**Co-occurrence of DSM-IV mental disorders and alcohol use disorder among adult Chinese males**

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**SUPPLEMENTARY MATERIAL**

**Technical details about the assessment of DSM-IV mental disorders and analysis weights**

A two-stage assessment procedure was used in all five sites. During the first stage, an expanded Chinese version of 12-item General Health Questionnaire (GHQ) was administered to all participants and the results were used to classify respondents into one of three risk strata for having any mental disorder. The screening items included the 12 items in the GHQ (which focus on mood disorders) and four to eight additional items that consider other common risk factors for a mental disorder including 1) self-rated very poor physical health, 2) self-rated very poor psychological health, 3) frequent obsessive thoughts or compulsive behaviors, 4) frequent restriction of behavior because of phobia(s), 5) frequent feelings of extreme nervousness or anxiety, 6) frequent excessive drinking, 7) any previous treatment for psychological problems, and 8) previous suicidal ideation or attempt. Only 4 of the addition items (1,2, 7, 8) were included in the first-stage screening in the 2001 Zhejiang study, but all 8 items were included in the first-stage screening at the other sites. GHQ has been validated in the Chinese population (Yang *et al.* 2003).

The total score of GHQ ranged from 0 to 12. All respondents were classified into three risk levels based on their GHQ scores and risk factor assessment: participants were classified as ‘high risk’ if they had a GHQ score >4 OR had any of the risk factors assessed by the additional items OR had difficulty completing the screening due to psychological problems; participants were classified as ‘moderate risk’ if they had a GHQ score between 1 and 3 and no risk factors; participants were classified as ‘low risk’ if they had a GHQ score of zero and no risk factors. These GHQ cut-off scores were determined by pilot studies that aimed to classify about 20% of community respondents in the high-risk group, 20% in the moderate-risk group, and 60% in the low-risk group. Using this procedure, 13,515 individuals were classified as ‘high risk’, 13,002 ‘moderate risk’, and 48,235 ‘low risk’. The screening interviews were conducted face-to-face in respondents’ homes by trained psychiatric nurses. A previous study report excellent reliability of this classification of risk strata (Phillips *et al.* 2009).

During the second stage of assessment, all high-risk individuals and a random sample of moderate-risk individuals (~30%) and low-risk individuals (~10%) were selected to complete the diagnostic assessment with the Chinese version of Structured Clinical Interview for Diagnostic and Statistical Manual (DSM)-IV-TR Axis 1 disorders (SCID). SCID has been validated in the Chinese population (Phillips & Liu 2011). SCID interviews were conducted face-to-face by trained psychiatrists.

In this study, inverse probability weights were used to adjust for differential selection probability across risk levels. For example, a low-risk person who was selected to complete SCID will receive a weight that is 10 times of the weight of a high-risk person because the low-risk person has only 10% probability to be selected and the high-risk person has 100% probability. In addition to selection probability, weights were also used to adjust for non-response patterns at each stage of sampling, as well as post-stratification factors that bring the sample into balance with the source population in terms of sex, age, and urban-rural residence. The use of these analysis weights ensures that the results are applicable to the source population. Previous publications provides additional details about the sampling, assessment, and weighting procedures (Phillips *et al.* 2009, 2016).

This type of oversampling of high-risk populations is a standard practice in contemporary population surveys that is used to ‘enrich’ the sample and to maximize statistical efficiency.

References

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