Reviewer’s report

Title: Risk factors for viral hepatitis C infection in Rwanda: Results from a Nationwide Screening Program

Version: 0 Date: 12 Jun 2019

Reviewer: Anne Oevrehus

Reviewer’s report:

Major comments

Very large and impressive study finding a high seroprevalence among people in Rwanda.

Important data but how well do they reflect the Twanda population is my major concern

It should be more clearly described if the tested population (69% women? And persons< 25 years excluded?) is representative for Rwanda with regards to the most important characteristics (sex, age distribution, HIV sero prevalence, socioeconomic, geographical). Is there a national census that can provide insight?

It should also be more clear how the participants in the study were enrolled and what bias this might have caused.

People who inject drugs (PWID) are not mentioned. It might be that it is not an issue but for the international reader any considerations about omitting this in most context important route of transmission should be described

In the multi variate analysis consider including fewer variables or merging some of the categorical variables with very few in each strata and examine for interactions between variables that might moderate effect.

Minor comments

Abstract

Clear and well written

Results. Ubudehe category and RAMA insurance are not a commonly known variables - please rephrase (socioeconomic category / national health insurance ?)

Maybe a matter of taste but three digit decimal are not needed for the OR - one digit or two at the most would be sufficient
Introduction

Nicely outlines why the study is needed

Line 55-57

Consider rephrasing - sounds like health workers have recreational exposure to blood?

Page 2 line 4-8

Is injecting drug use not a risk factor for transmission in Rwanda.?

Study design

Please elaborate on the design - what was included in the standardized laboratory request form and how has it completed?

Study population

What was the rationale for excluding people < 25 years of age - this is likely to have a major impact on results and make national adult sero prevalence less comparable to other studies

Was screening offered every one in the community or only those presenting with a wish for test. (testing bias)

Persons known to HCV-RNA + were excluded from the study or from the testing? Important with regards to

Data collection

Did the risk factors include intravenous drug use? Please clarify

Was the anti HCV test validated in the target population to ensure performance? Any validation of corresponding HCV-RNA?

Variables included in the analysis are mentioned both in the data collection section and variables section which is a little confusing should preferably be in the same section.

Were the data collected before or after the participant received the result of the test

Having one more sexual partner asked as ever or currently? (seems fairly unlikely that 97.3 had only had one partner ever?)
Statistical method

Using logistic regression to assess determinants for HCV exposure is fair but as mentioned in the Major comments section and below consider to

Line 53-53 - what is line-listed?

Line 55 data are always in plural?

Is bivariate same as univariate (examining one variate on the outcome?)

Not surprisingly age category is the main determinant for HCV exposure. Recommend you in the multivariate analyzes instead adjust for age using it as a continuous variable and not as an outcome category. It would probably give more insight into the other determinants

Were the variables included in the final models examined for interactions? Without knowledge on the Rwanda health system one might imagine that private insurance would interact with high socioeconomic status and the same for Diabetes # high blood pressure#CRF and HIV # TB

It is stated that a number of variables were kept in if they were presumed intuitive or appropriate -but including number of sexpartners when 97.3 state the same answer (no more than 1) is very unlikely to add to the model

Results

Study population

Advice to be consistent with numbers - either 123456 or 123,456

Line 46-49 - Please proof read again could be more clear

Almost no participants (0.1%) were in the highest Socioeconomic category (Ubudehe 4) - is it then meaningful to have it as a separate category?

It would be helpful with a short description on how Ubudehe categories are defined?

Try to minimize repeating figures stated in the tables in the text or try to rank them eg. "the main determinant for HCV seropositivity was xx with an aOr of XX and a p of xx indicating af major association

Line 32 - Being in Ubudehe category 3 had lower RAMA as…- is something missing here

Line 35 - mutuelle is a name? Capital first letter?
Discussion

Includes limitations and comparison with other studies including the major limitation of age restricting the cohort and mixed effects or no causality proven by higher aOR for exposure among family members.

The higher prevalence in the older age cohort is a historical exposure - but data cannot really prove this and a cumulative risk is just as likely?

It is hypothesized that migrants are the cause of higher prevalence outside the north region of Rwanda but being a migrant was not a factor in the data or were migrant excluded from the study?

In the conclusion opportunities for prevention and screening is mentioned. Does the authors think screening should be universal, birth cohort or risk based based on their finding?

Line 8 - Please spell out PLHIV at first use

Tables in general

Consider the headings - Frequency is used for number of participants(n) which is confusing

There is on decimal in table 1, two in table 2 and 3 in table 3. Suggest one for percentages and max 2 for the OR and p value?

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Unable to assess

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.
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