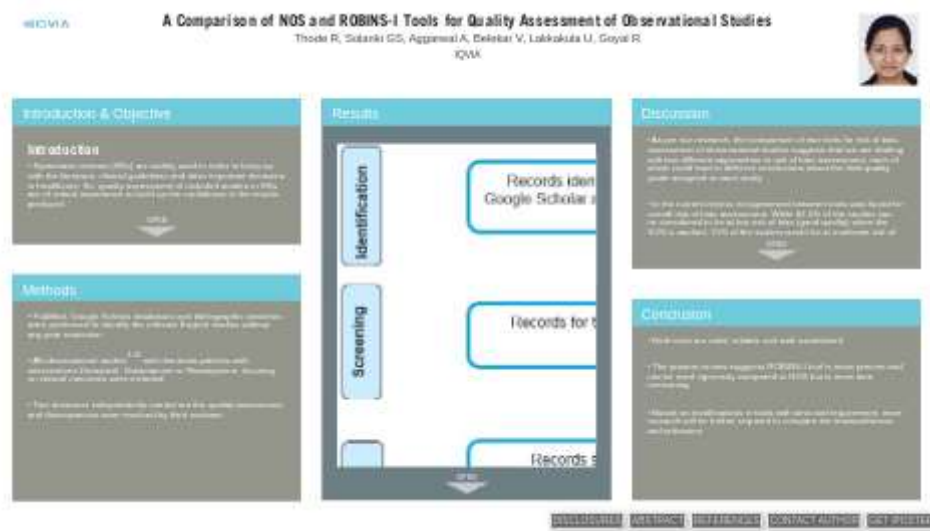


# A Comparison of NOS and ROBINS-I Tools for Quality Assessment of Observational Studies



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## INTRODUCTION & OBJECTIVE

### Introduction

- Systematic reviews (SRs) are widely used in order to keep up with the literature, clinical guidelines and drive important decisions in healthcare. So, quality assessment of included studies in SRs are of critical importance to build up the confidence in the results produced

- Newcastle Ottawa Scale (NOS)<sup>1</sup> and Risk of Bias in Non-Randomized Studies- of Interventions (ROBINS-I)<sup>2</sup> are two widely used quality assessment tools for observational studies but there exist some differences in their application

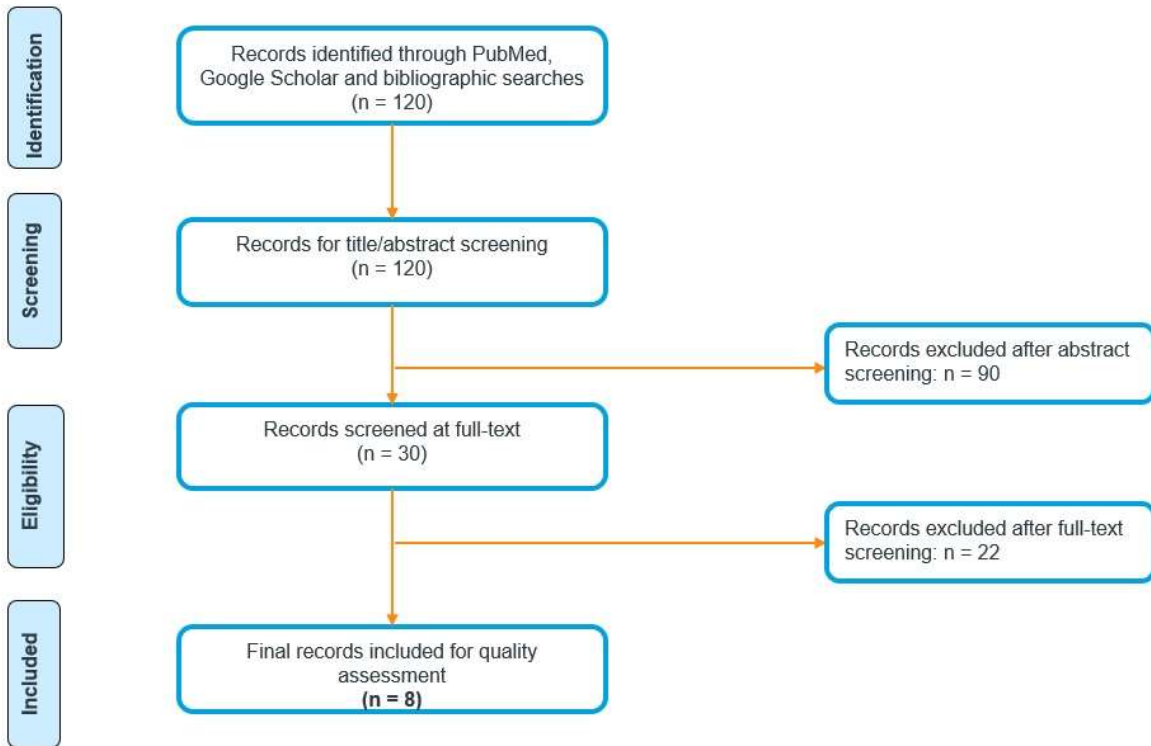
### Objective

- To compare the NOS and ROBINS-I tools in determining the quality of the included observational studies published in dementia

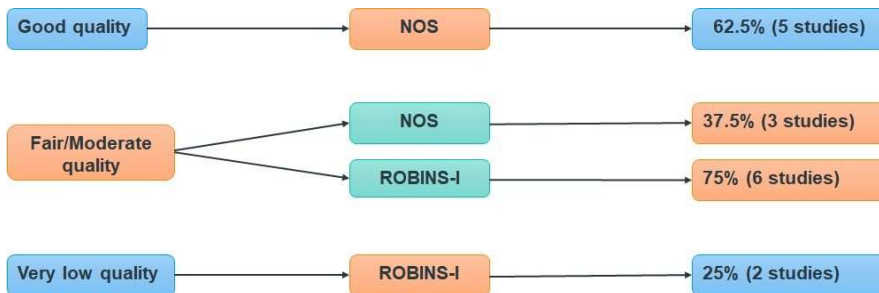
## METHODS

- PubMed, Google Scholar databases and bibliographic searches were performed to identify the relevant English studies without any year restriction
  
- All observational studies<sup>3-10</sup> with dementia patients with interventions Donepezil, Galantamine or Rivastigmine, focusing on clinical outcomes were included
  
- Two reviewers independently carried out the quality assessment and discrepancies were resolved by third reviewer

# RESULTS



- Eight out of 120 studies met the inclusion criteria



## DISCUSSION

- As per our research, the comparison of two tools for risk of bias assessment of observational studies suggests that we are dealing with two different approaches to risk of bias assessment, each of which could lead to different conclusions about the final quality grade assigned to each study
  
- In the current review, no agreement between tools was found for overall risk of bias assessment. While 62.5% of the studies can be considered to be at low risk of bias (good quality) when the NOS is applied, 75% of the studies would be at moderate risk of bias according to ROBINS-I
  
- Systematic reviews based on observational studies have been using multiple tools for risk of bias assessment. The Newcastle-Ottawa Scale was the most commonly listed tool (39%), followed by ROBINS-I (33%)<sup>11</sup>
  
- Some authors have highlighted that NOS is considered easy to use for observational studies even though it has several weaknesses, includes low inter-rater reliability and uncertain validity of some items. If we observe the current trend analysis from 2011 to 2018 for commonly listed tools, the NOS was the mostly commonly used and dominant appraisal tool for observational studies each year. On the other hand, the ROBINS-I tool seems to have gained popularity in recent years<sup>12-13</sup>

## CONCLUSION

- Both tools are valid, reliable and well-established
  
- The present review suggests ROBINS-I tool is more precise and can be used rigorously compared to NOS but is more time consuming
  
- Based on modifications in tools with time and requirement, more research will be further required to compare the trustworthiness and relevance

# DISCLOSURES

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## ABSTRACT

**OBJECTIVES:** Systematic reviews (SRs) are widely used in order to keep up with the literature, clinical guidelines and drive important decisions in healthcare. So, quality assessment of included studies in SRs are of critical importance to build up the confidence in the results produced. Newcastle Ottawa Scale(NOS) and Risk of Bias in Non-Randomized Studies- of Interventions (ROBINS-I) are two widely used quality assessment tools for observational studies but there exist some differences in their application. The aim is to compare the NOS and ROBINS-I tools in determining the quality of the included observational studies published in dementia.

**METHODS:** PubMed, Google Scholar databases and bibliographic searches were performed to identify the relevant English studies without any year restriction. All observational studies with dementia patients with interventions Donepezil, Galantamine or Rivastigmine, focusing on clinical outcomes were included. Two reviewers independently carried out the quality assessment and discrepancies were resolved by third reviewer.

**RESULTS:** Eight out of 120 studies met the inclusion criteria. Using NOS tool, 5 studies (62.5%) scored 6 to8 (good quality), whereas 3 studies (37.5%) scored 5 to 6 (fair quality). Contrary, as per ROBINS-I tool, 6 studies (75%) produced moderate risk of bias (moderate quality), while 2 studies (25%) showed critical risk of bias (very low quality). Both the tools covered bias due to selection, confounding, missing data and outcome assessment. The difference in the quality level of the studies based on NOS and ROBINS-I was due to more generalized questions around intervention selection and results details described in NOS.

**CONCLUSIONS:** Both tools are valid, reliable and well-established. The present review suggests ROBINS-I tool is more precise and can be used rigorously compared to NOS but is more time consuming. Based on modifications in tools with time and requirement, more research will be further required to compare the trustworthiness and relevance.



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