Table 1. Screening tools and their comparators, cognitive outcomes, administration time, sensitivity and specific and conclusions from the literature included in this systematic review.

Reference, Country	Number of studies included in systematic review	Intervention(s)	Comparator	Cognitive outcome(s) measured	Time of administration (minutes)	Sensitivity (%)	Specificity	Conclusions	Abbreviations
Mitchell *et.al.*, United Kingdom	44	Multidomain screening tests (known as a battery detection method) in primary care which assess for multiple cognitive domains. Primary care casefinding † : ・AMTS/MSQ, ・MSQ ・WIND-SET ・PCL ・AMTS ・PCL Primary care screening ‡ : ・ PCL ・AMTS/MSQ ・MSQ ・SPMSQ ・GPCOG	MMSE	Dementia	**Primary care case-finding:** ・AMTS/MSQ = 4 ・MSQ = 2 ・WIND-SET = 1 ・PCL = 11 ・AMTS = 2 ・PCL = 11 **Primary care screening:** ・PCL = 11 ・AMTS/MSQ = 4 ・MSQ = 2 ・SPMSQ = 2 ・GPCOG = 5 **Comparator:** ・MMSE = 9 with healthy individuals and 15 with patients with dementia.	**Battery detection methods:** ・84.0 (95% CI 74.2–91.8)	**Battery detection methods:** ・89.9 (95% CI 78.3–97.4)	The optimal individual tools were the AMTS/MSQ and PCL. AMTS was superior to the MMSE for case finding however the MMSE was optimal for screening.	AMTS/MSQ-Abbreviated Mental Test Score/Mental Status Questionnaire, (WIND-SET)-Specific Set of items from MMSE, PCL-Prueba cognitive de leganes, AMTS-Abbreviated mental test score, GPCOG-General practitioner's assessment of cognition, MMSEMini-Mental State Examination † Case-finding is defined as any tool or questionnaire which identifies a condition with minimal false negatives, measured as the positive predicative value. ‡ Screening is the ability of a test to rule out a diagnosis with minimal false positives, reported as the negative predictive value.
Creavin *et al.*, United Kingdom	70	・MMSE	A commonly accepted clinical (gold) reference standard.	Dementia	・MMSE=7 with a patient with dementia and 5 with a person with normal cognition	CarneroPardo 2013: ・Cut point of 17 = 70 (95% CI 59-80) ・Cut point of 24 = 100 (95% CI 95100)	Carnero-Pardo 2013: ・Cut point of 17 = 93 (95% CI 89, 96) ・Cut point of 24 = 46 (95% CI 40-52)	Carnero-Pardo 2013 reported there were some false negatives as the sensitivity fell from 1.00 (95% CI 0.95 to 1.00) to 0.70 (95% CI 0.59 to 0.80). The summary diagnostic accuracy could not be estimated due to insufficient data.	

Abd Razak *et al.*, Malaysia	30	・MoCA-B; MoCA ・SPMSQ ・MEFO ・ACE-III ・AQT-CF ・SLUMS ・5 Object Test ・BNB Semantic Fluency ・ SMCC compared to MMSE and CDT ・CASI-S ・RCS ・CPS ・Literacy Independent Cognitive Assessment ・BIMS; BCAT ・3MS ・Mini-Cog; MIS; MF-2 ・VT-VSM; VR-DOT ・CCS ・CAMCI ・CADi; CADi-2 ・DRA ・p-AD8 ・IQCODE	Comparing the feasibility and validity between the various screening tools.	Mild cognitive impairment and dementia	・MoCA-B = 1521; MoCA = 10-15 ・SPMSQ = 10-15 ・MEFO = 10-15 ・ACE-III = 15 ・AQT-CF = 3-5 ・SLUMS = 7 ・5 Object Test = <5 ・BNB Semantic Fluency = 31 ・ MCC compared to MMSE and CDT = NR ・CASI-S = NR ・RCS = <3 ・CPS = NR ・Literacy Independent Cognitive Assessment = 20 ・BIMS = 3; BCAT = 10-15 ・3MS = 17 ・Mini-Cog = 3; MIS = 4; MF-2 = <2 ・VT-VSM = >12; VR-DOT = NR ・CCS = 3 ・CAMCI = 30 ・CADi = 10; CADi-2 = 10-40 ・DRA = NR ・p-AD8 = NR ・IQCODE = 10	**For detecting dementia:** ・ACE-III at a cut-off point of <81, Sn = 100 **For detecting MCI:** ・MoCA, Sn = 91-97	**For detecting dementia:** ・**ACE-III at a cut-off point of <81, Sp=96 For detecting MCI:** ・**MoCA, Sp = 60-80**	For detecting dementia: Screening tools less sensitive to ACE-III but with relatively high Sn/Sp values were: SLUMS, RCS, and BCAT. For detecting MCI: The MoCA was the most commonly used tool and had the highest Sn/Sp ranges. Less specific to the MoCA but among the most sensitive tools were the (VR-DOT) and IQCODE. Tools with the highest specificity but with lower sensitivity were: The 5 Objects Test, RCS, CPS, and (VT-VSM).	NR-Not Reported, MCI-Mild Cognitive Impairment, (MoCA-B)Montreal Cognitive Assessment-Basic, (MoCA)-Montreal Cognitive Assessment, SPMSQ-Short Portable Mental Status Questionnaire, (MEFO)Memory, fluency and orientation, (ACE-III)-Addenbrooke's Cognitive Examination III, (AQT-CF)-A Quick Test of Cognitive Speed, (SLUMS)- Saint Louis University Mental Status, (BNB)-Brief Neuropsychological Battery Semantic Fluency, (SMCC)-The Subjective Memory Complaint Clinical, (CASI-S)-Cognitive Abilities Screening Instrument-Short, (RCS)-Rapid Cognitive Screen, (CPS)-Cognitive Performance Scale, (BIMS)-Brief Interview for Mental Status, (BCAT)-Brief Cognitive Assessment Tool, (3MS)-Modified Mini-Mental State Examination, (MIS)-Memory Impairment Screen, (MF-2)-Memory Function 2, (VT-VSM)-Virtual Reality technology: Virtual supermarket, (VR-DOT)-Virtual Reality Day-Out-Task, (CCS)Computerized Cognitive Screening Tests, (CAMCI)-Computerized	

									Assessment of Mild Cognitive Impairment, (CADi)-[Cognitive

									Assessment for Dementia, iPad version], (CADi-2)[Revised Cognitive Assessment for Dementia, iPad version], (DRA)Dementia Risk Assessment, (p-AD8)-Participant-rated, (IQCODE)- Informant Questionnaire on Cognitive Decline in the Elderly individuals
Smith *et al.,* United Kingdom	33	・Rural Older Adult Memory Evaluation ・Mini-Cog ・PRISM-PC ・SAPH questionnaire ・MMSE and clinical history/examination ・7-minute screen ・CIE and MMSE	Not mentioned.	Dementia	Not mentioned.	Not mentioned.	Not mentioned.	There is insufficient evidence to support the adoption of these programmes into practice. Six positive and eight negative effects of primary care screening and early diagnosis of dementia were reported.	(PRISM-PC)-Perceptions Regarding Investigational Screening for Memory in Primary Care, SAPHDementia Screening and Perceived Hames, CIEThe Canberra Interview for the Elderly

Brodaty *et al.,* Australia	83	**Instruments Validated in General Practice, Community or Population Samples:** ・AMT ・Cambridge Cognitive Examination ・CDT ・GPCOG ・Mini-Cog ・MIS ・MMSE ・Short and Sweet Screening Instrument ・Short IQCODE	MMSE	Dementia	・AMT = 3:16 ・Camnridge Cognitive Examination = 20 ・CDT = 2:16 ・GPCOG = 4.5 ・Mini-Cog = 2-4 ・MIS = 4 ・MMSE = 4 ・Short and Sweet Screening Instrument = 10 ・Short IQCODE = 30s	**Screening tests validated in general practice, community or population samples:** ・AMT-100 (95% CI 70-100) ・Cambridge Cognitive Examination-88 (95% CI 64-99) ・CDT-76 (95% CI 60-88) ・GPCOG-85 (95% CI 76-92) ・Mini-Cog76 (95% CI 65-85) ・MIS-80 (95% CI 66-90) ・MMSE-69 (95% CI 66-73) ・Short and Sweet Screening Instrument94 (95% CI 88-96) ・Short IQCODE-79 (95% CI 6590)	**Screening tests validated in general practice, community or population samples:** ・AMT-82 (95% CI 72-90) ・Cambridge Cognitive Examination-75 (95% CI 67-83) ・CDT-81 (95% CI 77-84) ・GPCOG-86 (95% CI 81-91) ・Mini-Cog89 (95% CI 87-91) ・MIS-96 (95% CI 94-98) ・MMSE-89 (95% CI 87-92) ・Short and Sweet Screening Instrument-91 (95% CI 9092) ・Short IQCODE-82 (95% CI 7985)	**Screening tests validated in general practice, community or population samples:** AMT had a PPV=0.42 (95% CI), NPV=1.00 (95% CI), misclassification of 16%, had internal consistency and face validity. Mini-Cog had a PPV=0.34 (95% CI), NPV=0.98 (95% CI), 12% misclassification, no education bias or language/cultural bias, and had face validity*. The AMT, CDT, GPCOG, Short IQCODE, Mini-Cog, and MIS all had a NPV =< MMSE (0.92). The GPCOG, Mini-Cog and MIS had a misclassification rate □=< MMSE (15%) and had a high sensitivity and specificity (>=80%) and were therefore chosen as the most suitable instruments for use in general practice.	MAT-Mental Alternation Test. *- (Based on Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition criteria requiring that instruments test memory and at least one other cognitive domain). CDTClock Drawing Test. GPCOG-General Practitioner Assessment of Cognition.	

Seitz *et al.*, Canada	4	The Mini-Cog performed in insolation or scored based on results on the CDT or threeword recall	Standard diagnostic criteria for the clinical diagnosis of dementia	Alzheimer's disease dementia and related dementias	Mini-Cog = 3-5 in routine practice	**CarneroPardo 2013 dementia prevalence was 34.5%:** • 100 (95% CI 93-100) **Fuchs 2012 5.0% dementia prevalence:** • 100 (95% CI 84-100) **Holsinger 2012 (highest quality study) 5.5% dementia prevalence:** • 76 (95% CI 53-92) **McCarten 2012 90.3% dementia prevalence:** • 84 (95% CI 81-87)	**Carnero-Pardo 2013:** • 40 (95% CI 30-50) **Fuchs 2012:** • 85 (95% CI 81-89) **Holsinger 2012:** • 73 (95% CI 68-77) **McCarten 2012:** • 27 (95% CI 16-41)	Presently there is insufficient evidence to support the use of Mini-Cog in primary care. Studies mentioned are primary journal articles (crosssectional studies).	
Cullen *et al.*, United Kingdom	36	• 3MS • CASI • MMSE • SASSI • STMS • CAST • GPCOG • 7MS • AMT • Mini-Cog • SIS • T&C • ACE-R • DemTect	Gold standard diagnostic criteria (based on international diagnostic guidelines or clinical judgement following a full assessment battery).	Cognitive impairment or any type of dementia	• 3MS = 10-15 • CASI = 15-20 • MMSE = 8-13 • SASSI = 10-15 • STMS = 5 • CAST = 15 • GPCOG = 5 • 7MS = 7-15 • AMT = 5 • Mini-Cog = 3-4 • SIS = 5 • T&C = 1 • ACE-R = 16 • DemTect = 8-10	• 3MS = 83-94 • CASI = 91-95 • MMSE = 69-91 • SASSI = 94 • STMS = 86-95 • CAST = 88-95 • GPCOG = 85 • 7MS = 91 • AMT = 73-100 • Mini-Cog = 76-99 • SIS = 81-	• 3MS = 85-90 • CASI = 37-97 • MMSE = 87-99 • SASSI = 81-91 • STMS = 88-94 • CAST = 88-100 • GPCOG = 86 • 7MS = 94 • AMT = 71-100 • Mini-Cog = 89-93 • SIS = 88-91	These tests were selected as brief assessment tools in the doctor's office due to their reported sensitivity and specificity values that were >85% for all dementia types together or for more than one particular subtype alone, and/or they covered at least three key domains. The 3MS and CASI are the only tests which cover all six key abilities (Attention/working memory, verbal recall, expressive	(ACE-R)-Addenbrooke's Cognitive Examination Revised, STMS-Short Test of Mental Status, CCSE-Cognitive Capacity Screening Examination, (R-CAMCOG)-Rotterdam Version of the Cambridge Cognitive Examination

						89 ・T&C = 63-95 ・ACE-R = 84-94 ・DemTect = 100 (Alzheimer's dementia)	・T&C = 54-96 ・ACE-R = 89-100 ・DemTect = 92 (Alzheimer's dementia)	language, verbal fluency, visual construction, reasoning/judgement).	
Lischka *et al.*, Canada	12	・MIS ・IST, BVRT ・CAMCI ・ACE ・ADAS-Cog ・CAMCOG ・MoCA ・S-MMSE ・IQCODE ・STMS ・MMSE ・HDS-R ・CCSE	A full clinical examination as the reference standard.	Dementia, MCI, amnestic MCI, mild dementia, and questionable dementia.	・MIS, IST = 4 ・IST, BVRT = 1 ・CAMCI = 15 ・ACE = 15 ・ADAS-Cog = NR ・CAMCOG = 20 ・MoCA = 10-12 ・S-MMSE = 10 ・IQCODE = 10-20 ・STMS = 5 ・MMSE = 5-10 ・HDS-R = NR ・CCSE = 10-12	・MIS, IST = 74 ・IST, BVRT - Cutoff level 1 = 90.8 ・CAMCI = 83.4 ・ACE - Cutoff <88/100 = 100 ・ADAS-Cog - Cutoff <75/100 = 85 ・CAMCOG = 76 for memory section ・MoCA = 94 ・S-MMSE = 14 ・IQCODE = 41 ・STMS = ≤ 80 ・MMSE = 31 ・HDS-R =	・MIS = 84, IST = 81 ・IST, BVRT - Cutoff level 1 = 52.2 ・CAMCI = 78.5 ・ACE - Cutoff <88/100 = 43 ・ADAS-Cog - Cutoff <75/100 = 83 ・CAMCOG = 96 for memory section ・MoCA = 50 ・S-MMSE = 100 ・IQCODE = 67 ・STMS = ≤ 80 ・MMSE = 96 ・HDS-R = 74 for the dementia diabetic group ・CCSE -	**Tools with the highest specificity rates:** ・MMSE ・S-MMSE **Tests with the highest sensitivities:** ・HDS-R ・ACE, which decreased depending on cut-off value ・MoCA for the dementia group and 83% for the MCI group ・CAMCI ・CCSE ・The combination of the MMSE, IST, and BVRT at 90.8% for the first cut-off level. The ACE demonstrated good diagnostic accuracy with AUC=0.98. Xu et al. (2002) found that the CCSE was the best predictive screen in MCI	(IST,BVRT)-Isaacs Set Test, Benton's Visual Retention Test. CAMCIChinese Abbreviated Mild Cognitive Impairment Test, (ADAS-Cog)-Alzheimer Disease Assessment ScaleCognitive Subscale, (SMMSE)-Standardized Mini-Mental State Examination, (HDS-R)-Hasegawa Dementia Scale-Revised, CCSE-Cognitive Capacity Screening Examination, CAMCOG-Cambridge Cognitive Examination

						92 for the dementia diabetic group ・ CCSE - Cutoff 26/25 = 88.1	Cutoff 26/25 = 83.5	participants for diagnosing all dementia due to its high sensitivity (88.1%) and specificity (83.5%).	
Boustani *et al.,* United States	61	・MMSE ・FAQ ・BIMC ・BOMC ・STMS	DSM-IV	Dementia	Not mentioned.	・MMSE = 71-92 ・FAQ = 90 ・BIMC = 90 ・BOMC = 69 ・STMS = 81	・MMSE = 56-96 ・FAQ = 90 ・BIMC = 65-90 ・BOMC = 90 ・STMS = 90	The MMSE has limited Sp when the cut-point is set for higher Sn. Accuracy of the MMSE changes based upon the patients age, education level and ethnicity and therefore requires adjustment when used.	BIMC-Blessed Information Memory Concentration; BOMC-Blessed Orientation Memory Concentration; FAQ□-Functional Activities Questionnaire; STMS-Short Test of Mental Status; DSM-IVDiagnostic and Statistical Manual of Mental Disorders, fourth edition