidence is sparse and restricted to middle- and high-income country settings. We conducted a cluster-randomized controlled trial in one low-income setting, rural Rajasthan, India. Communities lacking daycare facilities were identified ( $n = 160$ ) and randomly selected for assistance in setting up a community-based daycare program ( $n = 80$ ) or not ( $n = 80$ ). Women eligible for the daycare program living in these communities completed structured interviews before the intervention (participation rate = 89%) and approximately one year after rollout of the intervention (participation rate = 96%), resulting in a final analytic sample of 3041. Mental distress was measured with the Hindi version of the 12-item General Health Questionnaire (score range: 0–12). We modeled the relation between access to daycare and number of mental distress symptoms (GHQ-12 score) with negative binomial regression using an intention-to-treat approach, which groups women according to if they lived in communities randomized to affordable daycare. We also evaluated the effect of access to daycare on secondary outcomes that may be related to mental distress, including women's work burden, agency, and intimate partner violence (IPV). We found that access to daycare resulted in modest reductions in symptoms of mental distress (mean difference = 0.21, 95% CI:  $-0.43, 0.02$ ). We found some evidence that daycare reduced IPV, but virtually no change in women's work burden or agency. Our results provide some indication that access to affordable daycare might be one policy lever to improve population mental health.

## 1. Introduction

Common mental disorders (CMDs) encompass mood and anxiety disorders that are commonly experienced in both community and clinical settings (D. Goldberg and Huxley, 1992). CMDs affect a large proportion of women worldwide. A recent systematic review and meta-analysis of 157 studies conducted in 59 countries estimated that 14% of women will experience a mood disorder and 18% will experience an anxiety disorder in their lifetime (Steel et al., 2014). Structural factors that give rise to economic and social disadvantage play a key role in the development of mental health problems (Patel, 2015), and identifying interventions to confront these structural factors could greatly improve population mental health (Patel, 2015). However, intervention studies that target structural factors, such as poverty alleviation programs (Lund et al., 2011), rarely investigate mental health outcomes. Access to affordable daycare might be one structural factor that could reduce women's risk of experiencing a CMD, but evidence is sparse and

inconsistent (Ángeles et al., 2011; Baker et al., 2008; Rosero and Oosterbeek, 2011).

Using data from two waves of a cluster-randomized trial, the aim of this study was to evaluate the effect of providing access to an affordable daycare program on women's mental distress in a lower income setting, rural Rajasthan, India. We also evaluated if the provision of daycare resulted in changes to secondary outcomes related to daycare and mental distress, including women's work demands, intimate partner violence (IPV), and agency.

## 2. Background

### 2.1. Daycare and development of common mental disorders

In many societies, traditional gender roles relegate domestic and childcare work to women (Fisher et al., 2014). This work is largely invisible. When these duties are counted as work, women worldwide

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perform greater amounts of work than men (International Labour Organization, 2016). High work amounts are associated with worse mental health (Dinh et al., 2017; Kleiner and Pavalko, 2010; Richardson et al., 2017), and specific aspects of high work amounts may be especially detrimental to mental health, such as attempting to complete too many tasks without enough time (Roxburgh, 2004), having conflicting paid work and household demands (Chandola et al., 2004; Cooklin et al., 2016), and having high childcare demands (des Rivières-Pigeon et al., 2002; Matud et al., 2015; Ozer, 1995).

Access to affordable daycare might improve women's mental health through many interrelated mechanisms. First, daycare might reduce women's total work amount, which could reduce mental distress and risk of CMDs by reducing detrimental work aspects such as conflicting housework and paid work demands. Daycare may also free up women's time to engage in mental health promoting activities such as relaxation, self-care, and adequate sleep, as well as creating occasions to strengthen social ties with neighbors, friends, and family members (Kawachi and Berkman, 2001).

Second, daycare may shift the composition of women's work demands by making it easier to engage in work that can be difficult when caring for young children, such as farm work or paid work. While these changes in work composition may not reduce work burden, they might lead to improvements in mental health by allowing women to contribute more directly to the economic productivity of the household. Prior research links such activities, such as farm work, with slight reductions in mental distress (Richardson et al., 2017). Relatedly – and conversely – daycare could increase women's total work burden if it creates opportunities to engage in activities such as paid work without commensurate reductions in caregiving responsibilities. Thus, daycare could shift activities in a manner that increases the total work amount, which could negatively affect mental health.

Third, changes in the composition of women's work and leisure time may affect other aspects of women's lives that are related to mental health. For example, becoming a breadwinner through an increase in paid work may give women more say in decisions related to herself and the household. These changes might increase a woman's ability to make choices and act upon those choices (i.e., agency (Kabeer, 1999)) or reduce her exposure to IPV, which are two factors associated with higher prevalence of CMDs (Devries et al., 2013; Golding, 1999; Patel et al., 2006; Yount et al., 2014).

## 2.2. Daycare in India

Access to affordable, high-quality daycare is limited in India. Current government programs include the Integrated Child Development Scheme (ICDS), which provides pre-school education to children ages 3 to 6 through local facilities (anganwadis), and nurseries that provide care for young children (crèches). However, crèches are poorly regulated and are rarely functional, and the few operational crèches are characterized by poorly trained staff and substandard facilities (Palriwala and Neetha, 2009). Anganwadis only reach about half of eligible children (International Institute for Population Sciences (IIPS) and ICF, 2015/2016), and are marked by insufficient hours of operation, poorly trained workers, chronic staff absenteeism, and substandard facilities (Palriwala and Neetha, 2009).

## 3. Methods

### 3.1. Study design

This cluster-randomized controlled trial assessed the impact of providing affordable daycare on women and children's health and well-being. We recruited mothers or guardians with children between the ages of one and six living in rural communities from five blocks (geographical areas) in the Udaipur District of Rajasthan, India. A total of 160 village hamlets (i.e., clusters of houses that constitute separate

communities) were included in the study. The trial protocol is publicly available (A Nandi et al., 2016).

### 3.2. Participants

Potential village hamlets were identified by the non-governmental organization (NGO) Seva Mandir, which operates community development programs, including daycare centers called *balwadis*, in rural communities in the Udaipur District. Village hamlets where Seva Mandir had not previously established a daycare were selected between December 2014 and January 2015. These hamlets met the following criteria, established *a priori*: 1) there was no readily accessible government-operated daycare; 2) at least 25 children between the ages of one and six lived in the hamlet; 3) hamlets had an existing structure suitable for a daycare; 4) a woman qualified to operate the daycare lived in the study hamlet or nearby; and 5) the village council indicated adequate demand for daycare. To reduce potential spillover effects between treatment and control hamlets that might occur if women in control hamlets enrolled their children in balwadis in treatment hamlets, we selected control hamlets that were at least 1.5 km from treatment hamlets. Hamlets tended to be geographically isolated.

We conducted a household census in the 160 selected village hamlets to enumerate the population and identify eligible households, namely those with a mother (either biological or guardian) of at least one child between one and six years old. Trained interviewers randomly selected one eligible woman from each eligible household. Selected women were invited to participate in the study and underwent an informed consent process. Women who could read and write signed a written consent form, and women who could not read or write gave oral consent. Interviewers gave all women a copy of their consent form, which included contact details for the regional research manager. After consenting, women completed baseline interviews (described in the Procedures section) and were offered a small gift for participation.

### 3.3. Randomisation and masking

Treatment was assigned using a stratified randomisation procedure. Since there was substantial heterogeneity across blocks, we stratified by block ( $n = 5$ ) and randomly selected hamlets to receive access to the affordable daycare program ( $n = 80$ ) or serve as control hamlets ( $n = 80$ ). Assignment to a treatment or control hamlet was conducted by one of the investigators (SH) using a random number generator in Stata. The treatment assignment was communicated to Seva Mandir, who implemented the daycare programs.

Village hamlets were assigned to treatment or control groups after completion of baseline interviews to minimize bias in recruitment of participants and to avoid biased baseline participant responses due to treatment assignment. Due to the nature of the intervention, it was not possible to mask treatment assignment to study participants or interviewers after implementation of the intervention. The research assistant who cleaned the data and the author conducting the analysis (RR) were not blinded to treatment group assignment.

### 3.4. Procedures

The intervention was an offer of full-time, community-run, affordable daycare (balwadi). Each balwadi provided childcare, nutritious meals, preschool education, and linkage to health services (e.g., immunizations) to children between one and six years of age. Balwadis were operated by local women, called *sanchalikas*, who were hired and trained by Seva Mandir. Any child between the ages of one and six living in these communities could use the balwadi, regardless of participation in the study. Families using the daycare facility were charged a small yearly fee per child (i.e., 150 rupees or about \$2.30 USD). These fees were deposited into a collective fund, which was used to purchase items for the children attending the balwadi (e.g., shoes, sweaters).

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