

# Validity of the Self Reporting Questionnaire-20 for Depression Based on National Health Survey

Sri Idaiani (✉ [sriidaiani@gmail.com](mailto:sriidaiani@gmail.com))

NIHRD <https://orcid.org/0000-0001-9010-9103>

Indri Yunita Suryaputri

NIHRD

Rofingatul Mubasyiroh

NIHRD

Lely Indrawati

NIHRD

Ika Darmayanti

NIHRD

---

## Research article

**Keywords:** SRQ, MINI, validity, mental-emotional disorder, depression

**Posted Date:** March 26th, 2021

**DOI:** <https://doi.org/10.21203/rs.3.rs-362342/v1>

**License:**  This work is licensed under a Creative Commons Attribution 4.0 International License. [Read Full License](#)

---

# Abstract

**Background:** Adequate data is required to assess the validity of mental emotional disorder for depression based on Indonesia Basic Health Research. The purpose of this study is to assess the validity of mental-emotional disorder using Self Reporting Questionnaire-20 (SRQ-20) to the depression evaluated through the means of a MINI (Mini International Neuropsychiatric Interview) questionnaire.

**Methods:** The data were obtained from a total sample of 555,066 subjects analyzed from the National Health Survey (NHS) in 2018. These subjects were at least 15 years old with their mental-emotional disorders and depression assessed by using the SRQ and MINI, respectively. This study used the calculation of sensitivity, specificity, positive and negative predictive value, positive and negative likelihood ratio, ROC (receiver operating characteristic), kappa Brennan, and Prediger with the STATA statistical program version 15.00 to analyzed the data.

**Results:** The cut-off point in each group was different, ranging from 4 and 6 that almost all of the Area Under Curve (AUC) values were above 0.90 and the SRQ agreement with MINI depression are good because they all have values above 0.80.

**Conclusion:** The results obtained are used as material to predict the rate of depression in Indonesian residents aged  $\geq 15$  years.

## Introduction

Depression is a disorder discovered to be contributing to the burden of disease and Disability-Adjusted Live Years (DALYs). Moreover, certain improvements have been reported about its contribution to DALYs [1], as observed in its 20th position in 2006 and 19th in 2016 [2]. Burden of disease are caused by the reduction in the productivity of life of patients and the severe circumstances accompanied by the threat of suicide. Depression symptoms are expected to be exhibited by someone experiencing a sad event, but when drags on for a long time, it causes interference or even death [3]

The continuous increase in the burden of disease and the threat of death associated with suicide has led the Indonesian government to conduct a survey to obtain data on the prevalence of depression disorder in the country. However, the National Health Survey (NHS) conducted in 2007 and 2013 only displayed the data on the mental-emotional disorder or psychological distress which is also called Common Mental Disorder (CMD) that are assessed using self-reporting questionnaire-20 (SRQ-20). The term "mental-emotional disorder" has been used in the Indonesian household survey since 1995 and has continuously being applied even though it is not completely right. Meanwhile, distress is known as the neurotic state that causes anxiety and depression for people in the society. However, SRQ-20 is not the specific instrument to measure depression and this means that a special measurement is needed for the next NHS.

The assessment of the depression in Indonesia NHS 2018 was conducted using a special questionnaire obtained from mini international neuropsychiatric interviews (MINI)[4-6], and the results showed the prevalence among the population aged  $\geq 15$  years was 6.1% [7]. This tool has also been applied in the mental health surveys of several other countries such as India [8]. Also, some mental emotional disorders apart from depression were assessed in NHS 2018 using SRQ-20 due to its more practicality [9].

Therefore, the information above shows SRQ-20 as easy-to-use measurement tools that consider the answers designed to be yes or no but it does not provide specific results to determine if an individual has depression or anxiety. In contrast to the use of MINI, this questionnaire requires good training for enumerators to determine the right answer for the respondent besides it has been discovered to be the specific measurement tool to assess depression.

The health program implementers and practitioners expect Indonesian to have a specific or diagnostic number of mental disorders. This can only be produced through surveys with diagnostic instruments but not possible in the country because it consists of many islands and geographic difficulties, in the NHS 2018. Also, it is allowed to assess with two measuring

instruments, namely the SRQ-20 and MINI, but only one for the next NHS for the fact that an extrapolation tends to be needed to answer it needs in the future.

Therefore, this analysis was conducted to determine the validity of mental-emotional disorder assessed by SRQ-20 to the depression evaluated using the MINI questionnaire through the use of the NHS 2018 data.

## Method

### *Study Design*

This study was a sub-analysis of Indonesia NHS 2018 conducted in all the provinces and districts or cities in the country. The NHS sample was carried out using two stages that in the first one, implicit stratification, probability proportional to size (PPS) were carried out to determine the census block while in the second stage, 10 households in each census block were selected using systematic sampling. The method used in this study was written in the NHS's report [7] and socioeconomic level data were retrieved from the National Socio-Economic Survey (Susenas) conducted by the Central Statistics Body and integrated into the NHS. Therefore, the data used was sourced from the NHS in 2018 that analyzed a large number of subjects.

### *Subject*

The respondents used were selected based on certain inclusion criteria which include being at least 15 years old, physically available, has the ability to answer all the questions, and not being represented by other people when answering the questions. The sample framework used in the NHS was the 2018 National Socioeconomic survey and the data were obtained from the NHS questionnaire.

### *Measurements*

#### *Self Reporting Questionnaire*

Mental Emotional Disorders were assessed using the 20 questions originally formulated in Self-Reporting Questionnaire (SRQ) [10] and the cutoff point for Indonesia requires six "Yes" answers [11]. The SRQ was conducted since 1995 and has been periodically used in national surveys that assessed neurotic disorders which is more popular with the term mental emotional disorder in Indonesia within the last 1 month. However, it was recommended by WHO as a mental disorder screening tool for developing countries, and has been proven to have good face, content, criterion, validity, construct validity and also used in various surveys and research studies [10].

#### *Mini-International Neuropsychiatric Interview (MINI):*

Depression was evaluated using questions based on module of the Mini-International Neuropsychiatric Interview version 6 [4-6]. The MINI is a interviewed diagnostic tool assessing depression in past 2 weeks or life time. In this study, the depression module from MINI was used as a diagnostic reference (considered the gold standard). Depression module can be seen Appendix 1. Both SRQ-20 and MINI questionnaires were read out by enumerators who had previously been trained on the content of the questionnaire and interview techniques.

### *Data analysis*

The SRQ-20 in this study was applied as a screening test for validity while MINI depression was used as a reference. The sensitivity, specificity, true and false positive, positive and negative predictive value, positive and negative likelihood ratio, ROC (Receiver Operating Characteristic), PCA (Principal Component Analysis) and Kappa Brennan, and Prediger [12] were calculated using the statistical program, STATA version 15.00.

# Results

## Subjects

Following the inclusion criteria, a dataset consisting of 560,472 respondents was obtained but a total of 5,361 were excluded because they were represented by other persons at the time of the interview. Also, 45 others were excluded due to the provision of incomplete answers related to mental-emotional disorders or depression. Therefore, the total number of those used as samples was 555,066 subjects and their characteristics are presented in Table 1.

## *Analysis of the mean scores*

The mean score of SRQ-20 for the entire population in Indonesia was 1,857, at a 95% confidence interval (CI) 0.004-1.865 and those identified not to be depressed by the MINI questionnaire had a mean score of SRQ 1.431 (95% CI 1.425-1.437) while those confirmed depressed had 8,677 (95% CI 8.629- 8.725).

## *Prevalence*

Table 2 shows the prevalence of Mental Emotional Disorders with different SRQ cut-off points in all populations  $\geq 15$  years, male and female, 15-59 and  $\geq 60$  years. However, depression was observed to be 5.90% (95% CI 5.80-5.95) among the  $\geq 15$  years population but not shown in the results presented on the table.

## *Validity of Mental Emotional Disorders Score of SRQ-20 compared to Depression from MINI*

The quality of the measurement instruments used was assessed through several validity parameters as shown in Table 2 and several cut-off points were simulated to obtain the best from the results.

The table above shows a lower SRQ score that produces a higher sensitivity and NPV while those with higher scores gave higher specificity and PPV. Moreover, the positive likelihood ratio (LR) was observed to be higher at lower SRQ scores and vice versa. There are various cut-off point shown in Table 2 which tends to be used as a reference for various purposes. Sub-samples based on the characteristics of the respondents such as male, female, age group and, also the resulting ROC shows almost the same shape.

Figure 1 -5 are ROC curve of the SRQ-20 score on depression that shows high sensitivity and specificity but these two parameters are not the determinants required to obtain the optimum value of 6 used as the cut-off point for depression in SRQ-20 and also, the area under the curve value was found to be 93% and well based on the analysis.

## *Factorial validity*

In PCA, 2 factors that form SRQ are found, as shown in Table 3. These are factors that have an Eigen value  $> 1$ .

This study identifies factor 1 in the table above as depression, while factor 2 as a symptom of somatic and anxiety. The depression factors consist of thinking clearly, unhappy, cry more, difficulty to enjoy an activity, difficulty to make decisions, daily work suffering, unable to play a useful part, losing interest, and worthless person. Meanwhile, the somatic-anxiety factor consists of poor appetite, sleep badly, easy frightened, handshake, tense worried, and poor digestion.

# Discussion

The results showed various validity parameters at various cut-off point and several groups and it can be seen that the SRQ has good validity against depression as assessed by the MINI. The optimum cut-off point was different for each group and that the SRQ agreement with MINI depression is good because almost all have values above 0.80. Based on PCA analysis, there are two structural factors on the SRQ, namely the depression and a mixture of somatic and anxiety. The prevalence of depression obtained by 5.9% was slightly different from the NHS 2018 report, which was 6.1% because the sample analyzed

only the subjects that answer the questions themselves, while the NHS report still included subjects represented by a companion or caregiver [7].

The resulting ROC for total subjects, male, female, young, and old shows a similar image with AUC values and they are all above 0.90. This AUC value is even higher than previous studies in China, India, Vietnam, and Afghanistan which only had an AUC of around 0.80, even though it uses different reference instruments such as the Clinical Interview Schedule Revised (CIS-R), Composite International Diagnostic Interview (CIDI), Hopkins Symptom Checklist-25 (HSCL-25) [13-16]. Research using the same questionnaire such as SRQ and MINI was conducted in South Africa with an emergency department setting, the results also showed the AUC value of around 0.80 [17].

Regarding the forming factors, research in South Africa also showed 2 factors as depression-anxiety and somatic, while research in China showed 3 factors, including depression, anxiety, and somatic. In this study, there were two factors formed, and they include; specifically anxiety-somatic and depression. This shows that there is not much difference with other populations in various countries in terms of the factors forming the SRQ.

Various validity parameters have been provided at various cut-off point and in groups by gender and age by showing the AUC. The agreement between SRQ and MINI depression on this finding is good because the values are above 0.70 and 0.80. These results can be used as a basis for extrapolating, for example, the previous NHS data will be able to calculate the depression rate. A more important need is that the future NHS will also be able to obtain depression rates in the population if they tend not to use the MINI depression mode anymore. Regarding the cut-off point, all groups showed that the optimal cut-off point was between 4 -5 and this is slightly different from previous studies which determined it to be about 5 or even 6 (in women) for any diagnosis [17].

This validity assessment procedure has been studied and the short and easy questionnaires were shown to be preferable to special ones requiring special skills from the enumerator. These methods have been used in other studies, for example, a patient care questionnaire (PHQ) which was validated with MINI [18, 19]. Besides MINI, the Beck Depression Inventory (BDI) has also been used as a reference by several studies [20]. Moreover, the Center for Epidemiological Study for Depression questionnaire (CES-D) have also been used with certain populations according to the target of the study [21, 22].

SRQ has been used as a CMD screening tool, for example, in Eritrea and Afghanistan [23, 24]. Therefore, this means that both SRQ and Patient Health Questionnaire (PHQ) are good enough but require confirmation for positive screening results from health care facilities [25]. A prevalence of 5.90% and 9.88% was obtained for depression and mental-emotional disorder respectively. However, a survey conducted in Iraq with the use of SRQ-20 as initial screening produced a CMD percentage of 35.5% [26]. In Mexico, SRQ was also used to assess people to be deported for violating the border area and the CMD was found to be 16%. [27] The variation in these results despite the use of the same instrument is associated with the characteristics and conditions of different populations. However, the use of MINI in measuring the prevalence of depression in India was able to produced 2.68% [28].

The validity assessed is a diagnostic test or a screening tool which is also referred to as convergent and concurrent validity in other studies [29]. Meanwhile, some qualitative research has also been conducted to support the assessment of validity [30] with the focus on the appropriateness of tools, processes, and data [31].

The strength of this study was the use of a large sample which is an indication of high representation of the Indonesian population and this means it has the ability to reflect the real situation of the country. However, it was limited for the fact that NHS does not only assessed mental health, but various diseases and matters related to the subject's health. Through all the questions asked in this study, there is the potential for fatigue in both enumerators and respondents.

## Conclusion

The findings showed SRQ-20 with cut-off point  $\geq 6$  (cut-off point that has been used by the NHS) is able to screen depression, especially to detect those that are not depressed with a specificity of 94.12%. However, a person with an SRQ-20 score  $< 6$  tends to be 98.3% of depression with MINI questions and it is therefore, recommended that when using a cut-off point  $\geq 6$ , it will obtain sensitivity at 73.75%, specificity at 94.12%, positive predictive value at 44%, and negative predictive value at 98.3%.

The implications for survey policies in Indonesia in the future are to make it possible that MINI is used to assess depression like the survey in India, but if this is not possible then the results of this study can be used as a material to predict the rate of depression in Indonesians aged  $\geq 15$  years.

## Abbreviations

AUC: Area Under Curve; DALYs: Disability-Adjusted Live Years; CI: Confidence Interval; CMD: Common Mental Disorder; MINI: Mini International Neuropsychiatric Interview; NHS: National Health Survey; NIHRD: National Institute Health and Research Development; LR+: Likelihood Ratio Positive; LR-: Likelihood Ratio Negative; NPV: Negative Predictive Value; PPV: Positive Predictive Value; PCA: Principal Component Analysis; ROC: Receiver Operating Characteristic; SRQ-20: Self Reporting Questionnaire-20.

## Declarations

### Ethics approval and consent to participate

The ethical approval was obtained from Research Ethics Commission of the NIHRD of Ministry of Health number LB 02.01/3/KE 024/2018. The written informed consent was obtained from all participants prior the interview.

### Consent for publication

NA

### Availability of data and materials

Data is stored in Data Centre of National Institute Health and Research Development (NIHRD) of Ministry of Health , can be accessed by formal request to Director General of NIHRD

### Competing interest.

The authors declare that no competing interest

### Funding

This study funded by the Indonesian government while some meetings and workshops were facilitated by the WHO Indonesia.

### Authors' contributors

SI was the study coordinator, proposed the data, and drafted the manuscript. IY represented and helped SI. RM analyzed the data. LI and ID prepared the data set at the beginning of the study.

### Acknowledgments

The authors appreciate Iwan Ariawan, MD, MSPH from the Faculty of Public Health Universitas Indonesia for technical assistance since pre-NHS stage. We also express our gratitude to Mrs. Ryoko Takahashi from World Health Organization Indonesia for supporting our meetings during this study.

## References

1. Liu Q, He H, Yang J, Feng X, Zhao F, Lyu J: **Changes in the global burden of depression from 1990 to 2017: Findings from the Global Burden of Disease study.** *Journal of Psychiatric Research* 2019, **126**: 134-140. <https://doi.org/10.1016/j.jpsychires.2019.08.002>
2. Mboi N, Murty Surbakti I, Trihandini I, Elyazar I, Houston Smith K, Bahjuri Ali P, Kosen S, Flemons K, Ray SE, Cao J *et al*: **On the road to universal health care in Indonesia, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016.** *The Lancet* 2018, **392**(10147):581-591. [https://doi.org/10.1016/s0140-6736\(18\)30595-6](https://doi.org/10.1016/s0140-6736(18)30595-6)
3. Kawada T: **Duration of depressive symptoms significantly related to increase in mortality.** *Br J Psychiatry* 2016, **208**(6):593. <https://doi.org/10.1192/bjp.208.6.593>
4. Lecrubier Y SD, Weiller E, Amorin P, Bonora I, Sheehan K, et al: **The Mini International Neuropsychiatric Interview (MINI).A short diagnostic structured interview :reliability and validity according to CIDI.** *Eur Psychiatry* 1997, **12**:224-231.
5. Sheehan DV, Lecrubier Y, Sheehan KH, Janavs J, Weiller E, Keskiner A, Schinka J, Knapp E, Sheehan MF, Dunbar GC: **The validity of the Mini International Neuropsychiatric Interview (MINI) according to the SCID-P and its reliability.** *Eur Psychiatry* 1997, **12**:232-241.
6. Sheehan DV, Lecrubier Y, Sheehan KH, Amorin P, Janavs J, Weiller E, Hergueta T, Baker R, Dunbar GC: **The Mini International Neuropsychiatric Interview (MINI):The Development and Validation of a Structured Diagnostic Psychiatric Interview for DSM-IV and ICD-10.** *J clin Psychiatry* 1998, **59** suppl 2:20-23.
7. NIHRD: **National Report on Riskesdas 2018.** In. Jakarta: Indonesian Ministry of Health; 2018. [https://labmandat.litbang.kemkes.go.id/images/download/laporan/RKD/2018/Laporan\\_Nasional\\_RKD2018\\_FINAL.pdf](https://labmandat.litbang.kemkes.go.id/images/download/laporan/RKD/2018/Laporan_Nasional_RKD2018_FINAL.pdf)
8. Pradeep BS, Gururaj G, Varghese M, Benegal V, Rao GN, Sukumar GM, Amudhan S, Arvind B, Girimaji S, K T *et al*: **National Mental Health Survey of India, 2016 - Rationale, design and methods.** *PLoS One* 2018, **13**(10):e0205096. <https://doi.org/10.1371/journal.pone.0205096>
9. Harpham T RM, Oser R, Thomas E, Hamid N, Jaswal S, L. M. A. : **Measuring health in cost effective manner', Health Policy and Planning.** *Health Policy and Planning* 2003, **18**(4):344-349. <https://doi.org/10.1093/heapol/czg041>
10. Beusenbergh M, Orley, JH. **A User's guide to the self reporting questionnaire: A User's guide to the self reporting questionnaire** Geneva: World Health Organization. Division of Mental Health; 1994. <https://apps.who.int/iris/handle/10665/61113>
11. Hartono IG: **Psychiatric morbidity among patient attending Bangetayu community health centre in Indonesia.** *Bull Penelit Kesehat* 1996, **24**(4): 42-51. [repository.litbang.kemkes.go.id/1028/1/333-527-1-PB.pdf](https://repository.litbang.kemkes.go.id/1028/1/333-527-1-PB.pdf)
12. Gwet KL: **Handbook of Inter Rater Reliability .The Definitive Guide to Measuring the Extent of Agreement Among Raters,** 4 th edn. Gaithersburg: Advanced Analytics, LLC; 2014.
13. Chen YJ, Chang J, Yang SY: **Psychometric Evaluation of Chinese Version of Adherence to Refills and Medications Scale (ARMS) and Blood-Pressure Control Among Elderly with Hypertension.** *Patient Prefer Adherence* 2020, **14**:213-220. <https://doi.org/10.2147/ppa.s236268>
14. Giang KB, Allebeck P, Kullgren G, Tuan NV: **The Vietnamese version of the Self Reporting Questionnaire 20 (SRQ-20) in detecting mental disorders in rural Vietnam: a validation study.** *Int J Soc Psychiatry* 2006, **52**(2):175-184. <https://doi.org/10.1177/0020764006061251>
15. Patel V, Araya R, Chowdhary N, King M, Kirkwood B, Nayak S, Simon G, Weiss HA: **Detecting common mental disorders in primary care in India: a comparison of five screening questionnaires.** *Psychol Med* 2008, **38**(2):221-228. <https://doi.org/10.1017/s0033291707002334>
16. Ventevogel P, De Vries G, Scholte WF, Shinwari NR, Faiz H, Nassery R, van den Brink W, Olff M: **Properties of the Hopkins Symptom Checklist-25 (HSCL-25) and the Self-Reporting Questionnaire (SRQ-20) as screening instruments used in primary care in Afghanistan.** *Soc Psychiatry Psychiatr Epidemiol* 2007, **42**(4):328-335. <https://doi.org/10.1007/s00127-007-0161-8>

17. van der Westhuizen C, Wyatt G, Williams JK, Stein DJ, Sorsdahl K: **Validation of the Self Reporting Questionnaire 20-Item (SRQ-20) for Use in a Low- and Middle-Income Country Emergency Centre Setting.** *Int J Ment Health Addict* 2016, **14**(1):37-48. <https://doi.org/10.1007/s11469-015-9566-x>
18. de Vroege L, Hoedeman R, Nuyen J, Sijsma K, van der Feltz-Cornelis CM: **Validation of the PHQ-15 for somatoform disorder in the occupational health care setting.** *J Occup Rehabil* 2012, **22**(1):51-58. <https://doi.org/10.1007/s10926-011-9320-6>
19. Endsley P, Weobong B, Nadkarni A: **The psychometric properties of GHQ for detecting common mental disorder among community dwelling men in Goa, India.** *Asian J Psychiatr* 2017, **28**:106-110. <https://doi.org/10.1016/j.ajp.2017.03.023>
20. Urtasun M, Daray FM, Teti GL, Coppolillo F, Herlax G, Saba G, Rubinstein A, Araya R, Irazola V: **Validation and calibration of the patient health questionnaire (PHQ-9) in Argentina.** *BMC Psychiatry* 2019, **19**(1):291. <https://doi.org/10.1186/s12888-019-2262-9>
21. Chin WY, Choi EP, Chan KT, Wong CK: **The Psychometric Properties of the Center for Epidemiologic Studies Depression Scale in Chinese Primary Care Patients: Factor Structure, Construct Validity, Reliability, Sensitivity and Responsiveness.** *PLoS One* 2015, **10**(8):e0135131. <https://doi.org/10.1371/journal.pone.0135131>
22. Newcomb RD, Steffen MW, Breeher LE, Sturchio GM, Murad MH, Wang Z, Molella RG: **Screening for depression in the occupational health setting.** *Occup Med (Lond)* 2016, **66**(5):390-393. <https://doi.org/10.1093/occmed/kqw043>
23. Netsereab TB, Kifle MM, Tesfagiorgis RB, Habteab SG, Weldeabzgi YK, Tesfamariam OZ: **Validation of the WHO self-reporting questionnaire-20 (SRQ-20) item in primary health care settings in Eritrea.** *Int J Ment Health Syst* 2018, **12**:61. <https://doi.org/10.1186/s13033-018-0242-y>
24. Rasmussen A, Ventevogel P, Sancilio A, Eggerman M, Panter-Brick C: **Comparing the validity of the self reporting questionnaire and the Afghan symptom checklist: dysphoria, aggression, and gender in transcultural assessment of mental health.** *BMC Psychiatry* 2014, **14**(1):206. <https://doi.org/10.1186/1471-244x-14-206>
25. Gardner W: **Screening for mental health problems: does it work?** *J Adolesc Health* 2014, **55**(1):1-2. <https://doi.org/10.1016/j.jadohealth.2014.04.019>
26. Iraq Ministry of Health, EMRO W: **Iraq Mental Health Survey 2006/7.** In.; 2009.
27. Bojorquez I, Aguilera RM, Ramirez J, Cerecero D, Mejia S: **Common Mental Disorders at the Time of Deportation: A Survey at the Mexico-United States Border.** *J Immigr Minor Health* 2015, **17**(6):1732-1738. <https://doi.org/10.1007/s10903-014-0083-y>
28. Gururaj G, Varghese M, Benegal V, Gn R, K P, Singh L, Mehta R, D R, Shibukumar T, Kokane A *et al*: **National Mental Health Survey -2015-16 Summary;** 2016.
29. Michel C, Kutschal C, Schimmelmann BG, Schultze-Lutter F: **Convergent and concurrent validity of the Frankfurt Complaint Questionnaire as a screener for psychosis risk.** *Journal of Risk Research* 2016, **20**(11):1480-1496. <https://doi.org/10.1080/13669877.2016.1179209>
30. Farnbach S, Gee G, Eades AM, Evans JR, Fernando J, Hammond B, Simms M, DeMasi K, Glozier N, Brown A *et al*: **Process evaluation of the Getting it Right study and acceptability and feasibility of screening for depression with the aPHQ-9.** *BMC Public Health* 2019, **19**(1):1270. <https://doi.org/10.1186/s12889-019-7569-4>
31. Leung L: **Validity, reliability, and generalizability in qualitative research.** *J Family Med Prim Care* 2015, **4**(3):324-327. <https://doi.org/10.4103/2249-4863.161306>

## Tables

Tables 1-3 are available in the Supplementary Files.

## Figures

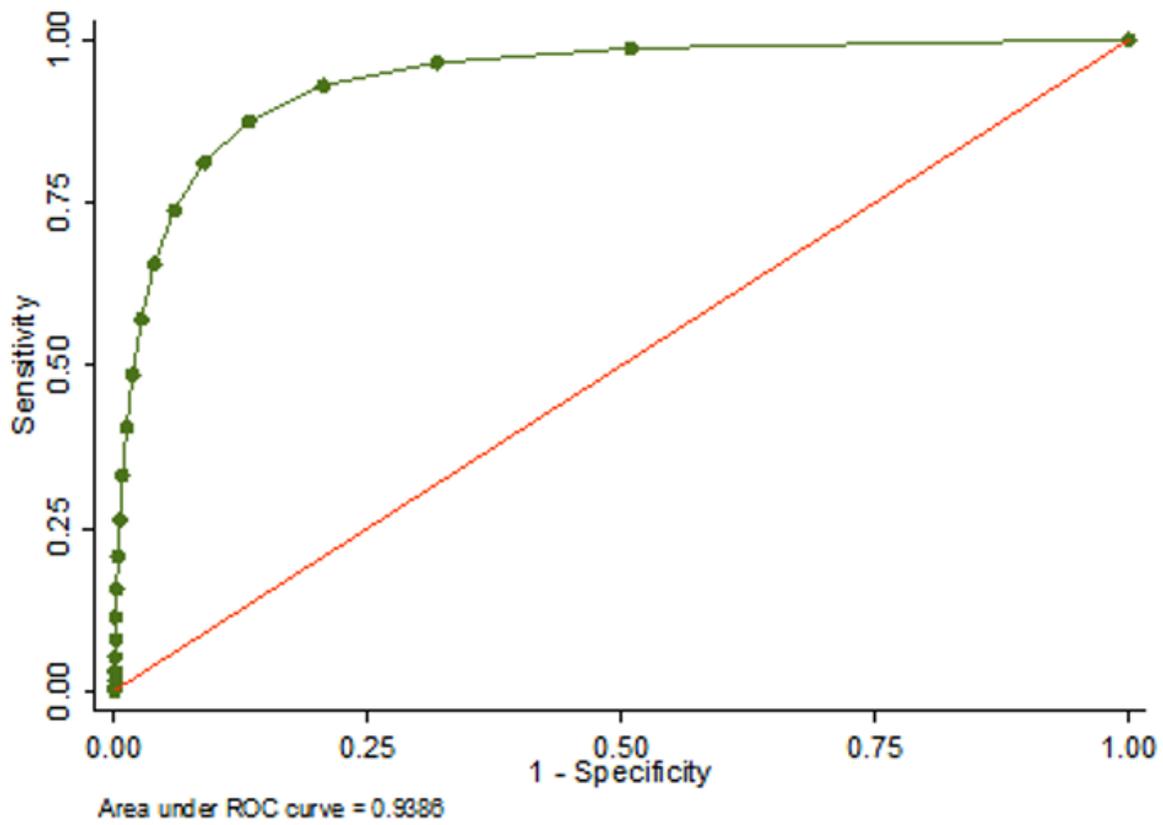


Figure 1

The  $\geq 15$  year ROC curve

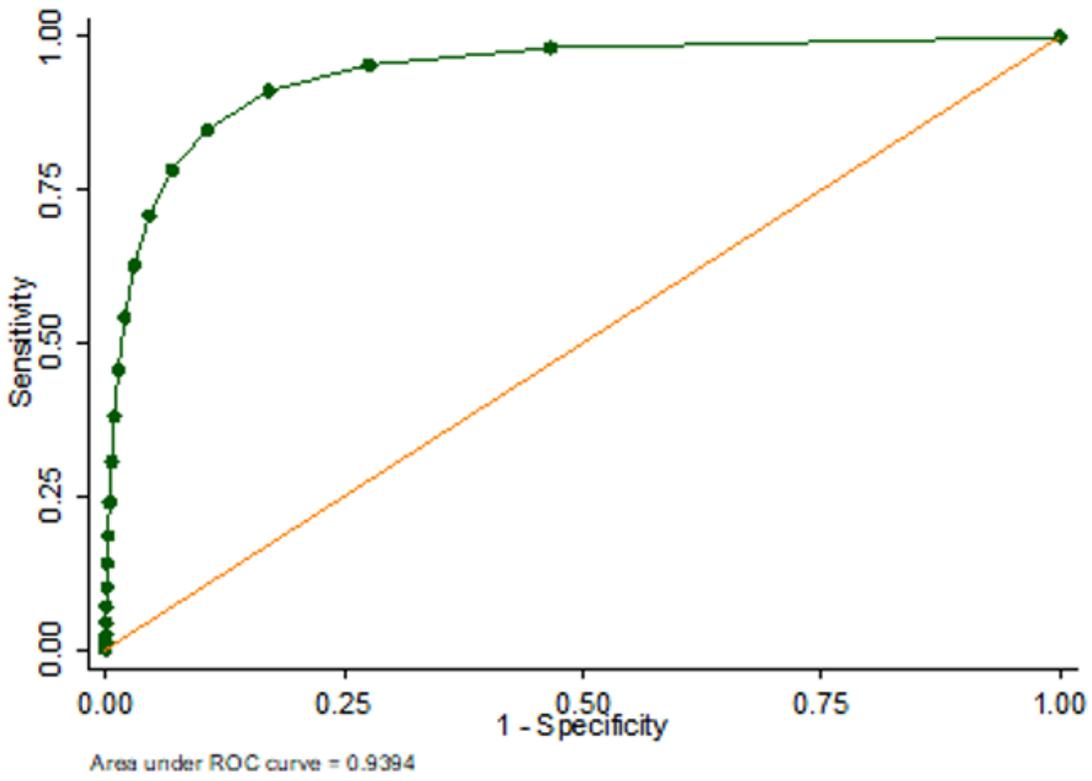


Figure 2

The Male ROC curve

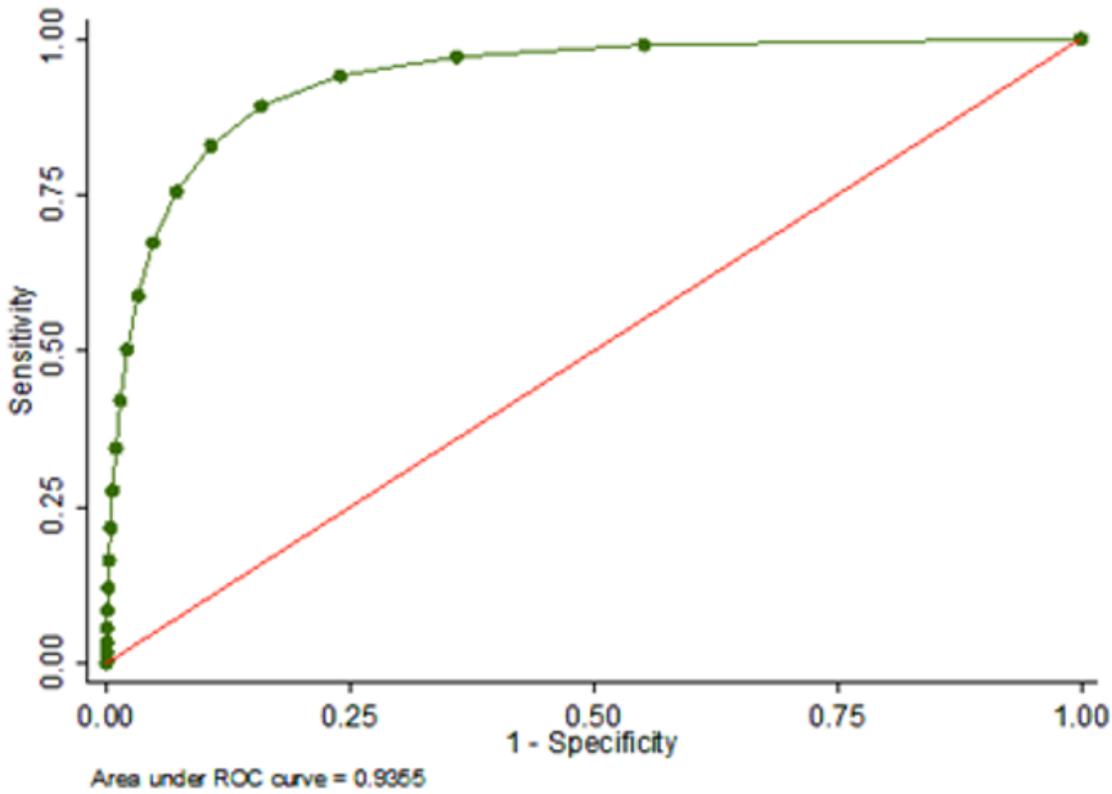


Figure 3

The Female ROC curve

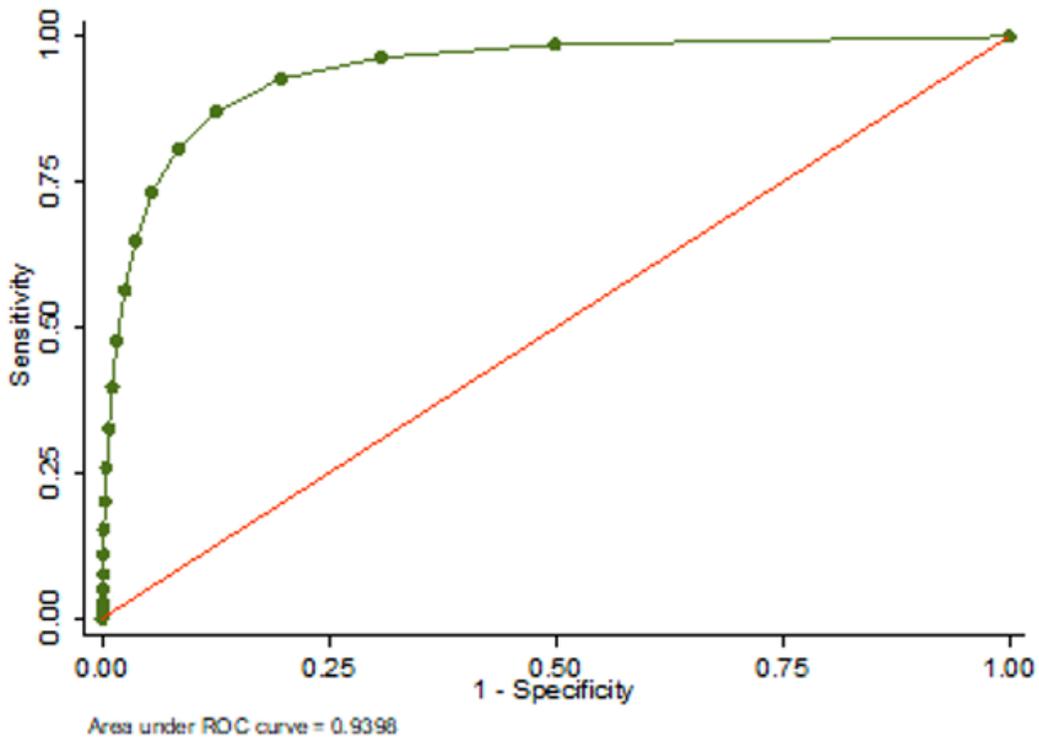


Figure 4

The < 60 year ROC curve

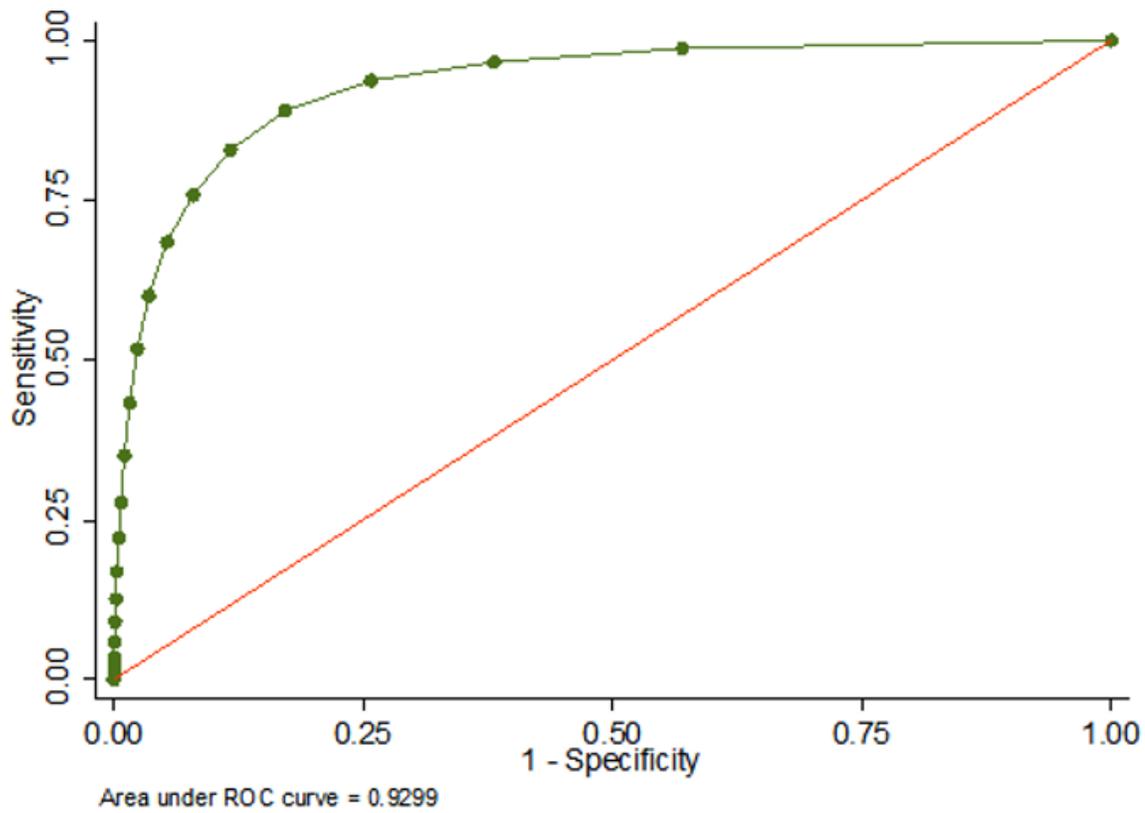


Figure 5

The  $\geq 60$  year ROC curve

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Tables.docx](#)
- [Appendix1.DepressionMINI.docx](#)