



Does early socio-economic disadvantage predict comorbid alcohol and mental health disorders?



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ABSTRACT

Background: Alcohol and mental health disorders are highly prevalent in the general population, with co-occurrence recognised as a major public health issue. Socio-economic factors are frequently associated with both disorders but their temporal association is unclear. This paper examines the association between prenatal socio-economic disadvantage and comorbid alcohol and mental health disorders at young adulthood.

Methods: An unselected cohort of women was enrolled during early pregnancy in the large longitudinal Mater-University of Queensland Study of Pregnancy (MUSP), at the Mater Misericordiae Public Hospital in Brisbane, Australia. The mothers and their offspring were followed over a 21 year period. Offspring from the MUSP birth cohort who provided full psychiatric information at age 21 and whose mothers provided socioeconomic information at baseline were included ($n = 2399$). Participants were grouped into no-disorder, mental health disorder only, alcohol disorder only or comorbid alcohol and mental health disorders according to DSM-IV diagnoses at age 21 as assessed by the Composite International Diagnostic Interview. We used multivariate logistic regression analysis to compare associations of disorder group with single measures of prenatal socio-economic disadvantage including family income, parental education and employment, and then created a cumulative scale of socioeconomic disadvantage.

Results: Greater socio-economic disadvantage was more strongly associated with comorbidity (OR 3.36; CI₉₅ 1.37, 8.24) than with single disorders. This relationship was not fully accounted for by maternal mental health, smoking and drinking during pregnancy.

Conclusion: Multiple domains of socio-economic disadvantage in early life are associated with comorbid alcohol and mental health disorders.

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1. Introduction

Alcohol and mental health disorders are highly prevalent in the general population (Merikangas and Kalaydjian, 2007), with adolescence and early adulthood the prime periods for emergence (Kessler et al., 2005; Teesson et al., 2009). The consequences of these disorders (King et al., 2000; Gore et al., 2011; Mojtabai, 2011; Whiteford et al., 2013), particularly when co-occurring, are increasingly recognised as a major public health issue and their global health and economic burden is high. Mental health and alcohol disorders contribute to 183.9 million Disability Adjusted Life Years annually, peaking in young adults (Whiteford et al., 2013), and

treatment of comorbid mental health and alcohol disorders is both more complex (Tiet and Mausbach, 2007; Connolly et al., 2011) and more costly than single disorders (King et al., 2000), with worse projected outcomes (Bruce et al., 2005). As such, understanding how these joint conditions emerge is of great interest to researchers, policy makers and health professionals (Rush and Koegl, 2008; Swendsen et al., 2009; Cerda et al., 2010; Green et al., 2012).

Yet little is known about specific predictors of co-occurrence of these conditions. Beyond individual, familial and hereditary factors, the role of socioeconomic status (SES), long linked to general morbidity (Adler and Stewart, 2010), deserves increased research attention. Cross-sectionally, SES has been associated separately with alcohol disorders (Windle and Davies, 1999; Caldwell et al., 2008; Rush and Koegl, 2008; Swendsen et al., 2009; Adler and Stewart, 2010; Melotti et al., 2011; Young-Wolff et al., 2011; Green et al., 2012; Karriker-Jaffe, 2013) and with depression and anxiety

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(de Graaf et al., 2002; Gilman et al., 2003; Melchior et al., 2007; Cerda et al., 2010). A number of studies have linked socio-economic factors and comorbid alcohol and mental health disorders (Ross, 1995; Costello et al., 1997; Windle and Davies, 1999; Armstrong and Costello, 2002; de Graaf et al., 2002; Rush and Koegl, 2008; Cerda et al., 2010; Green et al., 2012; Mulia and Zemore, 2012; Pulkki-Raback et al., 2012), but whether these associations differs from the single disorders is unclear: the use of varying measures makes comparisons challenging (Cerda et al., 2010). Aspects such as low personal income (Ross, 1995; Pulkki-Raback et al., 2012) and lower family social support (Windle and Davies, 1999) have been cross-sectionally associated with comorbid alcohol and mental health problems in large national studies (Mulia and Zemore, 2012). Other studies however have found this to hold only for Caucasian groups (Costello et al., 1997). Similarly, educational status has been implicated in some (Ross, 1995; Green et al., 2012) but not all (Rush and Koegl, 2008) findings.

It is unclear which aspects of SES-based disadvantage are more strongly associated with alcohol and mental health comorbidity. Studies comparing multiple measures of disadvantage have shown increased risk of depression (Eley et al., 2004) for some but not all SES measures used (McLaughlin et al., 2012), but results for comorbidity are again conflicting. Some comparisons have found that low income is more strongly associated than is education (Ross, 1995; Pulkki-Raback et al., 2012), while others suggest that lower education is more strongly associated with common mental disorders (Arya et al., 2003) or comorbid disorders (de Graaf et al., 2002). Generalisation of these seemingly inconsistent associations is complicated by heterogeneity of study designs (Ross, 1995; Costello et al., 1997; de Graaf et al., 2002; Arya et al., 2003; Mulia and Zemore, 2012) and diversity in sample characteristics (Costello et al., 1997; Rush and Koegl, 2008; Green et al., 2012). The cumulative effect of multiple dimensions of socioeconomic disadvantage has been argued to impact on health problems later in life (Turrell et al., 2003; Marmot, 2005; Chartier et al., 2010; Marie-Mitchell and O'Connor, 2013), but it is unknown whether cumulative disadvantage affects comorbid alcohol and mental health disorders. Some studies have investigated the impact of cumulative adversities on common mental health disorders by using composite measures which allow multiple factors to be considered simultaneously (Eley et al., 2004; Chartier et al., 2010; McLaughlin et al., 2012; Marie-Mitchell and O'Connor, 2013). However, where such composite measures include parental psychopathology, family conflict and health behaviours with socio-economic factors, as for the Adverse Childhood Events scale, it is not possible to distinguish between the impact of SES-based and behavioural factors on the outcome of interest (Marie-Mitchell and O'Connor, 2013). Our study is the first to use a cumulative measure of disadvantage based only on socio-economic factors to investigate its relationship with comorbidity, and considers the effects of parental mental health, drinking and smoking separately.

Another gap in the existing evidence is that most studies have measured SES and comorbidity in adulthood. However, adult SES may be the result of mental health and substance disorders developed during adolescence, which in turn can affect completion of education, and reduce adult employment opportunities and income (Skapinakis et al., 2006; Lee et al., 2013). Some longitudinal studies suggest this may be the case (Costello et al., 1997; Windle and Davies, 1999; Green et al., 2012) as they have shown childhood SES measures to have stronger separate associations with mental disorders and alcohol problems (Laaksonen et al., 2007; Cohen et al., 2010; Green et al., 2012) than measures from later life. No studies have explored more distant SES and its impact on alcohol and mental health comorbidity, yet the fact that childhood measures are more strongly associated with each disorder type points to the possibility that distal socio-economic disadvantage may be an

important factor in the development of alcohol and mental health comorbidity.

Taken together, this evidence suggests the importance of assessing multiple indicators of socio-economic disadvantage in predicting comorbid disorders, and looking at SES very early in life, ideally via a prospective design. This paper aims to examine the impact of a number of indicators of SES from the family of origin, both singly and cumulatively, on comorbid alcohol and mental health disorders in young adults. We use a birth cohort study, the Mater-University of Queensland Study of Pregnancy (MUSP), with detailed information about the parents at the time of pregnancy allowing temporality to be addressed.

2. Methods

2.1. Study design and participants

The Mater-University of Queensland Study of Pregnancy (MUSP) is a birth cohort study of mothers and children. Mothers were enrolled at their first clinic visit during pregnancy to the Mater Misericordiae Public Hospital in Brisbane between 1981 and 1983, with 7223 eligible participants at baseline. The MUSP was approved by the Behavioural and Social Sciences Ethics Review Committee at the University of Queensland and has been extensively described elsewhere (Najman et al., 2005). Dyads were followed up at birth, 5 days and 6 months, then 5, 14 and 21 years after birth with 3778 members of the offspring cohort (52% participating at age 21). At enrolment and follow-ups, participants gave written, informed consent. Only offspring for whom complete data on prenatal socio-economic factors and mental health and alcohol use at age 21 are available were included in the main analyses.

2.2. Measures

Comorbid mental health and alcohol disorders: At the 21-year follow up, 2539 offspring participants (35% of baseline) were administered the mental health and substance use disorders modules of the Composite International Diagnostic Interview (CIDI). Responses were coded to yield DSM-IV disorder diagnoses for occurrence over the participant's lifetime, to avoid missing episodes occurring before the year preceding interview. The 'any alcohol use disorder' diagnosis included alcohol abuse and dependence (AUD), whereas 'any mental health disorder' (MHD) included all participants reporting an anxiety, affective, or psychotic disorder. Within each of these groups, the presence of multiple disorders was possible.

A four-category variable "Comorbidity Group" was created: No (DSM-IV) disorder; mental health disorder only (MHD only, i.e., no alcohol disorder); alcohol use disorder only (AUD only, i.e., no mental health disorder) or comorbid (i.e., 'any alcohol use disorder' plus 'any mental health disorder'). Concurrence of disorders was examined using ages of onset of most recent episodes for the disorders comprising each individual's comorbid status. All 'Comorbid' participants were found to have episodes of alcohol use disorder and mental health disorder occurring within 12 months of each other, indicating temporal overlap.

Socio-economic measures: SES measures were investigated for association with comorbidity group according to previous findings (Swendsen et al., 2009; Najman et al., 2010; Australian Institute of Health and Welfare, 2012; Pulkki-Raback et al., 2012). Family income, parental employment and parental education were assessed at baseline and coded binomially for disadvantage as below.

Family income was recorded as less than \$2600pa, <\$5200pa, <\$10,400pa, <\$15,600pa, <\$20,800pa, <\$26000pa or >\$26000pa. The 1982 minimum wage was \$7857; unemployment benefits were \$6427 (married) or \$3856 (single with dependents) (Cameron, 1983). To account for the number of persons supported by the recorded family income, we conservatively coded un-partnered mothers as disadvantaged if family income was <\$5200 and married/de facto participants as disadvantaged if <\$10,400.

Maternal pre-pregnancy employment was coded as disadvantaged if recorded as 'unemployed', or 'on benefits'. A small proportion of women who reported 'studying' (0.64%) were also classed as 'disadvantaged', as this was presumed to have limited their employment at that time. 'Home duties' was not coded as disadvantaged as this represented participation in home-based (although unpaid) work. Partner employment was coded as disadvantaged if 'unemployed', 'studying', 'on benefits', 'in prison' or 'no partner'.

Education completed by mother/father was recorded as <Year 10; <Year 12; post-high school qualification or university qualification, and coded as disadvantaged if less than Year 12. Mother's ethnicity was recorded at baseline as white, Asian or Aboriginal/Islander and examined categorically. Participants' own socio-economic disadvantage at time of CIDI diagnosis (21 years) was estimated using the level of education completed and coded as disadvantaged if less than Year 12. As many (37%) participants were still studying at that time and 65% living with their parents, their income and employment were not considered measures that would accurately reflect SES-based disadvantage. Although strongly associated with socio-economic disadvantage, we did not separately consider family structure in this

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