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Objective structured clinical examinations (OSCEs) for students' training and assessment in the French respiratory medicine departments in 2021: an overview

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ABSTRACT

Background. Medical professional performances can be assessed by objective structured clinical examinations (OSCEs) where medical trainees go through a series of simulated clinical situations. OSCEs are now the gold standard for the assessment of medical students' competence during their training. In France, the first national OSCEs will take place in May 2024 and respiratory teachers will be involved in this reform and will use OSCEs for students' training and assessment in respiratory medicine. Students training regarding this final OSCE may vary across medical faculties and may impact students' results. Therefore, we aimed to provide a national overview of OSCE's training performed by respiratory teachers and their interest in developing a common French databank of OSCEs.

Methods. We conducted a national anonymous online survey among the members of the French college of respiratory teachers (CEP), from 2021 February the 15th to 2021 June the 15th. The survey consisted of 32 questions.

Results. Among 118 French pulmonologists teachers, 52 (45%) responded to the survey. We received a response from at least one of each of the French Medical Universities. Twenty-two (42%) had received specific training on how to conduct an OSCE. Twenty-eight (54%) of respondents used OSCEs for training purposes and 24 (46%) for assessment purposes, for less than 1 year in more than half of the participants. The average satisfaction scores out of 10 about OSCEs was 7.3 ± 1.7 for training and 7.4 ± 1.5 for students' assessment. Respondents were willing (8.9 ± 1.8 out of ten) to develop a common databank to share OSCEs subjects in respiratory medicine in France.

Conclusions. This survey confirms heterogeneity in the training and the use of OSCEs among French respiratory teachers. However, a common national databank could be a useful tool to reduce these disparities.

Keywords: Objective structured clinical examinations, survey, competence, medical teaching, students' assessment

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1. Introduction

As well as theoretical skills evaluation, assessment of clinical competence is absolutely necessary during medical studies as it reflects the ability of budding physicians to take care of patients [1]. Objective structured clinical examinations (OSCEs) incorporate into this behavioral assessment, an evaluation of theoretical skills and their application in a given context. Around the world, OSCEs have become the gold standard for the assessment of medical students' competence during medical school [2,3]. OSCEs are now used in several countries worldwide [4-7], especially in the United States and Canada who pioneered its integration in medical teaching programs since the 2000s [8,9]. OSCEs allow assessing performance at the "shows how" level of Miller's pyramid [10]. OSCEs, originally described by Harden in 1975, are defined as an assessment tool based on the principles of objectivity and standardization in which the candidate moves through a series of time-limited stations in a circuit for the purposes of assessment of professional performance in a simulated environment [11,12].

In France, clinical training and the assessment of clinical skills have long been carried out at bedside, through a mentoring system, however not in a structured way [13]. Moreover, assessments are only based on written exams with multiple choice questions (MCQ) which were criticized for being too standardized, not assessing students' clinical skills and not preparing them for clinical practice [1]. To address this issue, a large-scale national reform for undergraduate medical students in years four through six has been underway since the 2021/2022 academic year [14]. OSCEs are the cornerstone of this reform and will participate in 30% of the final grade of the national qualifying examination that determines their choice of specialty. The first national OSCEs represent both a pedagogical and an organizational challenge for teachers. Unfortunately, there are great disparities in France

because some universities have already used OSCEs for the training and faculty assessment of students for a long time, while other universities have never used them [13]. Respiratory medicine has been involved in the training of French students, but disparities probably exist between the French respiratory medicine departments for the establishment of OSCEs for training and assessment in respiratory medicine. Therefore, we aimed to establish a national picture of OSCE's practice and implication of respiratory teachers. We also intended to evaluate if French pulmonologists teachers were willing to develop a common databank of OSCEs to optimize shared tools across the country.

2. Methods

2.1. Participants

Each French professor or associate professor or reader in respiratory medicine is affiliated to the French college of respiratory medicine (Collège des Enseignants de Pneumologie (CEP)) which **coordinates** teaching across the country. From February 2021, the questionnaire was distributed through Google form® platform. Participants were invited, **by** three successive reminders to participate **via** an e-mail link. We included all members of the French college of respiratory teachers who accepted to answer the questionnaire from 2021 February the 15th to 2021 June the 15th.

2.2. Questionnaire about OSCEs

The questionnaire aimed to collect data on OSCEs settings, structure, process, and content. Consensually established, the final version of the questionnaire consisted in 32 questions divided into 5 categories: 1) Participants' characteristics, 2) General organization for teaching OSCEs in the department and in the university 3) Experiences about OSCEs in

training of students in respiratory medicine 4) Experiences about OSCEs in assessment of students in respiratory medicine 5) Interest for a national OSCEs databank in the respiratory field (**Annexe 1** in the supplementary material).

Based on the answers, teachers "practicing OSCEs" were defined as respiratory teachers already making OSCEs for training or assessment or both. Teachers "not-practicing OSCEs" were teachers who do **not** make OSCEs either for training nor assessment of students. Training was defined as training students in the skills expected in respiratory medicine. Assessment was defined by the means of grading and evaluating the skills acquired by students, usually at the end of a clerkship or faculty courses.

2.3. Statistical analysis

The analyses were performed using GraphPad Prism 9 (GraphPad Software Inc., La Jolla California USA). We reported continuous variables as mean \pm SD as appropriate, and categorical variables as number and frequency (percentage of group). Comparisons between "practicing OSCEs" and "non-practicing OSCEs" teachers were performed using the Student's t-test for normally distributed quantitative variables and the Fisher's exact test for qualitative binary data. Differences were considered significant when p was less than 0.05.

3. Results

3.1. Participants' characteristics and general organization for teaching OSCEs in the respiratory department and in the university

Among 118 French respiratory medicine teachers, 52 (45%) responded to the survey, including 38 (73%) male respondents, and 35 (67%) aged 40 years or older. Most

respondents (32 (62%)) had a professor position (**Table 1**). At least one member of each medical faculty in France responded to the survey (**Annexe 2** in the supplementary material). At the time of the survey, while 36 (69%) had received general training in medical teaching, a minority of the respiratory teachers (22 (42%)) had received a specific training on OSCEs. A centralized university organization of OSCEs existed in the universities of most participants (47 (90%)) with a pooled verification of the OSCEs script in 36 (69%) of the cases. However, concerns were expressed regarding the lack of one specific and adequate place to perform OSCEs (6.3 ± 3.1) (in 0-10 scale for the presence of an adequate place for OSCEs).

3.2. Experiences about OSCEs in training of students in respiratory medicine

Among the 52 responders, 28 (54%) practiced OSCEs for students' training in respiratory medicine (**Table 1**). Among them, 14/28 (50%) practiced OSCEs for training during the students' externship in the respiratory medicine department and 13/28 (46%) used it for training at the faculty of medicine. Seventeen of them (61%) had been using OSCEs for training for less than a year and only 3/28 (11%) had been using OSCEs for training purposes for more than 3 years (**Figure 1A**). Most were satisfied with the use of OSCEs for students' training with an average satisfaction score out of 10 of 7.3 ± 1.7 (**Figure 1B**).

3.3. Experiences about OSCEs in assessment of students in respiratory medicine

The practice of OSCEs for student assessment accounted for 24 (46%) of the respondents (**Table 1**). Among them, 17/24 (71%) used OSCEs for the assessment of students during the internship in the respiratory medicine department and 17/24 (71%) used them for the assessment of students during faculty exams in respiratory medicine for the whole of a promotion. As for training, the use of OSCEs for assessment in respiratory medicine in France

was very recent and most of the teachers were satisfied with the use of OSCEs for assessment with an average satisfaction score out of 10 of 7.4 ± 1.5 (**Figure 2**).

3.4. *Teachers practicing OSCEs versus non-practicing OSCEs*

Among the 52 responders, there was a majority of teachers practicing OSCEs (34 (65%)), either for training, or assessment, or both. We did not observe any statistical differences between teachers practicing-OSCEs users and non-practicing OSCEs on demographic characteristics, on the frequency of specific training for OSCEs, and on the number of physicians involved in teaching in the medical department, or in the interest for a French databank (**Table 1**). Figure 3 shows a predominance of teachers under the age of 50 yo (70%) among those practicing OSCEs and a predominance of teachers from 40 to 60 yo (72%) among those non-practicing OSCEs yet

3.5. *Databank of OSCEs*

The interest score out of 10 for a common databank to share OSCEs subjects in France was of 8.9 ± 1.8 . The teachers thought it could improve objectivity, fairness and standardization (score of 8.6 ± 1.8). Thirty-nine (75%) would have OSCEs scenarios to share when opening such a bank (mean number of scenarios to share 3.6 ± 2.6). Teachers practicing OSCEs were more willing to share OSCEs script in a national databank than teacher non-practicing OSCEs (30 (88%) vs 9 (50%) respectively ($p = 0.003$)).

4. Discussion

At the time of the survey, less than half of the interrogated respiratory teachers had been trained in OSCEs, and one third of respondents had never used OSCEs for training or evaluation. As hypothesized, this survey confirmed a great heterogeneity in the training and practice of respiratory teachers for OSCEs, although this method of competence assessment is now considered to be the gold standard and will have to be nationally used in 2024 in France. However, current teachers practicing OSCEs had no specific characteristics as compared to non-users. The survey also revealed a strong interest from the respondents in the construction of a nationwide databank of OSCE scripts in respiratory medicine.

Firstly, our survey unveils a wide disparity in training in OSCEs, as only a minority of the responding respiratory teachers (42%) declared to be already formed. One of the explanations lies in the absence of a standardized training program of OSCEs for medical teachers nowadays in France. From our investigation we learned that some teachers have been trained by visiting medical schools or departments that have been practicing OSCEs for several years, by watching open access videos on the internet or by reading scientific literature on the topic.

Our study supports the fact that national specific training is necessary to homogenize formation and limit disparities between universities. On the other hand, COVID-19 pandemic probably delayed teacher training in OSCEs because it needs a practical part.

Secondly, one third of respondents declared, at that time, never used OSCEs for respiratory training or evaluation yet. Interestingly, we did not evidence any difference between teachers practicing OSCEs and non-practicing OSCEs; moreover, being trained for OSCEs did not increase its use. Even if younger teachers are more frequent among teachers practicing

OSCEs, there are teachers non-practicing OSCEs among each age group, underlying the need of training for OSCEs for all teachers. Moreover, a large majority of respondents were favorable to OSCEs and eager to be trained for. We can hypothesize that teachers non-practicing OSCEs probably work in medical schools where OSCEs are not used yet in faculty evaluation of students.

OSCEs are a recent tool, used for 3 years or more for only 10% of responders. Moreover, its use has been restricted to training, rather than for evaluation at the time of the survey. This recent and focused use might be explained by the recent need to prepare teachers and students to this method of evaluation [14].was

This survey highlighted the positive appreciation of OSCEs by French respiratory medicine teachers. Indeed, a high concern on the evaluation of behavior and competences in medical students has been raised by medical teachers. In the respiratory field, OSCEs seem an adapted pedagogic tool. Indeed, for respiratory diseases, interrogatory, clinical examination, and some technical procedures such as arterial blood gases sampling, bronchoscopy and respiratory lung function tests are essential for diagnosis and can be easily evaluated by OSCEs. Moreover, responders assume that clinical practice of medical students will be improved by OSCEs and that students will be more involved in bedside learning (results not shown).

Among difficulties of OSCEs, the most frequently raised is its time-consuming aspects. Not only script writing takes time, but its testing is essential in order to check whether the objectives are achievable within the chosen timeframe (which is often less than 10 min) [1].

The presence of numerous teachers available at the same time is needed to OSCEs performance, and can have an impact on clinical rounds and department planning. On the other hand, many respondents have faced a lack of specific spaces in the faculty for OSCEs handling. Indeed, in order to evaluate an entire promotion of students at the same time, several rooms should be available, these rooms being close to each other, in order to limit time lost between each OSCE station. Unfortunately, these conditions cannot be met in some medical faculties and rend OSCEs uneasy to perform.

The interest of a nationwide databank of OSCEs scripts in respiratory medicine emerged in the context of the fast-approaching reform, and the absence of standardized training or practices. Our survey also revealed a strong interest in this proposal, as most responders (75%) are ready to share OSCEs at the opening of this databank. To date, no national bank has been created by other specialties in France. However, at the national level, a guide for writing OSCEs scenarios, an online certification training platform to help set up OSCEs and a numeric tool for writing and centralizing OSCEs scenarios are being finalized and will be available in 2022.

Although being national, and promoted by the CEP, our study bears several limitations.

Firstly, only 45% of the French academic pulmonologists provided an answer even though a large majority of CEP teachers will be participating in the national OSCEs exam in 2024. One of the explanations we found was that in some cases the head of the respiratory department asked a pulmonologist teacher to answer on behalf of the team. This is unfortunate because this was an individual survey and not a team survey. This might have induced a responding bias; the more involved teachers might have been the more responding. Secondly, the small number of respondents may raise questions about the validity of our results and the comparisons

between current OSCEs users and non-users. However, at least one member of each medical faculty in France answered which reduces the selection bias and allows us to obtain a global view of practices in France. We aimed at focusing on respiratory medicine teachers, and our results might not be representative of all medical specialties. Nevertheless, interviewees told us that the use of OSCEs for faculty evaluations was centralized by medical schools. Thus, it is possible that the proportion of teachers using OSCEs for faculty evaluations in respiratory medicine to date is also representative of the proportion of teachers from other specialties using OSCEs. Finally, our aim was to focus on teachers' perspective; a specific evaluation of students' point of view on OSCEs and a teacher assessment should be performed.

The strengths of our survey lie on its nationwide design, supported by the CEP. Moreover, it is the first investigation on OSCEs practice and the implication of respiratory teachers in France. We have highlighted respiratory medicine teachers' expectations for a standardization and centralization of OSCEs practices in order they are optimally prepared for the 2024 first use of OSCEs in France for the national evaluation of medical students.

In conclusion, our study evidenced the wide disparities among French respiratory medicine teachers for the training in OSCEs and their use for training and evaluation of medical students. In order to be prepared for the national reform of the French medical studies and to allow students to have an equal training for OSCEs in respiratory medicine in France; a French databank to share OSCEs test items would be warmly welcomed by the French respiratory medicine teachers who responded to our survey

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Author contributions.

Etienne-Marie Jutant: Conceptualization; Formal analysis; Methodology; Investigation; Writing - original draft Project administration; Resources; Supervision; Validation; Writing - review & editing / Lucile Sese: Conceptualization; Formal analysis; Methodology; Investigation; Writing - original draft Project administration; Resources; Supervision; Validation; Writing - review & editing / Maxime Patout: Resources; Writing - review & editing / Jonathan Messika: Resources; Writing - review & editing / Thomas Gille: Resources; Writing - review & editing / Maéva Zysman: Conceptualization; Formal analysis; Methodology; Project administration; Resources; Supervision; Validation; Writing - review & editing

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Table 1. Main responses to the OSCEs survey and comparisons between teachers practicing OSCEs and non-practicing OSCEs for students’ training and assessment in respiratory medicine

	All (n=52)	Non-practicing OSCEs (n=18)	Practicing OSCEs(n=34)	P-value
Male	38 (73)	16 (89)	22 (65)	0.10
Age				0.11
≤ 40 years	17 (33)	3 (17)	14 (41)	
> 40 years	35 (67)	15 (83)	20 (59)	
Grade				0.13
Professor	32 (62)	14 (78)	18 (53)	
Other (associate professor...)	20 (38)	4 (22)	16 (47)	
Teaching skills training	36 (69)	12 (67)	24 (71)	0.76
Teaching skills training specific in OSCEs	22 (42)	5 (28)	17 (50)	0.15
Number of Teachers involved in teaching in the department				0.66
≤ 4	21 (40)	8 (44)	13 (38)	
> 4	31 (60)	10 (56)	21 (62)	

General organization of OSCEs in the university	47 (90)	15 (88)	32 (94)	0.12
Appropriated area to organize OSCEs in the university or hospital (/10)	6.3 ± 3.10	5.6 ± 2.7	6.5 ± 3.2	0.37
OSCEs utilization Training Assessment	28 (54) 24 (46)	0 0	28 (82) 24 (71)	<0.001
Interest for a French databank of OCSEs (/10)	8.9 ± 1.8	9.0 ± 2.5	8.9 ± 1.4	0.87
Teachers ready to share OSCEs	37 (71)	9 (50)	30 (88)	0.003
Interest for a tutorial for OSCEs (/10)	7.9 ± 2.5	7.7 ± 2.6	8.0 ± 2.5	0.71

Values are expressed as mean ± SD, or number and frequency. The P-values refer to a comparison between teachers practicing OSCEs and non-practicing OSCEs.

Figure 1. Characterization of the teachers practicing OSCEs for training purposes in France (n=28)

- A. Repartition of the duration OSCEs have been used for training purposes among teachers who were using such modality
- B. Repartition of satisfaction scores for the use OSCEs for training purposes among teachers who were using such modality

Figure 2. Characterization of the teachers practicing OSCEs for assessment purposes in France (n=28)

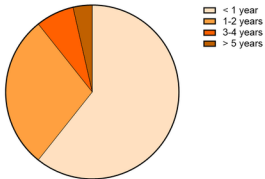
- A. Repartition of the duration OSCEs have been used for assessment purposes among teachers who were using such modality
- B. Repartition of satisfaction scores for the use OSCEs for assessment purposes among teachers who were using such modality

Figure 3. Age distribution of teachers practicing OSCEs (in green) or not practicing OSCEs (in red)

yo: years old

A

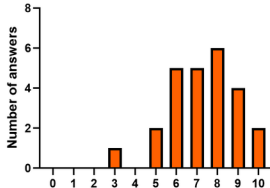
Time of OSCEs practice for students' training



Total=28

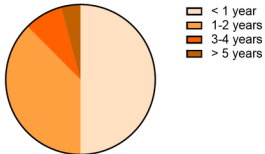
B

Satisfaction for OSCEs for students' training



A

Time of OSCEs practice for students' assessment



Total=24

B

Satisfaction for OSCEs for students' assessment

