

Screening for REM Sleep Behavior Disorder in Patients with Cognitive Impairment and/or Parkinsonism: Updated Validation Data on the Mayo Sleep Questionnaire

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OBJECTIVE

To validate a questionnaire for the diagnosis of REM sleep behavior disorder (RBD) in patients with cognitive impairment and/or parkinsonism.

BACKGROUND

- Several sleep disorders, including RBD, are associated with or reflect an underlying neurodegenerative disease, and their presence may offer diagnostic insights as well as affect morbidity and mortality.
- RBD requires polysomnography (PSG) to establish the diagnosis. The presence of REM sleep without atonia (RSWA) +/- complex motor activity on PSG confirms the diagnosis of RBD in those with a history of recurrent dream enactment behavior.
- A simple screening measure for RBD would be desirable for clinical and research purposes.

METHODS

- We developed the Mayo Sleep Questionnaire (MSQ)—a concise 16 item measure—to screen for the presence of RBD and other sleep disorders (Figure).
- We assessed the validity of the MSQ by comparing the responses of a large group of patients' bedpartners with the findings on PSG.
- All subjects recruited in the Mayo Alzheimer's Disease Research Center at Mayo Clinic Rochester and Mayo Clinic Jacksonville from 1/00 to 7/08 with cognitive impairment and/or parkinsonism who underwent a PSG were the focus of this analysis.

Table 1. Demographic and Clinical Data

	Frequency
Age (years)	
<50	2
50-59	12
60-69	49
70-79	62
80-89	15
90+	2
Total	142
Median	71
Sex	
Male	122 (86%)
Female	20
Bedpartner	
Spouse	136 (96%)
Other	6
Neurologic diagnosis	
MCI	38
AD	22
DLB	57
PD	10
FTLD spectrum	14
PSP	1

Table 2. Validation of RBD Questions

Does “Yes” on Question 1 predict RSWA on PSG?

SN: 98% SP: 69%

Does the timing of MSQ in relation to PSG matter?

MSQ before PSG SN: 96% SP: 73%

PSG before MSQ SN: 100% SP: 77%

Does the site of evaluation matter?

Mayo Clinic Rochester SN: 97% SP: 76%

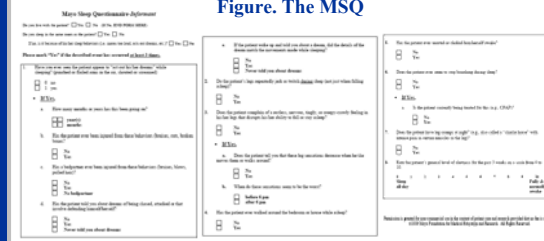
Mayo Clinic Jacksonville SN: 100% SP: 67%

Table 3. True Positives (TP, n=79) vs False Positives (FP, n=17)

Percent of “Yes” response to RBD subquestions

	TP	FP
Q1b – yes (injuries)	32%	6%
3 of questions Q1b-Q1e	24%	12%
4 of questions Q1b-Q1e	14%	0%
3 or 4 questions Q1b-Q1e	38%	12%
Q5 or Q6 – yes (OSA)	15%	29%
Apnea/hypopnea index ≥ 30	9%	35%

Figure. The MSQ



Email bboeve@mayo.edu if a copy of the MSQ is desired

RESULTS

- The demographic and clinical data are shown in **Table 1**.
- A “Yes” response to the core question on recurrent “acting out dream” behavior was 98% sensitive and 69% specific for PSG-confirmed RBD (**Table 2**).
- Specificity improves if one considers the responses on the RBD subquestions regarding injuries, dream content, etc. (**Table 3**).
- Specificity also improves if one considers those with historical features of OSA or PSG findings confirming moderately severe OSA (**Table 3**).

CONCLUSIONS

- These data suggest that among patients with cognitive impairment and/or parkinsonism, the MSQ has high SN and SP for the diagnosis of RBD, and is particularly specific for RBD if injuries have occurred and if features of OSA are absent.