The impact of respondent burden on current drinker rates in the National Drug Strategy Household Survey

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Abstract

Background: Increasing response burden in alcohol surveys combined with filter questions to exclude abstainers, results in systematically missing data in questions on alcohol consumption as abstainers are not required to answer them.

Objectives: The aim of the current study is to assess the impact of responder burden on current drinker rates in a large scale Australian survey.

Method: 23,855 Australian adults completed the National Drug Strategy Household Survey in 2013 and answered increasingly complex questions on alcohol consumption.

Results: Although 80% of respondents stated that they had consumed alcohol in the past 12 months, the current drinker rate appears to be 78% excluding, or 74% including missing data if taken from the quantity frequency measure. When respondents are then asked to give more detailed responses in a graduated frequency measure, current drinker rates appear to be at 75% or 73%, excluding or including missing data.

Conclusions: The rate of abstention in alcohol survey research is artificially inflated when more complex survey methods are used. Excluding missing data only partially corrects for this. Given that more sensitive analyses are usually performed on more detailed survey questions, rates of abstention and consumption should be adjusted to account for systematically missing data.

Introduction

Survey measurement is an integral part of studies on alcohol consumption, and the most common method of ascertaining the proportion of abstainers in a given population is to ask respondents if they have consumed alcohol in a specific time frame. Further questions on consumption are only asked of those who have consumed alcohol; therefore all missing data in these questions is from drinkers, as the non-drinkers' responses are already implicitly provided.

One of the most effective methods of collecting more accurate alcohol consumption information is to ask about it in more than one way, but this weighs more heavily on the respondent's time and attention (Dawson, 1998). There does appear to be a relationship between questionnaire length and response rates in alcohol surveys (Cunningham et al., 1999), and a similarly high response burden may also impact on responses for individual questions within the sample of those who agreed to participate. How long a survey would have to get for response burden to have an impact is unclear, however a meta-analysis indicated a positive relationship between response rates and questionnaire length (Rolstad et al., 2011).

The National Drug Strategy Household Survey (NDSHS) is a large-scale national survey of Australian alcohol and other drug use administered approximately every three years. Items ascertaining abstinence in the NDSHS use a reference period of twelve months, thought to be an appropriate time interval, at least for accurately distinguishing between abstainers, ex-drinkers and current drinkers (Midanik & Greenfield, 2003). In the NDSHS, respondents were asked about their alcohol consumption in a number of ways, each with an increasing level of response burden.

The aim of the current study is to assess the impact of response burden on the perceived prevalence of current drinkers in the NDSHS. This will be done by using a range of measures of drinker status with increasing respondent burden. It is predicted that as the respondent burden increases, the apparent rate of abstainers will rise.

Method

Sample

The sample consisted of the 23,855 respondents to the National Drug Strategy Household Survey in 2013. The response rate for the survey was 49.1% (AIHW, 2014). Participants were randomly selected within a multistage stratified area frame. Respondents were broadly representative of the Australian adult population. Data was collected using the drop and collect method, where surveys were dropped off at selected households and were then collected (and followed up where necessary) at a later date.This means that in most cases respondents had the whole questionnaire in front of them when they were filling out their responses. Further information on the study can be found in the study report (AIHW, 2014).

Materials

The questions relevant to the current study in the NDSHS are the following:

- Have you <u>ever</u> tried alcohol?
- Have you ever had a <u>full</u> serve of alcohol
- Have you ever had an alcoholic drink of any kind in <u>the last 12 months?</u>

While not made explicitly clear, it is presumed that in this context a 'full serve of alcohol' means an Australian standard drinks (ASD; 10g ethanol). These three items, referred to as the dichotomous items for the rest of the paper, are used to calculate the drinker rate. Respondents who answer no to any of the first three questions are told to skip over the subsequent questions on alcohol consumption. Those who have consumed alcohol in the last 12 months are asked to provide information on their usual alcohol consumption in two ways. The first, known as the quantity-frequency method, asks the respondent "*In the last 12 months, how often did you have an alcoholic drink of any kind?*" and then asks "*On a day that you have an alcoholic drink, how many standard drinks do you usually have?*" . The relevant amounts are; less than one standard drinks; 1-2, 3-4, 5-6, 7-10, 11-19, and 20 or more standard drinks in a day. The relative frequencies are; every day, 5-6 days per week, 3-4 days per week, 1-2 days per week, 2-3 days per month, about 1 day a month, less often and never.

The second method, graduated frequency, involves asking respondents to "*Please record how often in the last 12 months you have had each of the following number of standard drinks in a day?*". The relevant amounts and frequency of drinking are the same as for quantity frequency, however this method allows a frequency response for each of the listed amounts of consumption. Responses to questions for both sets of questions were tallied up using the midpoint of each drink range or frequency range.

Those respondents who selected "Never" on the quantity frequency or graduated frequency questions were marked down as abstainers for those items. Those that did not indicate they had consumed any of the provided amounts of alcohol in the graduated frequency questions were marked as missing for graduated frequency questions, the same went for the quantity frequency questions. Please note that the specific ways in which abstaining from alcohol is calculated in this paper differ somewhat to the ways in which it is presented in the 2013 NDSHS report (AIHW, 2014), due to the way missing data and ex-drinkers have been dealt with. In the current study we do not change the category of those who state they are ex-drinkers rather they are classified on their consumption or lack thereof in the past twelve months (regardless of whether they have stopped drinking more recently).

Analysis
All data analysis was conducted using Stata version 14. Survey weights were used to correct for misrepresentation as compared to population statistics on age, gender, location (stratified into 15 groups divided by states and territories, and by in and out of capital cities (except no subdivision of the Australian Capital Territory). Current drinker prevalence was calculated based on survey item used and whether missing data was counted as a category or excluded and treated as missing. All statistics presented in this paper are weighted except for sample sizes.

Results
The current drinker rate is derived from the proportion of the sample who reported any consumption in the last twelve months based on each set of items. Those respondents that do not answer the dichotomous items are not asked the rest of the items on consumption, and so are considered abstainers in the quantity frequency and graduated frequency items. Those that do not answer the quantity frequency questions are still asked the items on graduated frequency. The

current drinker rate based on these three sets of items is shown in Table 1, both where the missing data is excluded (so that it is coded as missing), and where it is included as a third classification.

[PLEASE INSERT TABLE 1 HERE]

The change in abstainer rates stems from those who state that they have consumed alcohol in the past twelve months but, when asked for further details about this consumption, either give no response, or respond in a way that would suggest that they consumed no alcohol. Overall, 1721 respondents or 7.2% of those who completed the survey indicated in the dichotomous questions that they had consumed alcohol in the past year, but either completed the graduated frequency questions in a way that indicated no alcohol consumption in the past year (n=847) or failed to answer the question at all (n=874).

Of these 1721 respondents, 9% filled out their quantity frequency questions in a way that indicated that they had stopped drinking in the past twelve months, 9% failed to complete the quantity frequency questions or stated that their consumption was 0, and the rest had a mean yearly consumption of 101.3 [81.3-121.3] ASD according to the quantity frequency questions. For comparison, the mean yearly consumption of drinkers who consistently completed the quantity frequency questions was 472.7 [460.0-485.4] ASD.

Discussion

The aim of the current study was to examine the rate of responder burden on different measures of consumption in the NDSHS. The drinker rate ranges from 80% to 72% based on the systematic exclusion of drinkers who stopped short of completing the survey, even when this data is coded as missing.

In line with Dawson's work (1998) the apparent drinker rate decreased as responder burden increased. In total 7.2% of all respondents stated they had consumed alcohol in the past twelve months but their answer (or lack thereof) in the graduated frequency section indicated that they had not. Nearly a tenth of these stated that they had stopped drinking in the past twelve months, yet their consumption should have still counted in the graduated frequency. Of the remainder, the consumption rates (based on those that did complete the quantity frequency measure) were fairly low on average, compared to those who completed the graduated frequency. However their omission from analyses based on the graduated frequency measure could still have an impact, primarily due the inflated abstention rate in analyses on this data.

The flow-on effect from this is that categories of drinker groups from these analyses will be slightly under-reported. In the majority of analyses the impact of this attrition may not be large if the low consumption rate of those who answered the quantity frequency questions but skipped the graduated frequency questions is any indication. However, detailed analyses on this data that are more sensitive to small changes, for instance econometric analyses, should take note of this inflated abstainer rate and adjust accordingly. Abstainers can't be missing on the graduated frequency measures, as they do not need to answer these questions. As such all respondents who are missing for these items are drinkers and the missingness is systematic.

The primary limitation of this study is that of most studies on missing data: we don't know what we don't know about these respondents. Fortunately the NDSHS is a comprehensive survey, so some

information on the drinking habits of those who chose not to complete the graduated frequency measure could be gleaned. However, how well the information on the quantity frequency measure among those who completed that section can be generalised to those who did not is not known. It is also worth noting that the difference in abstainer rates is not as large as that of drinker rates because of the role of missing data. However, it is the drinker rate, not the abstainer rate, which would be of importance when using a graduated frequency measure to calculate total volume across a population. Finally the role of social desirability and other issues that may result in a respondent not answering honestly is not assessed in this study, how this interacts with non-response would be an interesting avenue of future research

In conclusion, the percentage of missing data rises significantly as the response burden increases in alcohol consumption survey measures. This missing data is not random and will artificially increase the abstainer rate in a population as abstainers do not face the same level of respondent burden as drinkers. Analyses based on complex questionnaires where drinkers face an extra burden should take this inflation of abstainer rates into account in their analyses. One possible way of doing this is to weight the responses to the proportion of respondents who stated that they are current drinkers in simpler questions with less respondent burden. Another would be to impute missing data based on other information taken in the study.

Acknowledgements

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