

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Anemia and associated factors among older adults in an urban district in China: a large-scale cross-sectional study
AUTHORS	Ni, Wenqing; Yuan, Xueli; Sun, Yuanying; Zhang, Hong; Zhang, Yan; Xu, Jian

VERSION 1 – REVIEW

REVIEWER	Srivastava, Shobhit International Institute for Population Sciences
REVIEW RETURNED	04-Sep-2021

GENERAL COMMENTS	<p>The study is very relevant as anaemia among older adults is a domain that is not very much focused in the field of public health globally. However, I feel that this issue is very important to be addressed. As far as the write-up is concerned, I have certain issues which need to be addressed before the manuscript gets accepted for publication: -</p> <ol style="list-style-type: none">1. I suggest using the word "older adults" instead of "elderly" throughout the manuscript.2. In Strengths and limitations of this study: -<ol style="list-style-type: none">a. why convenience sampling was used?3. Please use one figure after decimal throughout the manuscript.4. The introduction section is not well written. The authors have not built any significant background. I prefer that authors should do an extensive literature review and use it to strengthen the introduction part. Moreover, a conceptual framework is also needed along with a strong background build.5. A proper inclusion and exclusion criterion should be presented in the method section.6. In table—1 what is general? The authors should provide a mean along with confidence interval to represent the descriptive statistics (for continuous variables only).9. In Table-2 please provide CI for the prevalence also.8. In figure-2 is that OR or AOR? I mean If the estimates were adjusted then authors should use the term AOR.10. The authors should provide the figure for the prevalence of anemia as per international standards. (Normal, mild and severe anemia levels).11. In figure-1. Please rewrite illiterate as not educated and correct this throughout the manuscript.12. In age groups please mention the group 65-69, 70-74.... and so on.13. The authors should discuss the findings in a standard and scientific manner. The main findings should be stated in the first part of the discussion; followed by the important findings to be discussed one by one and then discussing them in an in-depth manner.
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	<p>14. I request the authors to provide a valid reason and discuss that why the anemia levels were significantly lower among older adults who were smokers and drinkers.</p> <p>15. As per strobe guidelines gender should be renamed as sex.</p> <p>16. I recommend the authors brief the logistic regression analysis in the method section. The model should be well defined using an equation.</p> <p>17. I recommend authors use a professional English editor to get the manuscript edited in a scientific manner.</p>
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REVIEWER	Tiruneh, Fentanesh Bahir Dar University, Applied Human Nutrition
REVIEW RETURNED	10-Sep-2021

GENERAL COMMENTS	<p>Abstract I suggest the authors should revise the format of the abstract section by four sub-sections background, methods, result and conclusion).</p> <p>Objective Line 4: please remove the world “risk” because factors might be risk or protective. The authors said “Primary outcomes: Their hemoglobin (Hb) levels and the prevalence of anemia were analyzed and potential associated factors were evaluated” Which is not clear. Please describe your outcome variable clearly.</p> <p>Conclusion The authors should focus on specific results (statistically significant factors) when they recommend to implement prevention interventions. “Strengths and limitations of this study” I suggest to remove this section because you already mention it at the end of the discussion section.</p> <p>Introduction Line 13-15: This sentence begs reference “Although China has seen a significant reduction in anemia among middle-aged and elderly residents in the past decade, its occurrence among the elderly cannot be neglected”. The introduction section is very shallow. I suggest the authors should elaborate this section in detail by review different literatures specifically about factors associated with anemia among elderly.</p> <p>Material and Methods Line 40-41: “A total of 19,703 respondents were excluded because of failure to fulfil one or all of these requirements”. However the eligibility criteria is not clear. Line 3: “definition” I suggest change to Operational definition/measurement Line 17-18: this sentence begs reference “Participants were divided into four groups based on the adult weight criteria published by the Ministry of Health of China”.</p> <p>Results Currently the result section looks like conclusion. Detail interpretation is needed for result section including the OR with 95% CI for statistically significant variables to the final model.</p> <p>Discussion Line 8-9:” Current smokers had a lower risk of anemia than never smokers, and habitual drinking was also associated with a decreased risk of anemia (odds ratio: 0.81)”. What are the authors’ possible explanation for this results?</p>
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REVIEWER	Tayeh, Malatee Walailak University
REVIEW RETURNED	17-Sep-2021

GENERAL COMMENTS	<p>This paper is a large-scale cross-sectional survey to determine the prevalence of anemia and its factors in an urban district in China. It should provide useful information for establishing public health policy. However, some minor changes and recommendations are required.</p> <ol style="list-style-type: none"> 1. Please have more discussion of the lower risk of anemia in current smokers. 2. What is the p-value of the statistic test? Please mention beneath table 2. 3. Please double-check the format of reference number 17.
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VERSION 1 – AUTHOR RESPONSE

reviewer #1

General comments

1. The study is very relevant as anaemia among older adults is a domain that is not very much focused in the field of public health globally. However, I feel that this issue is very important to be addressed. As far as the write-up is concerned, I have certain issues which need to be addressed before the manuscript gets accepted for publication.

Answers: Thanks for the affirmative comments! Based on the comments, we have made major revisions which we feel have met the reviewers' concerns. We think the revised manuscript is an improvement on the original, and we hope that you will find the manuscript acceptable for publication in the journal. Thanks!

Specific comments

1. I suggest using the word "older adults" instead of "elderly" throughout the manuscript.

Answer: Thanks for the suggestion! According to this suggestion, we used the word "older adults" instead of "elderly" throughout the manuscript.

2. In the strengths and limitations of this study: a. why convenience sampling was used.

Answer: Thanks for the comment! In the revised manuscript, page 10, the last paragraph, the following sentences were "Second, we adopted a convenient sampling method to recruit elderly participants. This is a major factor preventing true extrapolation of the results to the general population." was changed to "Second, randomized sampling would represent the best design for testing the prevalence of anemia and its associated factors among older adults; however, large random sampling was not practically feasible and we therefore adopted a convenient sampling method to recruit older adult participants. This was a major factor preventing the extrapolation of the results to the general population. .".

3. Please use one figure after decimal throughout the manuscript.

Answer: Thanks for the suggestion! Because the confidence interval is very small, if only one decimal place is reserved, the lower limit of the confidence interval is easy to coincide with the statistic. So, we recommended two figures after decimal throughout the manuscript.

4. The introduction section is not well written. The authors have not built any significant background. I prefer that authors should do an extensive literature review and use it to strengthen the introduction part. Moreover, a conceptual framework is also needed along with a strong background build.

Answer: Thanks for the comment! According to this and below comments, we have rewritten the introduction as follows: Anemia results from an inadequate number of erythrocytes which leads to a decreased

ability to carry oxygen to meet the body's physiological demands. It is characterized by reduced levels of hemoglobin (Hb) in the blood in affected individuals. Anemia may occur at all stages of life, however, older people are among the most vulnerable.^{1,2} Globally, 11.0% of men and 10.2% of women aged 65 years and older are anemic.³ Anemia is a risk factor for a variety of adverse outcomes in the older population, including hospitalization, disability and mortality.¹ Previous studies found higher mortality rates in people aged 65 years and older hospitalized for myocardial infarction, patients with systolic and diastolic chronic heart failure (CHF), and in older CHF patients with anemia.⁴⁻⁶ Anemia is also an independent risk factor for decline in physical performance and has a negative impact on quality of life, physical functioning, and muscle strength in older individuals.⁷⁻⁹ Early identification and treatment of anemia is therefore an important strategy to improve the quality of life of older adults with anemia.

In China, 13.5% of the total population (approximately 190.64 million people) were aged 65 years or older in 2020,¹⁰ and increasing life expectancy and declining fertility rates mean that China is experiencing an ongoing aging process. In line with the aging of the population, anemia has become an important public health problem in China. The China Health and Retirement Longitudinal Study showed a prevalence of anemia in middle-aged and older Chinese residents of 12.86% from 2011 to 2012,¹¹ and the 2010–2012 China National Nutrition and Health Survey found a prevalence of anemia in older Chinese people of 12.6%.¹² Preventing anemia and improving the health of older adults in China are thus urgent issues. However, the only previous trial for preventing anemia examined the use of iron-fortified soy sauce in some cities in China, which aimed to reduce the prevalence of iron-deficiency anemia among women of reproductive age.¹³ The prevention of anemia in older adults thus still presents a challenge, and limited measures have been taken to address this public health problem.

Identifying the factors affecting the occurrence of anemia would help to determine effective interventional targets. Economic development and living standards are important factors affecting anemia.¹⁴ Most previous studies focused on the prevalence of anemia among middle-aged and older adults in urban and rural districts of China, but there is a lack of large-sample studies of anemia among older adults in urban districts.^{11,12,15,16} This study therefore aimed to examine the prevalence of anemia and its related factors among people aged 65 or older in an urban district of China, to help develop strategies for future interventions and the prevention of anemia in older adults living in urban districts in China.

5. A proper inclusion and exclusion criterion should be presented in the method section.

Answer: Thanks for the comment! According this and below comments, in the revised manuscript, section 2.1, the following sentence "The eligibility criteria were as follows: (1) having lived in Shenzhen for more than 6 months; and (2) able to participate in the study and give informed consent" was changed to "The eligibility criteria were as follows: (1) lived in Shenzhen for more than 6 months; (2) able to participate in the study and give informed consent; and (3) conscious and able to cooperate to complete the face-to-face interview, medical examinations and biomedical tests."

6. In table—1 what is general? The authors should provide a mean along with confidence interval to represent the descriptive statistics (for continuous variables only).

Answer: Thanks for the comment! In table 1, the word "general" was instead of "total". According this and below comments, in the revised manuscript, table 1 and table 2, we provided confidence interval for variables.

7. In Table-2 please provide CI for the prevalence also.

Answer: Thanks for the comment! According this and above comments, in the revised manuscript, table 1 and table 2, we provided confidence interval for all variables.

8. In figure-1 is that OR or AOR? I mean If the estimates were adjusted then authors should use the term AOR.

Answer: Thanks for the comment! In figure 1 is that AOR. We have used the term AOR throughout the revised manuscript.

9. The authors should provide the figure for the prevalence of anemia as per international standards. (Normal, mild and severe anemia levels).

Answer: Thanks for the comment! The following sentence were added (page 7, line 3-5, paragraph 1 in the revision): The severity of anemia was classified as mild (11–11.9 g/dL (women), 11–12.9 g/dL (men)), moderate (8–10.9 g/dL), and severe (<8 g/dL)¹⁷. The following sentence were added (page 8, line 17-19, section 3.2 in the revision): and the prevalence (95% confidence intervals(CI)) of mild, moderate and severe anemia were 12.24% (12.05-12.42), 2.94% (2.84-3.03) and 0.25% (0.23-0.28) respectively.

10. In figure-1. Please rewrite illiterate as not educated and correct this throughout the manuscript.

Answer: Thanks for the comment! We rewrite illiterate as not educated and correct this throughout the revised manuscript.

11. In age groups please mention the group 65-69, 70-74.... and so on.

Answer: Thanks for the comment! We have corrected throughout the revised manuscript.

12. The authors should discuss the findings in a standard and scientific manner. The main findings should be stated in the first part of the discussion; followed by the important findings to be discussed one by one and then discussing them in an in-depth manner.

Answer: Thanks for the comment! In the revised manuscript, section 4.0, page 9, the following paragraph was added : “This was the first large-scale cross-sectional survey to report the prevalence of anemia in older adults (aged 65 years or older) living in an urban district of China. This study demonstrated that the prevalence of anemia was relatively high, representing a public health problem in Shenzhen. After controlling for the confounding factors we found that the prevalence of anemia varied with education level, age group, smoking status, drinking habit, BMI, central obesity, and some non-communicable diseases.”.

13. I request the authors to provide a valid reason and discuss that why the anemia levels were significantly lower among older adults who were smokers and drinkers.

Answer: Thanks! The discussion on smoking or drinking results was modified. The paragraph “Current smokers had a lower risk of anemia than never smokers, and habitual drinking was also associated with a decreased risk of anemia (odds ratio: 0.81). However, these findings were not consistent with an Indian study.²⁶ Considering the potential risks to human health from alcohol or tobacco use, we do not recommend that alcohol or tobacco should be used as protective factors against anemia.” was deleted, and the following paragraph was added: “Current smokers had a lower risk of anemia than never smokers. Similarly, previous studies showed that smoking was negatively correlated with the risk of anemia.^{29,30} A multiple logistic regression analysis of the health check-up database of St. Luke’s International Hospital in Tokyo between April 2016 and March 2017 revealed that Japanese women (35–49 years) who were current smokers had a 25% lower risk of anemia compared with non-smokers, after adjusting for the covariates.³⁰ Increased Hb levels in smokers were associated with elevated carboxyhemoglobin (HbCO), a stable complex of Hb and carbon monoxide (CO), because of the exposure to excess CO caused by smoking.³¹ The form of HbCO decreases oxygen delivery, and smokers had compensatory elevated Hb to increase erythropoiesis and maintain oxygen transportation.³² This might explain why adaptation to excess CO during smoking was reflected by increases in Hb and RBC mass.³³ Habitual drinking was also associated with a decreased risk of anemia, with a corresponding OR of 0.81, consistent with a Korean study.²⁹ However, the direct causality of this negative correlation between alcohol drinking and anemia is still

unclear.²⁹ Given the potential risks of alcohol and tobacco consumption to human health, we do not recommend increasing alcohol consumption or smoking to protect against anemia”.

”.

14. As per strobe guidelines gender should be renamed as sex.

Answer: Thanks for the comment! We have corrected throughout the revised manuscript.

15. I recommend the authors brief the logistic regression analysis in the method section. The model should be well defined using an equation.

Answer: Thanks for the suggestion! We have clearly described the statistical method, and suggest that the original description be retained.

16. I recommend authors use a professional English editor to get the manuscript edited in a scientific manner.

Answer: Thanks for the suggestion! Answers: Thanks for the comments. Professor David Cushley, a native English speaker, helped language editing of the whole manuscript. Some grammatical errors in the original manuscript were corrected. The revised manuscript is improved on the original.

Responses to reviewer #2

General comments

1. Comments to the Author: Thank you for allowing me to review this manuscript. There are some concerns that have to be addressed before the paper is accepted for publication.

Answer: Thanks. Based on the comments, we have made major revisions which we feel have met the reviewers' concerns. We think the revised manuscript is an improvement on the original, and we hope that you will find the manuscript acceptable for publication in the journal. Thanks!

Specific comments

1. I suggest the authors should revise the format of the abstract section by four sub-sections (background, methods, result and conclusion).

Answer: Thanks for the suggestion! As abstracts are a fixed format for journals, we suggested to be retained.

2. Line 4: please remove the word “risk” because factors might be risk or protective.

Answer: Thanks for the comment! In the revised manuscript, line 4, the word “risk” was deleted.

3. The authors said “Primary outcomes: Their hemoglobin (Hb) levels and the prevalence of anemia were analyzed and potential associated factors were evaluated” Which is not clear. Please describe your outcome variable clearly.

Answer: Thanks for the comment! In the revised manuscript, page 2, the following sentence “Their hemoglobin (Hb) levels and the prevalence of anemia were analyzed and potential associated factors were evaluated” was changed to “The prevalence of anemia was analyzed and potential associated factors were evaluated”.

4. The authors should focus on specific results (statistically significant factors) when they recommend to implement prevention interventions.

Answer: Thanks for the comment! In the revised manuscript, page 2, the following sentence “Anemia is prevalent among people aged 65 years and older in China. Prevention, screening of key populations, and treatment of senile anemia should be a top priority in Shenzhen, and should be listed as important public health intervention measures for implementation.” was changed to “Anemia is prevalent among people aged 65 years and older in China. Screening of high-risk populations, and

treatment of senile anemia should be a top priority in Shenzhen, and should be listed as important public health intervention measures for implementation.”.

5. “Strengths and limitations of this study” I suggest to remove this section because you already mention it at the end of the discussion section.

Answer: Thanks for the suggestion! As abstracts are a fixed format for journals, we suggested to be retained.

6. Line 13-15: This sentence begs reference “Although China has seen a significant reduction in anemia among middle-aged and elderly residents in the past decade, its occurrence among the elderly cannot be neglected”.

Answer: Thanks! According this and above comments. The sentence “Although China has seen a significant reduction in anemia among middle-aged and elderly residents in the past decade, its occurrence among the elderly cannot be neglected.” was deleted.

7. The introduction section is very shallow. I suggest the authors should elaborate this section in detail by review different literatures specifically about factors associated with anemia among elderly.

Answer: Thanks for the comment! According this and above comments, we have rewritten introduction as following: Anemia results from an inadequate number of erythrocytes which leads to a decreased ability to carry oxygen to meet the body’s physiological demands. It is characterized by reduced levels of hemoglobin (Hb) in the blood in affected individuals. Anemia may occur at all stages of life, however, older people are among the most vulnerable.^{1,2} Globally, 11.0% of men and 10.2% of women aged 65 years and older are anemic.³ Anemia is a risk factor for a variety of adverse outcomes in the older population, including hospitalization, disability and mortality.¹ Previous studies found higher mortality rates in people aged 65 years and older hospitalized for myocardial infarction, patients with systolic and diastolic chronic heart failure (CHF), and in older CHF patients with anemia.⁴⁻⁶ Anemia is also an independent risk factor for decline in physical performance and has a negative impact on quality of life, physical functioning, and muscle strength in older individuals.⁷⁻⁹ Early identification and treatment of anemia is therefore an important strategy to improve the quality of life of older adults with anemia.

In China, 13.5% of the total population (approximately 190.64 million people) were aged 65 years or older in 2020,¹⁰ and increasing life expectancy and declining fertility rates mean that China is experiencing an ongoing aging process. In line with the aging of the population, anemia has become an important public health problem in China. The China Health and Retirement Longitudinal Study showed a prevalence of anemia in middle-aged and older Chinese residents of 12.86% from 2011 to 2012,¹¹ and the 2010–2012 China National Nutrition and Health Survey found a prevalence of anemia in older Chinese people of 12.6%.¹² Preventing anemia and improving the health of older adults in China are thus urgent issues. However, the only previous trial for preventing anemia examined the use of iron-fortified soy sauce in some cities in China, which aimed to reduce the prevalence of iron-deficiency anemia among women of reproductive age.¹³ The prevention of anemia in older adults thus still presents a challenge, and limited measures have been taken to address this public health problem.

Identifying the factors affecting the occurrence of anemia would help to determine effective interventional targets. Economic development and living standards are important factors affecting anemia.¹⁴ Most previous studies focused on the prevalence of anemia among middle-aged and older adults in urban and rural districts of China, but there is a lack of large-sample studies of anemia among older adults in urban districts.^{11,12,15,16} This study therefore aimed to examine the prevalence of anemia and its related factors among people aged 65 or older in an urban district of China, to help develop strategies for future interventions and the prevention of anemia in older adults living in urban districts in China.

8. Line 40-41: "A total of 19,703 respondents were excluded because of failure to fulfil one or all of these requirements". However the eligibility criteria is not clear.

Answer: Thanks for the comment! According this and above comments, in the revised manuscript, section 2.1, the following sentence "The eligibility criteria were as follows: (1) having lived in Shenzhen for more than 6 months; and (2) able to participate in the study and give informed consent" was changed to "The eligibility criteria were as follows: (1) lived in Shenzhen for more than 6 months; (2) able to participate in the study and give informed consent; and (3) conscious and able to cooperate to complete the face-to-face interview, medical examinations and biomedical tests."

9. Line 3: "definition" I suggest change to Operational definition/measurement

Answer: Thanks for the suggestion! We have changed in the revised manuscript.

10. Line 17-18: this sentence begs reference "Participants were divided into four groups based on the adult weight criteria published by the Ministry of Health of China".

Answer: Thanks for the comment! We have added in the revised manuscript.

11. Currently the result section looks like conclusion. Detail interpretation is needed for result section including the OR with 95% CI for statistically significant variables to the final model.

Answer: Thanks for the comment! According this comment, we have rewritten section 3.3 as following: " Binary logistic regression analysis was carried out with presence or absence of anemia as the dependent variable, and factors in univariate analysis as independent variables to determine the factors influencing anemia. Primary education (adjusted odds ratio (AOR)=0.89, 95%CI:0.84-0.94), junior school education and above (AOR=0.72, 95%CI:0.68-0.76) current-smoker (AOR=0.84, 95%CI:0.78-0.89), non-habitual drinker (AOR=0.86, 95%CI:0.81-0.92), habitual drinker (AOR=0.81, 95%CI:0.75-0.87), overweight (AOR=0.67, 95%CI:0.64-0.70), obesity (AOR=0.57, 95%CI:0.53-0.61), central obesity (AOR=0.86, 95%CI:0.82-0.89), hypertension (AOR=0.86, 95%CI:0.83-0.89), and dyslipidemia (AOR=0.81, 95%CI:0.78-0.84) were independently associated with lower odds for the presence of anemia (Fig. 1), while age 70-74 years (AOR=1.10, 95%CI:1.06-1.15) , age 75-79 years (AOR=1.37, 95%CI:1.31-1.44), age ≥80 years (AOR=1.96, 95%CI:1.86-2.06), underweight (AOR=2.06, 95%CI:1.93-2.20), diabetes (AOR=1.23, 95%CI:1.19-1.28), and CKD (AOR=1.41, 95%CI:1.36-1.46) were independently associated with greater odds (Fig. 1). However, there was no significant difference in the risk of anemia in relation to sex."

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12. Line 8-9: " Current smokers had a lower risk of anemia than never smokers, and habitual drinking was also associated with a decreased risk of anemia (odds ratio: 0.81)". What are the authors' possible explanation for this results?

Answer: Thanks for the comment! The discussion on smoking or drinking results was modified. The paragraph "Current smokers had a lower risk of anemia than never smokers, and habitual drinking was also associated with a decreased risk of anemia (odds ratio: 0.81). However, these findings were not consistent with an Indian study.²⁶ Considering the potential risks to human health from alcohol or tobacco use, we do not recommend that alcohol or tobacco should be used as protective factors against anemia." was deleted, and the following paragraph was added: "Current smokers had a lower risk of anemia than never smokers. Similarly, previous studies showed that smoking was negatively correlated with the risk of anemia.^{29,30} A multiple logistic regression analysis of the health check-up database of St. Luke's International Hospital in Tokyo between April 2016 and March 2017 revealed that Japanese women (35–49 years) who were current smokers had a 25% lower risk of anemia compared with non-smokers, after adjusting for the covariates.³⁰ Increased Hb levels in smokers were associated with elevated carboxyhemoglobin (HbCO), a stable complex of Hb and carbon monoxide (CO), because of the exposure to excess CO caused by smoking.³¹ The form of HbCO decreases oxygen delivery, and smokers had compensatory elevated Hb to increase erythropoiesis and maintain oxygen transportation.³² This might explain why adaptation to excess CO during

smoking was reflected by increases in Hb and RBC mass.³³ Habitual drinking was also associated with a decreased risk of anemia, with a corresponding OR of 0.81, consistent with a Korean study.²⁹ However, the direct causality of this negative correlation between alcohol drinking and anemia is still unclear.²⁹ Given the potential risks of alcohol and tobacco consumption to human health, we do not recommend increasing alcohol consumption or smoking to protect against anemia”.

Responses to reviewer #3

General comments

1. This paper is a large-scale cross-sectional survey to determine the prevalence of anemia and its factors in an urban district in China. It should provide useful information for establishing public health policy. However, some minor changes and recommendations are required.

Answer: Thanks for this affirm. Based on the comments, we have made major revisions which we feel have met the reviewers' concerns. We think the revised manuscript is an improvement on the original, and we hope that you will find the manuscript acceptable for publication in the journal. Thanks!

Specific comments

1. Please have more discussion of the lower risk of anemia in current smokers.

Answer: Thanks for the comment! The discussion on smoking or drinking results was modified. The paragraph “Current smokers had a lower risk of anemia than never smokers, and habitual drinking was also associated with a decreased risk of anemia (odds ratio: 0.81). However, these findings were not consistent with an Indian study.²⁶ Considering the potential risks to human health from alcohol or tobacco use, we do not recommend that alcohol or tobacco should be used as protective factors against anemia.” was deleted, and the following paragraph was added: “Compared with never smoker, current smoker had a lower risk of anemia. Similarly, the previous studies showed that smoking was negatively correlated with the risk of anemia.^{28,29} The multiple logistic regression analysis from the health check-up database of St. Luke's international hospital in Tokyo, between April 2016 and March 2017, revealed that Japanese women (35–49 years) who were current smokers decreased the risk of anemia by 25%, compared to those who were non-smokers, after adjusting for the covariates.²⁹ Increased Hb in smokers was associated with elevated carboxyhemoglobin (HbCO), a stable complex of Hb and carbon monoxide (CO), because of exposure to excess CO caused by smoking.³⁰ The form of HbCO decreases oxygen delivery, and smokers had elevated Hb as a compensatory mechanism to increase erythropoiesis rate and maintain oxygen transportation.³¹ This might explain why adaption to excess CO during smoking was reflected by the rise in Hb and RBC mass.³² We also found that habitual drinker was associated with a decreased risk of anemia with corresponding OR of 0.81. However, it is consistent with a Korea study. ²⁸ The direct causality of this negative correlation between alcohol drinking and anemia, in the previous study, is still unclear.²⁸ Given the potential risk of alcohol or tobacco consumption on human health, we don't recommend alcohol drinking or smoking as a protective factor for anemia.”.

2. What is the p-value of the statistic test? Please mention beneath table 2.

Answer: Thanks for the comment! We have added.

3. Please double-check the format of reference number 17.

Answer: Thanks for the comment! We have checked and corrected.

VERSION 2 – REVIEW

REVIEWER	Tiruneh, Fentanesh Bahir Dar University, Applied Human Nutrition
REVIEW RETURNED	11-Oct-2021

GENERAL COMMENTS	Introduction section still needs more information to achieve the study objectives specifically about factors associated with the outcome variable (anemia among older adults). Methods Line 10 on page 5 “We excluded residents living in prisons” the authors should explain why they exclude prisoners?
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REVIEWER	Tayeh, Malatee Walailak University
REVIEW RETURNED	20-Oct-2021

GENERAL COMMENTS	Minor corrections are required, and suggestions have been included in the attached manuscript's text.
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VERSION 2 – AUTHOR RESPONSE

reviewers:2

1.Introduction section still needs more information to achieve the study objectives specifically about factors associated with the outcome variable (anemia among older adults).

Answer: Thanks for the comment. In the revised manuscript, page 4, paragraph 3, the following sentence“Identifying the factors affecting the occurrence of anemia would help to determine effective interventional targets.”was changed to “ Clarifying the risk factors of anemia in the older adults will help to identify the population at risk of anemia, and promote the development of targeted screening and intervention measures.”.

2.Line 10 on page 5 “We excluded residents living in prisons” the authors should explain why they exclude prisoners?

Answer: Thanks for the comment. In the revised manuscript, page 5, paragraph 1, the following sentence“ We excluded residents living in prisons.”was changed to “ Prisoners are not free to visit community health centres, and we excluded residents living in prisons.”.

reviewers:3

1.Minor corrections are required, and suggestions have been included in the attached manuscript's text.

Answer: Thanks for the comment. We have corrected in the revised manuscript.

VERSION 3 – AUTHOR RESPONSE

Reviewer 2 previously commented "Introduction section still needs more information to achieve the study objectives specifically about factors associated with the outcome variable (anemia among older adults)". We not not feel this has been fully addressed in the revision. Please ensure that the introduction presents the background information on all the related factors of anemia that you will be investigating. It is currently not clear from the introduction exactly what the related factors of anemia are expected to be among older adults.

Answer: Thanks for the suggestion. In the revised manicurist, section of introduction, the following sentences "Economic development and living standards are important factors affecting anemia.¹⁴" was changed to " Economic development,living standards, body mass index (BMI), chronic disease and specific risk factors, chronic kidney disease (CKD), older age are important factors affecting anemia.^{1,3,14,15}"

1. -Please note that language errors are still present. Please carefully proofread your manuscript and correct and remaining typographical errors.

Answer: Thanks for this concern. We have corrected in the revised manuscript.

2. - On page 7, should "Written informed consent was obtained from uneducated participants before the collection of data and conducting of the study" be revised to "Written informed consent was obtained from all participants before the collection of data and conducting the study".

Answer: Thanks for this concern. We have corrected in the revised manuscript.

3. - On page 10, should "In conclusion, anemia is prevalent among the older adult population in China, with older age, underweight, diabetes, CKD, and anemia being positively associated with anemia" be revised to "In conclusion, anemia is prevalent among the older adult population in China, with older age, underweight, diabetes and CKD being positively associated with anemia".

Answer: Thanks for this concern. We have corrected in the revised manuscript.