

Standing and walking for > 5 hours per work day increased the risk for preterm delivery

Henriksen TB, Hedegaard M, Secher NJ, Wilcox AJ. *Standing at work and preterm delivery. Br J Obstet Gynaecol.* 1995 Mar;102:198-206.

Objective

To determine whether an association exists between standing and walking at work in the second trimester and gestational age at delivery.

Design

Cohort analytic study with follow-up to delivery.

Setting

Department of Obstetrics at Aarhus University Hospital in Aarhus, Denmark.

Participants

4259 pregnant women who were working at 16 weeks of gestation. Exclusion criteria were 1) inability to communicate in Danish, 2) pregnancies with more than a single fetus, or 3) fetal death before 28 completed weeks of gestation.

Assessment of Risk Factors

At the 16th and 30th weeks of pregnancy, self-report data were collected

by questionnaire. Questions included those pertaining to medical and obstetric history; menstruation; smoking and alcohol consumption; psychosocial factors; marital status; education and occupational status; social class; weekly hours at work; hours working in a standing, walking, and sitting position each day; frequency of exposure to heavy loads; changes in body position during the workday; availability of rest periods; chemical and radiological exposures; work exposures to noise, vibrations, extreme ambient temperatures, and humidity; and leisure-time physical activity.

Main Outcome Measure

Odds ratio (OR) for preterm delivery.

Main Results

The overall incidence of preterm delivery was 3.7%. After adjustment for parity, maternal height, smoking, leisure-time activities, and social class, women standing > 5 hours per work day had an OR for preterm delivery of 1.2 (95% CI, 0.6 to 2.4) compared with women standing \leq 2 hours per work day. Women walking > 5 hours per work day had an adjusted OR for

preterm delivery of 1.4 (CI, 0.7 to 2.5) compared with women walking \leq 2 hours. Women reporting > 5 hours per day of both standing and walking had an adjusted OR of 3.3 (CI, 1.4 to 8.0) compared with women who reported \leq 2 hours of standing or walking. Leisure-time physical activity had a protective effect. Restricting the analysis to women with no previous preterm delivery or miscarriage did not change the results.

Conclusion

Standing and walking for > 5 hours each per work day during the second trimester increased the risk for preterm delivery among women pregnant with a single fetus.

Sources of funding: Egmont H. Petersen's Fund; The Helse Fund; The Danish Health Research Council; Aarhus University's Fund; The Council of Research Politics; Institute of Experimental Clinical Research; The Fund of 17-12-81.

For article reprint: Dr. T.B. Henriksen, Perinatal Epidemiological Research Unit, Department of Gynaecology and Obstetrics, Aarhus University Hospital, DK-8000 Aarhus C, Denmark.

Commentary

Preterm birth is the most important child health problem in industrialised societies. Little is known about its causes and, therefore, progress towards its prevention has been meager. As a result of several provocative reports from France, recent epidemiological studies have assessed the aetiological role of women's working conditions. In general, results are inconsistent with specific job-related characteristics, such as posture, lifting, long working hours, availability of rest periods, and mental stress. The study by Henriksen and colleagues has 2 important methodological advantages over many of its predecessors. First, questions about working conditions were asked prospectively during pregnancy, eliminating the problem of recall bias. Second, although the

study cohort did not include women giving birth at home, the Aarhus Obstetrics Department has the only maternity ward in the city, thus reducing the potential for selection bias.

For several reasons, however, the findings are unlikely to have a major effect on clinical practice. Neither prolonged standing nor prolonged walking alone was associated with an elevated risk for preterm birth, and the combination of both was exceedingly rare, involving only 0.6% of the total study cohort percentage. This percentage, however, may be higher in other populations; thus, the public health importance could be more pronounced. Also, most women with prolonged standing and walking were nurses' aides, shopkeepers, nurses, cleaners, and

"childminders," suggesting the possibility of uncontrolled occupational confounding not accounted for by stated socioeconomic factors (1).

The protective effect of leisure-time physical activity deserves further study. Nonetheless, it appears prudent to counsel the few women whose work requires extremely prolonged standing and walking to reduce the amount of time they spend in an upright position.

Michael S. Kramer, MD
McGill University
Montreal, Québec

Reference

1. Klebanoff MA, Shiono PH, Rhoads GG. Outcomes of pregnancy in a national sample of resident physicians. *N Engl J Med.* 1990;323:1040-5.