

# CPH News and Views

*A semi-monthly column on emerging topics related to healthy workplaces*

## **Issue #45: Occupational health and safety hazards in child care work**

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The number of out-of-home childcare centers and workers has increased significantly in recent decades, as a result of more young women entering the workforce. In the U.S., about 1.3 million childcare workers were employed in 2012. The expected increase from 2012 to 2022 is 14%, compared to the average growth of 11% for all other occupations<sup>3</sup>.

Attention to health and safety issues in the childcare sector usually focuses on the children rather than on the childcare workers, even though caregiver physical and emotional health is one of the essential factors determining the quality of childcare services. Childcare work requires childcare workers to meet the basic physical needs of children and provide learning activities. It is physically and emotionally demanding and requires constant interaction with children who are active, sometimes impulsive, or heavy. Potential hazards in childcare work can be categorized as biological, chemical, physical, and psychosocial<sup>2,14</sup>.

### Biological hazards

Children and childcare workers were under the high risk of infectious disease compared to children who reared at home and adults not in a childcare setting<sup>12,17</sup>. Cytomegalovirus (CMV) is notorious for fetal development and 10 to 15% of infected fetus could lead to adverse birth outcomes<sup>4</sup>, so this infection might pose a great risk for female worker who planning to get pregnant. CMV could be transmitted by body fluid such as blood, tears, urine, saliva, and nasal secretion through contact with toys or diaper changes. HIV, Hepatitis B and C and human immunodeficiency virus (HIV) could be transmitted through blood, such as by a bite. Intestinal (enteric) pathogens like Hepatitis A, Cryptosporidium, Giardia, Shigella, Campylobacter, enteroviruses, and rotavirus can be transmitted by fecal-oral contamination through diaper changes, via sink faucets and the hands of childcare workers or children. People caring for children not yet toilet trained are at the highest risk of these exposures. Some vaccinations such as hepatitis A and B, Rotavirus have been available and recommended, and helpful for acquiring the herd immunity. However, many of the pathogens especially related to enteric are hard to be prevented by vaccination. Therefore the preventing strategy including contact precaution cannot be overvalued in the childcare setting<sup>2,10,14</sup>.

### Chemical hazards

Childcare workers are exposed to disinfectants and sanitizers which contain chlorine bleach. This compound is known to irritate the skin and eyes. Other common cleaning agents may contain volatile organic compounds which, if inhaled, could lead to upper respiratory irritation or headaches. Arts and crafts materials such as powdered paint, permanent markers, and spray-fixatives or enamels contain organic solvents, which can cause dizziness, allergies, psychological and behavior changes, nerve and respiratory damage with chronic exposure<sup>2,14</sup>.

### Physical / Musculoskeletal hazards

Childcare workers perform a variety of physically demanding tasks, and are at a high risk for musculoskeletal disorders. The prevalence of back and neck/shoulder discomfort was revealed to be 43-61% and 25-35.4% each<sup>5, 16</sup>. Caring for children aged 0 (OR1.40, CI 1.01 to 1.95) and requiring holding/lifting a child/material exceeding 20 kg everyday (OR 1.51, CI 1.10 to 2.06) were significantly associated with neck/shoulder pain<sup>11</sup>. On the worksite analyses, ergonomic exposures such as frequent lifting, bending, stooping, squatting, reaching, and carrying were concerned. For example, activities that can cause musculoskeletal strain include lifting and carrying children, pushing and pulling strollers, carrying diapers and garbage bags, moving furniture and play equipment. In addition, caregiving activities frequently cause awkward postures due to the small sizes and low heights of cribs, chairs, and tables designed for children's use<sup>5,6,8</sup>.

## Psychosocial hazards

Stressors in the childcare setting originate from issues such as understaffing, inadequate break times, long working hours, limited resources, non-structured programs, and ambiguous job description and evaluation. Depending on the facility management, social factors may include poor communication, conflict in relationships with co-workers/parents, inadequate professional support and recognition, and differences in philosophies and work ethics. Childcare positions often offer low wages, no benefits, and can require unpaid overtime. Although childcare workers are often highly motivated, these factors may result in childcare workers having low job satisfaction, burnout, and a high turnover rate<sup>1,9,13,18</sup>.

## **Recommendations for improving occupational health and safety**

Hepatitis A/B, rubella, and varicella vaccination are now routinely recommended in early childhood; if children and their care-givers have all been vaccinated, disease risk is very low. Rubella vaccine is especially indicated for childcare workers who wish to become pregnant<sup>10,12</sup>.

It is important to follow strict hygiene routines such as training workers in diapering procedure with proper hand-washing techniques. Other infection control practices include to refrain from kissing children on the lips and not to place saliva-laden objects (children's fingers, toys, etc.) in the mouth<sup>10,14</sup>.

Workers should have access to hazard information about potentially toxic substances (disinfectants, organic solvents) such as Material Safety Data Sheets (MSDS) and training on the proper handling of these substances. Whenever possible, choose or substitute less toxic chemical products such as low solvent cleaners, and use solvents properly and sparingly to reduce exposure<sup>15</sup>.

Workers should learn good body mechanics, such as lifting and carrying technique, and encourage toddlers' independence to decrease carrying and lifting. Transfer or rotation into caring for older children might relieve some physical load on the back and shoulders, if feasible. Other strategies for improving ergonomic aspects of the work include: 1) provide appropriately-sized furniture for teachers; 2) redesign storage areas by placing heaviest materials at waist level; 3) use a cart to carry garbage or diaper bags and reduce size and weight of loads; 4) use a step-stool when reaching above shoulder level; and 5) sit against a wall or furniture for back support when working on the floor. Workers can also incorporate stretching and movement into their curricula and do these activities along with the children<sup>6,7,8</sup>.

The psychosocial work environment could be improved by addressing organizational demands, having positive and regular staff communication, and offering professional development opportunities. Workers may also benefit from learning skills to cope with or manage stress at work using such as cognitive behavior techniques, time management skills, relaxation exercises, etc<sup>1,14</sup>.

## **References**

1. Barford SW, Whelton WJ. Understanding burnout in child youth care workers. *Child Youth Care Forum* 2010;39,271-87.
2. Bright KA, Calabro K. Child care workers and workplace hazards in the United States: Overview of research and implications for occupational health professionals. *Occup Med* 1999;49,427-37.
3. Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2012 Edition, Childcare Workers*. Available at: <http://www.bls.gov/ooh/personal-care-and-service/childcare-workers.htm>. Accessed July 23, 2015.
4. Dreher AM, Arora N, Fowler KB, Novak Z, Britt WJ et al. Spectrum of Disease and Outcome in Children with Symptomatic Congenital Cytomegalovirus Infection. *J Pediatr* 2014;164,855-9.
5. Grant KA, Habes DJ, Tepper AL. Work activities and musculoskeletal complaints among preschool workers, *Applied Ergonomics* 1995;26,405-10.
6. Gratz R, Claffey A, King PM, Scheuer G. The physical demands and ergonomics of working with young children. *Early Child Development and Care* 2002;172,531-7.
7. King PM, Gratz R, Kleiner K. Ergonomic recommendations and their impact on child care workers' health. *Work* 2006; 26, 13-7.
8. King PM, Gratz R, Scheuer G, Claffey A. The ergonomics of child care: Conducting worksite analyses. *Work* 1996;6,25-32.

9. Maslach C, Pines A. The burn-out syndrome in the day care setting. *Child Care Quarterly* 1977;6,100-13.
10. Mink CM, Yeh S. Infections in child-care facilities and schools. *Pediatr Rev* 2009;30,259-69.
11. Ono Y, Imaeda T, Shimaoka M, Hiruta S, Hattori Y, Ando S, Hori F, Tatsumi A. Associations of length of employment and working conditions with neck, shoulder and arm pain among nursery school teachers. *Ind Health* 2002;40,149-58.
12. Reves RR, Pickering LK. Impact of child day care on infectious diseases in adults. *Infectious Disease Clinics of North America* 1992;6,239-50,
13. Stremmel A, Benson M, Powell D. Communication, satisfaction, and emotional exhaustion among child care center staff: Directors, teachers and assistant teachers. *Early Childhood Research Quarterly* 1993;8,221-33.
14. The National Training Institute for Child Care Health Consultants. Promoting the health and safety of child care staff training module, version 3 revised in 2013. Available at: [http://ncemch.org/child-care-health-consultants/Part2/2-15\\_m\\_staff\\_health.pdf](http://ncemch.org/child-care-health-consultants/Part2/2-15_m_staff_health.pdf). Accessed July 23, 2015.
15. Toxics Use Reduction Institute (TURI) website:  
[http://www.turi.org/Our\\_Work/Cleaning\\_Laboratory/Households\\_Safer\\_Cleaning\\_Alternatives](http://www.turi.org/Our_Work/Cleaning_Laboratory/Households_Safer_Cleaning_Alternatives)
16. Tsuboi H, Takeuchi K, Watanabe M, Hori R, Kobayashi F. Psychosocial factors related to low back pain among school personnel in Nagoya, Japan. *Ind Health* 2002;40,266-71.
17. Wald ER, Guerra N, Byers C. Frequency and severity of infections in day care: three year follow-up. *J Pediatr* 1991;118:509-14.
18. Whitebook M, Sakai L, Gerber E, Howes C. Then and now: changes in child care staffing, 1994-2000. Washington: Center for the Child Care Workforce Berkeley: University of California Institute of Industrial Relations 2001. Available at:  
<http://www.ccw.org/storage/ccworkforce/documents/publications/thennowfull.pdf>. Accessed Oct 29, 2015.

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