EDUCATION

Why So Stressed? A Descriptive Thematic Analysis of Physical Therapy Students' Descriptions of Causes of Anxiety during Objective Structured Clinical Exams

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ABSTRACT

Purpose: The purpose of this study was to collect and conduct a descriptive content analysis of the primary triggers of practical exam anxiety in Master of Physical Therapy (MPT) students in a Canadian university programme. ***Method:*** First and second-year MPT students were invited to reflect upon their top 5 sources or triggers of OSCE exam anxiety, collected in written format during a low-stress, low-examination period of their programme. All participants had participated in at least 3 OSCEs before providing data. The emergent themes were member-checked with 10 of the original participants to improve trustworthiness of the results. ***Results:*** 56 of a possible 105 students provided 224 triggers of OSCE anxiety. Thematic content analysis revealed 6 emergent meta-themes that adequately captured all triggers. They were: *social performance anxiety, fear of lacking competence, overvaluing the outcome, fear of the unknown, impaired personal health/coping resources,* and *operational/procedural influences*. These meta-themes were endorsed by the participant sub-group. ***Conclusions:*** OSCEs are common forms of evaluation in MPT training programmes, but are also highly anxiogenic. The first step toward mitigating exam anxiety, thereby ensuring exam performance is less confounded by anxiety, is to identify the common triggers. Confidence in results will be strengthened by replication in other programmes.

Key Words: educational measurement; education; performance anxiety; qualitative research.

RÉSUMÉ

Objectif : la présente étude visait à connaître les déclencheurs primaires de l'anxiété aux examens pratiques chez des étudiants à la maîtrise en physiothérapie d'une université canadienne et à en effectuer une analyse descriptive. ***Méthodologie :*** les chercheurs ont invité des étudiants de première et deuxième année à la maîtrise en physiothérapie à réfléchir à leurs cinq principales sources d'anxiété lors de l'ECOS et à les consigner par écrit pendant une période peu stressante comportant peu d'examens. Tous les participants avaient fait aux moins trois ECOS auparavant. Dix des participants ont validé les thèmes émergents pour améliorer la fiabilité des résultats. ***Résultats :*** sur 105 étudiants, 56 ont fourni 224 déclencheurs d'anxiété à l'ECOS. L'analyse du contenu thématique a fait émerger six métathèmes qui résumaient bien tous les déclencheurs, soit *l'anxiété de performance sociale, la peur d'être incompétent, la surévaluation des conséquences, la peur de l'inconnu, l'atteinte à la santé personnelle ou le manque de ressources d'adaptation* ainsi que *les influences opérationnelles et procédurales*. Le sous-groupe de participants les a sanctionnés. ***Conclusion :*** les ECOS sont des formes d'évaluation courantes, mais hautement anxiogènes pendant la maîtrise en physiothérapie. Pour réduire l'anxiété face aux examens et en limiter l'effet sur la performance, la première mesure consiste à connaître les déclencheurs courants. La fiabilité des résultats sera renforcée par leur réplication dans d'autres programmes.

Objective structured clinical examinations (OSCEs) are widely used in competency-based health professional education. The intention is to allow an observational, pseudo-quantitative assessment of an individual's clinical skills and competencies in a standardized, simulated environment, most commonly before the person proceeds to a clinical internship. The standardized nature of OSCEs, with their well-designed marking systems, is intended to give educators or trainers the ability to determine whether a trainee has reached a threshold level of competence, one that will ideally ensure safe and effective practice in a real-world environment.[1,2] OSCEs vary in design, duration, number of stations, and approaches to observation or rating, but consistent characteristics include a standardized mock patient (either a live human actor or a biofidelic dummy), a time limit within which the skill is to be demonstrated, and a marker or rater who observes the trainee's performance and provides a score on the basis of that performance.

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The degree to which performance on an OSCE predicts future clinical performance is unclear and may be a function of the quality of the OSCE. Pugh and colleagues[3] reported modest correlations between student performance in an internal medicine residency programme and on the subsequent national licensing examination for internal medicine specialists in Canada ($r = 0.32$–0.55). Conversely, McLaughlin and colleagues[4] reported only weak correlations between OSCE performance and scores obtained from expert raters during pharmacy students' clinical rotations ($r = 0.00$–0.25), and Graham and colleagues[5] reported better correlations between OSCE performance and clinical rotation scores in dental students ($r = 0.54$–0.61). The interpretation of these types of cross-sectional, correlational studies is hampered by the question of which of the two variables (OSCE or clinical performance rating) is the more valid measure. However, when it has been evaluated, most students and raters have described the OSCE as a valuable tool for formative feedback.[5,6]

Despite their potential benefits, OSCEs are a source of stress and anxiety for many students, rated as more anxiogenic and requiring more preparation than other forms of evaluation.[7] Previous research has found that although some exam-related stress likely heightens performance, too much or too little can become a detrimental confounder that affects the validity of exam findings by interfering with the demonstration of actual competence.[8–11] Insofar as adequate performance is required to continue through professional training, it seems important to ensure that exam results are as close as possible to actual clinical competence rather than an evaluation of the ability to recite a memorized script or series of behaviours in a highly stressful mock environment. In addition, examination stress has been related to a variety of negative consequences, such as low self-esteem, anxiety, reduced sleep quality, and depression.[11–13] As such, it is in educators' and students' best interests to reduce examination anxiety as much as possible so that performance is a clearer demonstration of actual competence.

Although a considerable body of evidence has accumulated about written examination anxiety, there is a striking paucity of research focusing specifically on practical (OSCE-type) exams. It stands to reason that the first step toward developing interventions for a condition, such as practical exam anxiety, is to identify its triggers. With this overarching aim in mind, this study attempts to identify key sources of exam anxiety, as identified by those who experience the condition itself—students preparing for an OSCE.

METHODS

This study consisted of a thematic analysis of written responses collected directly from first- and second-year students in the Master of Physical Therapy (MPT) programme at an Ontario university.

Data collection

Data collection for this study occurred at a period in the programme after which all respondents had experienced at least three OSCEs, required as part of the criteria to progress through the MPT programme. Students in this programme undergo 18 OSCEs over 2 years. We informed them of the purpose of the study, and a member of the research team, who had no authority over them, obtained their informed consent. Data collection occurred during a period of relatively low stress between examination periods, which for these students lasts 4 weeks at most. All participants provided basic demographic data (age, sex, ethnicity, total years of post-secondary education).

The primary source of the data for this analysis was students' written responses to the following open-ended question: ''Please list up to the top five causes of exam anxiety during OSCEs.'' No further guidance was provided to ensure that students' answers were not biased by the investigators. All data were collected in the presence of the same investigator who had recruited the students. One member of the research team is also an instructor in the MPT programme and, for this reason, was absent from the lab when the data were being collected and received only anonymous, aggregated data for analysis.

Analysis

All responses were copied verbatim into one database from the written forms. A descriptive thematic analysis was then undertaken according to the methods described by Vaismoradi and colleagues.[14] No a priori themes were described; instead, we allowed them to emerge organically during the analysis process. We approached the data from different perspectives: one of us is an educator from the MPT programme who has participated in many OSCEs over a 16-year career, both as evaluatee and evaluator; the other is a student who has experienced no OSCEs. However, we shared a critical-realist, epistemic position, with analysis guided by our individual experiences rather than a specific theoretical framework. We had conducted a structured, systematic review of exam anxiety as part of a previous project; as a result, the themes we identified may well have been influenced by our understanding of the existing literature in the field.

We began the process by grouping like items together to form sub-themes through an iterative process of first checking each complete anxiety trigger against themes that had already been created and identifying a new sub-theme only when that trigger did not fit into an existing one. In some cases, an item changed our perspective on a previous sub-theme, leading to its being split into two. This first-pass process continued, prioritizing specificity over sensitivity (preferring more sub-themes than needed at this stage). A second researcher then reviewed the sub-themes and made revisions when necessary. Both researchers then worked independently

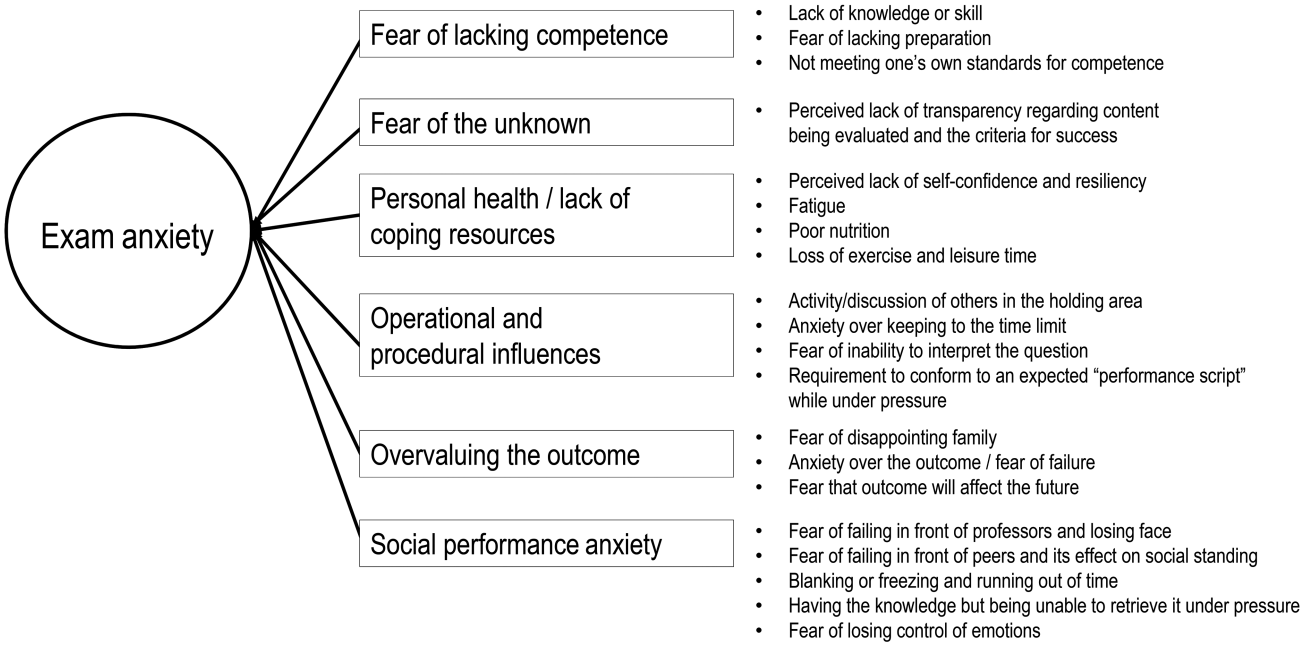

Figure 1 Conceptual map of the themes and sub-themes.

to group the sub-themes into meta-themes. The meta-themes consisted of sub-themes that tapped similar content, such as fear of failure or fear of performance. Each researcher's meta-themes were compared, and the final set of themes was agreed on through discussion and consensus. In no case was a third researcher required to settle disagreement. The final themes and sub-themes were then presented to a subgroup of the original participants to ensure that they adequately represented their intentions.

RESULTS

Of a population of 105 students, 53 (51% of the student body) participated in the study, providing 224 independent sources of exam anxiety (a mean of 4.2 sources per respondent). There were 23 first-year students and 30 second-year students. Reflecting the general composition of the MPT programme, the sample was 61% women, with a mean age of 23.4 (range 22–31) years. Following the iterative thematic analysis, six meta-themes emerged, with 19 sub-themes, and these were then endorsed by a subgroup of 10 of the original participants. Figure 1 is a conceptual map of the themes and sub-themes, depicted as outward expressions of the latent construct of anxiety. Figure 2 is a word cloud created by entering all the raw responses into the generator. Font size indicates the frequency with which these words appeared.

Following is a brief description of each trigger or source of anxiety, ordered by the frequency with which it was reported.

Theme 1: Social performance anxiety

The most consistent trigger of practical exam anxiety among our student participants related to a sense of what could best be labelled *social performance anxiety*. Sub-themes included fear of failing in front of their professors (''performing in front of the professor and worrying that I may mess up in front of them''), fear of failing in front of their peers (''I am nervous of how I present in front of peers because they know all the content as well so will know when/if I'm wrong''), blanking or freezing (''I'm scared of blanking out''), having the knowledge but being unable to retrieve it under pressure (''fear that the pressure of being on the spot will prevent me from accurately representing my true knowledge and abilities''), and fear of losing control of their emotions during the examination (''My physical symptoms of anxiety [shaky hands] increases my perception of how stressed I am, increasing my anxiety'').

As part of the member checking for this theme, we queried the participant subgroup regarding whether blanking or freezing was the same as inability to retrieve knowledge under pressure, but the participants stated that the two were distinct—the former related to a more global (cognitive and physical) inability to voluntarily move or respond, and the latter related to maintaining control of one's volitional faculties but simply being unable to retrieve the knowledge that they knew they possessed because of the anxiety arising from being watched and evaluated.

Figure 2 Word cloud depicting the most common words (unedited) used in the data collection process.

Theme 2: Fear of lacking competence

This theme was characterized by the respondents' fear that they did not possess the actual knowledge, skills, or abilities being assessed and that they would, therefore, not perform to an adequate standard to be allowed to progress through the programme. The sub-themes were lack of knowledge or skill (''I'm unsure whether I know the required information''), fear of lacking preparation (''I'm worried that I could have studied more and been more prepared''), and not meeting one's own standards (''I get worried that I will not perform up to my standards''). Of interest was *Fear of lacking preparation*, which was endorsed independently of *Lack of knowledge or skill*, using language that betrayed a sense of guilt, as though the students were unable to give themselves permission to stop studying, even when they were reasonably confident that they knew the material or possessed the competencies.

Upon member checking, our subgroup of participants unanimously agreed that the preparation sub-theme belonged here. Several recognized the difference between a legitimate fear of lacking knowledge and their own compulsive or perfectionistic tendencies that prevented them from either knowing when to stop, or allowing themselves to stop, studying even when they were confident in their grasp of the information. In this way, the compulsive studying could be seen as a coping strategy to deal with the anxiety created by the other two sub-themes, but it became a somewhat vicious cycle because not knowing when they had done enough was itself a source of anxiety.

Theme 3: Overvaluing the outcome

This theme was characterized by a fear of failure and the impact it could have on the students' self-esteem, their future, or the way they were viewed by important others (e.g., their families). Three sub-themes were identified: fear of disappointing family (''I want to make my family proud''), anxiety over the outcome/fear of failure (''If I fail, there will be bad consequences''), and fear that the outcome will affect the future (''I want to be a good physical therapist and am nervous these grades will affect my future as a physical therapist'').

Of interest is the fact that this theme was labelled *Overvaluing the outcome* because, when the students discussed it with our member group, many recognized that a single bad mark or failed exam would not actually affect their future in any substantive way (with the possible exception of those pursuing further graduate education) and that they placed too much weight on the outcome of every single exam. Some even indicated that, with the number of examinations they had to undergo, feeling ''like the world is riding on every one of these exams'' created an additional layer of fatigue and inability to manage stress. As one respondent stated, ''I feel stressed just before an exam because I make the exam worth more than it really is.''

Theme 4: Fear of the unknown

This theme was characterized by a perceived lack of transparency about what exactly the students would be asked to do, to what level, and what the criteria would be for being successful or unsuccessful. This theme had no obvious sub-themes (described in Figure 1 as a

single theme regarding transparency of expectations). The respondents indicated that the sources of anxiety were "uncertainty—not knowing exactly what the professor is looking for in terms of expectations (e.g., what their marking schemes look like)" and "I don't know what the questions will be . . . that element of uncertainty makes me nervous before going into the first station."

Theme 5: Personal health and lack of coping resources

This theme was characterized largely by a sense that the respondents did not possess adequate resources or resiliency traits to manage their anxiety and, hence, for some that made the problem worse. Two sub-themes emerged: fatigue ("I feel stressed before an exam because of the lack of sleep from studying") and lacking self-confidence ("I do not have a lot of confidence in myself"). This theme contained other one-off triggers that appeared important for some respondents; they included diet ("I eat terribly while studying and just feel cruddy by exam time") and disruption to the normal routine, including activity and exercise ("I am often tired as my normal routine has been disrupted by studying").

Theme 6: Operational or procedural influences

This theme was characterized by identifying operational and logistical aspects of practical exams that were deemed especially anxiogenic. Four sub-themes emerged here: activity in the holding area before the exam ("I feel a lot of pressure because others around me are making me feel nervous"), anxiety over keeping to the time limit ("I feel like I won't be able to read the scenario in time"), fear of an inability to interpret the question as written ("I fear that I will not understand the question"), and the requirement to conform to an expected "performance script" ("I have to 'act' and am not in a true, real-life situation, so it's hard to act normally"). Although these sub-themes were more common among the first-year students than the second-year students, presumably because the more senior students had become used to the pageantry and logistics of OSCEs, even the second-year students identified some of these, particularly the anxiogenic nature of waiting in a holding area before an exam with several other students.

DISCUSSION

By means of a descriptive thematic analysis of written reflections on the triggers or causes of practical OSCE exam anxiety, we identified six meta-themes and 18 sub-themes; these were then vetted and approved by a sub-group of the original participants. The most frequent triggers pertained not to fearing failure or lack of knowledge, as has been demonstrated in previous work on exam anxiety for written examinations,[9] but rather to performance anxiety—looking foolish or being embarrassed in front of peers and professors. Other themes related to lacking knowledge and not being adequately prepared, and another could be defined as having ruminating or catastrophic thoughts about a poor outcome. The participants admitted that when they were able to step back and consider the broader picture of their professional education, these thoughts were generally out of proportion to reality, but while they were in the heat of an examination period, they described an inability to break away from the compulsive studying and singular focus on achieving the above-average marks that had enabled them to be accepted into the programme in the first place. To illustrate this point, whereas many participants described a fear of learning that they were below average, two participants indicated a fear of learning that they were "just average."

A critical reflection on the themes identified here suggests that they are not all irrational. For some participants who aspire to graduate education (e.g., thesis-based master's or PhD studies), academic achievement, measured almost exclusively by marks, holds potentially important value for acceptance to a programme and funding decisions. Regardless of any aspiration to further education, before they can be recognized as independent practitioners, all graduates of an MPT programme are required to also successfully pass a standardized national licensing exam, which includes both a written and a practical component. The stakes for performance on the licensing exam are arguably even higher than those for individual OSCE stations.

Anxiety is a complex construct that must be viewed from multiple perspectives. We argue that a better understanding of the mechanisms and triggers of practical exam anxiety seems particularly relevant to the designers of and candidates for formative, summative, and licensing exams.

The triggers that were related to the operational or logistical machinations of a practical exam, such as being held in a room with several other equally (or more) stressed and anxious peers, were understandably endorsed by several participants. Social psychology has long since recognized phenomena such as attitude polarization[15] in group dynamics—the phenomenon whereby one's attitude toward a subject (such as feeling anxious about an impending examination) is strengthened by virtue of hearing others' arguments supporting one's own views (the echo chamber effect). This may also be an example of confirmation bias, whereby students are frequently sampling their surroundings to try and answer an internal question such as "Should I be anxious about this exam?"—and those who believe they should be will likely have that opinion strengthened by seeing others who are also expressing anxiety.

Performance anxiety is also a very reasonable source of anxiety when one considers our high-achieving academic sample of participants. They have developed effective strategies to succeed on written exams, but few

of them would have been adequately exposed to practical exams to the point that they could have developed strategies for success in that environment. An interesting finding is that this did not appear to be exclusive to the more OSCE-naïve first-year students; our senior students also identified performance anxiety as a common and strong trigger. Among both the first- and second-year students, this likely indicates a cognitive dissonance between how they believe they are expected to perform and how they believe they will actually perform in the OSCE setting. In other words, although the more senior students should be more used to the contextual (environmental) elements, they also believe that they are being held to a higher standard, and therefore the expectation of performance anxiety remains high. This contrasts with the theme related to the operational and logistical aspects and fear of the unknown that was more common among the first- than the second-year students, presumably because the latter had developed coping strategies for, and some degree of familiarity with, the context and the expectations (and vernacular) of their instructors.

There is relatively little empirical evidence against which to compare our findings regarding practical exam anxiety in the physical therapy field. In fact, we were unable to find any such work specific to physical therapy assessment. However, some studies exist in fields such as medicine, dentistry, and chiropractic training. Labaf and colleagues[16] administered a structured questionnaire to medical students, finding that although most (77%) rated the OSCE as a useful learning experience, almost all (88%) rated it as more intimidating and more stressful than other forms of examination; however, that study did not explore the reasons for the higher stress ratings. O'Carroll and Fisher[17] conducted a linear regression on questionnaire findings from 240 first-year medical students to determine the best predictors of scores on the standardized Performance Test Anxiety[18] questionnaire. Their findings revealed that worry, a sense of the uncontrollability of worry, and a heightened sense of the dangers of worry explained 45%–50% of the variance in practical exam anxiety. Worry and its perceived controllability or dangers were mirrored in the triggers of our participants as well, most notably in the themes of freezing or blanking and inability to control emotions.

Finally, Brand and Schoonheim-Klein[7] conducted a within-groups comparison of state anxiety just before students took four types of dental student examination (written, OSCE, pre-clinical crown and bridge preparation test, and a non-exam situation); they found that anxiety was highest before the OSCE than in the other settings and that OSCE anxiety was positively correlated with the degree of exam preparation (greater preparation was associated with greater anxiety). Preparation or, more accurately, a feeling of being underprepared despite having spent considerable time studying was a common trigger nominated by our participants as well.

Two limitations to this study should be observed. Most notably, the first is the qualitative, interpretive nature of the data analyses; despite two independent analysers and member checking, other investigators may have identified slightly different themes. It is also possible that the themes identified in our participants are unique to our academic setting—other programmes at other institutions very likely set practical exams that have slightly different operational and logistical characteristics and may not even use the OSCE-type exam at all (although, to our knowledge, this is a common model across physical therapy programmes in Canada). Therefore, the results of this analysis should be replicated in other programmes and contexts before we can confidently endorse them as universally applicable. However, the consistency of our findings with more quantitative findings from research groups in other health professional fields lends some confidence to the generalizability of our findings.

CONCLUSION

This study is the first to our knowledge that used a qualitative method to explore perceived anxiety triggers in a group of students who must demonstrate adequate performance across several OSCE-type evaluations. These findings complement those of other groups who have used more quantitative means to explore practical exam anxiety triggers, and they provide some opportunity for triangulation across methods and contexts. It would appear that students do find OSCEs quite anxiogenic, and the triggers range from performance anxiety through fear of the unknown and logistical and operational elements. The latter two may represent things that are relatively easy to address, but performance anxiety, the perfectionistic tendencies of MPT students, overvaluing outcomes, and fear of lacking competence (''impostor syndrome'') are triggers that demand more critical reflection and creative solutions if the goal is to conduct evaluations that are more accurate representations of actual student competencies that are not confounded by the ability to manage stress and anxiety. Perhaps this study will be a good starting point for practical exam reform for physical therapy and other health professional education evaluations.

KEY MESSAGES

What is already known on this topic

Objective structured clinical exams (OSCEs) are consistent and important formative and summative evaluations of clinical competencies in physical therapy training programmes. Students also describe OSCEs as some of the most anxiety-provoking experiences of their physical therapy training. Work in other fields that has focused on written exams has shown that exam anxiety can have a detrimental effect on performance, but very little evidence is available that describes the effects on practical

OSCE exams. The first step in this line of research is to identify the triggers of OSCE exam anxiety to work toward creating interventions to mitigate the anxiety for cleaner (less confounded) demonstrations of actual competency.

What this study adds

Through written reflections from 53 Master of Physical Therapy students at an Ontario university, we identified 6 meta-themes and 18 sub-themes describing the triggers and sources of OSCE exam anxiety. These range from performance anxiety through operational and logistic phenomena such as activity in pre-exam holding areas. Solutions to address these sources of anxiety are likely to range from relatively simple to relatively complex, and it is unlikely that all anxiety can be removed from the process. However, identifying the triggers in students and taking steps to address them should result in better student experiences and improved evaluations of actual clinical competencies.

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