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Exploring Medical Student's Experiences with Logbook in Clinical Training: A Qualitative Study

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ABSTRACT

Logbooks are widely used in medical education during the clinical years. However, evidence of their usefulness is inconclusive. The objective of this study was to explore medical graduates' perceptions of using logbooks during their clinical years as students. This qualitative study involved the use of semi-structured individual interviews with a total of 15 respondents. All interviews were audiotaped and transcribed, and an inductive thematic analysis of the data was conducted using NVivo software. Three themes were identified for the role of logbooks in learning: Logbooks provide guidance for self-directed learning; logbooks facilitate authentic learning experiences; and logbooks lead to opportunities for interprofessional interaction. Two main themes emerged with regard to the advantages of using logbooks for assessments: A logbook is a component of summative assessment, and it provides external motivation. In addition, three themes emerged regarding the disadvantages of logbooks: the extensive items in logbooks, the practicality of using logbooks, and the lack of feedback when logbooks are used. Themes that emerged from the respondents' suggestions to improve logbook use included constructing a blueprint for logbook use, applying a mechanism for monitoring progress, and changing the logbook format. In conclusion, logbooks play a positive role in learning during the clinical years, and students consider logbooks to be acceptable assessment tools. However, excessive items and a lack of feedback act as barriers to effective logbook usage.

Keywords: *logbook, medical student, clinical, experiences, feedback*

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INTRODUCTION

Logbooks have been extensively used in undergraduate programmes at medical schools worldwide for decades. The Medical Council of India has defined a logbook as a verified record of a learner's progression that documents the acquisition of requisite knowledge, skills, attitudes, and/or competencies (1). The role of the logbook in medical undergraduate programmes differs across countries and institutions. The Medical Council of India mandates students' completion of logbooks as a criterion of eligibility for summative assessments, and the logbook accounts for 20% of formative assessments (1). Meanwhile, since 2013, the Medical Licensing Regulations in Germany have dictated the mandatory use of logbooks among final-year medical students (2). The Malaysian Medical Council (MMC) does not outline any specific assessment methods for undergraduate medical programmes.

The logbook serves as a comprehensive guide for crucial cases and student activities. This structured approach not only promotes discipline and focus but also ensures standardized and structured learning in clinical settings, especially across multiple sites (3,4). The activities given in a logbook are constructively aligned with the corresponding institute's learning outcomes and provide a clear path for students' progression.

Previous studies have demonstrated the pivotal role of the logbook for formative assessments, particularly for meaningful feedback. Research on third-year medical students in clinical settings revealed that their mini logbooks included feedback on their competency levels and learning needs, which inspired them to enhance their skills and engage in patient-centred learning activities (5). Logbook use in clinical settings has the advantage of enabling assessments of students' practical and clinical competency skills (6).

Logbooks are important for feedback during learning, but there are limitations. In a study involving medical students in a surgical posting in Saudi Arabia, the lack of high-quality feedback regarding students' performance was the main shortfall associated with logbook implementation (7). Further, Schick et al. reported that students find the feedback given in logbooks unstructured and spontaneous, although timely (8).

There are other disadvantages of logbook use. Although logbooks are designed to correlate with learning goals, there are incongruities between the learning goals given in logbooks and the practical realities of clinical settings (9). Moreover, students have reported that when logbooks are implemented as educational tools for curriculum delivery, they are merely used for roll calls, and the information they contain is copied and pasted from other sources (10).

There is a paucity of evidence on medical students' experiences with using logbooks during their clinical years in undergraduate medical programmes in Malaysia. Therefore, the objective of this study was to explore the perceptions of medical graduates towards logbooks during their undergraduate clinical years at the National Defence University of Malaysia (NDUM), Faculty of Medicine and Health Defence.

METHODOLOGY

A qualitative case study approach was adopted in this study. This approach was chosen because of the advantage it provides in gaining an in-depth understanding of the participants' experiences with logbook use during their clinical years (11). The study was conducted at the National Defence University of Malaysia, where the Faculty of Medicine and Defence Health has introduced logbooks for the Early Clinical Exposure module during their first year in the undergraduate programme.

Logbook usage is more significant in the subsequent clinical years, as most departments require students to fill out and submit their logbooks during this time. The role of logbooks and the weight given to them differ across the university departments. Most departments use logbook marks as part of a continuous assessment. These marks account for 5–15% of the 30% continuous assessment. Other postings mandate logbook submissions for students to be eligible for the end-of-posting exams, but no marks are given for logbook submissions. The items in a logbook encompass the cases seen in wards and clinics, the procedures observed or attempted, and seminar presentations. Assessments of attitude and professionalism are not included. Any healthcare professional in a hospital can sign a student's logbook. Healthcare professionals are often not adequately briefed on the purpose and the assessment methods of the logbook. Students submit their logbooks for grading at the end of their postings. The final logbook marks are determined by the university lecturers.

The present study's population comprised the graduate medical students of NDUM in the year 2023. These graduates were expected to provide the most enriched accounts of their experiences with logbook use because they would have used logbooks throughout their three clinical years. Since these students had recently graduated, recall bias during the data collection was expected to be minimal compared to earlier batches of graduate medical students. Convenient sampling was performed, and the participants were recruited via a WhatsApp message sent to the batch's WhatsApp group. Graduates who were interested in joining the study were asked to respond to the researcher. The study included a total of 15 participants. The participant demographics are shown in Table 1. Sampling was stopped after data saturation was achieved and no new theme emerged.

Ethical Approval

Ethical approval for this study was obtained from the UKM Research Ethics Committee (research code JEP-2023-960) and the NDUM Research Ethics Committee (research code JKEP 1/2024).

Data Collection

Data were collected through semi-structured interviews conducted in English. This approach provided flexibility in responses and allowed the respondents to elaborate on their experiences (12). The interview questions were formulated based on literature review pertaining to the research objective. The interview questions are included in the supplementary material. The interviews were conducted via phone and recorded using a voice recorder. Phone interviews provide the advantage of being cost-effective while capturing a similar number of themes as in-person interviews (13). The audio recordings of the interviews were then transcribed. Data collection ended when no new themes emerged from the phone interviews.

Data Analysis

The data were analysed using the inductive thematic approach given by Braun and Clark (14) on NVivo software. The first step of the analysis, namely data familiarization, involved repeatedly reading and re-reading the transcribed interviews. The second step involved defining and labelling the initial codes. The third step was to generate potential themes by collating the codes. The fourth step involved reviewing the themes, specifically by naming and defining them. The fifth and final step was to produce the data report.

To establish data credibility, triangulation was achieved through the involvement of three researchers. The first researcher was a clinical lecturer at NDUM and was involved in assessing and designing the university's logbooks. The second researcher was a medical educator lecturer with a PhD in qualitative research, and the third researcher was a clinical lecturer at NDUM and had vast experience in

qualitative research. During the triangulation process and the data analysis, the three researchers faced the challenge of meeting for face-to-face discussions. All three researchers had to agree on the findings obtained in each step before proceeding to the next steps.

RESULTS

Role of Logbooks in Learning

Logbooks provide guidance for self-directed learning

Most of the respondents stated that their logbooks contained lists of important topics, cases, and procedures and thereby provided guidance. This enabled self-directed learning in clinical settings.

This logbook allows me to review the cases I've seen before. Moreover, since I've clerked those cases, I can use them as references to study again. By reviewing and clerking patients with the written cases, I can revisit cases that I haven't encountered in real life. (I1)

Logbooks facilitate authentic learning experiences

Based on their experiences during their clinical years, the respondents conveyed that logbook supported their learning by providing early exposure to the important tasks of a houseman.

Logbook also provides early exposure to important procedures, especially for housemanship later. It gives confidence to students with early exposure. (F1)

Logbooks lead to opportunities for interprofessional interaction

Another important theme identified from the interview data was that logbooks are associated with opportunities for interprofessional interactions with healthcare personnel. These interactions extend beyond asking for permission to see patients; they involve helping each other in a ward.

Logbook helps to build connection[s] with the medical officers and nurses. The nurses will teach and guide us on doing procedures, and when we are competent example[s] [for the] insertion of [an] intravenous cannula, we will then help the nurses and doctors to perform the procedures. (S1)

Advantages of using logbooks as assessment tools

A component of summative assessment

All respondents agreed that logbooks served as a component of summative assessments and that the marks given for logbook use contributed to grading.

I think it's okay to have marks for completing the logbook because it's challenging and time-consuming. So, I feel it's appropriate to be graded for it. This supports our effort in completing the logbook. (Z1)

Provides external motivation

When used as assessment tools, logbooks provided external motivation for the respondents to push themselves to learn in clinical settings.

Logbook as part of [the] assessment is very important because it motivates and pushes us, which is crucial for learning. (I2)

Disadvantages of using logbooks

Extensive items in logbooks

Most of the respondents expressed their concerns regarding the extensive items that needed to be completed in their logbooks. This drawback of logbook use can be divided into three subthemes:

i) Lack of opportunities for performing the listed tasks

The items listed in the logbooks were incongruent with the availability of opportunities in real-world clinical settings. This added to the difficulty that the respondents faced in filling out the logbook.

There are limited procedures that are performed at Hospital Angkatan Tentera Tuanku Mizan, so it's not possible to observe them. Sometimes, there are lecturers who don't even revise the 'updated procedures' that need to be observed. (S1)

There are some procedures that are listed extensively but are actually very limited in practice. So, it's difficult to fill in those entries. (I1)

ii) Time constraints that overburden students

The items given in the logbook had to be completed within a limited time period, which burdened the students.

[...] some postings, there's too much to be completed that is not appropriate to fill in within the time suggested. (M1)

iii) Lack of professionalism

The items in the logbook were so extensive that they led to the negative consequences of a lack of professionalism.

Logbook in Surgery and Obstetrics and Gynaecology posting have too many things that should be filled in, which the students ended up not fully utiliz[ing] since it is too many, in the span of [a] short duration, which ended up [with] the students only copying from the admission book to complete the task. (A3)

Practicality of using logbooks

The respondents expressed their concerns regarding the logbook being a hard copy. They faced problems carrying their logbooks around and had to deal with the possibility of the logbooks being misplaced.

Since it is a hard copy, the logbook easily can be misplaced or lost, and [we] need to carry it everywhere. And sometimes, [it] can easily be forgotten to bring around, so it is harder to get it signed by the healthcare personnel. (A1)

Lack of feedback when logbooks are used

Notably, none of the interview respondents mentioned receiving feedback on their logbook performance without prompting from the interviewer. After prompting, most of the respondents stated that they did not receive any feedback on their logbooks, and the others mentioned that they received limited feedback.

Feedback is very rare for the logbook. Only some logbooks receive feedback, but I've only received it once. Usually, I just get marks. Verbal feedback is given in paediatric postings, but it's generally just [an] 'okay' or comments like 'lack of clerking patients, lack of procedures'. Only general feedback is provided. (N1)

Suggestions to Improve Logbook Use

Constructing a blueprint

Constructing a blueprint for logbook use was a theme that emerged from the suggestions related to reviewing the items in a logbook. Most of the respondents also suggested revising the logbook items by including only the most relevant and essential items.

There are some procedures that are difficult to find and observe. We can overcome this by not listing them in the logbook. (S3)

Revise all procedures that need to be done, especially since there are limited procedures in Hospital Mizan. Reduce the number of procedures needed to complete to give everyone a chance to observe. (S1)

Improving the practicality of logbook use

The main suggestion for improving the practicality of logbook use was to improve the logbook format. The respondents suggested implementing e-logbooks instead of hard copies for feasibility. If hard copies are to be provided, the logbooks need to be smaller in size to make them easier to carry around.

The logbook should perhaps be smaller in size for easier carrying. A soft copy logbook is better because it's easier to carry around. (N1)

Another suggestion regarding the format of the logbook was to provide ample space for each item.

More space is needed for discussion topics because the current space is too small. (S3)

Applying a mechanism for monitoring progress

The respondents stated that continuous monitoring and progress are needed when using logbooks.

And if possible, by the second week, I feel like there should be a review from [the] doctor so that during the second week of studying, we can know what we need to focus on. (Z1)

Lecturers should perhaps ask students once in a while about the updates on their logbooks (per week). (I2)

DISCUSSION

Role of Logbooks in Learning

Guidance for self-directed learning

The activities documented in logbooks serve as guides that encourage independent reading and self-reviews of progress, and they enable students to revisit cases they have previously encountered. Considering this, logbooks that contain specific lists and cases can help students focus on their learning objectives, especially in wards (15). Logbook use facilitates self-directed learning, which occurs when students take initiative and responsibility for learning. For instance, in the case of a patient with acute exacerbation of asthma, students are expected to refer to the local guidelines, Clinical Practice Guideline for Adult Asthma, for management. In 1975, Knowles defined self-directed learning as “a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes” (16). The advantage of self-directed learning is that it helps build lifelong learning skills and enhances experiential learning experiences (17)

Authentic learning experiences

Logbooks provide opportunities for structured, authentic learning experiences for students in wards and clinics. In students' early clinical years, logbook procedures are implemented in the clinical skills lab for repetitive practice on task trainers. As the years progress, exposure and clinical procedures are focused upon, and emphasis is placed on hands-on learning in real-world clinical environments. The tasks listed in a logbook are guided by the expected competencies for housemen outlined by the Malaysia Medical Council. The associated learning experiences positively impact students, helping build their competency and confidence. Previous studies have shown that authentic learning experiences increase motivation and aid in the transition from being a student to working as a doctor (18). Furthermore, as logbooks are utilized in real-world clinical settings, they serve as conduits for workplace-based assessments (WPBAs). This emphasis on WPBAs ensures that students are well prepared for professional evaluations and helps instill a sense of readiness and confidence in their abilities.

Opportunities for interprofessional interaction

With the absence of lecturers in wards, the supervisory role is informally extended to healthcare personnel, such as housemen, medical officers, and nurses. This can be a starting point for incorporating interprofessional education into the curriculum. The General Medical Council of the United Kingdom allows healthcare personnel to facilitate students' development of procedural skills in hospital settings (19). Hence, the usage of logbook informally incorporates interprofessional

interaction as part of a hidden curriculum. Studies have shown that interprofessional education is crucial for the best patient care (20). To start with, healthcare personnel can be briefed on the expectations associated with their role of helping students in healthcare wards, and they can also be involved in 360 multisource feedback assessments.

Advantages of Using Logbooks as Assessment Tools

A logbook provides the advantage of facilitating performance assessments throughout a student's posting, rather than a one-off moment at the end of the posting. It can be used to assess the student's progress and thus identify the student's weaknesses and strengths for immediate remedial steps. According to Patil and Lee, logbooks provide opportunities to identify excellent students as well as students who need help, thereby encouraging students' learning in clinical settings (21).

Despite the above advantages, Schuwirth has identified the need to improve the validity and reliability of logbooks (22). A well-designed rubric for objective assessments of logbooks can help increase reliability and solve the issue of interrater reliability, which is particularly important if there are multiple logbook assessors (23).

Marking the logbooks can motivate students to complete them, which would, in turn, encourage the students to increase their patient encounters and perform procedures in clinical wards. This is in line with Upadhyay's findings, which indicate that marks can motivate students to maintain their logbooks (24). However, the pressure placed on students to complete their logbooks can lead to surface learning rather than deep learning. This was confirmed by Floris's study in 2023, which showed that motivation does not directly affect academic achievement (25). Students need to be provided with appropriate guidance and continuous constructive feedback on their logbook performance (26).

Disadvantages and Suggestions for Improvement

Extensive items in logbooks

Logbooks currently consist of extensive items that students must complete, which is a cause for concern. This not only hampers students' learning opportunities but also creates time constraints and fosters a lack of professionalism. The large number of items may be attributed to procedural redundancies that occur both within departments and across different departments over several years. This includes basic procedures such as venipuncture, arterial blood gas (ABG), intravenous cannula insertion, and urinary catheterization.

The construction of a blueprint for logbooks may address the issue of excessive items. Both intra- and interdepartmental blueprinting need to be done within different clinical postings. It would have to be guided by the list of core competencies outlined in the Standard for Undergraduate Medical Education given by the Malaysia Medical Council (MMC) (27). Procedures in the logbook that are not crucial or are of low relevance can be removed. The core competencies should be discussed interdepartmentally to determine the minimal number of items needed for each posting. For example, IV cannulation is listed as a core competency for internal medicine, surgery, primary care, and emergency postings. This would reduce the burden of completing extensive items within a short period. Intradepartmental blueprinting is also important. Complex and challenging tasks can be included in the logbook for Year 5 students, while a focus on simple tasks would be sufficient for juniors. In addition, juniors can be assigned basic procedures to observe, and senior medical students would be expected to perform them. This can help optimize experiential learning for each student. Previous research has shown that senior medical students optimize the usage of logbooks more than junior medical students, as the former are more likely to select cases with significant learning opportunities (26).

Time constraints occur regardless of whether a posting is short or long. A study by Svendsen et al. revealed that the barriers to documentation in a logbook arise from the time-consuming nature of the process (28). This is supported by Fatemah et al.'s study, wherein students reported that filling out a logbook was time-consuming and a burden and that they preferred to focus on practical sessions (6).

One of the major consequences of having excessive logbook items and time constraints is a lack of professionalism among students, which, in turn, leads to dishonesty and integrity. Examples of misconduct include group members copying logbook details from other members as well as from ward admission books, although students still need to perform the relevant tasks. In addition, lecturers are unable to monitor the integrity of logbook documentation. Most of the time, the responsibility to sign students' logbooks in clinical settings is handed over to healthcare personnel, without any questioning or counterchecks. Fatemah et al. explained that fake data entries arise from the pressure of having to meet logbook requirements (6). Moreover, supervisors rarely question or reject inaccurate logs of cases or activities (29). This can be attributed to the lack of monitoring, potentially because of the limited number of lecturers in a department. This issue could be solved by appointing non-academic healthcare professional as supervisors. However, it is essential to brief the appointed supervisors on their responsibilities and the expected learning outcomes corresponding to the logbook and module. Research has shown that interactive logbooks provide the benefit of continuous monitoring to improve students' learning experiences and the learning environment (26). The implementation of interactive logbooks requires a supervisor to be appointed for each student, who would intermittently review the student's progress and assess the student's performance mid-posting using the logbook. Supervisors can also provide feedback to their students for improvement. Furthermore, continuous monitoring can help overcome a lack of professionalism among students.

Some hospitals have limited subspecialties; therefore, specific procedures are not performed in those hospitals, although they may be listed in student logbooks. Examples include bone marrow biopsy and peritoneal dialysis. According to Uther and Ooi, the lack of opportunities for students to perform procedures and handle cases in real-world clinical settings, as compared to logbook requirements, is not an isolated issue (30).

Practicality of using logbooks

Most medical schools use hard copies of logbooks during the clinical years. Unfortunately, hard copies have the disadvantage of being difficult to carry around, which increases the risk of the logbooks being misplaced or lost. Setyonugroho et al. reported that hard copies are inconvenient because of the durability of the paper used as well as the trouble of carrying them around (31). In contrast, e-logbooks provide convenience of access at any time and making it easier to monitor; however need for expertise to design a user-friendly e-logbook (32). For the successful implementation of e-logbooks in a medical school, the faculty must demonstrate their long-term commitment.

Regardless of the logbook format, it is crucial that sufficient space is provided for recording information to promote learning. The issue of limited space in logbooks is not unique to a single medical school – Bartiet has also highlighted this concern (32). Ample space would not only be beneficial for students to document their tasks but also ensure that supervisors can provide detailed and constructive written feedback.

Lack of feedback when logbooks are used

Students usually do not receive constructive feedback on their performance in their logbooks (33). Logbooks are commonly reviewed by lecturers at the end of a posting. Feedback plays an important role in improving student performance. Without feedback, mistakes remain uncorrected, good

performance is not emphasized, and clinical competence is achieved only minimally (34). When feedback is provided, it's often unstructured and lacks quality (8). The following factors may contribute to feedback barriers: First, supervisors may lack training in providing constructive feedback. Second, there may be limited time for feedback in clinical settings. Moving forward, measures should be taken to improve the mechanism by which feedback is provided to students for their performance in the logbook. One recommendation is to incorporate the Direct Observation of Procedural Skills (DOPS) into logbooks, as this would open up opportunities for immediate feedback on student performance to facilitate improvement. Notably, the inclusion of DOPS has been found to increase the validity of logbooks (35).

Study limitations

This study focused on only one cohort of recent graduate medical students at a single medical school. Therefore, this study cannot be generalized to other medical schools, as they may differ in terms of the site of hospital attachment, logbook design, and supervisor training. Data for this study were collected only through phone interviews, so nonverbal responses could not be documented. Further, only students' experiences with using logbooks were explored in this study; supervisors' experiences were not considered, although these are crucial because supervisors are involved in designing and assessing logbooks.

CONCLUSION

Logbooks play a positive role in learning during the clinical years of medical school – they provide guidance, open up opportunities for interprofessional interaction, and facilitate authentic learning experiences for students. The use of logbooks as assessment tools is acceptable, but steps need to be taken to ensure that the logbooks are valid and reliable and have positive educational impacts on students. The main disadvantages of logbooks include the excessive number of items, lack of feedback, and practical usage issues. Regular reviews are necessary for the effective implementation of logbooks. Furthermore, the use of logbooks is not limited to medical schools; it continues throughout the training of house officers and during postgraduate education. The findings of this study highlight the need for logbooks to serve purposes beyond merely documenting procedures within hospital settings as well as the importance of providing performance feedback to promote the skills and professional development of house officers and junior doctors.

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