Classroom-Based Learning in an Academic Obstetrics and Gynecology Residency Training Program

Journal of Medical Education and Curricular Development
Volume 10: 1–7
© The Author(s) 2023
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/23821205231208790

Riki Dayan[1], Tien T. T. Quach[2], Sheila With[1], Jagdeep Ubhi[1], Hanna Ezzat[1] and Luke Y. C. Chen[2,3]

[1]Department of Obstetrics and Gynecology, University of British Columbia, Vancouver, British Columbia, Canada. [2]Centre for Health Education Scholarship, University of British Columbia, Vancouver, British Columbia, Canada. [3]Division of Hematology, University of British Columbia, Vancouver, British Columbia, Canada.

ABSTRACT

OBJECTIVES: Classroom-based learning such as academic half days (AHDs) are complementary to workplace learning in postgraduate medical education. This study examined three research questions: the purpose of AHDs, elements of an effective AHD, and factors that make AHD sustainable.

METHODS: We conducted a case study of the AHD in a large Obstetrics and Gynecology residency program at the University of British Columbia. Residents were interviewed in 2013 ($n=11$) and 2018 ($n=7$) and the program administrator was interviewed in 2018. The themes in each research question were identified by modified inductive analysis.

RESULTS: Residents expressed that the purposes of AHD included: providing organization and an overview for their knowledge acquisition; preparation for their Royal College specialty exam; and to provide a venue for peer support and mentorship. Elements of an effective AHD include the repetition of key concepts; formative assessments such as quizzes, a suitable balance of faculty input and resident active participation, and protection from clinical duty during AHD. Regarding the sustainability of AHD, themes included: addressing barriers to faculty participation, providing administrative support for logistical needs, and providing feedback to faculty.

CONCLUSIONS: This work provides important insights into the purpose, effectiveness, and sustainability of AHDs for those who design and implement classroom learning for residents.

KEYWORDS: academic half days, noon conference, resident education, graduate medical education, classroom-based learning

RECEIVED: April 4, 2023. **ACCEPTED:** September 29, 2023

TYPE: Original Research Article

FUNDING: The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Luke Chen's research is supported by the Hematology Research Program at the University of British Columbia.

DECLARATION OF CONFLICTING INTERESTS: The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

CORRESPONDING AUTHOR: Luke Y. C. Chen, University of British Columbia, 2775 Laurel St, 10th Floor, Vancouver, BC V5Z1M9, Canada.
Email: lchen2@bccancer.bc.ca

Introduction

Learning in postgraduate medical education (PGME) takes place primarily in the clinical environment, through authentic participation in clinical activity.[1] Learning by participating in clinical care is particularly important for procedural specialties such as Obstetrics and Gynecology (OBGYN), and indeed, some of the key studies on how residents learn were done in OBGYN residents and faculty.[2,3] While informal workplace learning is the mainstay of resident education, formal classroom-based learning is an important complementary aspect. These formal educational activities often take the form of an academic half-day (AHD).[4,5] AHD is a regularly occurring protected block of time (often a half-day or a full-day each week), in which residents are expected to attend and participate in formal classroom-based learning. The AHD was implemented over 25 years ago in family practice programs in rural United States as a replacement for daily noon conferences with the goal of improving attendance and allowing for innovative teaching opportunities.[6,7] AHDs have subsequently been implemented by many residency programs in Canada and much of the United States.

This case study follows the evolution of resident perceptions of the role and effectiveness of AHD at a large surgical residency program over the course of 5 years. In 2013, resident focus groups provided feedback on the structure, purpose, and effectiveness of AHD. Based on this feedback, changes to the structure of AHD were implemented and resident perceptions were again explored with a focus group in 2018. Additionally, the program administrator of 20 years was interviewed to explore the challenges and strategies for maintaining a sustainable AHD. Using this data, and following the evolution of the structure of AHD, we hope to answer the following questions:

1. What do OBGYN surgical residents perceive to be the purpose of AHD?
2. What do OBGYN residents view as important components of an effective AHD?
3. What are the administrative challenges and solutions to creating a sustainable AHD?

These questions were used to explore the role of classroom-based learning in PGME and to provide practical advice to programs on the implementation of these programs.

Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License (https://creativecommons.org/licenses/by-nc/4.0/) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access page (https://us.sagepub.com/en-us/nam/open-access-at-sage).

Methods

Program Description

The nature of this study is a single-case case study of resident perceptions on the purpose and effectiveness of AHD.[8] The case was the OBGYN Residency Program at the University of British Columbia (UBC) in Vancouver, BC. The UBC OBGYN program is a 5 year (PGY-1 to 5) surgical residency program with approximately 40 residents (8 residents per year).

AHDs occur once a week. At the time of the 2013 resident focus group, the AHD was structured as a resident-led 3-h didactic session with a faculty present for support. Based on the 2013 focus group feedback, the AHD then evolved to be a faculty-led didactic session with residents consolidating material at the end of the session using a review quiz or clinical case (Table 1). Of note, while the majority of AHDs are spent in this classroom format, there are also other activities throughout the year including simulations, pig lab, wellness days, objective structured clinical exams and practice board exams. The program administrator is responsible for organizing AHD and recruiting faculty to participate.

Data Collection

Inclusion criteria: Any residents in the OBGYN program at UBC during the study period were eligible to participate in the study. No residents in the OBGYN were excluded from the study. A focus group of UBC OBYN residents was conduced in 2013 and in 2018. The program administrator, who had served in this role for over 20 years, was interviewed in 2018. All residents in the program were invited to participate via e-mail and participants were offered a $20 coffee gift card as a token of appreciation. Written consent was received from all participants.

Focus groups. Focus groups were facilitated by one investigator (T.Q.) who was unknown to the residents. Another investigator (R.D., who was a PGY-2 OGYN resident at the time of the 2018 interview, and S.W., who was a PGY-2 OBGYN resident at the time of the 2013 interview), audio-recorded the interviews and served as an additional facilitator. Open-ended questions were designed to address the research questions stated earlier.[9]

Facilitators asked questions about the purpose of AHD, the role of AHD in one's residency education, and opinions on the structure and the effectiveness of AHD. Examples of questions include the following:

- How does AHD contribute to your learning?
- What is the purpose of AHD in your residency education?
- How effective do you think your learning is at AHD?

Focus groups were audio-recorded and transcribed verbatim; data were deidentified so that participants remained anonymous.

Interview with program administrator. One of us (R.D.) interviewed the program administrator in 2018 to explore the historical evolution of the UBC OBGYN AHD, the challenges of implementing AHD, and the creative solutions to creating a sustainable AHD. Examples of questions include the following:

- How has the structure of the UBC OBGYN AHD evolved over the past 20 years?
- How is the curricular outline for the AHDs developed?
- What challenges have you experienced in organizing AHD?

The interview was audio-recorded and transcribed verbatim.

Data Analysis

The 2018 focus group had seven participants (out of 32 in PGY-2 to 5) with at least one resident volunteer from each postgraduate year 2-5. (PGY1 residents did not participate in OBGYN AHDs in 2018 as they had a separate educational program). The 2013 focus group included 11 residents spanning PGY 2 to 5 (out of 31). None of the residents from 2013 participated in the 2018 focus group. The focus group and interview transcripts were analyzed using a modified

Table 1. Structure of the UBC OBGYN residency program AHD in 2013 and 2018.

Year	Protected time	Faculty role	Resident role
2013	3 h	Attendance at AHD to answer questions, clarify information	Prepare a three-hour didactic session on the assigned topic
2018	3 h	Responsible for the majority of teaching, often in the form of a two-hour didactic session**	1. Provide a review and consolidation of the material at the end of the half day (~1 h). This is done through a case presentation or Kahoot! quiz. These are created by the resident, reviewed by the staff, and worked through as a group following the staff presentation.[a] 2. Each resident submits a multiple-choice question based on the AHD material to the program director. These are compiled and distributed to residents at the start of following week's AHD as a formative review.

[a]Kahoot! quizzes are multiple choice question quizzes which are created online and can be shared with the group. Individual participants log in through their personal computers using a fictional nickname to keep scores anonymous. After each question, participants are able to see the correct answer and the distribution of answers from the group—providing real-time feedback on each individual's progress and the group's understanding of the material. Residents receive points for answering questions quickly and correctly. At the end of the quiz, the winner is announced and awarded a prize. UBC: University of British Columbia; OBGYN: Obstetrics and Gynecology; AHDs: academic half days.

analytic inductive approach,[10,11] using HyperResearch software. This approach was used to identify core themes in the data. A preliminary analysis of the transcripts was done to generate a codebook. Three of us (R.D., T.Q., and L.C.) conducted a preliminary analysis of the interview transcripts to generate a codebook. One of us (R.D.) completed an analysis of the entire dataset, assigning unique codes to each remark in light of the research questions and adding new codes as needed until no new codes emerged. As the number of codes grew, they were renamed and regrouped into themes by the three of us who had conducted the preliminary analysis. With all of the data coded, the codes were then grouped into themes. Our group then discussed and agreed on the emergent themes and their relevance to our research question.

Ethics Approval

This study (H17-02198 ObGyn AHD research) was reviewed by the University of British Columbia Behavioural Research Ethics Board and was exempt from ethical approval because it was considered a quality improvement. Written consent was received from all participants.

Results

Resident Focus Groups

Ten themes emerged from the resident focus group data, which we divided into the three study questions addressed (Box 1).

Box 1. Summary of themes related to the three research questions

Question 1: Purpose of AHDs	Provide knowledge overview and organization (junior residents)
	Provide evidence to facilitate clinical reasoning (junior residents)
	Preparation for Royal College exam (senior residents)
	Social aspects: peer support, mentorship and community of practice
Question 2: Elements of effective AHDs	Formative assessment and active participation
	Balance between resident presentations and faculty input
	Protection from clinical duties
Question 3: Sustainability of AHDs	Remove barriers to faculty participation
	Administrative support for scheduling and logistics (room bookings, speakers, information technology support, etc.)
	Importance of feedback for improvement

Note: AHDs: academic half days.

We have presented the themes below, along with illustrative quotes from the interviews.

Research question 1: Purpose of AHDs

Summary. Residents identified knowledge acquisition to be the primary purpose of AHD. Residents view AHD as an opportunity to link their clinical experiences, which are often unpredictable, with codified knowledge from the medical literatures. Further, residents identify AHD as an opportunity to prepare for their licensing exams. Social aspects of AHD were identified as a secondary goal.

Provide knowledge overview and organization. For junior residents, AHDs provided a curricular outline of the material a resident is responsible for learning in residency. Further, the structuring of AHDs into thematic blocks (eg, general OBGYN, gynecologic oncology, infectious disease, etc.) helped residents organize a large amount of information they are expected to learn into tangible and more accessible portions:

> When I first started coming they were doing the General OBGYN topics so then they broke things down like antepartum hemorrhage, postpartum hemorrhage, normal labor, obstructed labor, etc so I thought 'oh, that's exactly what I need to learn'. (2018)

The organization of AHD topics also assists residents in establishing resources for future reference during their clinical work:

> For each AHD one of our colleagues prepares and sends out relevant guidelines in addition to the chapters in the textbook so I am able to create a repository of all the important information for each topic. (2018)

Provide evidence to facilitate clinical reasoning. Junior residents describe a high-volume, high-intensity clinical work environment, wherein their main objective is learning to work efficiently, and the theory behind clinical decision-making patterns is not always clear:

> In OBGYN a lot of it you learn by doing it and you may not even always know why you're doing … you spend a lot of time running around from place to place trying to just figure out how to do things efficiently … you have another eight patients who are waiting for you … What is the evidence for why you're admitting vs. delivering vs. sending people home vs. treating; you don't always know why. (2018)

In contrast to the busy clinical environment, AHD provides time to focus on evidence-based practice and learn the clinical theory behind the management:

> Postpartum haemorrhage—so first line we start oxytocin [rather than misoprostol]. The reason is because there have been clinical trials looking head-to-head between oxytocin and misoprostol. They've proven that misoprostol is inferior to oxytocin … but as

> an R2 [second year resident], I had no idea why. I just knew, okay, everyone says oxytocin. I start oxytocin. (2013)

Residents also valued AHD for providing context and a forum for discussion between residents and faculty to discuss and understand the variability in clinical practice between different faculty members:

> There is also a lot of variability between different Obstetricians that you work with. Having this kind of forum where we have someone teaching based on evidence, and also being able to ask each other 'I've seen this' and 'you've seen this differently', 'what is the evidence for why we're doing this?' allows to come up with a consensus. (2018)

Preparation for Royal College exam. The nature of clinical learning is opportunistic, residents have little control over the types of patients who will present, and may not be exposed to all the cases they are expected to be familiar with for their licensing exam. For senior residents, AHD provides a curricular outline and ensures major topics are addressed:

> The academic half days provide you with a framework of notes and background, so you're not starting at ground zero studying (for the Royal College exam). (2013)

Social aspects: Peer support, mentorship, and communities of practice. While the above themes identified the primary purpose of AHD as acquiring medical knowledge, residents identified social aspects as an important secondary purpose and recognized several benefits of this social space. Several residents describe the importance of having an opportunity to debrief difficult clinical encounters:

> It gives you time to breathe sometimes with other residents. You can talk about challenging cases … Oftentimes we don't see some of our colleagues for a little while. We're on different services, different years so sometimes it's a nice opportunity for us to see each other, on a social level. (2018)

The unique emotional challenges of obstetrics practice underscores the importance of emotional support from peers.

> OBGYN is happy until it's not happy, and then it's really not happy. And so I think sometimes we give each other emotional support that way too. (2013)

AHD brings together all the residents in one place, allowing residents to help each other navigate the residency program:

> [If you] want to talk to an upper year [resident] about something they're just there. There are not many occasions where we're all in the same place so it's an opportunity for us to ask … 'What did you do for electives in R4? How did you coordinate that?' (2018)

Research question 2: Elements of an effective AHD

Summary. Residents identify repetition, engagement, and real-time assessment as key components of an effective AHD. While clinical cases and multiple choice question quizzes both review material, residents prefer the latter as it's a more engaging and efficient transmission of material. Residents also value faculty teaching as the most effective way to gain expert clinical pearls and a mastery of the material.

Formative assessment and active participation. Repetition of material helps residents engage, consolidate, and retain the information. At the end of the classroom session, the material is reviewed as a case or a Kahoot! Quiz. Residents find the quizzes particularly engaging and a good way to review material from a lengthy lecture:

> What I like about it [the Kahoot! Quiz] isn't just that it's really fun but … it is the best way that I've found to consolidate the learning that we just had. (2018)

Many use case-based learning in the AHD curriculum with the hope that it will stimulate discussion. Interestingly, residents found that Kahoot! quizzes led to a more natural and productive discussion. One third-year resident explained:

> Especially for the R5s who are studying for the exams, they would sometimes have interpreted a question differently or maybe they had studied two different resources so then we were able to discuss as a team what exactly the question was asking and decide on an answer. Sometimes it would be something that you hadn't learned yet and I would realize, 'this is what I need to study' … now I've identified something missing in my umbrella of knowledge. (2018)

Residents also value the Kahoot! quiz as a way of receiving real-time feedback on their own and the cohort's understanding of the material. Discrepancies in the answers result in discussion and clarification of the material:

> We had a lecture on Gynecological Oncology staging [and] the pre-operative workup … then the Kahoot provides an [illustrative] case and asks 'what would your workup include before sending her to a Gyne-Oncology specialist?' Then there's four choices and we see that half of the residents chose A [incorrect], and half the people chose B [correct] – then we can discuss – why did half the group get confused and choose the wrong answer? (2018)

Balance between resident presentations and faculty input. Residents feel faculty are better equipped to transmit expert medical knowledge and the intricacies of clinical decision-making:

> One of our Gyne Onc (Gynecological Oncology) specialists gave a lecture on cervical cancer which is a difficult topic. He gave a lot of evidence based on the research around why we treat certain stages surgically vs. with radiation treatment … A lot of people said this was a very effective lecture and it was nice to have the expert in the area. (2018)

In 2013, the majority of AHDs were resident-created and presented. Residents strongly felt that faculty, with their expert clinical knowledge, are excellent resources and are better suited to teaching AHDs:

> The resident creates the entire case, is responsible for all of the content. So we have these three-hour half days with these incredible experts who come to our half days, who sit there for three hours and say almost nothing. Or a resident who's summarizing a chapter in Williams [a standard textbook] … And it's just so frustrating, because that expert could say anything and we would write it down and eat it up. (2013)

Because of this feedback, the program pivoted toward more direct presentations by faculty experts in 2018.

Protection from clinical duties. AHD is valued as protected time from the busy and sometimes overwhelming clinical schedule. It serves residents as a time to take a break from clinical work to reflect on what they are learning.

> Our specialty can be very busy and service based when you're actually on call or in the hospital and there is not a lot of time for teaching when you are working so this is a different environment when you get a bit more dedicated time for teaching that you don't always get when you're in the hospital. (2018)

Research question 3: Sustainability of AHDs

Interview with program administrator. Three major themes emerged from the interview with the program administrator:

1. Barriers to scheduling
2. Strategies toward sustainable AHDs
3. Importance of feedback

Summary. Faculty express a high level of interest in participating in formal resident learning, however, the single largest barrier to securing faculty support for AHDs is scheduling conflicts. The involvement of Division Heads at an organizational level has helped improve ease of scheduling and availability of staff.

Remove barriers to faculty participation. The busy nature of clinical work results in unpredictable scheduling changes which can result in the cancelation of AHD. Faculty interest in teaching is high and convincing staff to participate is not an issue. As mentioned above, the major issue is competing clinical needs:

> It's the scheduling aspect of it. My struggle's not convincing them to come out and teach. I've never heard anyone complain or say they didn't want to do it. [some of the conflicts include]: I'm not here. I'm at a conference. I'm in a clinic. I'm in O.R.

Administrative support for scheduling and logistics. Prior to 2017, AHD topics were scheduled without a thematic order. The program director decided on topics and these were scheduled at random in a 2-year cycle. The program director and administrator would then assign and contact individual faculty for support. With the switch of the curriculum into themed blocks (such as gynecological oncology, maternal-fetal medicine, general gynecology, etc.), the division heads became responsible for assigning and scheduling faculty to AHDs:

> Before I would actually go out and contact each person individually. We would come up with, 'oh, we think this person should teach this' or 'this person should supervise this' … then about three years ago we decided, no, we're just going to email the whole division and say: 'these are the topics, these are the dates'.

Involving organizational leads significantly eased scheduling as faculty could be scheduled to attend AHD without conflicting scheduling needs:

> There were fewer faculty cancellations. Because their division head is involved in it too, so they could actually schedule O.R.'s appropriately and block their time off better than them just saying yes.

Faculty have a requirement to teach as part of their university appointment. To capitalize on this, invitations to participate in AHD seminars are sent out shortly after the annual faculty performance reviews:

> At their yearly performance reviews … [they] look at all their teaching that they do. Any formal teaching they do, I record on the same database … And that's generally when I start asking for teaching commitments for the next academic year; because teaching has just been discussed at their performance reviews.

Importance of feedback for improvement. Consistent feedback from all stakeholders is vital to a sustainable and evolving AHD that meets learner's needs. Residents and rotation supervisors are involved in reviewing topics and ensuring they are appropriately chosen. However, the biggest catalyst for change is resident feedback:

> I think the only thing is just to know ongoing feedback from residents, I think, is the most important thing. Because it's hard for us to know what works and what doesn't work because we don't get a lot of feedback from faculty, to be honest.

Discussion

Classroom-based learning, in the form of an AHD, has an important and complementary role in clinical learning. This study builds previous work by ourselves and others in demonstrating that classroom learning and clinical activity in residency are not a dichotomy but represent the ends of a spectrum between formal and informal learning.[12–15] While the majority of learning occurs in the workplace, classroom-based learning provides the space for residents to process and refine their knowledge. Helping residents integrate the evidence and

theory behind their clinical decision-making remains one of the key purposes of classroom-based education. AHD provides a curricular outline which helps junior residents organize an enormous amount of information into an organized and approachable format. For senior residents, AHD helps to ensure they cover the breadth of material required for their licensing exams. AHD provides affordances and opportunities to link clinical practice with evidence-based clinical reasoning.[16,17]

This longitudinal case study demonstrates that residents have substantial insight into what type of AHD structure will best help them meet their learning needs. Faculty-led sessions are extremely valuable to residents. In this program, between 2013 and 2018, there was a transition from highly resident-led AHDs to those with more faculty input. The reason AHDs prior to 2013 were highly resident-led was that the program wished to develop resident presentation skills and promote active learning. However, it was felt that having too much focus on resident presentations did not make good use of the expert faculty present. This illustrates the importance of balancing faculty and resident participation to avoid passive learning while still making use of faculty expertise. Residents throughout the study period asserted that formative assessment, such as Kahoot! Quizzes, are engaging, and help consolidate learning at the end of a 3 h classroom session.

This study explored the administrative challenges and solutions in implementing a sustainable engaging AHD. Other programs that have created innovative and engaging AHDs have found it requires consistent buy-in and motivation from all stakeholders and this can be a challenge.[18,19] Some administrative solutions included organizing thematic blocks and delegating division heads to recruit and organize faculty for sessions. Faculty were often recruited shortly after annual performance reviews when their teaching would be a priority for them. Tracking learner feedback is crucial for ongoing faculty motivation and sustainability.

The present study has several limitations. This was a small exploratory study and we did not include saturation of themes in our data collection. Due to clinical and COVID-19-related research obligations during the COVID-19 pandemic, there were substantial delays in the submission and publication of this study. Findings from this study of obstetrics and gynecology residents may have limited transferability to other disciplines.

Some future directions in exploring classroom-based learning in residency could include the use of threshold concepts.[20] One of the recurring themes in this study is that there are certain concepts which represent "troublesome knowledge," and having faculty input and near-peer teaching in the classroom setting may be helpful for this. We did not elaborate on the role of the pig lab and other simulation programs in this study. Future studies could explore the interaction between simulation and classroom-based learning, particularly given the central role that simulation plays in surgical programs.[21] Flipped classrooms and virtual learning, particularly in the COVID-19 era are an area of growth and may be particularly helpful for programs such as UBC, which have a distributed curriculum over a large geographic area.[22]

Conclusion

This study demonstrates the important complementary role classroom-based learning plays in resident education. Resident participation and active learning must be balanced with meaningful faculty input, and organizational support is crucial to supporting faculty involvement.

Acknowledgements

The authors thank Scott Lewis, OBGYN training program administrator, for sharing his experience in organizing and supporting the AHD program over the past 20 years. Luke Chen's research is supported by the Hematology Research Program at the University of British Columbia.

Author Contributions

RD, TQ, and LC designed the study, and collected and analyzed the data. All authors helped to write and edit the manuscript and approved the final version.

Consent

All subjects provided written informed consent for participation in this study.

Data Availability

Primary data can be made available upon request.

ORCID iD

Jag Ubhi https://orcid.org/0000-0001-5984-1128

Supplemental Material

Supplemental material for this article is available online.

REFERENCES

1. Watling C, Driessen E, van der Vleuten CP, Lingard L. Learning from clinical work: the roles of learning cues and credibility judgements. *Med Educ*. 2012;46(2):192-200. doi:10.1111/j.1365-2923.2011.04126.x.
2. Teunissen PW, Scheele F, Scherpbier AJJA, et al. How residents learn: qualitative evidence for the pivotal role of clinical activities. *Med Educ*. 2007;41(8):763-770.
3. Teunissen PW, Boor K, Scherpbier AJ, et al. Attending doctors' perspectives on how residents learn. *Med Educ*. 2007;41(11):1050-1058. doi:10.1111/j.1365-2923.2007.02858.x.
4. Chen LY, McDonald JA, Pratt DD, Wisener KM, Jarvis-Selinger S. Residents' views of the role of classroom-based learning in graduate medical education through the lens of academic half days. *Acad Med*. 2015;90(4):532-538.
5. Chen LYC, Quach TTT, Dayan R, Giustini D, Teunissen PW. Academic half days, noon conferences and classroom-based education in postgraduate medical education: a scoping review. *CMAJ Open*. 2023;11(3):E411-e425. doi:10.9778/cmajo.20210203.
6. Zweifler J, Ringel M, Maudlin RK, Blossom HJ. Extended educational sessions at three family medicine residency programs. *Acad Med*. 1996;71(10):1059-1063.
7. Tannenbaum DW. New "horizontal" curriculum in family medicine residency. *Can Fam Physician*. 1998;44(8):1669-1675.
8. Yin RK. *Case Study Research Design and Methods*, Vol. 5, 4th ed. Applied Social Research Methods Series. Sage; 2009:240.

9. Barbour RS. Making sense of focus groups. *Med Educ*. 2005;39(7):742-750. doi:10.1111/j.1365-2929.2005.02200.x.
10. Patton MQ. *Qualitative Research and Evaluation Methods*, 3rd ed. Sage; 2002:688.
11. Thomas DR. A general inductive approach for analyzing qualitative evaluation data. *Am J Eval*. 2006;27(2):237-246. doi:10.1177/1098214005283748.
12. Randall MH, Schreiner AD, Clyburn EB, Rockey DC, Duckett A. Effects of an academic half day in a residency program on perceived educational value, resident satisfaction and wellness. *Am J Med Sci*. 2020;360(4):342-347. doi:10.1016/j.amjms.2020.05.013.
13. Chen LYC, Hubinette MM. Exploring the role of classroom-based learning in professional identity formation of family practice residents using the experiences, trajectories, and reifications framework. *Med Teach*. 2017;39(8):876-882.
14. Wagoner H, Seltz B. Attending physicians' perspectives of resident academic half day. *Teach Learn Med*. 2019:1-9. doi:10.1080/10401334.2018.1551140.
15. Cleland J, Durning SJ. Education and service: how theories can help in understanding tensions. *Med Educ*. 2018;40:287. 10.1111/medu.13738
16. Ma C, Tabarsi N, Chen L. Clinical reasoning and threshold concepts. *Acad Med*. 2017;92(4):426.
17. McBee E, Ratcliffe T, Goldszmidt M, et al. Clinical reasoning tasks and resident physicians: what do they reason about? *Acad Med*. 2016;91(7):1022-1028.
18. Batalden MK, Warm EJ, Logio LS. Beyond a curricular design of convenience: replacing the noon conference with an academic half day in three internal medicine residency programs. *Acad Med*. 2013;88(5):644-651. doi:10.1097/ACM.0b013e31828b09f4.
19. Di Genova T, Valentino PL, Gosselin R, Bhanji F. The academic half-day redesigned: improving generalism, promoting CanMEDS and developing self-directed learners. *Paediatr Child Health*. 2015;20(1):30-34. doi:10.1093/pch/20.1.30.
20. Chen LYC, Poole G. Grappling with troublesome knowledge. *Med Educ*. 2018;52(6):584-586.
21. Dayan R, Ubhi J, Chen LYC. Simulation and classroom-based learning in obstetrics and gynaecology residency training. *J Obstet Gynaecol Can*. 2018.
22. Nunneley CE, Fishman M, Sundheim KM, et al. Leading synchronous virtual teaching sessions. *Clin Teach*. 2021;18(3):231-235. doi:10.1111/tct.13282.