Reviewer's report

Title: Colorectal cancer screening knowledge, attitudes and behavioural intention among Indigenous Western Australians

Version: 1 Date: 1 September 2011

Reviewer: John Condon

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The research question is clearly defined. The methods are appropriate and adequately described, with the exception of the multivariate analysis (see below). The data collection instrument and collection methods appear sound, with the limitation that 'snowball' recruitment from three urban areas was used rather than a random sample, so the results are not necessarily generalisable to the wider Indigenous population. This limitation is adequately addressed in the discussion. Despite this limitation, the study identifies important issues that are relevant to the research question.

The comments in the discussion and conclusion are reasonable and supported by the research results, within the limitations of the study that are adequately discussed. The title is appropriate, the abstract summarises the main points well, although the results and interpretation of the multivariate analysis of 'intention to screen' may need modification (see below).

Major compulsory revisions

1. The Background is too long and much of its contents would be more appropriate in the Discussion, such as paras 2, 3, 4, 6 and part of 7. Discussion para 1 is a repetition of comments in the Background.

There are several issues about the multivariate analysis of 'intention to screen' that need to be clarified.

2. There is an inconsistency between the results of the univariate and multivariate analyses of variables associated with 'intention to screen' (Tables 5 and 6). The odds ratios (ORs) for the variables (except gender) in the final model are very large, but the ORs for the same variables in univariate analysis are much smaller: age 18.41 c/w 1.69, marital status 18.30 c/w 5.96, perceived self-efficacy 41.05 c/w 13.4, participated in screening in the past 12.45 c/w 3.83. This suggest that there were one or more very strong confounders of the univariate associations with 'intention to screen'; this needs to be explored and explained in more detail because it raises more questions than it answers.

3. The authors need to clarify which variables were considered for inclusion in the multivariate analysis of 'intention to screen' (Methods para 6). Were all variables in tables 1, 2 & 4 considered, or only those in table 5?

4. In the same para, the authors also need to clarify what they mean by the term
‘entry method’ in regard to selecting which variables to include in the final model; the description sounds like backward elimination, but the term ‘entry method’ suggests forward selection. The criteria used to select variables for the final model are also unclear. The authors state they removed variables that were ‘...least related to the outcome until only variables with a p<0.05 remained while still controlling for age, gender and marital status’. Strength of association is determined by the size of the odds ratio, not the p-value; which was used?

5. The variable retention criteria for the final model (only variables with p<0.05) were too restrictive, given the relatively small sample size and the very large odds ratios of the three variables that were retained. Were there other variables with large odds ratios but p-values that were a little larger than 0.05? This would be suggestive of an association that may have not reached the arbitrary 0.05 level because of the small sample size. If so, these should be included in the final model, or at least mentioned in the text if not included.

Minor essential revisions

6. The age range of participants needs to be clarified. The eligibility criteria include age 40 or more (Methods para 1), but the Tables include age-group ‘25-44’, or ‘up to 44’, with 26% of participants in this age-group. If this is actually age-group 40-44, why were 26% of participants recruited in this relatively small and young age range, given that the first screening age is not until age 50?

7. The authors need to clarify how the knowledge score was calculated. There are 24 knowledge items listed in Table 2 but the Methods section states that “A knowledge score was computed for each respondent based on 18 knowledge items...” (Methods para 3), and there are a different number of respondents for each knowledge items; 19 of the 24 items had 91-93 respondents, but the other five had only 61-88 respondents.

8. Remove reference to the content analysis (Methods para 6); no results of the content analysis are presented.

9. The ‘don’t know’ category is inconsistently combined with the ‘no’ category in the tables, both between tables and, in Table 4, within the table; for several variables, the combined category is the majority of respondents. The authors should explain why these two categories were combined for some questions.

10. Results para 9: it is not clear what the final sentence means.

11. Discussion para 6, first sentence. Change ‘received’ to ‘completed’ or ‘had’; it sounds like these were people who received a FOBT test kit in the mail. Same para, final sentence refers to ‘...the recall of kits in late 2009...’. This has not been mentioned previously and assumes the reader knows about this event; it needs a little explanation.

Discretionary revisions

12. It would be informative to provide a comparison of the distribution of socio-demographic characteristics in the total WA or Australian Indigenous
population to give some indication of the representativeness of the sample (Results para 1). Census data are available for most of the characteristics listed.

13. The presentation of results in the text reports the proportions of positives or negatives inconsistently, which is confusing; for example in Results para 3, the final sentence states that 30% is higher than 86%.

14. Results, all paras. P-values are not needed in the text when they are included in the tables, and unnecessarily impede easy reading.

15. The Discussion does not seem to be coherently structured. It could be better organised, perhaps, by grouping the issues into themes such as knowledge of bowel cancer, knowledge of screening, and intention to screen. At present, it seems to jump from issue to issue.

16. It would be informative to include a multivariate analysis of associations between the variables in Table 3 and ‘knowledge score’ because a strong association was found between ‘knowledge score’ and ‘intention to screen’, and between several socio-demographic variables and ‘knowledge score’, but not between these socio-demographic variables and ‘intention to screen’. However multivariate analysis may not be appropriate because of the small sample size (see comments re analysis of ‘intention to screen’).

Minor issues not for publication.
Background para 7 sentence 2, add ‘of’.
Results para 8 sentence 1, delete ‘the’.
Results para 10 sentence 2, add ‘be’ & ‘in’.
Limitations para 3 sentence 1, there are words missing, this sentence does not make any sense. It is not clear what ‘desirability bias’ refers to.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**
I declare that I have no competing interests