CAN THE MALLAMPATI MODIFIED SCORE HELP SCREENING MOUTH BREATHING AND SLEEP DISORDERED BREATHING IN CHILDREN?

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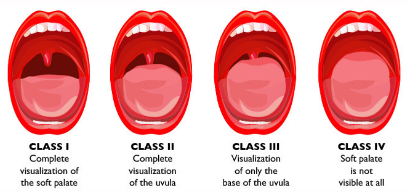
1 INTRODUCTION

The Mallampati Modified Score (MMS)



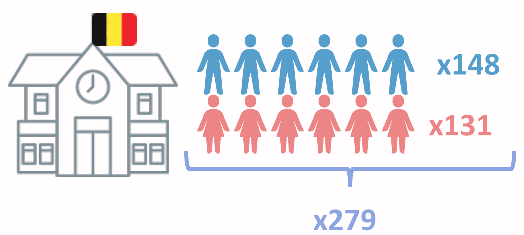
= assesses the oropharyngeal/airway space
1 = the most space & 4 = the least space
= can be part of the myofunctional assessment for breathing disorders
= used by SLTs, ENTs or dentists / orthodontists

Mouth breathing (MB) & Sleep Disordered Breathing (SDB)
= common in preschool children [1,2]
= associated with malocclusions, swallowing and chewing adaptations, attention disorders, and poorer quality of life [1,2]
• MB may also be associated with speech sound disorders [3].

Early identification is essential
→ the MMS = interesting according to some studies [2,4]

Here, we aim to investigate the utility of the MMS for the screening of MB and SDB in preschool children.

2 METHODS



→ *Exclusion*
- *craniofacial anomalies,*
- *pulmonary and/or cardiac pathologies*
- *genetic syndromes*

→ *AGE = 36 → 72 months ; μ = 52.3 (9.73)*

Measures

MB → Direct assessment
- *Awake Breathing Pattern Assessment (ABPA)*

SDB → Parent questionnaire
- *Pediatric Sleep Questionnaire (PSQ)*

Test under study
- *Modified Mallampati Score (MMS)*

Analyses

Interrater reliability on MMS
- ICC = 0.62 (moderate)

Group comparison on MMS
- Non-parametric student's t-test

Association analyses
- Fisher's Exact test + Relative risk

Discriminant accuracy analyses
- **Sensitivity + Specificity**

3 RESULTS

Group classifications

ABPA	N	Mean age (ET)
NB	168	51 (9.95)
MB	111	53.1 (9.51)

PSQ	N	Mean age (ET)
NSDB	240	52.6 (9.78)
SDB	39	50.1 (9.27)

Notes : NB = Nasal breather, NSDB = children without SDB

MMS	N	Mean age (ET)
1	28	54 (9.35)
2	118	51.5 (9.8)
3	59	52 (9.15)
4	74	48 (9.98)

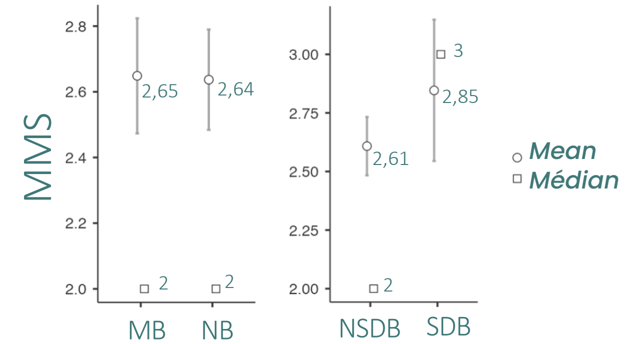
MMS - binary	N	Mean age (ET)
1-2	133	51.2 (9.69)
3-4	146	53.2 (9.69)

Group comparison on MMS

Mann-Withney U test

Dependant Variable	MMS	
Independant Variables	ABPA	PSQ
H_0	RB > RN	SDB > NSDB
Mann-Withney U	9309	4062
P	0.491	0.08

MMS descriptive statistics for MB & NB, and NSDB & SDB groups



Association analyses

Contingency tables

ABPA	MMS-binary 1-2	MMS-binary 3-4
NB	85	83
MB	61	50

PSQ	MMS-binary 1-2	MMS-binary 3-4
NSDB	129	111
SDB	17	22

Fisher's Exact test

ABPA	
N	p
279	0.8

PSQ	
N	p
279	0.3

Relative risk

ABPA		
	95% CI	
value	Lower	Upper
0.91	0.71	1.18

PSQ		
	95% CI	
value	Lower	Upper
0.82	0.6	1.12

Sensitivity & Specificity

MB:
- Sensitivity 45 %
- Specificity 50,6 %

SDB:
- Sensitivity 56,4 %
- Specificity 53,8 %

4 DISCUSSION POINTS

We have found no association between the MMS and (1) MB & (2) SDB.

❊ SDB children → higher MMS, but the difference ≠ significant
❊ The oropharyngeal space didn't change in MB or SDB
❊ Neither day MB, nor children with SDB appeared to have a significantly higher classification on the MMS.

In previous works on the MMS [2,4,5,6] :
Ø The utility of the MMS for screening for MB in preschool children has never been investigated [5]. [5].
≠ Studies have found associations between SDB, MB and a high MMS in school children [2,4,5]
= Studies question the clinical relevance of MMS for SDB screening [6,7]

Our findings echo concerns about MMS raised in previous work [7] :
- Significant variability in MMS administration and scoring
- Low reproducibility and low inter-rater reliability
- Child cooperation strongly influences MMS scoring
- → MMS administration needs to be standardized

Age effect ? *Between 3 and 6 → many anatomical changes*
- Analyses were replicated after controlling for age
  → still no association between MMS and SDB/MB

Limitations/Perspectives of our study :
- SDB was screened using a parent questionnaire rather than an objective assessment method (polysomnography)
- We screened for SDB and not for OSA >< in other studies [4]
- Our inter-rater reliability was moderate
  = consistent with MMS reviews [7]
- Our study included a small number of children with SDB
  - Perspective = pairing SDB and NSDB children and conducting a paired t-test

The MMS did not appear to be a useful tool for screening preschoolers for MB and SDB

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Footnote

Developed by S. Mallampati in 1985, it was originally a three-classes scale based on visualization of the tonsillar pillars, uvula and soft palate. It was used to predict potential intubation difficulties. Over time, certain modifications were made, notably the addition of a fourth class taking into account the hard palate. Its use, initially reserved for anesthesia, has also diversified. The MMS assesses many of the pharyngeal muscles involved in the diagnosis of SDB and possibly MB.