

Authors' Responses to the Reviewers' Comments – Revision 1

World Journal of Psychiatry - Manuscript ID: 68432

Title: Developing a nomogram for predicting the depression of senior citizens living alone while focusing on perceived social support: a nationally representative sample of South Korea

We appreciate the editor, who gave opportunity to revise our work. Also, we would like to thank the reviewers for careful and thorough reading of this manuscript and for the thoughtful comments and constructive suggestions, which help to improve the quality of this manuscript. We carefully considered your comments as well as those offered by the two reviewers. We agree with most of them, and the manuscript has been revised thoroughly according to the reviewer's advice. We hope that these revisions improve the paper such that you and the reviewers now deem it worthy of publication in World Journal of Psychiatry. Also, we hope our revision meet your approval. We next detail our responses to each reviewer's concerns and comments.

Our response follows (the reviewer's comments and editor's comments are in italics).

Editor

1) The title of the manuscript is too long and must be shortened to meet the requirement of the journal (Title: The title should be no more than 18 words).

We appreciate the editor, who gave opportunity to revise our work. We changed the title to: **Developing a nomogram for predicting the depression of senior citizens living alone while focusing on perceived social support**

2) The "Article Highlights" section is missing. Please add the "Article Highlights" section

at the end of the main text.

We appreciate the editor, who gave opportunity to revise our work. We added article highlights.

(Page 14-15)

ARTICLE HIGHLIGHTS

Research background

Senile diseases are rapidly increasing globally due to the rapid aging of the population. Among these diseases, depression is an important and frequent psychiatric disorder in the senile stage, and it is predicted to be the second major factor in the global burden of disease.

Research motivation

Although the number of senior citizens living alone is increasing, only a few studies have identified factors related to the depression characteristics of senior citizens living alone by using epidemiological survey data that can represent a population group.

Research objectives

This study developed a nomogram that allows physicians to check the multiple risk factors of depression of senior citizens living alone using visual graphs and to calculate the prevalence probability of depression while considering the personal characteristics of a subject based on these results.

Research methods

This study analyzed 1,558 senior citizens (695 males and 863 females) who were 60 years or older. Depression, an outcome variable, was measured using the Short Form of the Korean version CES-D (Short Form of CES-D). This study built a depression prediction model using logistic regression analysis to find out the effect of each variable on depression. The developed depression prediction model contained a nomogram to make it possible for clinicians to interpret the prediction results easily.

Research results

In this study, the significant predictors of depression of the senior citizens living alone were the experiences of suicidal urge over the past year, dissatisfaction with help (support) from neighbors, subjective loneliness, age, and low self-esteem.

Research conclusions

The results of this study implied that it is necessary to develop a support system customized for subjects to strengthen the relation network for preventing depression in senior citizens living alone so that they can receive actual support from acquaintances such as neighbors rather than the frequency of physical contact.

Research perspectives

It is needed to establish an improved mental health policy that identifies high depression risk groups among senior citizens living alone based on multiple risk factors and continuously manages them.

Reviewer #1

In this study, the authors developed a nomogram for predicting the depression of senior citizens living alone while focusing on perceived social support. They concluded that the experiences of suicidal urge over the past year, dissatisfaction with help from neighbors, subjective loneliness, age, and low self-esteem were significant predictors of depression of the senior citizens living alone.

We appreciate the reviewer's detailed evaluations and positive comments.
We appreciate the positive feedback. Also, we appreciate you very much for giving us the opportunity to revise our paper. We agree with most of them, and the manuscript has been revised thoroughly according to the reviewer's

advice. Our changes have been marked in red font and highlight in the revised manuscript. We hope that these revisions improve the paper such that reviewers now deem it worthy of publication in World Journal of Psychiatry. Also, we hope our revision meet your approval.

1.) Please provide sensitivity, specificity, accuracy, NPV, and PPV to the ROC curve.

We would like to thank the reviewer for careful and thorough reading of this manuscript and for the thoughtful comments and constructive suggestions, which help to improve the quality of this manuscript. Also, we appreciate you very much for giving us the opportunity to revise our paper. We agree with the reviewers' comments. In response to the reviewer's comments, We revised Figure 1 and Table 4 to reflect the opinions of the reviewers.

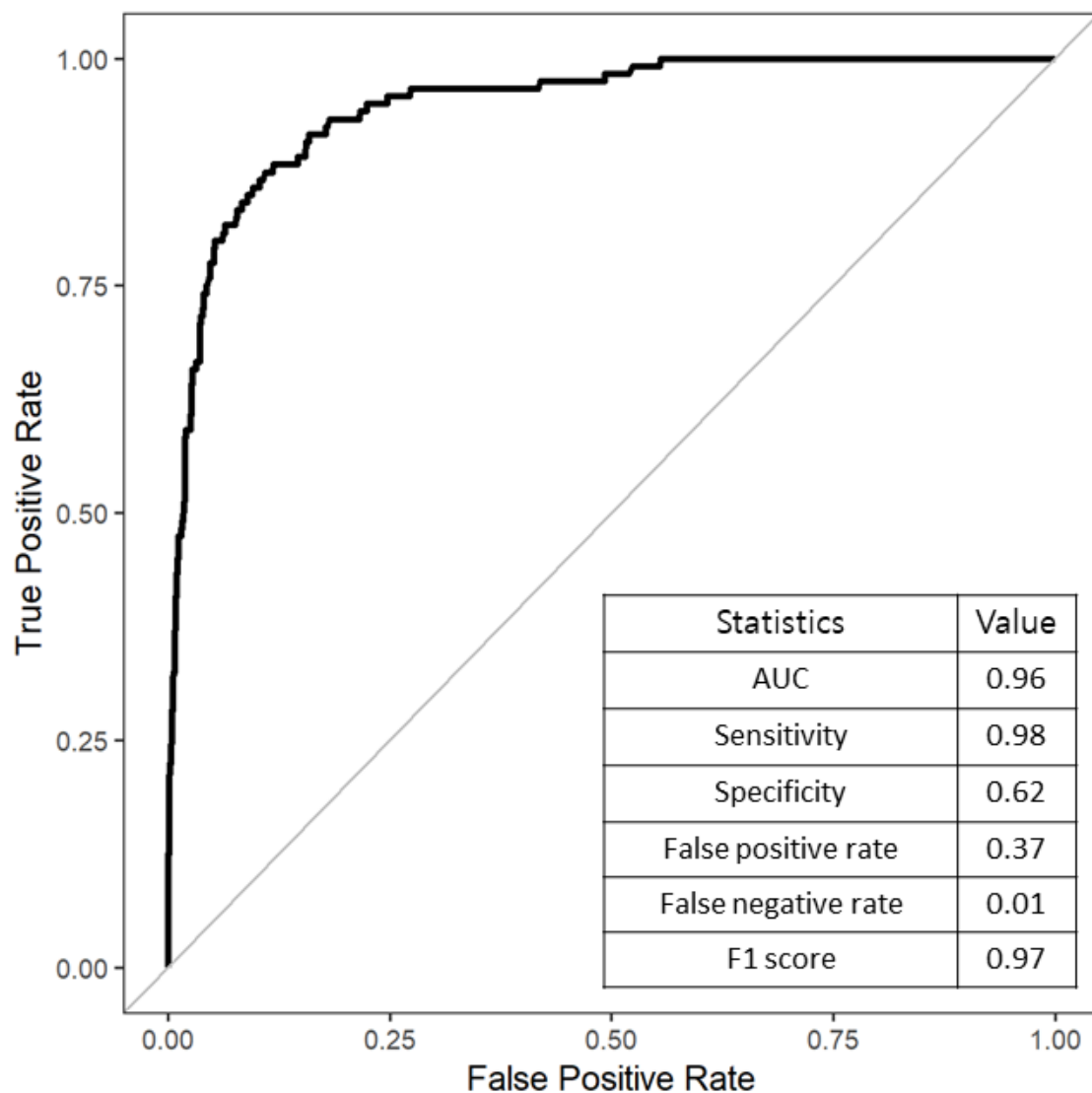


Figure 1 The AUC of the developed nomogram for predicting the depression of senior citizens living alone

Table 4 Validating a nomogram for predicting the depression of senior citizens living alone

Measure	Description	Value
True positive (TP)		1012
True negative (TN)		49
False positive (FP)		29
False negative (FN)		18
AUC		0.96
Accuracy	$(TP+TN)/(TP+TN+FP+FN)$	0.95
Balanced accuracy	$(TP/(TP+FN)+TN/(TN+FP))/2$	0.80
Sensitivity (Sens)	$TP/(TP+FN)$	0.98
Specificity (Spec)	$TN/(TN+FP)$	0.62
False positive rate (FPR)	$FP/(TN+FP)$	0.37
False negative rate (FNR)	$FN/(TP+FN)$	0.01
F1 score	$2/(1/Sens+1/PPV)$	0.97

2.) *Could the authors provide the calibration curves to the nomogram?.*

We appreciate the reviewer's detailed evaluations and positive comments. Also, we appreciate you very much for giving us the opportunity to revise our paper. We have added the calibration curves in method and result section.

(Page 9) AUC, general accuracy, balanced accuracy, F1 score, sensitivity, specificity and calibration plot were presented. The calibration plot is a graph for visually confirming the degree of agreement (y, Calibration curve and x, predicted probability) between the predicted probability and the observed probability.

(Page 11) The equation of the calibration plot was drawn along the ideal line; coefficient of determination (R square) was 0.853 (Figure 3). The AUC of the developed nomogram for predicting the depression of senior citizens living alone is presented in Figure 4.

Figure 3 has been added.

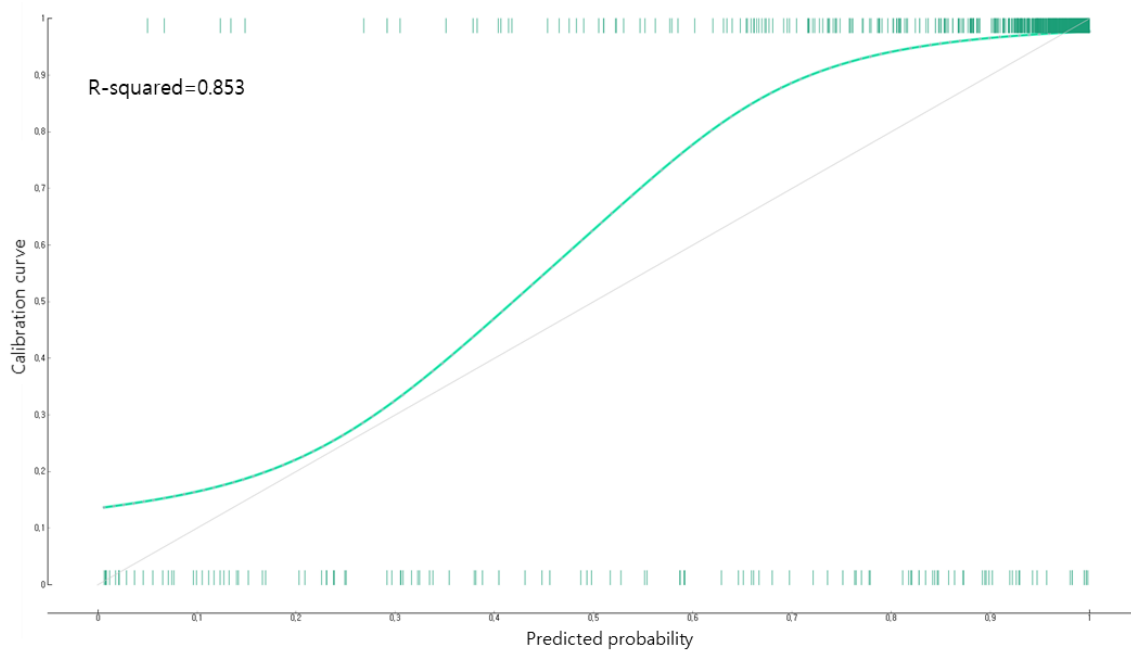


Figure 3 Calibration plot for nomogram model

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