



Remarriage after divorce and depression risk



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ABSTRACT

As marriage is associated with lower depression rates compared with being single in men, we aimed to examine if remarriage compared with remaining divorced is also associated with a reduced depression risk. Swedish register data were used to define a cohort of men who were born between 1952 and 1956 and underwent a compulsory military conscription assessment in adolescence. This study population comprised men who were divorced in 1985 ($n = 72,246$). The risk of pharmaceutically treated depression from 2005 to 2009 was compared for those who remarried or remained divorced between 1986 and 2004. Cox proportional hazards analysis was used to estimate hazard ratios for the risk of depression identified by pharmaceutical treatment, with adjustment for a range of potential confounding factors including childhood and adulthood socioeconomic circumstances, cognitive, physical, psychological and medical characteristics at the conscription assessment. The results showed that, even though divorced men who remarried had markers of lower depression risk in earlier life such as higher cognitive and physical function, higher stress resilience and socioeconomic advantages than men who remained divorced, remarriage was associated with a statistically significant elevated risk of depression with an adjusted hazard ratio (and 95% confidence interval) of 1.27(1.03 1.55), compared with men who remained divorced. Remarriage following divorce is not associated with a reduced risk of depression identified by pharmaceutical treatment, compared with remaining divorced. Interpersonal or financial difficulties resulting from remarriage may outweigh the benefits of marriage in terms of depression risk.

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1. Introduction

Marriage is associated with lower rates of depression (Yan et al., 2011) and mortality than being unmarried (Manzoli et al., 2007). Such associations with marriage have been attributed to intimacy and mutual care, emotional reward, increased living standards through stable and improved financial circumstances, extension of kinship and social support, improved access to social services, and engagement in healthier lifestyles (Musick and Bumpass, 2012). However, less is known about whether remarriage compared with a persistently divorced state is associated with a reduced risk of depression. The average rate of marriage has declined, but divorce and remarriage have become more common in OECD countries

(OECD, 2014; United Nations – Department of Economic and Social Affairs – Population Division, 2009). In Sweden, the proportion who marry for the first time has declined from approximately 90% in 1970 to 75% in 2010 (OECD, 2014).

Remarriage may be different from a first marriage, as such unions tend to be less stable (Martin and Bumpass, 1989) and may be more often influenced by factors that were absent in first marriages – such as stepchildren and former partners, which may create conflict for reasons such as parenting issues and financial arrangements (Hughes and Waite, 2009; Skinner et al., 2002) and thus increasing depression risk. Additionally, divorce may be associated with personality traits less suitable for stable relationships (Teachman, 2008), which also can increase stress and depression risk.

To our knowledge, comparison of depression risk between those who remained divorced and remarried has been assessed only rarely. Two studies reported that, compared with constantly divorced or widowed men, remarried men had a lower depression

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risk (Williams, 2003), higher life satisfaction (Williams, 2003) and better self-rated health (Williams and Umberson, 2004). Although informative, these studies had some limitations, including combining divorce with being widowed, which may introduce some heterogeneity.

Using longitudinal Swedish register data, we examined whether remarriage is associated with a lower risk of depression compared with being persistently divorced among men born in the 1950s. We examined marital history during 1985–2004 and identified pharmaceutically treated depression during 2005–2009.

2. Materials and methods

This cohort study used Swedish register data on men born from 1 January 1952 to 31 December 1956 who underwent compulsory military conscription examinations and were included in the *Swedish Military Conscription Register*. At the time, military conscription was compulsory for all young Swedish men (Otto, 1976). Fewer than 4% of all men were not included, and exclusion was usually due to severe illness or disability (Otto, 1976). We analysed information on men who underwent the conscription examination between 1970 and 1976 (mean ages of conscription assessment were 18 and 21 years, respectively, and over 98% of subjects with valid conscription assessment dates were included). Follow-up started from July 2005 (at ages 49–53 years), and ended on the date of depression, death, emigration or 31st December 2009 (at ages 54–58 years), whichever occurred first. Dates of death and emigration were identified using the *Total Population Register* and the *Cause of Death Register*.

2.1. Marriage history

The *Population and Housing Censuses*[FoB] in 1960 and 1985 (Statistics Sweden, n.d.-b), and the *Longitudinal Database of Education, Income and Occupation* in 1990, 2001 and 2008 (Statistics Sweden, n.d.-a) provided data for marital status and childhood and adulthood socioeconomic characteristics. Married, unmarried, divorced and widowed at the end of a given year was available in each survey year. The duration of the most recent (that year) marital status was reported in 1990, 2001 and 2008, which was used to fill the gaps between survey years. Men who were divorced by 1985 (at ages 29 and 33 years) were identified, and among them, those who remarried once during 1986–2004 ('remarried') were compared with men who remained divorced during this period ('persistently divorced'). Remarriages that had dissolved by 2004 were included and accounted for a quarter of remarriages. For comparison, men who were married in 1985 were divided into two groups; those who remained married ('constantly married') and those who were later divorced but not remarried ('divorced after 1985').

2.2. Depression

Using the *Prescribed Drug Register*, which holds records for all prescribed drugs dispensed by Swedish pharmacies since July 2005, we defined depression as those who had approximately continuous antidepressant medication. Defined Daily Dose indicated the number of days the dispensed drug is expected to be used for its main indication (World Health Organization Collaborating Centre for Drug Statistics Methodology, n.d.). The date that the sum of dispensed antidepressant (N06A) became equivalent to the use of more than or equal to 180 days within 365 days for the first time was used to define incidence of approximately continuous treatment for depression (Andersen et al., 2009; Spijker et al., 2002; Hiyoshi et al., 2015). Information on depression diagnoses among

inpatients (from 1964) and outpatients (2001 onwards) hospitals was provided by the *Patient Register*. Men with an inpatient diagnosis of depression before 1985 were excluded, as such serious depression may have consequences for subsequent partnership formation and stability. During the subsequent follow-up period when remarriage was examined, in- and outpatient diagnoses of depression were used to provide a measure that may be considered a potential confounding factor.

2.3. Potential confounding factors

Childhood living conditions were indicated by social classification of the head of household based on occupation in the 1960 FoB (census), grouped as: 1) self-employed professionals, 2) managers, 3) office worker, 4) self-employed (non-farmer), 5) self-employed (farmer), 6) lower service, 7) manual worker (non-farmer), 8) manual worker (farmer), 9) other unclassifiable jobs or students, and 10) not in gainful employment.

Measures in adolescence were provided by the *Military Conscription Register*. Stress resilience was measured using a semi-structured interview with trained psychologists, and it evaluated psychological dimensions relevant to everyday life such as social maturity, psychological energy and emotional stability (Otto, 1976). The normally distributed nine-level scale was coded so that higher values show lower stress resilience. Cognitive function was estimated by a nine-grade normally distributed scale summarising assessments of linguistic understanding, spatial recognition, general knowledge, and ability to follow mechanical instructions, and was recorded one to be the highest function and nine to be the lowest (Otto, 1976). Physical function was derived from an endurance test using an electronically braked bicycle ergometer with gradually increasing load (Mattsson et al., 2012), and, after combining the lowest two categories, the nine level variable was coded so that higher values indicated lower physical function. The summary disease score (0–9) details the results of the medical examination. The variable was collapsed into six categories with higher values indicating poorer health, except for the last category for ill-defined problems.

Information on adult social class based on the men's own occupation, disposable income, presence of children in the household, and residential region were obtained from the 1985 FoB (census). The Erikson-Goldthorpe social class was derived from the occupational classification (Bihagen, 2007) according to the theory of employment status (such as employer, employee or self-employed) and employment relations for employees (Erikson and Goldthorpe, 1992). The categories are: 1) Higher professional, 2) Lower professional, 3) Routine higher non-manual, 4) Routine lower non-manual, 5) Self-employed, 6) Self-employed farmers, 7) Skilled manual worker, 8) Unskilled manual worker, and 9) Farm labourer. Disposable income was grouped into deciles, and was used as a continuous variable. The presence of children in 1985 was used to produce a dichotomous variable. The region of residence was grouped into northern, central and southern Sweden.

2.4. Analytic sample

Among 284,257 men who were born between 1952 and 1956, 72,246 were married or divorced in 1985 and had complete data for the relevant variables. Exclusions were due to inconsistencies in vital status ($n = 2623$), those who did not have the conscription examination between 1970 and 1977 ($n = 28,859$), or had a psychiatric condition recorded at the conscription examination in adolescence (Swedish International Classification of Diseases [ICD]-8 290–309) or a depression diagnosis recorded in the *National Patient Register* (ICD-8 296.00, 296.99 and 298) before 1985

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