Psychosocial work environment and early pregnancy loss

Extended abstract

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Miscarriage is the most common complication of pregnancy, affecting 20% of pregnancies[2]. This number may be even higher as many early pregnancy foetal losses are handled at home and not reported[3]. Over 50% of miscarriages are linked with foetal chromosomal abnormalities[4,5], but a high share remains unexplained.

As majority of women in reproductive age are in paid employment, there has been a substantial interest in analysing the association between occupational activity and miscarriage. Known occupational risks include exposure to harmful substances [6], and job causing a physical strain or physiological disruptions. Studies find a positive association between working irregular or night shifts, long working hours, standing for long periods of time or heavy lifting and an increased risk of miscarriage [7–9]. Some studies report an increased risk of miscarriage among women in particular occupations such as in manufacturing or among health workers[10].

An increasing number of studies has provided evidence that net of other variables, maternal psychological stress is also a significant risk factor for miscarriage[11]. Psychological stress disrupts a woman's menstrual cycle by affecting the hypothalamic-pituary axis [12,13].

Stress is an emotional and physiological response to certain aspects of one's work environment. Job resources, job demands, and the interaction between them, influences stress at work and, in consequence, may trigger physiological changes that affect the workers' psychological and physical health [15]. Job demands are the burdensome aspects of the work, whereas resources represent the beneficial elements and as such they may counteract the negative effects of high demands. High level of demands [14], an increase in workplace demands [3] or having a stressful/demanding job [12] have been associated with an increased risk of miscarriage but otherwise evidence on the link between the women's psychosocial work environment and the risk of miscarriage is lacking.

Studies to date linked good climate at work [16] and perceived fairness in workplace [17] lower stress levels. Conversely, lack of social support, has been linked with adverse health outcomes such as a higher levels of sickness absence [18]. Workplace bullying was associated with higher levels of stress and anxiety among the victims and witnesses of bullying as reflected in physiological stress measures [19], and low levels of workplace justice predicted higher risk of burnout and poor self-rated health [20]. Women, as opposed to men, value relationships at work, support, fairness, and equity more than status and pay. Importantly, these psychosocial aspects of work were also better predictors of women's health outcomes [21].

The aspects of the psychosocial work environment, such as climate at work or fairness, have not been analysed in the context of pregnancy or fertility. This study fills in the gap. It looks at a range of the identified predecessors of work-related psychological stress: work climate,

and being paid well for the job (as proxy for fairness), and examines how these relate to subsequent miscarriage.

Methods

We use the German Family Panel (Pairfam) data, waves 1-11, spanning the years between 2008 and 2019. Pairfam uses population random sample of adolescents and young adults, starting with three cohorts (aged 15-17, 25-27, or 35-37 years in 2008). We sample women aged 17-45 during the observation period. Because we are interested in occupational risk factors, we include only women who are working or in education/ training. In the German case education and training may overlap and may represent a transition between education and occupational activity (apprenticeship).

The data includes information on self-reported miscarriage since the last wave. We do not have exact information on when the miscarriage happened and we need to rely on women's own accounts. Overall, miscarriage is most likely to occur at early stages of pregnancy[5] so there is high probably of that being the case. Overall, the sample includes 671 pregnancies, 162 of which ended in miscarriage, which corresponds to the miscarriage rate being 24%, similar to one reported in earlier studies[2].

Our explanatory variables include job-related risks factors: work schedule, long working hours, having a physically strenuous job, workload, time pressure, climate at work, and whether the woman felt she was paid well for the job. The models also controlled for the woman's employment status differentiating between being an employee, self-employed, in marginal employment or a mini-job (the so called Ein-Euro-Job) or in education/ training.

Other control included non-work related variables which are also known risk factors for miscarriage: maternal age and BMI[24], time to pregnancy or subfertility (defined as time to pregnancy > 12 months)[4].

Using the panel structure of the data we analyse how occupational conditions in the preceding observation period (n) when the woman was pregnant, are associated with the risk of reporting having miscarried at period n+1. In most cases we observe the same woman in two waves and there are very few cases of respondents reporting more than two pregnancies/ miscarriages. Associations were tested using logistic regression models with clustered standard errors, stepwise adjusting for time to pregnancy (>12 months) because it may be that some of the effects of the psychosocial work environment would also be associated with time to pregnancy and we will not see their effect in the model that accounts for that. We lag all observations by 1 period prior to observed outcome, with the exception of BMI which is lagged by 2 periods to make sure we have the woman's pre-pregnancy BMI in the model.

Results

We find that older women (38-45) have a significantly higher risk of miscarriage, though this effect is accounted for by significantly longer time they take to conceive. Additional analyses show that they are much more likely to try for over 12 months for a child.

Consistent with earlier findings we also find a positive association between shift work and the risk of miscarriage. It is significant for changing shifts and, in particular, for other, irregular working time arrangement.

We find no association between long (>40) work hours and the risk of miscarriage. In fact, it is women working reduced (<20) working hours who seem to have an increased risk of miscarriage. That likely points to some selection into reduced working time, possibly health-related. Strenuous job was not associated with an increased risk of miscarriage (though, noteworthy, it was significantly associated with longer time to pregnancy in supplementary analyses). There was no association between heavy workload and subsequent miscarriage.

As regards the psychosocial work environment, women who declared they have good climate at work and who thought they were paid well for the job had a lower risk of miscarriage. These are variables theorized to be the precursors of the levels of psychological stress at work.

Conclusions

We find a negative association between good work climate, and being paid well for the job, and the risk of miscarriage net of the woman's other identified risk factors for miscarriage. The findings are novel and they bridge existing studies on job demands and resources, stress at work, and miscarriage. Taking into account the social importance of the topic and major individual and social costs of miscarriages, this line of research is worth more scholarly attention.

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