Men’s work, Women’s work, and mental health: A longitudinal investigation of the relationship between the gender composition of occupations and mental health

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\section{Introduction}

Gender is as an important social determinant of health (Krieger, 2003; Phillips, 2005) constructed through norms, roles and relationships within and between groups of women and men (WHO, 2015). This is separate from sex, defined as a biological construct premised upon biological characteristics enabling sexual reproduction (Phillips, 2005). Gender interacts with other social determinants of health, including education and income, as well as employment and working experiences (Hosseinpoor et al., 2012), and may influence health states directly as well as through interaction with other social determinants. Thus, gender may be considered as a fundamental cause of health and health problems (Link and Phelan, 1995).

In the employed population, there is gender patterning across different occupations. For example, in Australia (as in many high income countries), a greater proportion of men are employed in construction related jobs (about 20\% of employed males and 4\% of employed females), or in higher levels of management (about 16\% of employed males and about 9\% of employed females) (Australian Bureau of Statistics, 2006). In contrast, females are more likely to be employed in nursing (about 90\% of nurses are female) and secretarial work (about 23\% of employed females and 6\% of employed males) (Australian Bureau of Statistics, 2006). Gender segregation of the workforce first came to the attention of social researchers in the late nineteenth century (Preston, 1999). This phenomenon has persisted across countries and over time. Since the 1960s (which is when women starting entering the workforce in substantial numbers), there has been persistent gender segregation of women into clerical, sales and service occupations in industrialised nations (Preston, 1999).

The nuances of gender in the workforce have generally been ignored in epidemiology, which has traditionally focused on working conditions (employment arrangements, working hours, psychosocial stressors) (Bildt and Michelsen, 2002; Plaisier et al., 2007). However, there is some evidence from a limited number of studies that the gender composition of a job (e.g., the extent to which a job is comprised of males versus females) has an impact on health (Elwer et al., 2013; Elwer et al., 2014; Evans and Steptoe, 2002; Hall, 1989; Hensing and Alexanderson, 2004; Mastekaasa, 2005; Sobiraj et al., 2015). In general, this evidence has suggested that working in a job where the other gender is dominant (e.g., males working in a female dominated occupation, and females working in a male dominated occupation) may have damaging effects on psychological health (Elwer et al., 2013; Sobiraj et al., 2015) and be...
associated with higher sickness absence (Evans and Steptoe, 2002; Hensing and Alexanderson, 2004).

Explanations for this have drawn on Kanter’s (1993) theory of being in a minority demographic group. Kanter (1993) argues that being in a minority (e.g., female in a male dominated occupation) may be particularly damaging because the affected individual may have heightened visibility and thus be subject to stereotyping. Minority status at work might also affect mental health through mechanisms that include differential working conditions and pay (Blau and Kahn, 2016). Another theory posited by Blalock (1967) focuses on the dominance of the majority group and extent to which the minority group can be considered a threat to power and resources. Thus, as women increase in numbers in male-dominated jobs, they may experience poorer treatment, worse conditions and greater discrimination. Although this theory has also been used to describe the dynamics of gender at work, it is important to acknowledge that this theory was developed to explain race relations. Another perspective is that women and men employed in occupations where the other gender is dominant may experience gender-role conflict because they deviate from normative work-arrangements for male and females (Simon, 1995).

A limitation of most past research on the gender composition of the workforce and health is that it has been cross-sectional and/or has not controlled for within person (time invariant) influences (Evans and Steptoe, 2002; Hensing and Alexanderson, 2004; Mastekaasa, 2005; Sobiraj et al., 2015). This is problematic as a comparison between persons (e.g., a female employed in a male dominated versus female dominated occupation) may produce substantially different estimates compared to those that can be found within persons (e.g., a person who changes between a male and female dominated occupation). The analytic approach used in this paper enables us to estimate the differences in mental health between groups defined by the gender dominance of their occupation relative to their own gender. It also allows us to examine how changing the gender dominance of a person’s occupation impacts on mental health within-persons, thus capturing the dynamic relationship between gender and work environment.

Using 14 waves of longitudinal data from an Australian working population cohort, we create and describe an occupational gender ratio measure across a range of individual and job characteristics (Aim 1). We then assess the association between the occupational gender ratio and mental health, adjusting for known confounders (Aim 2). Following this, we test if changes in mental health occur for people who change from a gender neutral to a male or female dominated occupation across the 14-year study period (Aim 3). Last, we assess whether the relationship between occupational gender ratio and mental health is modified by a person’s own gender (Aim 4). This is important considering gender differences in the working conditions and the overall prevalence of common mental health problems, as women are more likely to report mental health problems than men (WHO, 2015). A major contribution of this paper is to build understanding of the role that gendered contexts have in influencing health outcomes, thereby expanding the conceptualisation of gender from being an individual influence on health (e.g., a person’s gender), to an environmental influence (e.g., normative expressions of gendered behaviours at work). From a public health perspective, this paper will provide information on whether the gender composition of a person’s job may have an independent effect on their mental health. If so, then this would provide a rationale for targeted prevention initiatives in male or female dominated occupations.

2. Methods

2.1. Data source

The Household, Income and Labour Dynamics in Australia (HILDA) survey is a longitudinal, nationally representative study of Australian households established in 2001. It collects detailed information annually from over 13,000 individuals within over 7000 households (Wilkins, 2013). The response rate to wave 1 was 66% (Wilkins, 2013). The survey covers a range of dimensions including social, demographic, health and economic conditions using a combination of face-to-face interviews with trained interviewers and a self-completion questionnaire.

The initial wave of the survey began with a large national probability sample of Australian households occupying private dwellings (Wilkins, 2013). Interviews were sought in later waves with all persons in sample households who turned 15 years of age. Additional persons have been added to the sample as a result of changes in household composition. Inclusion of these new households is the main way in which the HILDA survey maintains sample representativeness. A top-up sample of 2000 people was added to the cohort in 2011 to allow better representation of the Australian population using the same methodology as the original sample (i.e., a three-stage area-based design) (Watson, 2011). The retention rates for the HILDA survey are above 90% for respondents who have continued in the survey and above 70% for new respondents being invited into the study (Wilkins, 2013). The main variables examined in this study were available in all annual waves of HILDA (2001–2014).

2.2. Outcome variable

Mental health was assessed using the five-item Mental Health Inventory (MHI-5), a subscale from the Short Form-36 (SF-36) general health measure. The MHI-5 assesses symptoms of depression and anxiety (nervousness, depressed affect) and positive aspects of mental health (feeling calm, happy) in the past 4 weeks. The MHI-5 has reasonable validity and is an effective screening instrument for mood disorders or severe depressive symptomatology in the general population (Gill et al., 2006; Rumpf et al., 2001; Yamazaki et al., 2005) and has been validated as a measure for depression using clinical interviews as the gold standard (Berwick et al., 1991; Cuijpers et al., 2009; Rumpf et al., 2001). The current analyses use the continuous MHI-5 score (scale 1 to 100), with higher scores representing better mental health. Although there is no universally accepted translation of MHI-5 score difference to clinical meaningfulness, a difference of three points on the norm based scale (T-score) has been suggested to reflect a minimally important difference (Ware, 2000), and a difference of four or more on the unstandardised scale has been characterised as indicating a moderate clinically significant effect (Contopoulopoulos-Ioannidis et al., 2009).

2.3. Exposure variable: occupational gender ratio

We constructed a measure of whether an occupation was male dominated, female dominated or gender-neutral based on the 2006 census population level statistics from the Australian Bureau of Statistics (ABS) (Australian Bureau of Statistics, 2006). We used the Australian and New Zealand Standard Classification of Occupations (ANZSCO) two-digit occupation (n = 50 occupations) (ANZSCO, 2009), which was the most detailed occupational data available from HILDA. The initial wave of the survey began with a large national probability sample of Australian households occupying private dwellings (Wilkins, 2013). Interviews were sought in later waves with all persons in sample households who turned 15 years of age. Additional persons have been added to the sample as a result of changes in household composition. Inclusion of these new households is the main way in which the HILDA survey maintains sample representativeness. A top-up sample of 2000 people was added to the cohort in 2011 to allow better representation of the Australian population using the same methodology as the original sample (i.e., a three-stage area-based design) (Watson, 2011). The retention rates for the HILDA survey are above 90% for respondents who have continued in the survey and above 70% for new respondents being invited into the study (Wilkins, 2013). The main variables examined in this study were available in all annual waves of HILDA (2001–2014).

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We created an alternate five level measure based on the quintiles of
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