



Can social inequalities explain differences in smoking prevalence by wellbeing measures?

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INTRODUCTION

Smoking is a modifiable lifestyle risk factor and effective tobacco control measures can reduce the prevalence of smoking in the population.

Survey data has shown that smoking prevalence varies between social groups. Males smoke more than females (17.4% versus 13.7%) and clear gradients are seen by socio-economic deprivation (ranging from 11.0% in the least deprived decile to 18.9% in the most deprived) and age (ranging from 21.6% for age 25-29 years to 7.7% for over 65 years)¹.

Furthermore, studies have shown that people with mental health conditions are more likely to smoke than the general public and that smoking rates increase with the severity of illness². In addition studies have shown that those smoking more than 15 cigarettes a day are more likely to experience a common mental health disorder than those who smoke fewer cigarettes or do not smoke at all³, and 40% of cigarettes smoked in England are smoked by people with a mental health problem⁴.

The Annual Population Survey (APS) is a large continuous household survey run by the Office for National Statistics, questioning around 320,000 people (160,000 in England) per year. The range of questions in the survey allows us to examine if the observed difference in smoking prevalence between people with different levels of self-perceived wellbeing⁵ can be attributed to other factors such as sex, age, socio-economic group, marital status and employment status.

METHODS

We analysed responses to the question 'Do you smoke cigarettes at all nowadays?' from the APS for England residents aged 18 and over, alongside the four wellbeing questions:

- overall, how satisfied are you with your life nowadays?
- overall, to what extent do you feel the things you do in your life are worthwhile?
- overall, how happy did you feel yesterday?
- overall, how anxious did you feel yesterday?

Respondents were able to give a score between 0 and 10 for each of the four questions, and scores were grouped as in Table 1.

Responses were excluded where the age was less than 18, the respondent did not live in England, or no valid response was recorded for smoking status or any of the four wellbeing variables. After exclusions 109,157 respondents were included in the analysis.

We tabulated the weighted mean averages of respondents in each group for smokers and corresponding 95% confidence intervals calculated using the normal approximation.

Then we used simple logistic regression to explore the differences between different levels within each wellbeing variable, comparing to the highest wellbeing group as the reference (Odds ratio = 1).

Finally, we explored whether personal characteristics of the respondents (sex, age, occupation, marital status and employment status) accounted for any of the differences observed using multiple logistic models in Stata. Each wellbeing variable was considered individually.

RESULTS

Smoking prevalence in the sample was 15.62% which is not significantly different to the smoking prevalence in all adults in England reported on the Local Tobacco Control Profiles (15.5%). Table 1 shows that more males smoked than females and smoking prevalence decreased with increasing age group. Those working in routine and manual occupations had the highest rate of smokers, and people who are married or have been married have significantly lower smoking prevalence than other marital status groups.

Each of the wellbeing variables showed highest rates of smoking prevalence in the lowest wellbeing group. The smallest difference was seen in anxiety with 18.95% of respondents reporting high anxiety (scoring 6-10) also smoking compared with 14.91% with very low anxiety (scoring 0-1), and the largest difference in life satisfaction where 30.92% of respondents with low life satisfaction (scoring 0-4) were smokers compared with 12.22% of those with high satisfaction (scoring 9-10).

Unadjusted (Figure 1) and adjusted odds ratios (Figure 2) showed clear gradients for each of the wellbeing variables and each of the models significantly fit the data (prob>chi-squared 0.0000).

Table 1. Smoking prevalence in adults by category, APS 2016

| Category | Group | Sample size | % | Current smokers | |
|-------------------------------|---------------------------------------|-------------|-------|-----------------|-------|
| | | | | LCI | UCI |
| All respondents | | 109,157 | 15.62 | 15.40 | 15.83 |
| Sex | males | 49,009 | 16.63 | 16.30 | 16.96 |
| | female | 60,148 | 14.76 | 14.48 | 15.04 |
| Age group | 18-34 years | 19,928 | 21.54 | 20.97 | 22.11 |
| | 35-44 years | 17,394 | 18.14 | 17.57 | 18.72 |
| | 45-54 years | 20,302 | 17.47 | 16.95 | 17.99 |
| | 55-64 years | 19,923 | 14.77 | 14.28 | 15.27 |
| | 65-74 years | 20,156 | 10.24 | 9.82 | 10.66 |
| | 75+ years | 11,454 | 5.25 | 4.84 | 5.65 |
| Occupation | managerial and professional | 34,620 | 10.32 | 10.00 | 10.64 |
| | intermediate | 19,266 | 15.83 | 15.32 | 16.35 |
| | routine and manual | 24,434 | 25.33 | 24.78 | 25.87 |
| | never worked and long term unemployed | 30,837 | 14.15 | 13.77 | 14.54 |
| Marital status | married | 55,938 | 9.57 | 9.33 | 9.82 |
| | single | 12,051 | 22.80 | 22.05 | 23.55 |
| | cohabiting | 18,620 | 24.60 | 23.98 | 25.22 |
| | divorced/separated | 8,807 | 10.49 | 9.85 | 11.13 |
| | widowed | 13,088 | 23.07 | 22.35 | 23.79 |
| | other | 653 | 18.82 | 15.82 | 21.82 |
| Employment status | working | 54,804 | 16.08 | 15.77 | 16.38 |
| | not working | 54,147 | 15.03 | 14.73 | 15.33 |
| Feelings of anxiety | Very low (0-1) | 44,304 | 14.91 | 14.57 | 15.24 |
| | Low (2-3) | 24,946 | 13.74 | 13.32 | 14.17 |
| | Medium (4-5) | 17,887 | 16.01 | 15.47 | 16.54 |
| | High (6-10) | 22,020 | 18.95 | 18.43 | 19.46 |
| Feelings of happiness | Very High (9-10) | 38,634 | 13.46 | 13.12 | 13.80 |
| | High (7-8) | 43,381 | 14.04 | 13.72 | 14.37 |
| | Medium (5-6) | 17,517 | 18.69 | 18.11 | 19.27 |
| | Low (0-4) | 9,625 | 26.05 | 25.17 | 26.92 |
| Feelings of life satisfaction | Very High (9-10) | 32,683 | 12.22 | 11.87 | 12.58 |
| | High (7-8) | 55,831 | 14.24 | 13.95 | 14.53 |
| | Medium (5-6) | 15,361 | 22.96 | 22.30 | 23.63 |
| | Low (0-4) | 5,282 | 30.92 | 29.68 | 32.17 |
| Feelings of self worth | Very High (9-10) | 39,170 | 13.48 | 13.14 | 13.82 |
| | High (7-8) | 52,601 | 14.33 | 14.03 | 14.63 |
| | Medium (5-6) | 13,297 | 22.60 | 21.89 | 23.31 |
| | Low (0-4) | 4,089 | 30.37 | 28.96 | 31.78 |

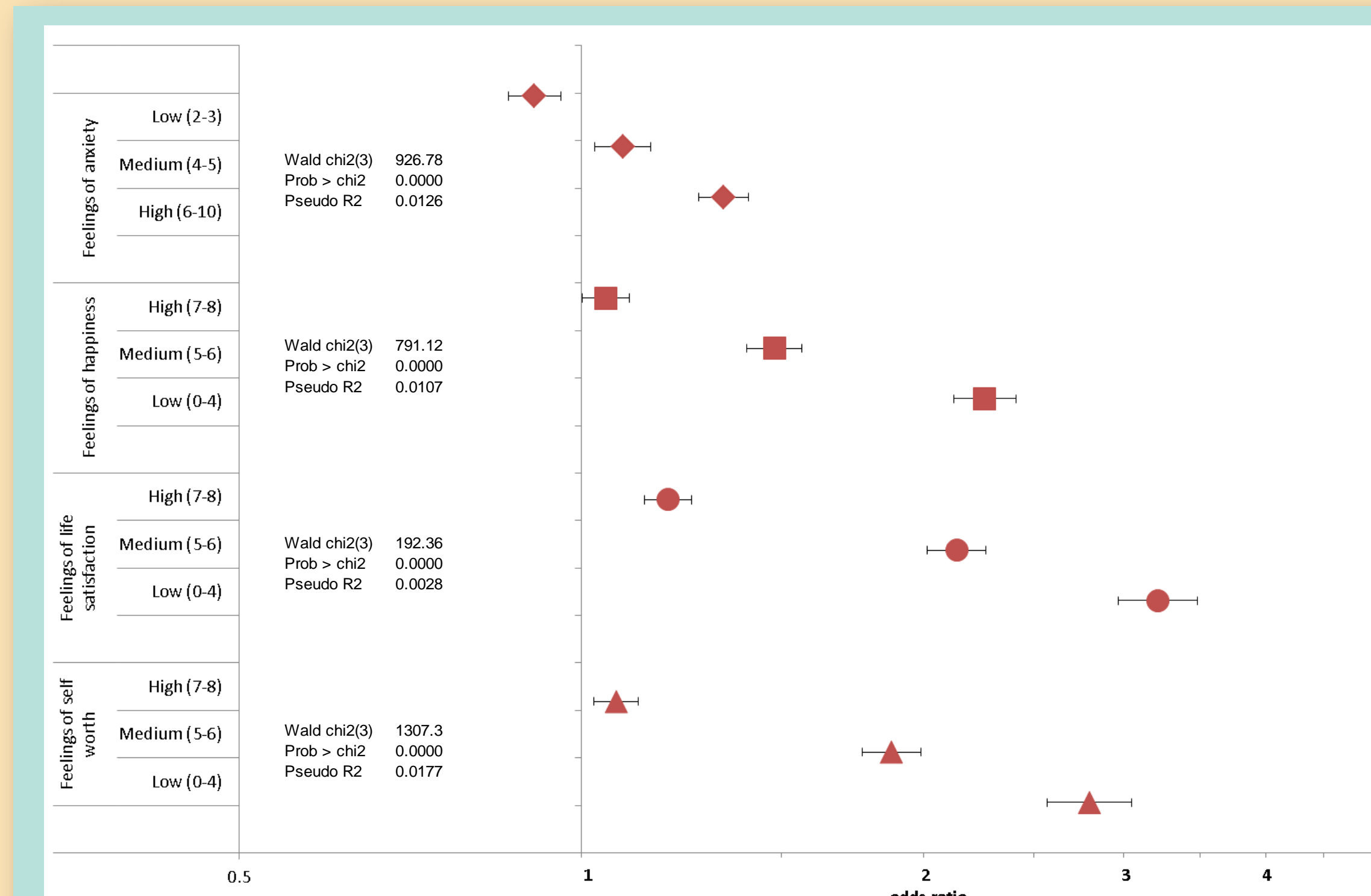


Figure 1: Unadjusted odds of smoking prevalence by group for each wellbeing variable (compared to the highest wellbeing group) and corresponding 95% confidence intervals

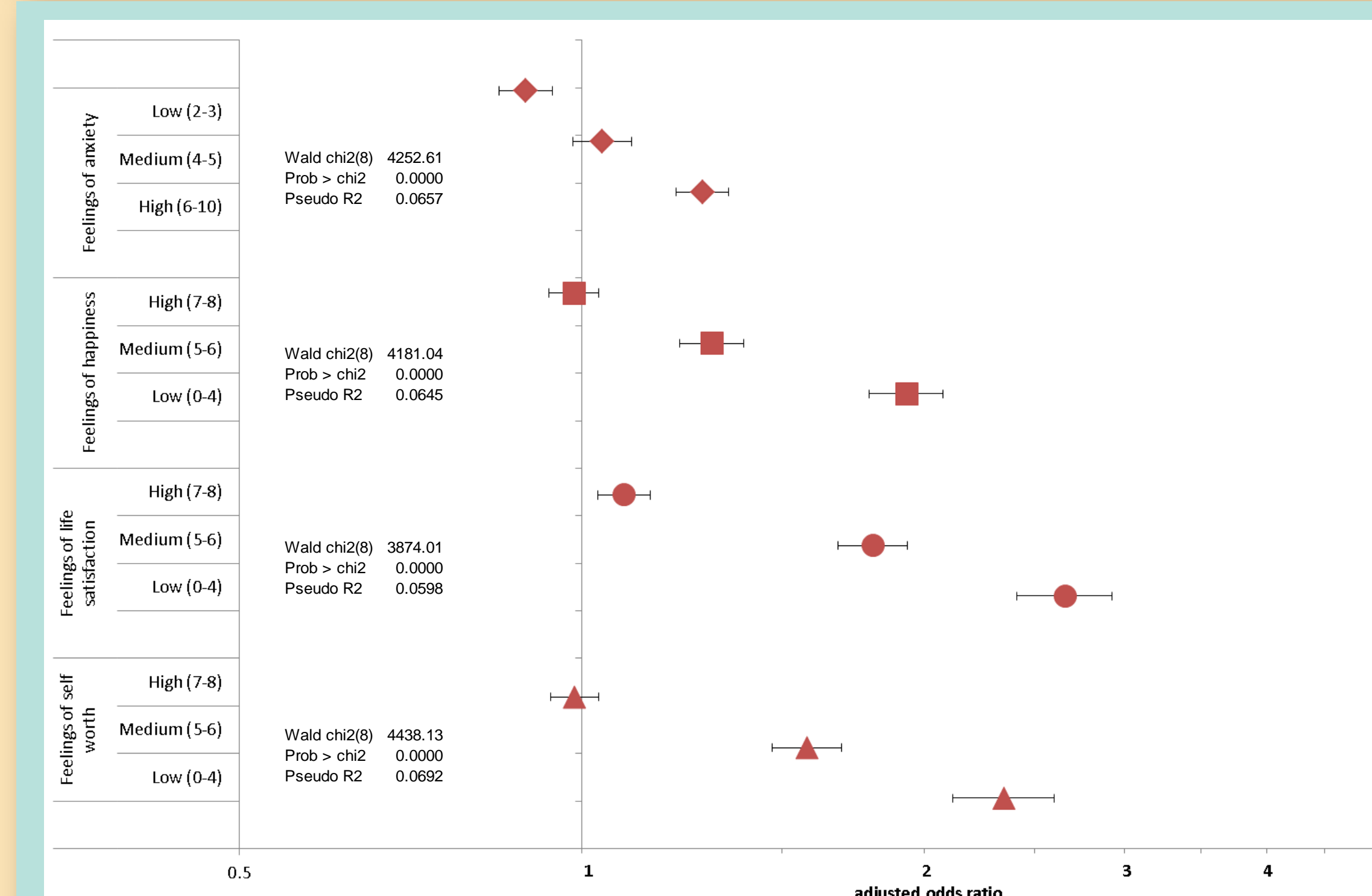


Figure 2: Adjusted odds* of smoking prevalence by group for each wellbeing variable (compared to the highest wellbeing group) and corresponding 95% confidence intervals (*adjusted for sex, age, routine & manual occupations, marital status and employment status)

Anxiety:

Before taking into account any of the underlying characteristics of the respondents in each group, those in the high anxiety group were a third more likely than those in the very low anxiety group to smoke (Odds ratio (OR) = 1.33, 95% confidence intervals (CI's) 1.27 – 1.40).

Once other factors were accounted for, the odds ratio reduced to 1.28 (CI's 1.21 – 1.34).

Happiness:

Respondents reporting low levels of happiness in their life were more than twice as likely to smoke than those reporting high levels (OR = 2.27, CI's 2.13 – 2.41). Again the characteristics of the respondents accounted for some but not all of the difference in each group, for example in the most extreme group OR = 1.93, CI's 1.81 – 2.06.

Life satisfaction:

The largest odds of smoking were seen in the low satisfaction group (OR = 3.21, CI's 2.97 – 3.48), although the greatest decrease was seen here after adjustments (OR = 2.66, CI's 2.45 – 2.89).

Self-worth:

Similar results were seen in the self-worth category, with those self-reporting the lowest levels of self-worth being more than twice as likely to smoke even after personal characteristics were accounted for (unadjusted OR = 2.80, CI's 2.57 – 3.05, adjusted OR = 2.35, CI's 2.15 – 2.57).

DISCUSSION

Smoking rates are associated with mental wellbeing although it is not known which is the cause or effect.

Although the wellbeing variables in the APS cannot be considered indicators of serious mental illness or depression, anxiety, happiness, life satisfaction and self-worth can be considered for low level severity mental health conditions and "form part of a much wider initiative in the UK, and internationally, to look beyond Gross Domestic Product (GDP) and to measure what really matters to people"⁵

It is well documented that people with a mental health condition are likely to die 10-20 years younger than other people, and the single largest reason for this is smoking⁴. Therefore if smoking rates were reduced in this group, other health outcomes may also improve.

More generally, smokers often believe that smoking is an aid for reducing stress. However, there is some evidence that smoking increases levels of anxiety and stress².

CONCLUSIONS

- Strong associations can be found between smoking prevalence and sex, age, occupation, marital status and employment status.
- The four wellbeing variables explored in the APS demonstrate a clear association with smoking prevalence, with clear gradients in the odds of smoking increasing as self-perceived wellbeing decreases.
- When personal characteristics are accounted for, the odds of smoking are reduced but remain significantly higher in the lowest wellbeing groups, compared with the highest.
- All the logistic regression models fit the data significantly well, and more investigation is needed to determine if the inclusion of other factors would improve the fit further.

FURTHER ANALYSIS

Further analysis will look at interactions between the wellbeing variables, exploring creating an overall wellbeing variable by combining the results of the four current questions, and exploring whether other factors such as general health contribute at all to the odds of smoking.

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