PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Correlates and Etiological Factors Associated with Hedonic Well-Being Among an Aging Population of US Men and Women: Secondary Data Analysis of a National Survey
AUTHORS	Odlum, Michelle; Davis, Nicole; Owens, Otis; Preston, Michael; Brewer, Russell; Black, Danielle

VERSION 1 – REVIEW

REVIEWER	Salvatore Giovanni Vitale University of Messina (Italy)
REVIEW RETURNED	28-Jan-2018

GENERAL COMMENTS	I was pleased to review the Manuscript titled “Correlates and Etiological Factors Associated with Hedonic Well-Being Among an Aging Population of US Men and Women: secondary data analysis of a national survey” (bmjopen-2017-020962). The methodology used by the Authors is appropriate for the purpose of the study and the conclusion is consistent with data discussion and with available evidence throughout the text. References should be further improved. In general, the Manuscript may benefit from some minor revisions, as suggested below: 1. I suggest to further discuss other clinical conditions that may have a significant impact on women’s quality of life such as endometriosis or infertility, mentioning these studies about these topics: Int J Womens Health. 2017 May 16;9:323-330. doi: 10.2147/IJWH.S119729; J Psychosom Obstet Gynaecol. 2017 Mar;38(1):1-3. doi: 10.1080/0167482X.2016.1244184. 2. Authors discuss the impact of urinary incontinence on female quality of life and psychological wellbeing. I suggest to further expand references about this topic mentioning also these articles: J Psychosom Obstet Gynaecol. 2017 Mar 1:1-3. doi: 10.1080/0167482X.2017.1294155.

REVIEWER	Ling Na, PhD Incyte Corporation, USA
REVIEW RETURNED	11-Feb-2018

GENERAL COMMENTS	This study explores gender differences in perceived HRQoL-happiness among US adults aged 57-85. The literature review is thorough, and the theoretical framework is clearly described. However, the methodology is inadequate to address the study objective.

	In figure 1, the pathway from biological function to quality of life (happiness) follows a causal relationship. That is, for instance, the effect of biological function on quality of life is mediated through symptom status, function status and health perceptions in sequence (not in parallel). However, the linear regression models used in this study did not capture such causal pathway. Rather the linear regression models treated all the precedent factors (biological, symptom, function, health perceptions) as covariates, which in my opinion substantially changed the pathway model in figure 1. I would recommend using a structural equation model to at least describe the mediation effects of the model (even with cross-sectional data). The other major methodological concern is applying the same model on each gender and selecting most significant covariates on the outcome without validation endangers the reliability of the study results. The authors may consider building a gender-based model on half of the study sample, and validate the model using the other half of the sample. In addition, I would also like to see how the sampled males compared to females in terms of age, race, education, insurance, marital status, partnership, as well as biological function, symptom, functional status, and general health perceptions. I recommend that the authors provide a table to describe gender differences (proportions with chi-square statistics) in all variables used in the analyses. The claim in the discussion section that "women reported significantly lower HRQoL than men" can be further explored by matching males and females on individual and environmental characteristics, if sample size permits. Subsequently, all important biological and functional and health factors that lead to happiness can be explored on the matched sample. Thus we would have an idea how mediation effects occur differently in females vs. males when other variables are controlled for. There are also some minor methodological concerns. Variable scales were not defined. For instance, what variables were treated as continuous or categorical. Was a likert variable 5-point or 3-point or 7-point? Were there derived variables? How were they derived?

VERSION 1 – AUTHOR RESPONSE

Reviewer 1: Salvatore Giovanni Vitale

1. …further discuss other clinical conditions that may have a significant impact on women's quality of life such as endometriosis or infertility, mentioning these studies about these topics…

To address the concern of Reviewer 1: our sample is between 57 and 85 years of age, and clinical conditions such as endometriosis and infertility generally affect women of reproductive age. The lifelong impact of such conditions may significantly contribute to quality of life in older women, but historical data of this kind were not collected in the National Social Life, Health and Aging Project, which is a potential limitation when measuring quality of life.

2. …suggest to further expand references about this topic mentioning also these articles: J Psychosom Obstet Gynaecol. 2017 Mar 1:1-3. doi: 10.1080/0167482X.2017.1294155.

As suggested by Reviewer 1: additional information was provided in the Discussion section: Mechanisms and Implications regarding pelvic organ prolapse and its contribution to urinary incontinence and its direct and tremendous impact on the quality of life of older women. Xavier Fritel, Noëlle Varnoux, Marie Zins, Gérard Breart, Virginie Ringa. Symptomatic pelvic organ prolapse at midlife, quality of life, and risk factors. Obstetric Gynecol. 2009 Mar; 113(3): 609–616

3. …the linear regression models used in this study did not capture such causal pathway. Rather the linear regression models treated all the precedent factors (biological, symptom, function, health perceptions) as covariates, which in my opinion substantially changed the pathway model in figure 1. I would recommend using a structural equation model to at least describe the mediation effects of the model (even with cross-sectional data).

Reviewer 2: Name: Ling Na, PhD

To ensure the paper addresses the concerns of Reviewer 2: the limitation of a non-causal pathway was identified and addressed in the Discussion section: Strength and limitations.

To provide additional clarification to address Reviewer 2 concerns: added to the Discussion section: Strength and limitations was that our analysis was not intended to treat the theoretical framework as a causal pathway. Our analysis instead addresses the contribution of each construct and characteristic an item level factors to HRQoL, which is similar to a mediation effect that helps to explain how or why an independent variable (construct items and characteristic items) influences an outcome (HRQoL).

To provide additional clarification to address Reviewer 2 concerns: added to the Discussion section: Strength and limitation was that the data used in this analysis is cross sectional. Additionally adding that our analysis is identifying significant variables related to HRQoL and lays the groundwork for the development of an SEM model when longitudinal data is available. In fact, SEM does not allow for the establishment of causal relationships with our cross sectional data, as the prior presence/absence of construct related factors cannot be established, which is the advantage of a longitudinal SEM model.

To ensure the paper addresses the concerns of Reviewer 2: an explanation for the use of our Regression analytic approach was added to the Discussion section: Strengths and limitations of the paper.

4. …like to see how the sampled males compared to females in terms of age, race, education, insurance, marital status, partnership, as well as biological function, symptom, functional status, and general health perceptions. I recommend that the authors provide a table to describe gender differences (proportions with chi-square statistics) in all variables used in the analyses.

As suggested by Reviewer 2: a table with the Chi square differences between males and females for all significant variables under each construct of the theoretical framework (biological function, symptom, functional status, and general health perceptions) was added to the paper's Results section.

5. The claim in the discussion section that "women reported significantly lower HRQoL than men" can be further explored by matching males and females on individual and environmental characteristics, if sample size permits. Subsequently, all important biological and functional and health factors that lead to happiness can be explored on the matched sample.

In our attempt to match the samples of men and women as suggested by Reviewer 2: a propensity matching of the sample of men and women based on demographic characteristics of: age and race/ethnicity, education, insurance coverage and marital status (Table 1) was conducted. However, it

did not produce a sufficient sample size for the analysis suggested by Reviewer 2 of individual and environmental characteristics.

6. Variable scales were not defined. For instance, what variables were treated as continuous or categorical.

As suggested by Reviewer 2: the defined variable scales treated as either categorical or continuous was identified in the Methods: Measures section of the paper.

VERSION 2 – REVIEW

REVIEWER	Salvatore Giovanni Vitale University of Messina, Messina (Italy)
REVIEW RETURNED	23-Apr-2018

GENERAL COMMENTS	I was pleased to review the Manuscript “Correlates and Etiological Factors Associated with Hedonic Well-Being Among an Aging Population of US Men and Women: secondary data analysis of a national survey” (bmjopen-2017-020962.R1). In my opinion, this is a well-written manuscript, feasible for publication in BMJ Open. I appreciated the changes made by the Authors according to Reviewers' suggestions. The article provides a valuable and methodologically correct data analysis, the conclusion is consistent with data discussion and with available evidence throughout the text. I suggest to accept this Manuscript in its current form.

REVIEWER	Ling Na, PhD Incyte Corporation, USA
REVIEW RETURNED	28-Apr-2018

GENERAL COMMENTS	This paper is well-written and focuses on an interesting research question. Although an improved version, the paper makes a far stronger claim than what its methodology supports. For instance, in lines 36-38, the authors claim that they determined the best models predicting HRQoL of female and male US adults ages 57-85. The models are not validated and the variables selected may be due to chance. To support the claim, the authors should build a development model and a validation model to test selected predictors. To test the theoretical framework of causal pathways with the currently adopted models is also an easy way out, especially when data are available to develop a superior model. I have no further comments.

VERSION 2 – AUTHOR RESPONSE

Reviewer 1: Salvatore Giovanni Vitale

Reviewer 1 believes the last version of the manuscript was acceptable for publication.

Reviewer 2: Name: Ling Na, PhD

Reviewer 2 stated: The models are not validated and the variables selected may be due to chance. To support the claim, the authors should build a development model and a validation model to test selected predictors.

To ensure the paper addresses the concerns of Reviewer 2: we went back and built a developmental and validation model to test the predictor variables. The model validation process was described in the section entitled Statistical analysis and reads:

For model validation, our dataset was randomly divided, using a split-sample technique, into a developmental: n=1689 and validation: n=1688 group before identifying final model variables.13 The development model was selected through a stepwise multiple regression to identify the model of best fit. To determine the accuracy of the developmental model, a regression model was calculated with the validation dataset for the retained variables. To choose the final model, adjusted R2 values, Standardized βs and unstandardized slopes (B) were observed between the developmental and validation models to ensure analytic comparability.

The variables that remained in the validation model, included all of the variables that were used to build the separate models for gender. Therefore, proving the variables selected were not due to chance. Variables in the validation model were marked in Table 2 and explained in the Results section and reads:

All significantly correlated variables that comprised the WCM constructs and characteristics were then validated by linear regression, reducing the variable list from 24 to 13 (Table 2), for final model development by gender.

We thank Reviewer 2 for providing the guidance to ensure we did, in fact, developed a superior model. A sentence was added to the Strengths and limitations section of the Discussion and reads:

Furthermore, our model validation ensured that variable selection for the gender models were not due to chance.

VERSION 3 – REVIEW

REVIEWER	Ling Na, PhD Incyte Corporation, USA
REVIEW RETURNED	08-Jul-2018

GENERAL COMMENTS	Overall this is a well-written paper and can be considered for publication. I have two minor comments: 1. In a couple of places, the authors made very strong statements and I would suggest toning down these statements.

	For instance, page 4 lines 36-37, " We determined the best models predicting the HRQoL of male and female US adults ages 57 to 85". First, I'm not sure these are the best models (based on theory, a path model or SEM may be more appropriate); Second, even if the model is correctly specified, there can be confounders not included in the survey but contributing to the outcome. Another example is page 10, lines47-48, "Furthermore, our model validation ensured that variable selection for the gender models were not due to chance." I would revise it into something like "The validation increased our confidence in the predictive validity of the models ..." 2. It would be beneficial to the readers if the authors can provide validation results based on the development and validation cohorts in a table.

VERSION 3 – AUTHOR RESPONSE

Reviewer 2: Ling Na, PhD

In a couple of places, the authors made very strong statements and I would suggest toning down these statements.
For instance, page 4 lines 36-37, " We determined the best models predicting the HRQoL of male and female US adults ages 57 to 85". First, I'm not sure these are the best models (based on theory, a path model or SEM may be more appropriate); Second, even if the model is correctly specified, there can be confounders not included in the survey but contributing to the outcome.

To address the concern of Reviewer 2: The word best was removed from the sentence describing our models. The sentence now reads: We determined the models predicting the HRQoL of male and female US adults ages 57 to 85.

Another example is page 10, lines47-48, "Furthermore, our model validation ensured that variable selection for the gender models were not due to chance." I would revise it into something like "The validation increased our confidence in the predictive validity of the models

To address the concern of Reviewer 2: The sentence was reworded as the Reviewer suggested. The sentence now reads: Furthermore, our model validation increased our confidence in the predictive validity of the models.

It would be beneficial to the readers if the authors can provide validation results based on the development and validation cohorts in a table.

To address the concern of Reviewer 2: We created a table with the development and validation results.