

## OSA Screening Tools

Table S1 - Evaluated screening tools and developer information

Referenced tool name	Full tool name	Developer contact information
Berlin	Berlin Questionnaire	Nikolas C Netzer, MD, PhD nikinetzer@yahoo.com
ESS	Epworth Sleepiness Scale	Johns Murray W, MB, BS, BSc, PhD <a href="https://eprovide.mapi-trust.org/instruments/epworth-sleepiness-scale">https://eprovide.mapi-trust.org/instruments/epworth-sleepiness-scale</a>
MVAP	Multivariable Apnea Prediction	Greg Maislin, MS, MA gregmaislin@biomedstat.com
NAMES	NAMES assessment ( <i>neck circumference, airway classification, comorbidities, Epworth scale, and snoring</i> )	Shyam Subramanian, M.D. shyammd@gmail.com
OSA50	OSA50 Questionnaire	Ching Li Chai-Coetzer, MBBS, FRACP, GCPH, PhD chingli.chai@health.sa.gov.au
sMVAP	Short Multivariable Apnea Prediction	Greg Maislin, MS, MA gregmaislin@biomedstat.com
STOP-BAG	STOP-BAG Questionnaire ( <i>snoring, tiredness during daytime, observed apnea, and high blood pressure, BMI, age, and gender</i> )	Frances Chung MBBS, FRCPC <a href="http://www.stopbang.ca/about/contactus.php">http://www.stopbang.ca/about/contactus.php</a>
STOP-BANG	STOP-BANG Questionnaire ( <i>snoring, tiredness during daytime, observed apnea, and high blood pressure, BMI, age, neck circumference, and gender</i> )	Frances Chung MBBS, FRCPC <a href="http://www.stopbang.ca/about/contactus.php">http://www.stopbang.ca/about/contactus.php</a>
STOP	STOP Questionnaire ( <i>snoring, tiredness during daytime, observed apnea, high blood pressure</i> )	Frances Chung MBBS, FRCPC <a href="http://www.stopbang.ca/about/contactus.php">http://www.stopbang.ca/about/contactus.php</a>
Wisconsin Sleep	Wisconsin Sleep Questionnaire	Wisconsin Sleep Cohort PI: Paul Peppard, PhD ppeppard@wisc.edu

**Table S2 - Screening tool validation metrics (in OSA population)**

Screening Tool <sup>1</sup>	Accuracy	Cut-off values for scoring	Diagnostic odds ratio	Likelihood ratio	Negative Predictive Value	Positive Predictive Value	Sensitivity	Specificity
Berlin	✓	✓		✓	✓	✓	✓	✓
ESS	✓	✓	✓		✓	✓	✓	✓
MVAP	✓	✓	✓	✓	✓	✓	✓	✓
NAMES	✓	✓			✓	✓	✓	✓
OSA50				✓	✓	✓	✓	✓
sMVAP	✓	✓	✓	✓	✓	✓	✓	✓
STOP-BAG	✓	✓			✓	✓	✓	✓
STOP-BANG	✓	✓	✓	✓	✓	✓	✓	✓
STOP	✓	✓	✓	✓	✓	✓	✓	✓
Wisconsin Sleep				✓	✓	✓	✓	✓

<sup>1</sup>Berlin = Berlin Questionnaire; ESS = Epworth Sleepiness Scale; MVAP = Multivariable Apnea Prediction; NAMES = NAMES assessment; OSA50 = OSA50 Questionnaire; sMVAP = Short Multivariable Apnea Prediction; STOP-BAG = STOP-BAG Questionnaire ; STOP-BANG = STOP-BANG Questionnaire; STOP = STOP Questionnaire; Wisconsin Sleep = Wisconsin Sleep Questionnaire

Table S3 - Target population studied by screening tool<sup>1</sup>

Screening Tool <sup>2</sup>	Commercial vehicle operator - truck driver	Coronary artery disease	General population	Obesity	Preoperative for bariatric surgery	Sleep patient population	Stroke	Type 2 diabetes	Other populations
Berlin		✓	✓	✓		✓			Primary care clinic, veterans, unspecified cardiac disease
ESS	✓	✓	✓	✓		✓			Chronic obstructive pulmonary disease, pregnancy
MVAP	✓			✓		✓			Hypertension, elderly with sleepiness, veterans
NAMES		✓		✓		✓			Hypertension, sleepiness
OSA50			✓	✓					
sMVAP	✓								Preoperative
STOP-BAG							✓		Ischemic stroke, hemorrhagic stroke
STOP-BANG	✓	✓	✓	✓	✓	✓	✓	✓	General surgery, gynecology, orthopedics, urology, plastic surgery, ophthalmology, spinal surgery, hypertension, multiple sclerosis
STOP					✓	✓	✓		General surgery, gynecology, orthopedics, urology, plastic surgery, ophthalmology, spinal surgery
Wisconsin Sleep			✓						

<sup>1</sup>Target populations that were not studied by any of the screening tools are commercial vehicle operator - airline pilot, congestive heart failure, and pulmonary hypertension.  
<sup>2</sup>Berlin = Berlin Questionnaire; ESS = Epworth Sleepiness Scale; MVAP = Multivariable Apnea Prediction; NAMES = NAMES assessment; OSA50 = OSA50 Questionnaire; sMVAP = Short Multivariable Apnea Prediction; STOP-BAG = STOP-BAG Questionnaire; STOP-BANG = STOP-BANG Questionnaire; STOP = STOP Questionnaire; Wisconsin Sleep = Wisconsin Sleep Questionnaire

Table S4 - Demographics studied by screening tool

Screening Tool <sup>1</sup>	General demographics			Sex		Age groups			Additional demographics
	General population	Minorities	Multinational (in addition to US)	Females	Males	Young adult (18-44 years)	Middle age (45-64 years)	Elderly (65+ years)	
Berlin	✓		✓	✓	✓		✓	✓	
ESS	✓	✓	✓	✓	✓	✓	✓	✓	
MVAP	✓	✓	✓	✓	✓		✓	✓	Marital status
NAMES	✓	✓		✓	✓	✓	✓	✓	
OSA50	✓			✓	✓		✓	✓	Australian population
sMVAP					✓		✓	✓	Commercial truck drivers
STOP-BAG	✓	✓	✓	✓	✓		✓	✓	
STOP-BANG	✓	✓	✓	✓	✓		✓	✓	Canada, USA, England, Iran
STOP	✓			✓	✓	✓	✓	✓	Primarily white population
Wisconsin Sleep	✓		✓	✓	✓		✓	✓	Canada

<sup>1</sup>Berlin = Berlin Questionnaire; ESS = Epworth Sleepiness Scale; MVAP = Multivariable Apnea Prediction; NAMES = NAMES assessment; OSA50 = OSA50 Questionnaire; sMVAP = Short Multivariable Apnea Prediction; STOP-BAG = STOP-BAG Questionnaire; STOP-BANG = STOP-BANG Questionnaire; STOP = STOP Questionnaire; Wisconsin Sleep = Wisconsin Sleep Questionnaire

Table S5 - Screening tool functionality

Screening Tool <sup>1</sup>	General usability		Platforms				Scoring	Source of information				# of items	Grade readability <sup>2</sup>	Completion time
	Cost	Permission	Electronic	Face-to-face	Paper	Telephone		Clinician	Patient	Observer	Staff			
Berlin	Unknown	Unknown		✓	✓		Manual	✓	✓			10	2.9	5 minutes
ESS	Yes, for research use	Yes, for research use	✓	✓	✓	✓	Electronic, Manual		✓			8	6.9	1 minute
MVAP	< \$5.00	Yes, for research use	✓	✓	✓	✓	Electronic	✓	✓		✓		Unable to determine	1-2 minutes
NAMES	Unknown	Unknown		✓			Manual	✓			✓	6	Unable to determine	Not reported
OSA50	No	Yes, for clinical use		✓	✓		Manual		✓			4	5.1	Not reported
sMVAP	< \$5.00	Yes, for research use	✓	✓	✓	✓	Electronic	✓	✓		✓	3	Unable to determine	1 minute
STOP-BAG	Unknown	Unknown	✓	✓	✓	✓	Electronic, Manual	✓	✓	✓	✓	7	3.7	1 minute
STOP-BANG	Unknown	Unknown	✓	✓	✓	✓	Electronic, Manual	✓	✓	✓	✓	8	3.9	1-3 minutes
STOP	Unknown	Unknown		✓	✓	✓	Manual	✓	✓	✓	✓	4	4.0	1 minute
Wisconsin Sleep	Unknown	Unknown			✓		Manual		✓			72	5.0	10-15 minutes

<sup>1</sup>Berlin = Berlin Questionnaire; ESS = Epworth Sleepiness Scale; MVAP = Multivariable Apnea Prediction; NAMES = NAMES assessment; OSA50 = OSA50 Questionnaire; sMVAP = Short Multivariable Apnea Prediction; STOP-BAG = STOP-BAG Questionnaire ; STOP-BANG = STOP-BANG Questionnaire; STOP = STOP Questionnaire; Wisconsin Sleep = Wisconsin Sleep Questionnaire

<sup>2</sup>Based on Word 2010 Flesch-Kincaid grade readability level.

**Table S6 – Screening tool languages**

Screening Tool <sup>1</sup>	Languages
Berlin	French, English, German, Norwegian, Greek, Iranian, Korean, Turkish
ESS	Chinese, French, English, Spanish, Tagalog, Vietnamese, Many
MVAP	English
NAMES	English
OSA50	English
sMVAP	English
STOP-BAG	English
STOP-BANG	Chinese, French, English, Spanish, Per STOP BANG web site: Singapore, Afrikaans, Bulgarian, Czech, Dutch, German, Hungarian, Italian, Korean, Malay, Polish, Portuguese, Romanian, Sami, Taiwanese, Turkish, Urdu
STOP	Chinese, French, English, Spanish, Per STOP BANG web site: Singapore, Afrikaans, Bulgarian, Czech, Dutch, German, Hungarian, Italian, Korean, Malay, Polish, Portuguese, Romanian, Sami, Taiwanese, Turkish, Urdu
Wisconsin Sleep	English
<sup>1</sup> Berlin = Berlin Questionnaire; ESS = Epworth Sleepiness Scale; MVAP = Multivariable Apnea Prediction; NAMES = NAMES assessment; OSA50 = OSA50 Questionnaire; sMVAP = Short Multivariable Apnea Prediction; STOP-BAG = STOP-BAG Questionnaire; STOP-BANG = STOP-BANG Questionnaire; STOP = STOP Questionnaire; Wisconsin Sleep = Wisconsin Sleep Questionnaire	

## Publications used to evaluate screening tools

1. Kapur VK, Auckley DH, Chowdhuri S, et al. Clinical Practice Guideline for Diagnostic Testing for Adult Obstructive Sleep Apnea: An American Academy of Sleep Medicine Clinical Practice Guideline. *J Clin Sleep Med*. 2017; 13(3):479-504.
2. US Preventive Services Task Force. Screening for Obstructive Sleep Apnea in Adults: US Preventive Services Task Force Recommendation Statement. *JAMA*. 2017;317(4):407-414.
3. Netzer NC, Stoohs RA, Netzer CM, et al. Using the Berlin Questionnaire To Identify Patients at Risk for the Sleep Apnea Syndrome. *Ann Intern Med*. 1999;131:485-491.
4. Maislin G, Pack AI, Kirbbs NB, et al. A Survey Screen for Prediction of Apnea. *Sleep*. 1995;18(3):158-66.
5. Subramanian S, Hesselbacher SE, Aguilar R, et al. The NAMES assessment: a novel combined-modality screening tool for obstructive sleep apnea. *Sleep Breath*. 2011;15:819-826.
6. Chai-Coetzer CL, Antic NA, Rowland LS, et al. A simplified model of screening questionnaire and home monitoring for obstructive sleep apnoea in primary care. *Thorax*. 2011; 66:213-219.
7. Boulos MI, Wan A, Im J, et al. Identifying obstructive sleep apnea after stroke/TIA: evaluating four simple screening tools. *Sleep Medicine*. 2016; 21:133-139
8. Chung F, Yegneswaran B, Liao P, et al. STOP Questionnaire: A Tool to Screen Patients for Obstructive Sleep Apnea. *Anesthes*. 2008;108(5):812-821.
9. Chung F, Subramanyam R, Liao P, et al. High STOP-Bang score indicates a high probability of obstructive sleep apnoea. *Br J Anaesth*. 2012;108(5):768-775.
10. Chung F, Yang Y, Brown R, et al. Alternative Scoring Models of STOP-Bang Questionnaire Improve Specificity To Detect Undiagnosed Obstructive Sleep Apnea. *J Clin Sleep Med*. 2014;10(9):951-958.
11. Katzan IL, Thompson NR, Uchino K, et al. A screening tool for obstructive sleep apnea in cerebrovascular patients. *Sleep Med*. 2016;21:70-76.

## OSA Assessment Tools

Table S7 - Evaluated assessment tools and developer information

Referenced tool name	Full tool name	Developer contact information
SF-36	36-Item Short Form Health Survey	RAND Health RAND_Health@rand.org
BAI	Beck Anxiety Inventory	Aaron T. Beck, M.D. Publisher: Pearson's Clinical Assessment Group <a href="https://www.pearsonclinical.com/psychology/form/customer-service-products-and-qualification.html">https://www.pearsonclinical.com/psychology/form/customer-service-products-and-qualification.html</a>
BDI	Beck Depression Inventory	Aaron T. Beck, M.D. Publisher: Pearson's Clinical Assessment Group <a href="https://www.pearsonclinical.com/psychology/form/customer-service-products-and-qualification.html">https://www.pearsonclinical.com/psychology/form/customer-service-products-and-qualification.html</a>
BFI	Brief Fatigue Inventory	University of Texas M. D. Anderson Cancer Center symptomresearch@mdanderson.org
SAQLI	Calgary Sleep Apnea Quality of Life Index	W. Ward Flemons, MD flemons@ucalgary.ca
CGI	Clinical Global Impression	National Institute of Mental Health
ESS	Epworth Sleepiness Scale	Johns Murray W, MB, BS, BSc, PhD <a href="https://provide.mapi-trust.org/instruments/epworth-sleepiness-scale">https://provide.mapi-trust.org/instruments/epworth-sleepiness-scale</a>
EQ-5D	European Quality of Life-5 Dimensions	EuroQol Group Association userinformationservice@euroqol.org
FSS	Fatigue Severity Scale	Lauren Krupp, MD Lauren.krupp@sunysb.edu
FOSQ	Functional Outcomes of Sleep Questionnaire	Terri Weaver, PhD, RN, FAAN teweaver@uic.edu
HADS	Hospital Anxiety and Depression Scale	GL-Assessment <a href="https://www.gl-assessment.co.uk/main-navigation/contact/#contact">https://www.gl-assessment.co.uk/main-navigation/contact/#contact</a>
NHP	Nottingham Health Profile	Hunt S; McEwen J; McKenna Stephen P
PROMIS - Sleep Disturbance	Patient Reported Outcomes Measurement Information System - Sleep Disturbance	PROMIS Health Organization Publisher: HealthMeasures/Northwestern University help@healthmeasures.net
PROMIS - Sleep-Related Impairment	Patient Reported Outcomes Measurement Information System - Sleep-Related Impairment	PROMIS Health Organization Publisher: HealthMeasures/Northwestern University help@healthmeasures.net
PSQI	Pittsburgh Sleep Quality Index	Daniel J. Buysse, M.D. buyssedj@upmc.edu
SF-6D	Short Form-6 dimension	The University of Sheffield <a href="http://www.sheffield.ac.uk/scharr/sections/heds/mvh/noncommercial">http://www.sheffield.ac.uk/scharr/sections/heds/mvh/noncommercial</a>
SASDQ	Sleep Apnea scale of the Sleep Disorders Questionnaire	Alan Douglass, MD alan.douglass@theroyal.ca
SSS	Stanford Sleepiness Scale	William C. Dement, M.D., Ph.D. Stanford University Department Psych/Sleep Medicine 3165 Porter Drive



		room 2175 Palo Alto, California 94304-5744
STAI	State-Trait Anxiety Inventory	Charles D. Spielberger, PhD Publisher: Mind Garden
SNORE	Symptoms of Nocturnal Obstruction and Related Events	Jay F. Piccirillo, MD, FACS piccirilloj@ent.wustl.edu

Table S8 - Assessment tool outcome domains

Assessment Tool <sup>1</sup>	Mood disorder	Quality of life	Severity of disease	Sleepiness	Sleep quality
SF-36		Adequately addressed			
BAI	Adequately addressed	Not addressed at all	Adequately addressed	Not addressed at all	Not addressed at all
BDI	Adequately addressed	Adequately addressed	Not addressed at all	Partially addressed	Adequately addressed
BFI		Adequately addressed	Adequately addressed		
SAQLI	Adequately addressed	Adequately addressed	Not addressed at all	Adequately addressed	Adequately addressed
CGI	Partially addressed	Partially addressed	Partially addressed	Partially addressed	Partially addressed
ESS	Not addressed at all	Not addressed at all	Adequately addressed	Adequately addressed	Not addressed at all
EQ-5D	Partially addressed	Adequately addressed			
FSS	Not addressed at all	Not addressed at all	Not addressed at all	Not addressed at all	Not addressed at all
FOSQ	Partially addressed	Adequately addressed	Not addressed at all	Not addressed at all	Not addressed at all
HADS	Adequately addressed	Partially addressed	Not addressed at all	Not addressed at all	Not addressed at all
NHP		Adequately addressed		Adequately addressed	
PROMIS - Sleep Disturbance					Adequately addressed
PROMIS - Sleep-Related Impairment	Not addressed at all	Partially addressed	Not addressed at all	Not addressed at all	Not addressed at all
PSQI	Not addressed at all	Partially addressed	Partially addressed	Adequately addressed	Adequately addressed
SF-6D	Adequately addressed	Adequately addressed	Partially addressed	Not addressed at all	Not addressed at all
SASDQ	Not addressed at all	Not addressed at all	Not addressed at all	Not addressed at all	Not addressed at all
SSS	Not addressed at all	Not addressed at all	Not addressed at all	Adequately addressed	Not addressed at all
STAI	Adequately addressed	Not addressed at all	Not addressed at all	Not addressed at all	Not addressed at all
SNORE	Partially addressed	Partially addressed	Partially addressed	Partially addressed	Partially addressed

<sup>1</sup>SF-36 = 36-Item Short Form Health Survey; BAI = Beck Anxiety Inventory; BDI = Beck Depression Inventory; BFI = Brief Fatigue Inventory; SAQLI = Calgary Sleep Apnea Quality of Life Index; CGI = Clinical Global Impression; ESS = Epworth Sleepiness Scale; EQ-5D = European Quality of Life-5 Dimensions; FSS = Fatigue Severity Scale; FOSQ = Functional Outcomes of Sleep Questionnaire; HADS = Hospital Anxiety and Depression Scale; NHP = Nottingham Health Profile; PROMIS - Sleep Disturbance = Patient Reported Outcomes Measurement Information System - Sleep Disturbance; PROMIS - Sleep-Related Impairment = Patient Reported Outcomes Measurement Information System - Sleep-Related Impairment; PSQI = Pittsburgh Sleep Quality Index; SF-6D = Short Form-6 dimension; SASDQ = Sleep Apnea scale of the Sleep Disorders Questionnaire; SSS = Stanford Sleepiness Scale; STAI = State-Trait Anxiety Inventory; SNORE = Symptoms of Nocturnal Obstruction and Related Events

Table S9 - Assessment tool measures<sup>1</sup>

Assessment Tool <sup>2</sup>	Anxiety	Blood pressure	Cardio-vascular events	Cognition/memory	Daytime fatigue	Daytime sleepiness	Depression	Motor vehicle hazard	Occupational hazard	Quality of life	Other
SF-36					✓					✓	
BAI	✓										
BDI				✓	✓		✓			✓	
BFI					✓						
SAQLI	✓			✓	✓	✓	✓	✓		✓	Treatment-related symptoms
CGI											Measures illness severity, global improvement or change, therapeutic response
ESS						✓		✓			
EQ-5D	✓						✓			✓	
FSS					✓						
FOSQ				✓	✓	✓				✓	
HADS							✓				
NHP										✓	
PROMIS - Sleep Disturbance											Sleep disturbance
PROMIS - Sleep-Related Impairment										✓	
PSQI			✓			✓					
SF-6D	✓						✓			✓	Functioning: social, work, at home
SASDQ		✓									Symptoms likely to occur during night/sleep (snoring, gasping, allergies). Sleep quality was partially addressed
SSS						✓					
STAI	✓										
SNORE	✓			✓	✓	✓	✓	✓	✓		Sleep quality was partially addressed

<sup>1</sup>Outcome measures that were not studied by any of the assessment tools are adherence, cerebrovascular events, and nocturnal oxygen saturation.

<sup>2</sup>SF-36 = 36-Item Short Form Health Survey; BAI = Beck Anxiety Inventory; BDI = Beck Depression Inventory; BFI = Brief Fatigue Inventory; SAQLI = Calgary Sleep Apnea Quality of Life Index; CGI = Clinical Global Impression; ESS = Epworth Sleepiness Scale; EQ-5D = European Quality of Life-5 Dimensions; FSS = Fatigue Severity Scale; FOSQ = Functional Outcomes of Sleep Questionnaire; HADS = Hospital Anxiety and Depression Scale; NHP = Nottingham Health Profile; PROMIS - Sleep Disturbance = Patient Reported Outcomes Measurement Information System - Sleep Disturbance; PROMIS - Sleep-Related Impairment = Patient Reported Outcomes Measurement Information System - Sleep-Related Impairment; PSQI = Pittsburgh Sleep Quality Index; SF-6D = Short Form-6 dimension; SASDQ = Sleep Apnea scale of the Sleep Disorders Questionnaire; SSS = Stanford Sleepiness Scale; STAI = State-Trait Anxiety Inventory; SNORE = Symptoms of Nocturnal Obstruction and Related Events

Table S10 - Assessment tool validation metrics (in OSA population)<sup>1</sup>

Assessment Tool <sup>2</sup>	Accuracy	Diagnostic odds ratio	Internal Consistency	Prospective	Reliability	Validity	Time points of assessment evaluated	Other
SF-36								
BAI	✓				✓	✓		
BDI				✓				
BFI					✓	✓		
SAQLI			✓		✓			
CGI								Not available
ESS								Based on SF-36 and SF-12 which have been well validated
EQ-5D								
FSS			✓		✓	✓		
FOSQ				✓	✓	✓	✓	
HADS			✓		✓			
NHP								Not available
PROMIS - Sleep Disturbance								Not available
PROMIS - Sleep-Related Impairment								Not available
PSQI		✓						
SF-6D								
SASDQ								Not available
SSS					✓	✓		
STAI					✓	✓		
SNORE								Not available

<sup>1</sup>Metrics that were not validated (in OSA population) by any of the assessment tools are area under ROC curve, likelihood ratio, negative predictive value, retrospective, positive predictive value, sensitivity, and specificity.  
<sup>2</sup>SF-36 = 36-Item Short Form Health Survey; BAI = Beck Anxiety Inventory; BDI = Beck Depression Inventory; BFI = Brief Fatigue Inventory; SAQLI = Calgary Sleep Apnea Quality of Life Index; CGI = Clinical Global Impression; ESS = Epworth Sleepiness Scale; EQ-5D = European Quality of Life-5 Dimensions; FSS = Fatigue Severity Scale; FOSQ = Functional Outcomes of Sleep Questionnaire; HADS = Hospital Anxiety and Depression Scale; NHP = Nottingham Health Profile; PROMIS - Sleep Disturbance = Patient Reported Outcomes Measurement Information System - Sleep Disturbance; PROMIS - Sleep-Related Impairment = Patient Reported Outcomes Measurement Information System - Sleep-Related Impairment; PSQI = Pittsburgh Sleep Quality Index; SF-6D = Short Form-6 dimension; SASDQ = Sleep Apnea scale of the Sleep Disorders Questionnaire; SSS = Stanford Sleepiness Scale; STAI = State-Trait Anxiety Inventory; SNORE = Symptoms of Nocturnal Obstruction and Related Events

Table S11 - Target population studied by assessment tool<sup>1</sup>

Assessment Tool <sup>2</sup>	Commercial vehicle operator truck driver	Congestive heart failure	Coronary artery disease	General population	Obesity	Preoperative for bariatric surgery	Sleep patient population	Stroke	Type 2 diabetes	Other populations
SF-36		✓					✓			
BAI				✓			✓			Psychiatric outpatients
BDI			✓				✓			Ear, nose, throat surgical population
BFI										Patients with fatigue due to cancer and cancer treatment
SAQLI							✓			
CGI							✓			Social anxiety, depression, bipolar disorder
ESS	✓	✓	✓	✓	✓	✓	✓	✓	✓	
EQ-5D		✓					✓			
FSS					✓					Cancer, hepatitis C, FM, multiple sclerosis, Parkinson's disease, depression, rheumatoid arthritis, stroke, polio, spinal muscular atrophy type II, lupus, Lyme's disease
FOSQ				✓			✓			
HADS				✓			✓			General hospital patients, cancer patients, HIV patients
NHP							✓			
PROMIS - Sleep Disturbance										Not available
PROMIS - Sleep-Related Impairment										Not available
PSQI		✓	✓	✓	✓		✓			Rheumatology, pregnancy, transplant patients, gastroesophageal reflux disease, migraine, aldosteronism
SF-6D							✓			
SASDQ										Evaluated in patients with epilepsy.
SSS				✓				✓		
STAI										None of the above (other than OSA)
SNORE										Not available

<sup>1</sup>Target populations that were not studied by any of the tools are commercial vehicle operator – airline pilot and pulmonary hypertension.

<sup>2</sup>SF-36 = 36-Item Short Form Health Survey; BAI = Beck Anxiety Inventory; BDI = Beck Depression Inventory; BFI = Brief Fatigue Inventory; SAQLI = Calgary Sleep Apnea Quality of Life Index; CGI = Clinical Global Impression; ESS = Epworth Sleepiness Scale; EQ-5D = European Quality of Life-5 Dimensions; FSS = Fatigue Severity Scale; FOSQ = Functional Outcomes of Sleep Questionnaire; HADS = Hospital Anxiety and Depression Scale; NHP = Nottingham Health Profile; PROMIS - Sleep Disturbance = Patient Reported Outcomes Measurement Information System - Sleep Disturbance; PROMIS - Sleep-Related Impairment = Patient Reported Outcomes Measurement Information System - Sleep-Related Impairment; PSQI = Pittsburgh Sleep Quality Index; SF-6D = Short Form-6 dimension; SASDQ = Sleep Apnea scale of the Sleep Disorders Questionnaire; SSS = Stanford Sleepiness Scale; STAI = State-Trait Anxiety Inventory; SNORE = Symptoms of Nocturnal Obstruction and Related Events

Table S12 - Demographics studied by assessment tool

Assessment Tool <sup>1</sup>	General demographics			Sex		Age groups			Additional demographics
	General population	Minorities	Multinational (in addition to US)	Females	Males	Young adult (18-44 years)	Middle age (45-64 years)	Elderly (65+ years)	
SF-36			✓	✓	✓		✓	✓	
BAI	✓	✓		✓	✓	✓	✓	✓	
BDI			✓	✓	✓	✓	✓	✓	
BFI	✓	✓	✓	✓	✓	✓	✓	✓	
SAQLI				✓	✓				Sleep clinic patients, Adults
CGI	✓		✓	✓	✓		✓		
ESS	✓	✓	✓	✓	✓		✓	✓	
EQ-5D	✓			✓	✓		✓	✓	Spain
FSS				✓	✓	✓	✓	✓	Clinical/medical populations
FOSQ	✓	✓	✓	✓	✓	✓	✓	✓	
HADS	✓		✓	✓	✓				Adults
NHP	✓			✓	✓		✓		
PROMIS - Sleep Disturbance									Not available
PROMIS - Sleep-Related Impairment			✓						Not available
PSQI	✓	✓		✓	✓	✓	✓	✓	
SF-6D	✓			✓	✓			✓	Multiple UK sites
SASDQ									Epilepsy
SSS	✓			✓	✓				Adults
STAI					✓		✓		
SNORE									Not available

<sup>1</sup>SF-36 = 36-Item Short Form Health Survey; BAI = Beck Anxiety Inventory; BDI = Beck Depression Inventory; BFI = Brief Fatigue Inventory; SAQLI = Calgary Sleep Apnea Quality of Life Index; CGI = Clinical Global Impression; ESS = Epworth Sleepiness Scale; EQ-5D = European Quality of Life-5 Dimensions; FSS = Fatigue Severity Scale; FOSQ = Functional Outcomes of Sleep Questionnaire; HADS = Hospital Anxiety and Depression Scale; NHP = Nottingham Health Profile; PROMIS - Sleep Disturbance = Patient Reported Outcomes Measurement Information System - Sleep Disturbance; PROMIS - Sleep-Related Impairment = Patient Reported Outcomes Measurement Information System - Sleep-Related Impairment; PSQI = Pittsburgh Sleep Quality Index; SF-6D = Short Form-6 dimension; SASDQ = Sleep Apnea scale of the Sleep Disorders Questionnaire; SSS = Stanford Sleepiness Scale; STAI = State-Trait Anxiety Inventory; SNORE = Symptoms of Nocturnal Obstruction and Related Events

Table S13 - Assessment tool functionality

Assessment Tool <sup>1</sup>	General usability		Platforms				Scoring	Source of information				# of items	Grade readability <sup>2</sup>	Completion time
	Cost	Permission	Electronic	Face-to-face	Paper	Telephone		Caregiver	Patient	Provider	Staff			
SF-36	No	No					Manual		✓			36	6.8	Not reported
BAI	\$132.95	Yes, for clinical use	✓	✓	✓		Electronic, Manual		✓			21	8.3	Not reported
BDI	\$84.25	Yes, for clinical use			✓		Manual		✓			21	3.5	10 minutes
BFI	\$100 - 300	Yes, for clinical use	✓	✓	✓	✓	Manual		✓			9	7.9	5 minutes
SAQLI	No	Yes, for clinical use		✓	✓		Manual	✓ (short)	✓ (short)	✓ (original)		Original: 90 Short: 18	Original: 6.5 Short: 7.1	Original: 10-15 minutes Short: 7 minutes
CGI	No	No			✓		Manual		✓			3	10.6	Not reported
ESS	Yes, for clinical use	Yes, for clinical use	✓	✓	✓	✓	Electronic, Manual		✓			8	6.9	1 minute
EQ-5D	Unknown	Yes, for research use	✓	✓	✓	✓	Electronic, Manual	✓	✓			EQ-5D-5L: 25 EQ-5D-3L: 15 EQ-5D-Y: 15	3.1-3.4	Not reported
FSS	No	No	✓	✓	✓	✓	Electronic, Manual		✓			9	7.9	≤ 5 minutes
FOSQ	No	Yes, for clinical use	✓	✓	✓	✓	Manual	✓	✓	✓	✓	Short: 10 Full: 30	Full: 7.7 Short: 8.5	Short: 5 minutes
HADS	Unknown	Unknown			✓		Manual		✓			14	5.6	2-5 minutes
NHP	Unknown	Unknown			✓		Manual		✓			45	2.1	
PROMIS - Sleep Disturbance	No	No	✓		✓		Electronic, Manual		✓			Full: 27 Short form 4a: 4 Short form 6a: 6 Short form 8a: 8 Short form 8b: 8	2.0	Not reported
PROMIS - Sleep-Related Impairment	No	No	✓		✓		Electronic, Manual		✓			Full: 16 Short form 8a: 8	2.6	Not reported
PSQI	No	Yes, for clinical use	✓	✓	✓		Electronic, Manual		✓		✓	19	7.0	5 minutes
SF-6D	Yes, for research use	Yes, for research use	✓	✓	✓	✓	Electronic		✓			6	Unable to determine	3-9 minutes
SASDQ	No	Yes, for clinical use			✓		Manual		✓			12	6.9	< 5 minutes
SSS	No	No			✓		Manual		✓			1	7.4	1-2 minutes
STAI	Yes, for clinical use	Yes, for clinical use	✓		✓		Electronic, Manual		✓			40	6.4	Not reported
SNORE												25	7.1	Not available

<sup>1</sup>SF-36 = 36-Item Short Form Health Survey; BAI = Beck Anxiety Inventory; BDI = Beck Depression Inventory; BFI = Brief Fatigue Inventory; SAQLI = Calgary Sleep Apnea Quality of Life Index; CGI = Clinical Global Impression; ESS = Epworth Sleepiness Scale; EQ-5D = European Quality of Life-5 Dimensions; FSS = Fatigue Severity Scale; FOSQ = Functional Outcomes of Sleep Questionnaire; HADS = Hospital Anxiety and Depression Scale; NHP = Nottingham Health Profile; PROMIS - Sleep Disturbance = Patient Reported Outcomes Measurement Information System - Sleep Disturbance; PROMIS - Sleep-Related Impairment = Patient Reported Outcomes Measurement Information System - Sleep-Related Impairment; PSQI = Pittsburgh Sleep Quality Index; SF-6D = Short Form-6 dimension; SASDQ = Sleep Apnea scale of the Sleep Disorders Questionnaire; SSS = Stanford Sleepiness Scale; STAI = State-Trait Anxiety Inventory; SNORE = Symptoms of Nocturnal Obstruction and Related Events

<sup>2</sup>Based on Word 2010 Flesch-Kincaid grade readability level.

Table S14 - Assessment tool languages

Assessment Tool <sup>1</sup>	Languages
SF-36	English, Arabic
BAI	Chinese, French, English, Spanish, Portuguese, Italian, Korean, Danish, Norwegian, Swedish, German
BDI	English
BFI	Chinese, French, English, Spanish, It is available in multiple languages
SAQLI	Chinese, English, Spanish, Lithuanian, Malay, Persian, Portuguese
CGI	English, Russian
ESS	Chinese, French, English, Spanish, Chinese is Cantonese and Mandarin
EQ-5D	English
FSS	French, English, Spanish, German, Norwegian, Turkish
FOSQ	Chinese, French, English, Spanish, offered in over 20 languages
HADS	Chinese, English, Spanish, Polish, Greek (115 languages)
NHP	English
PROMIS - Sleep Disturbance	English
PROMIS - Sleep-Related Impairment	English, Spanish
PSQI	English
SF-6D	English, use depends on calibration in specific population, which appears to have been done only in English speakers
SASDQ	English, French, Spanish
SSS	English
STAI	Chinese, French, English, Spanish, Tagalog, Available in 50 languages
SNORE	English
<sup>1</sup> SF-36 = 36-Item Short Form Health Survey; BAI = Beck Anxiety Inventory; BDI = Beck Depression Inventory; BFI = Brief Fatigue Inventory; SAQLI = Calgary Sleep Apnea Quality of Life Index; CGI = Clinical Global Impression; ESS = Epworth Sleepiness Scale; EQ-5D = European Quality of Life-5 Dimensions; FSS = Fatigue Severity Scale; FOSQ = Functional Outcomes of Sleep Questionnaire; HADS = Hospital Anxiety and Depression Scale; NHP = Nottingham Health Profile; PROMIS - Sleep Disturbance = Patient Reported Outcomes Measurement Information System - Sleep Disturbance; PROMIS - Sleep-Related Impairment = Patient Reported Outcomes Measurement Information System - Sleep-Related Impairment; PSQI = Pittsburgh Sleep Quality Index; SF-6D = Short Form-6 dimension; SASDQ = Sleep Apnea scale of the Sleep Disorders Questionnaire; SSS = Stanford Sleepiness Scale; STAI = State-Trait Anxiety Inventory; SNORE = Symptoms of Nocturnal Obstruction and Related Events	



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