Lifetime prevalence and determinants of antidepressant usage in a 2015 cross-sectional

South Australian sample

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Abstract

There is disagreement over the demographic risk factors for Major Depressive Disorder (MDD). Using data from the 3,005 participants of the 2015 Health Omnibus Survey, previously researched determinants as well as bullying and sexual assault exposure were investigated as predictors of depression. MDD predictors were hypothesised to include: Indigenous ethnicity, female gender, experience of bullying or sexual assault, age under 25, lower socioeconomic status and non-metropolitan residence. Lifetime MDD was inferred via any previous use of antidepressants. Chi square tests and a binary logistic regression were used to calculate the adjusted odds ratios. Results showed that Indigenous ethnicity, rural residence and age under 25 years did not predict antidepressant use. However, female gender, exposure to bullying or sexual abuse, age and socioeconomic status were significant predictors. Future research should investigate the interactions between these factors, investigate other determinants and examine causal pathways for more informed Government interventions.

Keywords: epidemiology, psychiatry, antidepressants, bullying, sexual assault.

Introduction

Major Depressive Disorder (MDD) is a psychiatric disorder characterised by affective and cognitive dysfunction (Snyder, 2013). Individuals experience a range of issues, including intense dysphoria, a lack of motivation, sleep disturbance and interpersonal difficulties (Snyder, 2013). Ultimately MDD results in functional impairment and affects 10.3% of Australians (Goldney et al., 2010). To understand this burden and design effective interventions, the broad-scale risk factors for depression must be elucidated (Hirschfeld & Weissman, 2002).

In separate countries, Blazer et al. (1994) and Eckert et al. (2006) both found that a household income (HHI) below 20,000 USD and AUD respectively resulted in a higher risk of MDD, which decreased as HHI increased. The 2007 National Survey of Mental Health and Wellbeing across Australia (Australian Bureau of Statistics, 2008) also came to this conclusion in their stratified representative sample of Australia. Fryers et al. (2005) reviewed 25 years of adult population studies of educational achievement, employment level, HHI and social status from different European countries, finding a strong link between low socio-economic status and MDD. Page et al. (2009) used antidepressant data from the Pharmaceutical benefit scheme (PBS) to look at socio-demographic correlates, finding that lower socioeconomic status (SES) groups had significantly higher antidepressant uptake. Thus, there is strong evidence supporting a relationship between adult MDD and SES.

Multiple population-level surveys have found that gender differences in depression are not present during childhood but emerge during adolescence (Newton et al. 2010) and then persevere over the lifespan (Lewinsohn, Rode & Seeley, 1998), with females having higher MDD diagnoses than males (Page et al. 2009; Australian Bureau of Statistics 2008). More recently, Kelly et al. (2010) found that there was no gender difference in their study

and Goldney et al. (2010) found that depression in young males but not young females is increasing. Together, these results may suggest a shift in the manifestation of depression in males. The National Survey (Australian Bureau of Statistics, 2008) also found that depression was more likely in those who were Indigenous, were under 25, had never been married, or lived rurally, which was corroborated by Kelly (2010) and Page et al. (2009). Two traumas that are also implicated with depression are bullying (Roy, 2015) and sexual abuse (Mandelli, Petrelli & Serretti, 2015).

Bullying includes a range of antisocial behaviours in any environment that are perceived to repetitively target an individual, from physical violence to relational aggression (Simon & Nail, 2013). It has received renewed attention given its modifiability, suggested prevalence and the advent of positive psychology in the educational sphere (Seligman & Csikszentmihalyi, 2014). No studies have previously investigated it on a population level and examined its effect in relation to other predictors of depression. Therefore, it was an especially important variable to investigate on the population level.

Sexual assault refers to any unwanted sexual contact that occurs to either children or adults (Molnar, Buka & Kessler, 2001). Childhood sexual assault (CSA), wherein the victim is aged below 15 years, is common in Australia, possibly affecting up to 25% of women and 8% of men (James, 2000). Adult sexual assault (ASA) is also common, with 48% of women and 18% of men over 18 years of age experiencing this at least once in their lifetime (Australian Bureau of Statistics, 2012). Both types of sexual abuse have been documented as an independent risk factor for lifetime depression (Mandelli, Petrelli & Serretti, 2015; Kendall-Tackett, Williams & Finkelhor, 1993). However, no study has evaluated the relationship on a representative population level.

As shown, there are some inconsistencies in the relationship between demographic factors and MDD. This indicates a need to clarify risk factors and update the data with more contemporary data. The aim of this study was to achieve this by examining available data from the 2015 Health Omnibus Survey, which inquired about anti-depressant use for separate studies. Ideally, all negative social behaviors would be included in population surveys. However, given the limited resources, for the arguments made above only sexual assault and bullying were included.

In line with the previous research, it was hypothesised that independent risk factors for depression include being female in all ages; being aged under 25; being of Indigenous origin; living in a rural area; being either never married or having experienced a divorce; and having experienced either bullying or sexual abuse. It was also hypothesised that the likelihood of depression would decrease according to increasing socioeconomic status.

Methods

The 2015 Health Omnibus Survey was a randomly sampled and socially stratified face-to-face survey conducted with 3,005 people across South Australia by the University of Adelaide (PROS, 2016). The survey methodology and questions received ethics approval from the University of Adelaide Ethics Committee. Voluntary consent was obtained and pathways for counselling were given to respondents. Further information on the SAHOS methodology has been published by Taylor et al. (2006).

Although the survey is exhaustive and comprises over 150 questions, only limited data was available to the authors free of charge. The accessible variable information included relationship status, residential location, household income, sex, ethnicity, and exposure to school or workplace bullying and experience of sexual abuse. Household

income was used to represent socioeconomic status as educational attainment and occupation were unavailable. The categories within relationship status included mutually exclusive categories of current partnership/marriage, current ceased previous marriage/partnership or no long-term relationship status. No definitions were provided for bullying or sexual abuse. Instead, respondents were asked only if they had experienced either. Lifetime prevalence of depression was coded as previous use of PBS listed antidepressants. Lithium was excluded as its indication for highly heritable bipolar and psychotic disorders (Song et al., 2015) meant it would bias the results towards the mean and obscure possible determinant effects.

Individual data was weighted to ensure overall representation of the South Australian population, as detailed by Taylor et al. (2006). Pearson chi-square tests were used to test whether the hypothesised variables were significantly related to antidepressant history. A binary logistic regression was used to eliminate the predictors' shared variance and to allow for comparisons of risk effect size.

Results

The general sample characteristics appear in the Appendix, with 16.2% of all participants having used antidepressants. The results of the Chi Square tests used to calculate Crude Odd's Ratios appear below in Table 1.

Table 1: Crude factor results, * = significant Chi at p<0.001; ^ = not significant at p > 0.05

Predictor Categories	n	% of sample	Antidepressant use in category
*Female Gender all ages.	1,527	50.8%	19.9%
*Female gender below age 25.	232	48.7%	16.4%
*Age < 25.	474	15.8%	10.5%
*Experienced Bullying	1,388	46.2%	21.8%
*Experienced Sexual abuse	298	9.9%	39.3%
*Divorced/Separated	417	13.9%	28.3%
*Never Married	290	11.1%	24.1%
*Income <20K	201	9.3%	24.9%
*Income <80K	1,103	51.2%	13.1%
^Income <140	1837	85.0%	17.5%
^Rural Living	752	21.1%	16.3%
^Indigenous Ethnicity	46	2.1%	26.1%

The predictive factors for this model were those that had significant associations with depression as shown in Table 1. These included gender, income (HHI), bullying, sex abuse and age. The results for this are presented in Table 2 below.

Table 2: Results of logistic regression. Hosmer & Lemeshow $X^2(8)$ = 7.17, p = 0.519; 82.3% of anti-depressant cases were identified. Partnered includes married/defacto. * = p < 0.001.

Predictor	Base Group	Comparator	Adjusted OR	95% CI
Gender	Males	Females	1.31	1.03 - 1.67
*Bullied	No Bullying	Bullying	1.91	1.50 - 2.44
*Sexual abused	No abuse	Abused	2.74	1.99 - 3.78
Income	<20k	20-80k	0.98	0.66 - 1.45
		80-140k	0.623	0.39 - 0.98
		140-180k	1.13	0.65 - 1.96
		>180k	0.835	0.46 - 1.51
*Relationship Status	Partnered	Separated	2.18	1.58 - 3.01
		Never Married	1.97	1.35 - 2.85
*Age	>65 years	15-25	0.78	0.46 - 1.32
		25-35	1.19	0.70 - 2.02
		35-45	1.54	0.98 - 2.79
		45-55	1.59	0.92 - 2.75
		55-65	0.93	0.53 - 1.65

Discussion

The adjusted results showed inconsistent support for the hypotheses. The hypothesised predictors Indigenous background, age less than 25 years and living rurally were not significantly related to anti-depressant use. The increased likelihood of depression in those with an HHI below $20,000 compared with above $80,000 but not between other monetary levels showed evidence of SES involvement but not a linear relationship between MDD and HHI. As hypothesised, those who experienced a separation or divorce; were never married or partnered; bullied; sexually abused; or were females were more likely to have been depressed.

These conclusions have a mixed relationship with previous studies. That Indigenous people were not more likely to use antidepressants is at odds with previously high reported rates of Indigenous depression (Australian Bureau of Statistics 2008). However, this could be an artifact of the small number of Indigenous participants, or indicate that depressed Indigenous people are less likely to be prescribed antidepressants. Rural living was not a risk factor for depression, which was at odds with the NSW sample of similar size (Kelly et al. 2010) and recent PBS studies (Page et al. 2009). This may reflect that the HOS ignores towns with populations below 1,000 people (Taylor et al. 2006). That young age was not a risk factor was anomalous with previous data in NSW (Kelly et al. 2010) and previous HOS data (Goldney et al. 2010). This also could be because younger people are less likely to be prescribed antidepressants for depression (Page et al. 2009). Female gender was a risk factor across age groups, which is in line with previous research (Lewinsohn, Rhode & Seeley, 1998) and against an epidemiological shift in depression (Kelly et al. 2010; Goldney et al. 2010).

Being in a long-term relationship was protective against depression in comparison with either currently being separated or divorced, or never having a partner. This supports the findings of the Australian Bureau of Statistics (2008). That HHI was only related to depression in those making below $80,000 is consistent with previous population studies (Eckert et al. 2006; Blazer et al. 1994). Explanations for this include that finance is only related to happiness when it fulfills basic needs (Di Tella, 2008).

The prevalence of sexual abuse was similar to previously reported levels, which were approximately 10% (Australian Bureau of Statistics 2012), while bullying was higher than the international figures for both work at 2-4% (Mikkelsen & Einarsen, 2001) and school at 10% (Nansel et al., 2001). This may reflect the undefined question in the survey. Sexual abuse had a strong relationship to depression, which is consistent with previous research on survivors of sexual abuse (Mandelli, Petrelli & Serretti, 2015).

There were several limitations to this method that made the data results crude and require further study. Depression history was only recorded for patients who had used antidepressants, excluding those who didn't and perhaps inappropriately including patients with anxiety, although these conditions are co-morbid in 90% of cases (Gorman, 1998). Thus, it is neither sensitive nor specific measure. Bullying includes diverse behaviours from physical violence to relational aggression (Simon & Nail, 2013). Thus, it is simplistic to aggregate these all into one category. The lack of definition may have meant it was over-reported and thus diluted a possibly stronger predictive effect on antidepressant use.

Despite this, this study has implications on government policy and future research. Given the prevalence of these social issues, and their modifiability, governments should investigate how to reduce the resultant psychosocial burden. This could be in the form of optimizing treatment approaches or maximizing prevention of sexual assault and bullying.

The decision about pursuing this is outside the scope of this paper. Regardless, both efforts follow on from positive educational research that seeks to implement preventative and management strategies to bullying in schools and workplaces (Seligman & Csikszentmihalyi, 2014). Future research should improve on this study by using depression diagnosis instead of anti-depressant use and investigate specific interactions between the various demographic risk factors. Causal pathways between the demographic factors and depression in a developmental approach could also be studied. By doing so, this will further efforts to reduce the burden of depression on individuals and societies.

Conclusion

As shown, antidepressant use is common in South Australia. The general determinants of antidepressant use were generally compatible with results in previous studies from around the world. Of note, it is likely that rural, Indigenous and younger Australians are less likely to have been prescribed antidepressants. Separately, females, the financially disadvantaged and those who have experienced bullying or sexual abuse are more likely to have been prescribed antidepressants. This information can be used to guide targets for future research and Government interventions.

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: Statistical Data

General Characteristics

Category	Number in Category	Percent of total sample
Females	1527	50.8%
Experienced Bullying	1388	46.2%
Experienced Sexual assault	298	9.9%
Married and De Facto	1873	62.4%
Separated/Widowed	417	13.9%
Never married	713	23.7%
Income < 20K	201	9.9%
20K < Income < 80K	773	38.1%
80K < Income < 140K	734	36.2%
140K < income < 180K	175	8.6%
Income > 180K	145	7.2%
Indigenous	47	2.2%
Living Rurally	754	25.1%
Taken antidepressants	488	16.3%

Household income: data missing from 977 participants, who were excluded from this analysis.

Unadjusted Odds ratios

Category	n	No. with anti-D exposure	% of category with anti-D	Crude OR	95% CI	
					Lower	Higher
*Female Gender all ages.	1,527	304	19.9	1.74	1.42	2.12
*Experienced Bullying	1,388 (46.2%)	303	21.8	2.15	1.76	2.65
*Experienced Sexual abuse	298 (9.9%)	117	39.3	4.01	3.15	5.26
*Married	1873 (62.4%)	268	14.3	0.691 (risk reducti on)	0.568	0.840
*Divorced/Sepa rated	417 (13.9%)	118	28.3%	2.36	1.86	3.00
*Never Married	290 (11.1%)	70	24.1%	1.61	1.21	2.16
*Income <20K	201 (9.3%)	50	24.9%	1.61	1.14	2.26
*Income <80K	1,103 (51.2%)	145	13.1%	1.66	1.63	2.17
`Income <140	1837 (85%)	323	17.5%	0.90	0.67	1.23
*Age < 25	474 (15.8)	50	10.5%	0.56 reducti on	0.41	0.77
`Rural Living	752 (21.1%)	123	16.3%	1.07	0.81	1.26
`Indigenous Ethnicity	46 (2.1%)	12	26.1%	1.68	0.86	3.27
*Female gender below age 25.	232 (48.7)	38	16.4%	3.48	1.80	6.72

* = p value for Chi square < 0.001; ' = chi square not significant at p < 0.05. Anti-D = antidepressants.