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Development of online teaching expertise in fragile and conflict-affected contexts

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What we know about the development of online teaching expertise during the COVID-19 pandemic is scarce. Current research has concentrated primarily on the obstacles encountered by university teachers, leaving a significant gap in our understanding of the strategies they employ not only to survive but to flourish in online teaching. Furthermore, there is a significant bias toward Western perspectives in existing research and it remains unclear whether Western theories of expertise development are relevant in deprived, fragile, and conflict-affected contexts. The current study set out to explore how university teachers developed their online teaching expertise during the COVID-19 pandemic in the Palestinian context. Narrative episode interviews were conducted with 16 university teachers working at a Palestinian higher education institution in Gaza city. Thematic analysis revealed five themes of online teaching expertise development: domain, mechanisms, motives, consequences, and emotions. Implications for practitioners and administrators are discussed together with future research directions.

KEYWORDS

teaching expertise, higher education, professional development, online teaching, thematic analysis, COVID-19, fragile and conflict-affected contexts, Palestine

1 Introduction

The COVID-19 pandemic has impacted higher education institutions around the globe, and developing countries are no exception (Bashitialshaaer et al., 2021; Zarei and Mohammadi, 2021; Aljanazrah et al., 2022). Within developing countries, there are groups of countries or territories that are defined as fragile and conflict-affected contexts (FCACs) according to their financial and security status (World Bank, 2022). Higher education in FCACs was already dire before the pandemic, and the shift to online teaching has only exacerbated existing issues. The sudden shift to online teaching has forced instructors in FCACs—including those with minimal experience and those with no previous online teaching practice prior to COVID-19—to quickly adapt to new technologies and modes of delivery, often with limited resources and infrastructure. Understanding how instructors in FCACs can develop online teaching expertise is crucial for ensuring quality education. However, research to date has focused mainly on the challenges facing instructors (Marek et al., 2021; Zarei and Mohammadi, 2021), and little is known about their strategies to survive, and even thrive, in online teaching. For instance, recent works (Mouchantaf, 2020) have shown that limited electricity and Internet access, along with financial and technological constraints, were the main

struggles in FCACs. However, there is a lack of understanding regarding how university teachers dealt with these challenges. This paper aims to explore the elements and processes of university online teaching expertise development in FCACs. The findings of this study provide insights into how to support instructors in resource-constrained environments in developing online teaching expertise, thereby improving the quality of online instruction in FCACs.

2 Theoretical framework

2.1 Expertise development

Expertise development in general has long been a matter of great interest in a wide range of fields (Ericsson et al., 2018). The results of seminal works have indicated three main conceptualizations (Tynjälä et al., 2020): (1) expertise as deliberate practice, (2) expertise as a process of progressive problem solving, and (3) expertise as integration of the two aforementioned conceptualizations together with expert knowledge and thinking. Further research on the third approach resulted in the Integrative Pedagogy Model (IPM) (Tynjälä et al., 2016), which is detailed in Figure 1.

Many models have been suggested in the literature in attempt to explain how expertise is developed (Dreyfus and Dreyfus, 1986; Bereiter and Scardamalia, 1993; Ericsson et al., 1993; Grenier and Kehrhahn, 2008). IPM was selected to guide the current study because it was developed in the workplace learning context and there are empirical studies examined the model's relevance for supporting in-service teachers' workplace learning and development (Tynjälä et al., 2014).

The IPM proposes five core components of expertise: theoretical knowledge, practical knowledge, self-regulative knowledge, sociocultural knowledge, and emotions (Tynjälä et al., 2020). Theoretical knowledge pertains to formal and conceptual understanding, whereas practical knowledge is derived from experience and skill development. Self-regulative knowledge involves metacognitive and reflective skills, which are cultivated through reflection on both theoretical and practical knowledge. Sociocultural knowledge is embedded within social practices and the tools employed within those practices. It is acquired through active participation in a community of practice and contributes to the development of knowledge at the communal level, in contrast to the first three elements, which contribute to individual-level knowledge. More recently, emotions have been recognized as a fifth component of expertise due to their significant role in teachers' learning and development (Tynjälä et al., 2016).

According to the IPM, these elements should be integrated in a problem-solving context to trigger the process of expertise development (Tynjälä et al., 2016). In other words, expertise development does not start in a vacuum. A problem or challenge is the spark that fires the development of expertise. Theoretical knowledge develops into practical knowledge; thus, practical knowledge is an explicit image of the implicit theoretical knowledge. The transformation from theoretical to practical knowledge is not always a smooth process. The friction between what one knows and the practical implementation of that knowledge stimulates reflection. The goal of the knowledge obtained upon reflection is to bring about a kind of harmony between theoretical knowledge and practical knowledge. The boundaries and horizons of expertise development

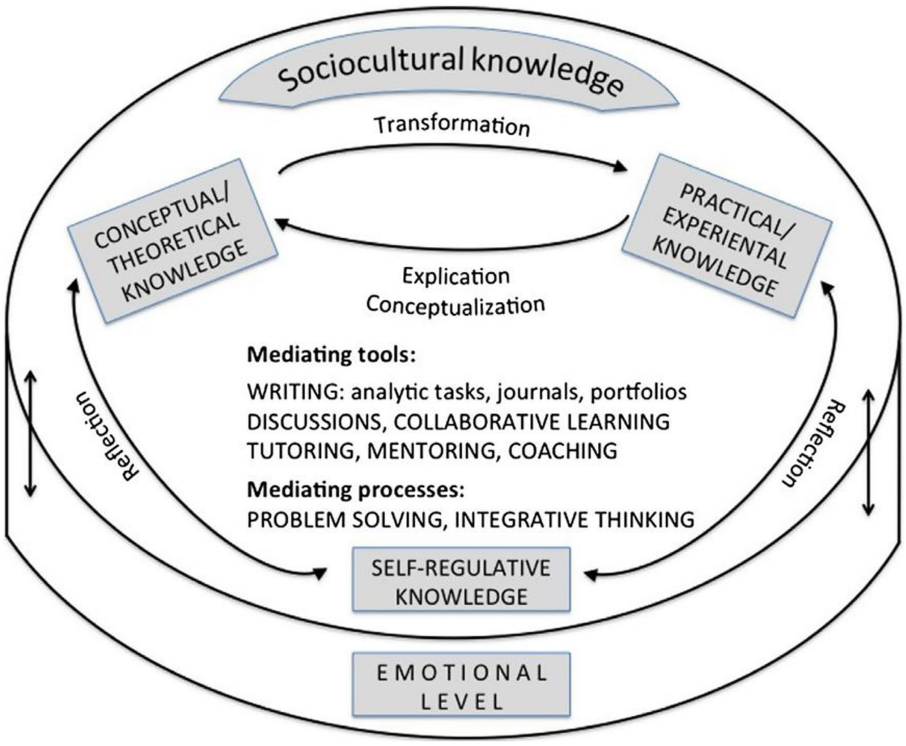

FIGURE 1
Integrative pedagogy model. Figure adopted from Tynjälä et al. (2016, p. 370).

take place within sociocultural knowledge, as one usually thinks within the framework of societal and cultural norms and the tools they provide. The interplay among theoretical, practical, reflective, and sociocultural knowledge generates teachers' emotions.

As teaching is an emotional practice, studying teachers' development would be incomplete without taking emotion into account. Research has shown that emotions affect teachers' cognitive effectiveness, including perception, attention, memory, problem solving (Golombek and Doran, 2014), teaching behaviors (Frenzel et al., 2021), motivation and well-being (Panadero et al., 2022), ability to generate innovative ideas and strategies (Chen, 2019), self-efficacy (Burić et al., 2020), identity construction, and the sustainment of professional development (Gu et al., 2022).

Developing an understanding of teachers' emotions in response to educational changes has only recently been appreciated (Saunders, 2013). For example, a study by Saunders (2013) investigated the role that emotions play when teachers transfer new instructional processes into their practice. The findings revealed that teachers experienced a range of emotions when participating in professional development, and that their emotional responses directly impacted their use of new instructional processes. More recently, the sudden shift to online teaching due to COVID-19 triggered teachers' emotions and has influenced the ways in which they cope. While most research showed that teachers reported more negative emotions, such as stress and disappointment, they also experienced positive emotions, such as the joy of success (Meishar and Ariella, 2021). These emotions were formed as the result of many overlapping personal and contextual factors. For example, Gu et al. (2022) indicated that factors which may influence the arousal of emotion among teachers in the online context range from the performance of students, to the application of technology, to the requirements prescribed by institutions.

2.2 Online teaching expertise

Online teaching expertise refers to the set of knowledge, skills, and emotional responses that distinguishes teachers who are especially proficient in carrying out their responsibilities in the online teaching domain. A systematic literature review by van Dijk et al. (2020) revealed a list of six tasks that constitute university teacher expertise: "teaching and supporting learning," "educational design," "assessment and feedback," "educational leadership and management," "educational scholarship and research," and "professional development."

Research has tended to focus predominantly on exploring how teachers develop their expertise in normal settings (see, e.g., Hughes et al., 2023). Addressing online teaching expertise development, however, is still in its infancy. Among the few studies that have examined this development, McGee et al. (2017) conducted a Delphi study with seven experts in online teaching to investigate factors that support the development of online teaching expertise. Their findings revealed three main factors: (1) formal training, (2) the provision of external support mechanisms, and (3) prolonged experience. Another study, by Ching et al. (2018), introduced an online-teaching graduate course and examined the reflections of 34 student teachers at the end of the course. The participants' reflections revealed three major patterns: (1) perceptions of online instructors' roles; (2) development of pedagogical and technological knowledge; and (3) shifting from online learners' perspectives to online instructors' perspectives.

The sudden transition sparked by COVID-19 has resulted in an unprecedented and accelerated shift to the study of expertise in online teaching. For instance, research has addressed teachers' readiness (Scherer et al., 2021), perceptions (Almahasees et al., 2021), emotions (Meishar and Ariella, 2021), expectations, experiences, and challenges (Mensa and Grow, 2020; Spoel et al., 2020; Marek et al., 2021; Riekkinen et al., 2022), and teaching practices (Wu, 2021). Other studies have identified factors that contribute to teachers' coping ability, including personal attributes such as previous experience in online teaching (Meishar and Ariella, 2021; Scherer et al., 2021), technological or digital competency (Akram et al., 2021), innovativeness (Aldahdouh et al., 2023), positive attitudes toward technology (Spoel et al., 2020), and professional identity (Bruggeman et al., 2021), as well as institutional attributes such as technological support (Scherer et al., 2021), infrastructure (Mittal et al., 2022), and training (Oliveira et al., 2021). A common view of these studies is that each addressed one specific aspect of the phenomenon of teacher expertise. A holistic understanding of how teachers have developed during the COVID-19 period is still unclear.

2.3 Online teaching in FCACs

The challenges faced by higher education institutions in FCACs during the COVID-19 pandemic were exacerbated by a range of factors, as highlighted in recent studies conducted in Palestine, Syria, and Lebanon (Mouchantaf, 2020; Bashitialshaaer et al., 2021; Zarei and Mohammadi, 2021; Aljanazrah et al., 2022). In addition to the global consensus that the pandemic has significantly increased the workload for teachers and disrupted the work-life balance (Hadar et al., 2020; Aldahdouh et al., 2023), specific challenges in FCACs included a lack of staff training, limited Internet access, inadequate resources for both students and teachers, and financial and technological constraints (Mouchantaf, 2020; Bashitialshaaer et al., 2021; Zarei and Mohammadi, 2021; Aljanazrah et al., 2022).

Palestine, which is the FCAC chosen for this study, has endured over seven decades of occupation and conflict that have negatively impacted its higher education system. Currently, Palestine is home to 51 higher education institutions in the West Bank and the Gaza Strip, consisting of 16 traditional universities, two open education universities, and several technical colleges (Burgos and Affouneh, 2022). In the 2020–2021 academic year, over 57,112 students (60% female) enrolled in these institutions, with approximately 17,048 academic and administrative staff (Burgos and Affouneh, 2022).

At the start of 2020, the Palestinian higher education system experienced significant disruptions due to the pandemic. To address these, universities swiftly adopted makeshift measures for online teaching to ensure that all Palestinian university students could continue their education during COVID-19. As the shift from on-campus teaching to remote teaching occurred mid-semester, adapting to the new situation had to be swift; but it was difficult to plan, as teachers possessed varying levels of readiness in designing and delivering course content online (Burgos and Affouneh, 2022). For example, a study by Affouneh et al. (2021) revealed that teachers were overwhelmed at the beginning of the pandemic, and that online assessment—among many technical and pedagogical challenges—was a major concern. Similar findings were reported by Bashitialshaaer et al. (2021) in Gaza. However, Bashitialshaaer et al. (2021) found

more obstacles related to infrastructure issues (i.e., frequent power cuts and unreliable Internet access), in addition to difficult living conditions and variations in access to e-learning requirements. Despite these barriers, studies (Aljanazrah et al., 2022) indicated several opportunities and positive experiences of online teaching, such as flexibility and the opportunity to develop new technical and educational skills.

3 Materials and methods

3.1 Research context

The research took place at a Palestinian university located in the Gaza Strip. Gaza is considered one of the FCACs that suffers from high institutional and social fragility (World Bank, 2022). Gaza has been exposed to several wars, the last of which was in May 2021 (Milton, 2021); long-lasting blockades; and encountered a severe electricity and fuel crisis (United Nations Office for the Coordination of Humanitarian Affairs, 2017).

The Palestinian university under investigation is a multidisciplinary university with 16,000 students studying in 11 faculties: Medicine, Engineering, Information Technology, Nursing, Science, Health Science, Education, Arts, Sharia & Law, Theology (Osoul Eddin), and Commerce. In March 2020, the Palestinian university had to adjust its teaching and learning methods to comply with the safety guidelines issued by the Ministry of Health. The university shifted to online teaching using Moodle, with various platforms such as Zoom, Google Classroom, and Microsoft Teams. The university took several measures to address the challenges. For example, Academic Affairs invited all faculty members to attend short, concentrated training sessions—on campus or online—on how to use Moodle and online teaching tools. In addition, teachers were encouraged to use different teaching and assessment methods to engage students in the learning process, such as live lectures, recorded lectures, assigned readings, assignments, quizzes, exams, online discussions, and group projects. Continuous online support and counseling services were provided to faculty members simultaneously.

3.2 Sampling and data collection

The study adopted a qualitative research method that followed the episodic narrative interview framework developed by Mueller (2019). The episodic narrative interview aims to gain deeper insight into a particular phenomenon by asking participants to share detailed accounts of their experiences within a specific situation or event. What differentiates the episodic narrative interview from other semi-structured interviews and narrative inquiries is that it provides a specific structure that guides participants to share their stories in a temporal order. This temporal structure helps to set boundaries and creates a focus on specific related events. Participants were first requested to reflect on their conceptions of online teaching and then to share their experiences with online teaching at three points in time: in the very beginning days of COVID-19, during COVID-19, after the removal of COVID-19 restrictions and upon return to normal teaching settings. Experiences of teaching during COVID-19 were set out into five episodes corresponding to the IPM's five expertise elements. Interview guide was developed and was validated by an expert in higher education pedagogy. In addition, pilot interviews with two teachers were conducted to ensure that the questions were understandable. The first author conducted the interviews in Arabic (the mother tongue) from March–April 2022. The interviews were held in a face-to-face setting and were recorded and transcribed verbatim. The length of the interviews varied between 31 and 86 min.

We followed an objective sampling method in selecting interview informants so that participants represented both genders, different faculties, and various levels of previous experience in using technology in teaching. A very short questionnaire was distributed via email for all teachers at the investigated Palestinian university. The questionnaire included background questions and questions concerning their previous technology usage in teaching, and asked whether the teacher was willing to join the interview. A total of 43 respondents answered the questionnaire, of whom 16 agreed to be interviewed.

Participation in the episodic narrative interview was voluntary. Participants were provided with a document explaining the research aims and data confidentiality. Moreover, participants signed an informed consent form before starting the interview. Interview transcriptions were pseudonymized before analysis. Table 1 presents the background information of the study participants.

3.3 Data analysis

Both inductive and deductive approaches were applied in the analysis. Thematic analysis was conducted utilizing ATLAS.ti 23 software, with the aim of providing a general description of

TABLE 1 Participants' background information.

Participant	Gender	Faculty	Previous online teaching experience
P01	Male	Arts	No
P02	Female	Commerce	Yes
P03	Female	IT	Yes
P04	Male	Engineering	No
P05	Male	Theology (Asoul Addin)	No
P06	Male	Engineering	No
P07	Female	Engineering	Yes
P08	Female	Nursing	No
P09	Male	Education	Yes
P10	Male	Education	No
P11	Female	IT	Yes
P12	Male	Science	No
P13	Male	Medicine	Yes
P14	Male	Health Sciences	No
P15	Male	Medicine	No
P16	Female	Engineering	Yes

informants' accounts of online teaching expertise rather than focusing on a detailed account of one particular aspect in the dataset. The analysis also focused on the prominence of a theme (i.e., it presented an important notion of online teaching expertise development), although we presented the prevalence of a theme in the results. We followed the six-step analysis procedure outlined by Braun and Clarke (2006, p. 87). Interview transcriptions were read twice to develop familiarity with the data at hand. Next, initial codes were opened freely and inductively, followed by a search for consistent categories (by allocating and re-allocating the similar codes). Quotes were double checked to ensure that they belonged to their categories. Finally, categories were grouped deductively into five themes (as we were guided by different theories in the literature).

4 Results

The analysis revealed five themes of online teaching expertise development: domain, mechanisms, motives, consequences, and emotions accompanying the process. Under each theme, the categories were arranged in order of frequency of occurrence, as shown in Table 2.

TABLE 2 Themes and categories that emerged from the interview data together with their frequencies.

Theme	Frequency
Domains	
Teaching	109
Management	80
Assessment	79
Technology usage	71
Theoretical conceptions	17
Supervision	1
Mechanisms	
Self-learning	185
Institutional support	79
Interpersonal relationships	62
Motives	
Social goals	47
Necessity-based goals	41
Performance goals	20
Mastery goals	15
Religious goals	11
Newness	11
Consequences	
Behavior	86
Perceptions	24
Well-being	20
Attitudes	8
Emotions	
Negative emotions	222
Positive emotions	103

4.1 Domains

The data set revealed that teachers experienced development in different areas, or domains, as a result of moving to online teaching during COVID-19. The domains are described in the following sections.

4.1.1 Teaching

Expectedly, teaching emerged as the most frequent domain, and was even coded into three categories: teaching methods, instructional design and online teaching presence.

Teachers started online teaching believing it to be just another form of face-to-face teaching. However, it did not take them long to realize that the synchronous meetings with their students presented challenges, thus inducing them to rethink their teaching approaches (e.g., "to solve the issue, I sat back a little bit from the camera and used my hands to teach the human nervous system; body language is important," P15 reported; "My previous one-slide approach did not work at all; students misunderstood the concepts. So, I searched YouTube and there I found a video where they employed zoom-in and -out techniques to closely and nicely explain the concept," P16 commented). Some teachers took their approaches one step further and implemented teaching methods that better promoted teacher-student interaction, such as the flipped classroom, brainstorming, problem-based learning, game-based learning, drama, or role playing. For instance, P09 embraced a role-playing method with his colleague: "I invited my colleague to our online session, where he and I played the roles of a psychologist and a patient. Then students were asked to reflect and discuss what they had observed."

However, synchronous teaching presented compelling issues which sometimes forced teachers to move to asynchronous teaching. In fact, all informants agreed that most of their teaching was organized in asynchronous mode because it was hard to agree on a schedule for a teaching session that suited all students, many of whom had irregular electricity at home, which reduced their available study time. At first, asynchronous teaching was based mainly on lecturing, as most of the teachers found it challenging to teach in front of a screen without students. The development started to happen when teachers rewatched their recorded videos, which triggered reflection on their own practices.

Teachers' development in *instructional design* was driven by the fact that their pre-COVID-19 learning materials were used in the classroom and complemented by pointing, commenting, and writing/drawing on the blackboard. Teachers, especially those with limited digital skills, found themselves handcuffed in the online environment. This motivated them to develop their learning materials (e.g., P06: "the solution was to let students see the slide content be built step by step; preparing one slide consumes about 2–3 h to think, split, and construct an animated figure").

Further, teachers expressed their progression in terms of how to enhance their *online presence*. For example, P03 stated, "my virtual presence has improved; I mean, how do I appear online, how do I speak, how do I introduce my presentation?" One factor that encouraged teachers to improve their online presence was that their lectures were uploaded to the institutional YouTube channel ("you have to be precise, the whole world is watching!": P11).

4.1.2 Management

The results showed that teachers developed their management of online teaching in three main aspects: classroom management, teacher-student interaction, and communication. Interestingly, in the early days of COVID-19, some teachers refrained from teaching remotely, thinking that the epidemic and thus the transition to e-learning would be temporary. Later, when it became clear that the matter would be prolonged, they found themselves forced to manage online learning. Unfortunately, they did so only superficially, even to the point of transferring the traditional mechanisms of managing the classroom to the online context (e.g., P08 called a student by phone asking her to turn off her camera). The process of learning online classroom management has gradually taken place, and the teachers have learnt mainly by *practice* how to control online sessions technically and in more efficient ways (e.g., teacher as online session admin can add, drop, group, ungroup, mute, and unmute students).

The study revealed that online teacher-student interaction has evolved since the early stages of the pandemic. Initially, teachers primarily lectured and presented slides, but this shifted to more discussion-oriented and interactive learning as the pandemic progressed. Teachers reported that keeping students engaged during online sessions was difficult, particularly when cameras were turned off. Some teachers learned this the hard way (e.g., "Students must talk. You must ask them. I once asked a student who appeared online, but he wasn't actually there listening," as reported by P02). While few teachers were able to achieve a higher level of student engagement, utilizing methods such as flipped classrooms and role-playing, they were in the minority. For instance, P09, noticed during one lecture that a student was talking to someone else while her microphone was open. P09 further clarified, "Are you talking to somebody else? The student replied, yes, I was discussing [the topic] with my husband who is also here attending the lecture. He [her husband] is working as a psychologist in the field. I [P09] then invited her husband for a short interview during the same lecture and allowed all students to discuss the connection between theory and practice together."

Apart from online classroom management and teacher-student interaction, teachers were in need of a method to communicate with their students to send learning material links, announce important news, establish the lecture's timetable, and answer student queries and questions. A bulk of the informants' feedback showed that they found managing teacher-student communication easier and faster using WhatsApp and Facebook groups as opposed to the Moodle platform. One teacher (P03), on the other hand, said that using those social media channels as a means of communication with students was a mistake, as they blurred the boundaries between teachers' personal and professional lives (e.g., "the phone was ringing day and night. There were no limits. I could not even take a break"). Managing communication in mass classes was even more challenging (e.g., "I was afraid to check my mobile, as hundreds or more notifications were in there," P11 reported). A few teachers devised ideas and tried some ways to mitigate these issues. For example, teacher P16 thought to mimic the idea of academic office hours by identifying specific hours when she would be available for students. Applying this idea, however, revealed other difficulties: "I kept waiting and waiting for students… Just one or two students came eventually, and unfortunately they did not know how to post questions there." Still, this teacher successfully mitigated the communication issues by delegating the task of filtering students' comments and questions to one of her students.

4.1.3 Assessment

Informants' accounts referred to teachers' development in assessment from two angles. For one, the informants began to question the online assessment as a process. P03, for example, wondered, "How do I assess student learning in online mass classes?" For the other, the data show that the teachers developed their skills in applying online assessments. For instance, they learnt about Moodle tools for creating online assignments, quizzes, and exams. Moreover, they exploited social media channels such as WhatsApp, which are already popular among students, as a means of following up students' questions and learning. They also explored Moodle's advanced features, such as learning analytics, to track student interaction. A few teachers invented methods to make assessments more interactive and personalized. P05, for example, provided feedback to each student as a recorded video showing annotations on the student's work.

Nevertheless, participants' statements cited the challenge of promoting academic integrity in online assessments. Most participants spoke about their trials in controlling online exams and in minimizing opportunities for cheating.

4.1.4 Technology usage

The forced transition to online teaching during COVID-19 seemed to present an opportunity for teachers to significantly develop their digital competences in all aforementioned domains. Teachers who had barely touched digital tools before shifting their teaching online moved from relying entirely on others in the early days of the pandemic to relying on themselves—a result of practice (e.g., P10: "At first, I asked my sons to prepare the online session for me. After that, the issue became easy… I started to open Google Meet myself, learnt its icons and how to share the screen, send messages, check attendees, and record the session"). More technologically adept teachers found in COVID-19 an opportunity to enhance their skills by employing simulation programs and virtual reality. Teachers also learnt through trial and correction how to use tools that mimicked the blackboard. They began with Paint, Word, and Zoom Whiteboard, and moved to more advanced plugin apps that involved a pen connected to a tablet. Comparing software capabilities developed teachers' judgment skills and gave them a better understanding as to when and how to use technology in teaching.

Working in an environment with limited resources, teachers showed creativity in finding alternative ways of doing their tasks. For example, facing the challenge of a noise on her recorded videos, P11 moved from using different video editing software, to using voice filters, to buying another microphone, and finally to using her mobile recorder app to merge voice in video.

4.1.5 Theoretical conceptions

Development in theoretical conceptions was a less cited category. The sudden shift stimulated teachers to question the concept of online teaching (e.g., P01 stated, "Honestly, I did not understand online teaching in this way. It is not just to communicate through the Internet. There is also online learning, distance learning, and blended learning"). P03 put it differently: "online teaching was understood previously as material delivery. During COVID-19, no… it is not like that. It is more about creating an engaging learning environment by utilizing forums, Wikis…" Conceptional development often manifested in a form of comparison between face-to-face and online

learning, including the pros and cons of each side and the terms of implementation, learning outcomes, student characteristics, and infrastructure. P12 advocated the advantages of the online infrastructure: "In classroom settings, I may not have a computer and Internet connection available for me to show students how the transistor works [in an electronics course], but in online settings I can easily search, play, or share videos with students."

4.1.6 Supervision

Although supervision is considered one of the main tasks of HEI academics according to van Dijk et al. (2020), only one participant (P01) shed light on his development of supervision skills during COVID-19. P01 reported, "I have adopted online supervision since COVID-19 in terms of sending/receiving and commenting on master's students' work. No more paper!"

4.2 Mechanisms

The mechanisms category refers to the ways in which the development of teachers' expertise took place. Those means and processes are discussed below.

4.2.1 Self-learning

In most cases, teachers relied on themselves to cope with the abrupt challenges of online teaching. In this study we spotted four variants of self-learning.

For those teachers who had some sort of *previous experience* in blended learning prior to COVID-19, this experience was a lifebuoy or bedrock on which they later developed. They were using Moodle and, before that, WebCT. In the years before COVID-19, some had participated in recording teaching sessions in the studios of the institutional eLearning center. Teachers also indicated that their previous digital skills and familiarization with basic computer software helped them to later navigate different options when facing obstacles.

All participants agreed that *practicing* online teaching played a significant role in their development. Practice refers to the ongoing process of learning and improvement through repeated action. For example, P15 recalled developing an online exam: "at first we had to get assistance from IT persons; then, as we practiced several times, we started to do it ourselves." Another teacher (P07) reported the issue of writing using a mouse compared to writing using a pen. However, practicing it more and more made writing easy.

Trial and correction highlight the process of experimenting and trying out different approaches in response to failure or challenges. P03 clarified, "My problem concerned how to assess students in mass classes. Online exams have their deficiencies. I thought to make use of oral exams instead: I ask a question, you [student] record your answer in a one-minute video and send it to me. I ended up with 300 video recordings! The oral exam is a huge effort…. The quizzes, despite their drawbacks, are perhaps the fastest and most time-saving solution." For P02, the issue was how to manage the online session: "I searched the Internet, watched videos on YouTube, and kept discovering and trying features by myself."

Teachers' narratives pointed to *reflection* as a way to develop their expertise. The key for reflection was confusion. P02 stated, "It took long and deep thinking after I knew we would teach online: How to solve technical challenges? Who to ask? With whom to exchange knowledge?" However, the most cited means for reflection were the recorded lectures themselves. In P03's words, "Looking at your recorded video is much like looking at yourself in the mirror; you judge and see your mistakes, the places that can be improved."

4.2.2 Institutional support

In all cases, the informants reported that institutional support was essential in learning and overcoming the technical challenges presented by online teaching during COVID-19. Institutional support came in various forms, including the provision of 24-h helpdesk support, learning tutorial links, and official trainings. For example, P13 elaborated: "The university has an e-learning center which provided us with training. In addition, each faculty has its own helpdesk support available around the clock."

4.2.3 Interpersonal relationships

A common view amongst teachers was that interpersonal relationships with colleagues, the international community, relatives, and students reinforced their learning and development.

Learning from *colleagues*, for example, took place in both formal and informal settings. Formal cooperation was endorsed by the institutional administration, usually through formal online meetings or by creating WhatsApp groups. Those groups acted as a hub for teachers to ask questions, share their experiences, and suggest solutions and best practices. Informal cooperation, however, seems to have more frequently promoted learning. Informal cooperation took the form of personal visits (P4 stated, "we were trying to emulate the Zoom session and see through students' eyes. He [his colleague] is using his laptop and I [P04] am using mine sitting in different places in the same room; I teach, and he provides comments") or observation (P07: "It grabbed my attention when I came across the Moodle page of my colleague; it had a different layout! So, I asked him: how did you do it? He guided me to the settings where I learnt new layout designs").

One valuable avenue for teacher development was interaction with the *international community.* This usually happened by participating in online courses designed by international universities (P8 pointed out, "I was a student in that course. There was collaborative activity with colleagues in Moodle and this experience made me change my mind about Moodle—in a positive way, I mean") or by joining or being a member of international organizations. For instance, having received an invitation to attend a course about teaching AI to undergraduate students, P16 was not curious about the subject matter alone, but also about learning how other teachers around the world teach online. P16 noticed that "they [teachers of non-FCACs countries] also have similar difficulties in teaching online. For example, most teachers noticed that the instructor was using the pen smoothly on PowerPoint slides. When asked, the instructor indicated that he was employing a free plugin app. After the training, I searched for that app and learnt how to use it."

A few teachers referred to *relatives* as a source of learning. Teachers asked their sons for help (P05 said, "My son has experience in technology, so he guided me on how to run online sessions via Zoom"), as well as their spouses (P11 added, "I got inspiration for that idea while talking with my husband"). Besides relatives, two teachers indicated that they learnt from their *students*. For instance, P08 noted

that "I did not know what Google Classroom was for. A student of mine suggested I use it instead of other, complicated platforms."

4.3 Motives

Teachers differed considerably in terms of the motives behind their development. *Social goals* refer to the teacher's motivation to improve their skills, knowledge, and practices in order to better serve the needs of their students and to contribute to the betterment of society as a whole. Teachers varied in how they were working toward this aim; while some teachers expressed their willingness to scaffold students' learning and promote their understanding (e.g., P12 stated, "I was using a role-playing teaching method followed by a discussion to help students understand the concept"), others aimed to regulate and control students' learning (e.g., P04 said, "It is hard to control students in face-to-face settings, but how about online settings? I need to know how to follow up and monitor them"). On the other hand, P09 found a motive for further development in challenging the besieged society: "In a closed and besieged region such as Gaza, where we suffer to travel abroad, it is useful to open for online international experiences." *Necessity-based goals* refers to the motivation that arises from external factors that leave teachers with no other option but to adapt or change their behavior. P2, for example, stated, "Without the pandemic, it was possible to learn at your own pace. However, COVID-19 imposed itself and made development in teaching inevitable." For a few participants, concerns about job security served as a motivator to ensure that they remained competitive in the job market. P08 added: "If you want to stay as a teacher at the university and receive a salary, you must follow the instructions and work as requested." The reason behind the development of other teachers was to demonstrate and prove competency or to avoid appearing incompetent in front of others (*performance goals*). Their intention was to conduct themselves professionally for their students (P08 said, "I want to appear competent in front of my students"), colleagues (P02 said, "Why are my colleagues giving 50 lectures, and I am not? I want to give lectures like them"), the administration (P06 stated, "One reason that made us work was institutional surveillance, as the deans were asked to follow up teachers' work and write reports about the quality of their Moodle pages for the course"), and the international community (P13 said, "When recording lectures for YouTube, I do my best to produce content that is scientifically abundant, robust, and revised"). Others sought to avoid looking less competent than their students (P01 said, "It is not logical that you be less than your students; you have to be one step ahead of them so that they do not overtake you"), their colleagues (P02 said, "I want to learn and develop so that my colleagues do not do better than me"), and the administration (P13 said, "One does not like to be criticized, or to be negligent in his work"). Yet, several informants adopted *mastery goals*, where the reason to develop is to master the subject matter itself (P11 said, "I seek to master the subject at hand") or to prepare oneself for future opportunities (P10 stated, "I try to continuously develop my teaching so that I am ready in case of future crises"). *Religious goals* were also one of teachers' development reasons, taking the form of feeling responsible for student learning and being entrusted with teaching tasks. Other teachers were driven by trends, *newness*, and modern knowledge and skills (P02 stated, "We are now living in the AI era, and we have to keep pace with continuous changes").

4.4 Consequences

Going through the online teaching experience amidst COVID-19 led to changes in teachers' behaviors, perceptions, and attitudes, followed by effects on their wellbeing.

Development in teachers' *behaviors* was manifested in their pedagogical practices and collaborative skills. Most teachers mentioned that they adopted blended learning as a teaching method after returning to face-to-face teaching. Teachers mastered the skills needed to carry out online teaching tasks, which were manifested in the time and effort required to complete the tasks (P06: "In the beginning, I used to record my teaching session two or three times, then the process became quick and easy"). Moreover, teachers started to assist each other and to establish more international connections. This cooperation took multiple forms, including joint projects and inviting or being guest speakers in online seminars.

In addition, teachers' *perceptions* about online teaching were significantly affected. This change included their perceptions about online teaching readiness, quality, and outcome. P02 stated, "We can carry out online courses without anxiety; we have enough experience now," while P01 added, "blended learning combines the advantages of two teaching modes [online and face-to-face teaching] and prepares us for uncertain times." Interestingly, the COVID-19 experience increased teachers' self-efficacy (P08 reported, "Assuming I had the opportunity to teach remotely at any other university, why not? This experience has opened up job opportunities for many people").

Teachers developed positive *attitudes* toward online teaching after touching on some of the advantages of teaching online during COVID-19:

> I thought negatively about online teaching when I first heard about it. Now I see some merits of online teaching that I have never thought about. Students, for instance, can play and replay the recorded lectures as they wish. They can choose to learn from their teachers, or from any resource on the Internet… Those merits are obviously not possible in face-to-face settings. (P04 elaborated)

There appeared to be both positive and negative consequences for *well-being*. Some teachers noted that they appreciated the flexibility of online teaching during COVID-19 (e.g., P04 stated, "It is no longer mandatory to attend the campus at specific times and in specific places; I arranged online sessions at convenient times while drinking coffee at home"). P14 added, "I recorded lectures at times that suited me and saved the daylight hours to hike on the beach and enjoy the weather." However, most teachers commented on the negative consequences on their well-being (P15: "It is a really boring experience, you talk to a tiny hole in front of the computer screen [referring to the laptop camera]. I have become visually impaired!"). A heavy workload and blurred boundaries between work and personal life were factors in teachers' distress, as P07 reported: "No limitations to communication. We sometimes continue our discussions with colleagues on WhatsApp until midnight!".

4.5 Emotions

A broad spectrum of negative and positive emotions was aroused by online teaching during COVID-19. The first conclusion reached

from Table 2 is that negative emotions occurred twice as often as positive emotions. Feelings of stress, exhaustion, and confusion—in that order—were the emotions experienced most by participants. *Stress* was felt in the early days of COVID-19 due to unpreparedness and the sudden transition to online settings. Triggers of stress varied between a lack of electricity, a suitable Internet connection, and a proper space to work. Moreover, we found that noise emanating from the participants' surroundings was a stress trigger (P09: "Every time I start the [lecture] recording, the hawkers come near the windows and start shouting! This is not right at all!"). Teachers felt *exhausted* as a result of contextual factors, since sudden cuts in electricity or low Internet bandwidth forced teachers to repeat and edit their recordings multiple times. Another source of exhaustion was large class sizes and the absence of teacher assistants. Teachers also experienced *confusion* due to a lack of guidance or knowledge on how to solve online teaching challenges (P03: "How can one assess students in online settings? How to ensure academic integrity? Mass classes were another challenge. That was confusing").

Although not on the list of the most negative emotions, participants in FCACs felt *negative empathy*. Negative empathy is experienced when one commiserates with others in negative situations and so works to assist them in avoiding negative outcomes and further suffering. Triggers of such an emotion were students' financial issues (P05: "I felt sorry for some students who could not afford to pay for the eLearning requirements") or the loss of a family member due to COVID-19.

Online teaching during the pandemic was not a purely negative experience, as teachers reported situations where they felt positive. Among these positive emotions were contentment, joy, and relief. For example, teachers felt *contentment* when they successfully accomplished their tasks and fulfilled needs (e.g., P10 reported, "despite all difficulties, I felt satisfied with the learning outcomes of the last semester"). Teachers also felt *joy* when mastering new skills ("There was a point at which I felt the enjoyment of learning; it was when I started working independently of my sons," said P10), or when seeing the positive effect of their teaching on student engagement. This last factor was a source of teachers' *pride* (e.g., "I felt happy when others [e.g., students, local and international colleagues] saw my work as valuable and beneficial. This also increased my self-confidence," said P06). Interestingly, some teachers reported feeling the positive emotion of relief as they overcame the difficulties of teaching online during COVID-19. In the words of P01, "Thank God, we made it with minimal collateral damage!"

5 Discussion

This study set out to shed some light on online teaching expertise development in higher education in FCACs. It is argued that COVID-19 was the starting pistol for forced educational reform. The results show that the participants initially approached online teaching while retaining their existing theories and beliefs about face-to-face teaching (Alenius et al., 2019). However, their initial assumptions did not translate well to the online environment, resulting in changes to their theories and behaviors. Thus, the results of the current study concur with the IPM model in that the process of developing teaching expertise involves a continuous loop of interaction between teaching theory and practice. This loop led to consequences in teachers' behavior, perceptions, attitudes, and well-being. However, not all collisions between theory and practice lead to development. Our data refer to some cases where teachers missed the opportunity to develop due to contextual and personal factors (to be reported in a future study). The study further identified that teacher expertise development spans six areas: teaching, management, assessment, technology usage, theoretical conceptions, and supervision. The mechanism of development involves engaging in self-learning, seeking support from the institution, learning from colleagues, and tapping into the international academic community. However, the current study identified three elements that IPM does not take into account. First, the present results highlight that teachers' motivations matter in their development. Second, teachers' emotions are complexly related to the development process—far more than their current representation in IPM. Last but not least, consideration of the function of core beliefs about learning processes, stakeholders, and settings is currently lacking in IPM.

Consistent with the literature, this research found that practicing online teaching had positive effects on teachers' behaviors, perceptions, attitudes, and well-being. For instance, Saha et al. (2022) reported that most teachers embraced mixed teaching in the post-pandemic era. In a similar vein, Spoel et al. (2020) collected teachers' expectations and experiences during the early days of COVID-19 and again two months later. Compared to the early days, the results of the later measurement showed that educators were more aware of the technology affordances in education, and that they began to realize that technology usage improved their teaching and learning efficiency. Increasingly positive attitudes toward online teaching have also been documented by previous studies (Aljanazrah et al., 2022). Moreover, our findings that online teaching during COVID-19 had positive and negative effects on teachers' well-being match those observed in earlier studies, in which teachers appreciated flexibility in their work but also experienced a considerably higher workload and a lack of work-life balance (Mensa and Grow, 2020; Marek et al., 2021).

Areas of teaching expertise highlighted by the study data partially match those reported by van Dijk et al. (2020): (1) teaching, (2) instructional design, (3) assessment, (4) educational leadership, (5) research, and (6) professional development. The first four tasks stand out clearly in the study data, while the last two were absent. One explanation for this finding is that the policy of the investigated institution seems to place less emphasis on research as a core task of its teachers. In addition, teachers who had not previously practiced online teaching were overwhelmed and had no time left to engage in professional development activities. In regard to the first four tasks: while the teaching domain emerged in our data, we found that teachers first opted to teach in a way that mimicked their methods for teaching in face-to-face settings. This finding is in accord with Abid et al. (2021), who reported that teachers focused on "immediate online instructional matters in the wake of the pandemic with a lack of emphasis on global practices for online learning" (p. 367). Although all teachers in the study realized that their initial teaching methods fell short in engaging their students, only a few teachers pondered alternative methods (e.g., brainstorming, discussion). An important note here is that no teacher tried to explore the digital tools' potentialities to boost student interaction. Moreover, teachers' statements focused on teacher-student interaction, with no attention paid to student–student interaction, which is deemed important for meaningful learning. As for the assessment domain, the current

findings are in agreement with those obtained by Bashitialshaaer et al. (2021), in that assessment is a major challenge in online settings because students tend to cheat more often in online than in on-site exams (Daumiller et al., 2021). The data show that while teachers tried to improve academic integrity, their focus was on the technical rather than the pedagogical aspects of online assessment.

On the question of expertise development mechanisms, the findings support the notion that teachers most likely rely on themselves to learn, practice, and reflect. Building on previous experience is in accord with the findings of Marek et al. (2021), who showed that past online teaching experience predicted teachers' ease and comfort in teaching during COVID-19. Moreover, practice makes perfect is obviously illustrated in teachers' accounts. Besides practice, and in accordance with IPM, this study acknowledges the importance of reflection in teacher development. The weight given to reflection as an essential element of expertise development provides further support for a previous study (Bruggeman et al., 2021), which concluded that while reflection is an indispensable attribute for every teacher, it becomes critical when engaging in innovative settings. Besides, teachers sought out interpersonal connections to learn and develop. Learning from local or international colleagues is a well-established factor in promoting teacher development (McCune, 2018; Aldahdouh et al., 2022). For instance, Bruggeman et al. (2022) found that connecting with colleagues and students was one of the elements that influenced university teachers' experiences with online education during COVID-19. Surprisingly, the teachers in our study also asked their relatives for help and guidance. This result reflects the importance of family in Eastern cultures, even in one's career. It might also reflect the feasibility and ease of obtaining support from close persons during COVID-19. The results also add to a growing body of research stating that institutional support is essential for teachers' growth and professional development (Aldahdouh et al., 2017). The investigated institution did not hesitate to provide training and helpdesk support to answer teachers' queries and to make sure that they were onboard. However, the results indicate that the training was mainly technically oriented, which created some confusion concerning teachers' understanding of the integration of the three pillars of successful online teaching: technology, pedagogy, and content knowledge (Mishra, 2019).

Although IPM acknowledges the importance of emotions, it does not show how emotions fit within the model and how they interact with its other elements. The findings of the current study show that negative emotions dominated the learning and development process of online teaching during COVID-19. Those negative emotions were triggered as a result of unpreparedness, lack of digital pedagogical competences, lack of infrastructure, inadequate work environment, and the pandemic itself, which was a major source of anxiety. Interestingly, negative empathy occurred in our data, mirroring findings by González et al. (2023), which showed that teachers "developed an empathic disposition to understand students' situations" (p. 70). However, we did observe that teachers' positive emotions emerged when the ambiguity began to dissipate and when teachers began to gain the minimum skills required to administer online teaching. The co-occurrence table in ATLAS.ti gives us more insights regarding the relationship between emotions and other expertise elements. For example, the intersection between emotions and development mechanisms shows that negative emotions occurred more often with self-learning, while positive emotions occurred more frequently with interpersonal relationships. In addition, the data show positive emotions associated with the positive consequences of development. For example, a change in teachers' perceptions (e.g., online teaching readiness) was associated with feeling proud. A possible explanation for this observation is what Lasky (2005) found: that as teachers gained self-efficacy during the implementation, they valued the reform and experienced more positive emotions.

Another expertise element that occurred in our data and departed from the IPM model is teachers' motivations to develop their expertise. We argue that teachers' motivations played a role in their development because the data show that those teachers adopting necessity-based goals most likely developed themselves while experiencing negative emotions. Moreover, teachers driven by social goals are more likely to develop their expertise through self-learning mechanisms. Necessity-based goals were extensively featured in research conducted during the pandemic. Regardless of the pandemic, necessity and the feeling of a problem in their own teaching practices motivates teachers to take action and develop. For example, Westbroek et al. (2019) reported that "what ultimately motivated teachers to re-design their context was not a new scientific insight on how to do things, but a deeply felt and experienced problem in their teaching practice" (p. 43). Further, the results are consistent with teachers' achievement goal orientation theory, as the study showed that teachers hold various goals for their teaching development: mastery, performance approach, and performance avoidance goal orientations. Achievement goal orientations have found support in other studies conducted in a similar COVID-19 context (Daumiller et al., 2021).

It is worth noting that one of the elements missing in the IPM—yet one that the current results make clear—is the core beliefs of teachers. Core beliefs refers to teachers' deeply ingrained personal convictions about the learning process, stakeholders, and learning settings. Teachers' beliefs concerning the learning process define how they see learning taking place and how teaching should be organized in support of learning. Beliefs about stakeholders refers to teachers' assumptions about themselves, students, the institution, parents, and society. This includes their convictions about the roles and influences of each entity in the learning process. Beliefs about learning settings refers to teachers' perceptions as to what constitutes an appropriate learning environment, ranging from their views on the ideal classroom or online session to their perceptions about societal circumstances (e.g., living in a besieged city). We argue that these three belief components exert influence on teachers' willingness to develop, their motivations, and the mechanisms of development. For example, one of the participants (P14) firmly believed that the online environment was not the right option for teaching his course. Moving to online teaching during COVID-19, he made no effort to change or develop his convictions or the tools that could have improved learning outcomes; rather, he began to present evidence of the failure and futility of online teaching and learning. In his words, "I figured out after the end of COVID-19 that students misunderstood the course concepts; I re-taught parts of the course when we returned back face-to-face". Another participant (P05) stated clearly his beliefs about online teaching: "We accept online teaching under a general rule: necessities overrule prohibitions." Previous research has also pointed out that teachers perceive online teaching as less effective than face-to-face teaching (Almahasees et al., 2021). We still need to know whether or not these perceptions hinder teachers in developing their online teaching.

6 Conclusion and implications

The current study was undertaken to understand how university teachers in FCACs develop their online teaching expertise. The findings show that even teachers in difficult and unstable contexts develop and seek to broaden their horizons as much as they can. For example, a work environment with limited resources seems to reinvigorate teachers' self-regulation skills, as the teachers in this study resorted to planning and implementing online teaching in an asynchronous format while using live sessions for discussion and following up students' learning. The process of recording and editing lecture videos in a context in which one expects the electricity and Internet to be cut at any moment was itself a lesson where teachers learned through practice and reflection. Although stress and exhaustion accompanied this process, it taught the teachers resilience and rewarded them with positive feelings when they began to experience the positive outcomes of the development process.

Taken together, and adding our voice to previous studies, the current findings suggest investing extensively in designing and implementing a thoughtful theory-based training for university teachers. It is not enough to equip teachers with technical skills detached from pedagogical understanding. Training should promote instructional practices shaped by content-driven, pedagogically sound, and technologically enlightened knowledge. Even the currently provided technical side seems to be limited to a few already known tools. Diversifying perspectives based on empirical research would open teachers' eyes to technology affordances that reinforce students' learning experiences (e.g., student engagement in online settings). In addition, training should foster teachers' reflection and a "life-long" mindset that help them to confidently adapt their expertise to varied settings. In other words, the training should not be designed and implemented as a response to emergencies. Rather, continuous learning and reflection is necessary for better teacher readiness. The present study also suggests lending an ear to teachers' feedback and complaints. Teachers need to share their success and failure stories, the pains and gains in their everyday practices, and to learn from each other. They also need to know that their voices are heard. HEI could consider building an informal hub where teachers and administrators regularly meet, share ideas, and collaborate on everyday practices.

The present study has been one of the first attempts to thoroughly examine the elements and processes of university online teaching expertise development in FCACs according to the integrative pedagogy model established in Western contexts. While the results indicate that the model explains to a large extent expertise development in FCACs, it does not however consider the influence of motivations and core beliefs. Future quantitative studies should be carried out to test our hypotheses. Moreover, since only one participant highlighted the development of supervision in online setting, more studies are still needed to cover this area more profoundly.

This study is limited by the notion that the development of expertise was explored retrospectively, while development as a construct would be best investigated *in situ*. Thus, teachers' experiences and emotions might not accurately reflect their reality as they lived it during COVID-19. Future studies should embrace longitudinal studies that capture individual experiences in context as the situation unfolds. Another limitation is that, while the study incorporated teachers' emotions while teaching online in conflict-based contexts, and found that teachers managed to cope, how they regulated their emotions while experiencing such hardships remains unclear. A future study could investigate teachers' emotion regulation in FCACs.

Data availability statement

The datasets presented in this article are not readily available because the ethics committee stated that raw data cannot be disclosed to any third party. Only the authors can see and access the raw data. Requests to access the datasets should be directed to tahani.aldahdouh@tuni.fi.

Ethics statement

The studies involving humans were approved by the Islamic University of Gaza – Palestine. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

TA: conceptualization, study design, data collection and analysis, writing the original draft, and reviewing and editing. NA-M: conceptualization. SA-D: methodology. AA: conceptualization, providing consultation on data analysis, and Review and editing the manuscript. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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