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Exploration of Clinical Clerkship Remediation in Undergraduate Medical Programme during the COVID-19 Pandemic

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ABSTRACT

Medical students in their clinical phase face various academic and non-academic challenges affecting their achievement of expected competencies. Medical students who fail competency assessments are encouraged to enrol in a remediation programme. Due to COVID-19, remediation learning activities have been altered to distance learning. Unfortunately, studies on clinical remediation programmes are scarce. This study aims to explore the clinical clerkship remediation process during the COVID-19 pandemic to provide a reference for developing appropriate remediation programmes. This is a qualitative study with a phenomenological design. The remediation process was explored through focus group discussions (FGDs) and in-depth interviews. Five FGDs with regular students, five FGDs with remedial students, five in-depth interviews with clinical lecturers and five in-depth interviews with education coordinators were completed. Four themes were identified from the gathered data: academic and non-academic factors influencing the need for remediation, planning, learning activities and assessment, and evaluation of learning processes and outcomes. Remediation during the clinical phase comprises several critical steps, and following the remediation process, students demonstrated improved performance. To improve the quality of the remediation process, the factors underlying the need for remediation should be determined.

Keywords: *Students, Medical, Clinical clerkship, Remedial teaching, Medical competency*

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INTRODUCTION

The COVID-19 pandemic, which began in late 2019, has significantly impacted the teaching and learning process in medical education (1), which plays a crucial role in producing professional physicians who provide quality health services. In general, medical education consists of two stages: the undergraduate programme and the clinical clerkship (2, 3). As undergraduate students, medical students are tasked with mastering medical theories and basic clinical skills, which are then applied during the clinical clerkship (4). During the clinical clerkship, medical students are exposed to clinical learning environments that require interprofessional collaboration with patients, instructors, colleagues, residents and other health care providers in the hospital (5). However, due to COVID-19, medical students had limited opportunity to practise their clinical skills at the hospital, so the entire learning process had shifted to distance learning, which has also affected the clinical clerkship remediation process (1).

Several studies have reported that a substantial number of medical students struggle in the clinical clerkship due to both cognitive and non-cognitive issues (6). Cognitive issues primarily include challenges in integrating medical knowledge, clinical skills, history taking and clinical reasoning, while non-cognitive issues encompass challenges in communication, mental health and professionalism (6–8). The clinical clerkship also requires students to learn to provide standardised health services under the supervision of clinical teachers. Deficient performance will impact the quality of health services and patient safety, and students who are considered incompetent are required to undergo a remediation process that supports them in achieving the expected competencies (4, 8–10).

The remediation programme facilitates improved student performance within the standard programme. The process begins

with causal identification to determine appropriate learning activities that will be re-evaluated once completed (11, 12). Remediation must be implemented effectively; however, studies evaluating the efficacy of remediation processes during the clinical clerkship are scarce (10). Krzyzaniak et al. stated that the factors challenging a successful remediation process include inadequate instructor involvement, limited resources, lack of institutional experience, low student awareness and insufficient documentation (13). A study by Cleland et al. found that the majority of remediation programmes only aimed to support students in passing or achieving competencies rather than facilitating effective long-term learning (12). Therefore, the commitment of all involved parties is needed to enhance remediation strategies.

The remediation model proposed by Hauer et al. is the most commonly employed remediation approach (7). This remediation model includes assessing students' competency, diagnosing the core problem, developing a study plan and re-evaluating the students' competency. Evaluation of the remediation process during the clinical clerkship has been rarely discussed, and there is no study available that identifies the supports and challenges of the remediation process. Hence, the efficacy of current remediation processes is unknown. This study, therefore, aims to explore the clinical clerkship remediation process during the COVID-19 pandemic to aid in the development of appropriate and qualified clinical clerkship remediation programmes in medical education.

METHODS

Study Design

This is a qualitative study with a phenomenological design. This study aims to explore the remediation process of the clinical clerkship from the perspectives of education coordinators, clinical teachers

and clinical clerkship students, as well as the factors supporting and challenging the development of appropriate clinical clerkship remediation processes.

Data Collection

This study was conducted at the Zainoel Abidin General Hospital, Faculty of Medicine, Universitas Syiah Kuala, Banda Aceh, Indonesia. Five clinical departments were selected to represent all clinical rotations, including surgical and non-surgical departments. The selected departments were paediatrics, pulmonology, neurology, cardiology and ophthalmology. Data were collected from the fourth week of August 2020 to the second week of October 2020.

Our study included clinical clerkship students, education coordinators and clinical teachers from the selected departments. Respondents were selected using the purposive sampling method with maximum variation sampling to achieve data saturation. Students were chosen based on gender, year in medical school and student status (regular or remedial). Regular students were defined as students taking a clinical rotation for the first time, while remedial students were students who did not pass previous clinical rotation assessments and were obliged to retake the rotation. Clinical teachers and education coordinators were chosen based on gender, work experience (≤ 5 years and > 5 years) and their involvement in the remediation process

of their department. The remediation programme was conducted via distance learning due to the COVID-19 pandemic.

Data collection consisted of two methods: focus group discussions (FGDs) for the clinical clerkship students and in-depth interviews with the clinical teachers and education coordinators. There were 10 in-depth interviews with five clinical teachers and five education coordinators, one from each department, following interview guidelines. Both the FGDs and in-depth interviews were conducted in Indonesian. All respondents approved of and provided written informed consent to participate in the study. Informed consent was provided to each respondent via electronic mail.

FGDs were led by a moderator (author VCM) using probing questions developed specifically for this study (Table 1). The moderator has expertise in medical education. The FGD lasted for 30–60 min using virtual platforms and was recorded with the respondents' permission. The moderator ensured all participants had the opportunity to participate in the discussion and directed the discussion towards a goal. In addition, the moderator also monitored non-verbal communication, such as participants' facial expressions and gestures, through video conference. To ensure trustworthiness in the FGDs, the moderator established clear ground rules and fostered an environment in which participants felt comfortable sharing their opinions.

Table 1: Probing questions for FGDs and in-depth interview

Regular students	Remedial students	In-depth interview
1. How is your feeling during the rotation?	1. How is your feeling during the rotation?	1. What are your ups and downs as the clinical teacher?
2. What are the difficulties that respondents encounter and how to solve them?	2. What are difficulties that respondents encounter and how to solve them?	2. How is the assessment for students determined?
3. Have you been enrolled in this rotation?	3. Have you been enrolled in any remediation programme?	3. In your opinion, what is the most common problem faced by clinical students?

(Continued on next page)

Table 1: (Continued)

Regular students	Remedial students	In-depth interview
4. What do you think about the urgency of the remediation process?	4. What do you think about the urgency of the remediation process?	4. What steps will be addressed for students not passing the grade?
5. What do you know about remediation process (background, assessment method, learning activities, duration, challenges, and student preparation)?	5. What do you know about remediation process (background, assessment method, learning activities, interaction with clinical teacher, duration, and challenges)?	5. How is your experience in the remediation process for clinical students?
6. What do you think about the supervision of remediation programme (clinical teacher's preparation, curriculum, schedule, time allocation, instruments, and attitude)?	6. What do you think about the supervision of remediation programme (clinical teacher's preparation, curriculum, schedule, time allocation, instruments, and attitude)?	6. What do you think about current remediation process?
7. What do you think about the importance of students' feedback?	7. What do you think about the importance of students' feedback?	7. How important a remediation process is, according to you?
8. What factors are crucial for the success of the remediation programme?	8. How is the assessment method used to determine remedial students?	8. What are the learning activities used during remediation programme?
9. What are your expectations and wishes for the remedial students?	9. What factors are crucial for the success of the remediation programme?	9. How long is the duration of remediation process?
10. What will you suggest for the remediation process?	10. What are the challenges you faced in the remediation process?	10. What do you think about the supervision provided during remediation (curriculum, time allocation, instruments)?
	11. What are your expectations and wishes for the remedial students?	11. What factors are crucial for the success of the remediation programme?
	12. What will you suggest for the remediation process?	12. What do you think about the importance of students' feedback?
		13. What are the challenges you faced in the remediation process?
		14. What are your expectations and wishes for the remedial students?
		15. What will you suggest for the remediation process?

Data Analysis

We performed a thematic analysis to identify emerging themes and sub-themes relevant to the research question. Data collected through FGDs and in-depth interviews were converted into complete transcriptions. The transcriptions were checked for spelling, anonymised and compared with other transcriptions of the same audio file. Authors VM, MW and AF separately analysed one FGD transcript and one interview transcript, and VM performed all additional analyses following a discussion of the emerging themes and sub-themes with the other two authors (MW and AF). Relevant data were coded and categorised into several themes and sub-themes, both inductively, based on the data obtained, and deductively, based on the existing literature. To increase the internal validity of the findings, VM, MW and AF

triangulated the findings from FGDs and in-depth interviews with document studies. VM transferred the data systematically and confirmed all research data with MW and AF. The Ethical Committee of the Faculty of Medicine approved this study at Universitas Syiah Kuala before it was initiated.

RESULTS

Based on the thematic analysis, four themes emerged: (a) academic and non-academic factors influencing the need for remediation; (b) adequate remediation programme planning; (c) remediation learning activities and assessment; and (d) evaluation of the learning process and outcomes. Each theme and its corresponding sub-themes are described in Figure 1.

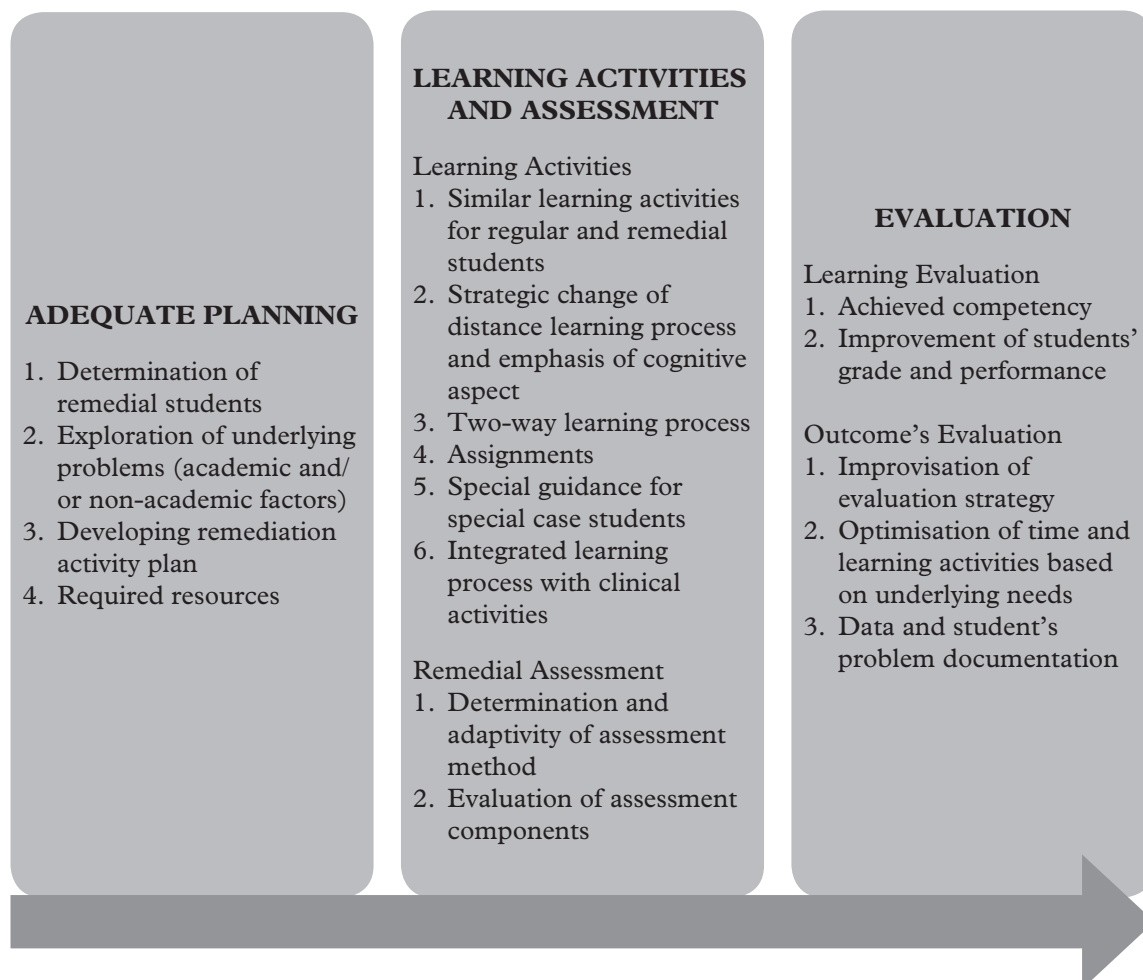


Figure 1: Themes and subthemes.

Academic and Non-academic Factors Influencing the Need for Remediation

Academic factors

Two types of academic factors, cognitive and psychomotor factors, were identified as influencing the need for remediation. The primary cognitive factors were insufficient knowledge and a lack of clinical reasoning skills. Inadequate clinical skills constituted the psychomotor cause of students not passing the expected competency.

The score did not pass the minimal passing grade, both for Objective Structured Clinical Examination (OSCE) and Computer-based Test (CBT), or oral examination. Students have to pass the minimal passing grade. (IntvSp2, academic staff)

Students usually join the remediation process as they lack clinical reasoning. (IntvSp1, academic staff)

Remedial students also confirmed that a lack of knowledge and clinical skills were the main causes of their insufficient grades.

We learned the competency related to cardiology, but we did not expect that other questions would show up. We realised that we did not study optimally. (MW4, second clinical year)

I believe that I failed the OSCE because the ophthalmology skills required were too advanced, and the cases were also quite difficult. (MP11, fourth clinical year)

Non-academic factors

Two types of non-academic factors influencing remediation were identified: internal factors, which included affective and mental components; and attitude problems in a majority of remedial students, which were reported by many respondents, including poor student attendance, signature fabrication and cheating.

The first issue is attitude. For example, not attending examinations. Those attitude problems are intolerable. (IntvKP5, academic staff)

Mental health aspects, such as mental disorders, anxiety and difficulty concentrating, were also found in a small proportion of students.

Some students revealed psychological symptoms. These students joined several remediation programmes and had mental disorder indications. (IntvKP2, academic staff)

Adequate Remediation Programme Planning

Steps for organising the remediation programme

The process of organising the remediation programme began with identifying the students who needed remediation based on their performance.

If students do not pass the expected competency, they will be considered to have failed and are obliged to undergo the remediation programme. (IntvSp2, pulmonologist)

Staff then explored the underlying reasons for students' failure to determine the appropriate learning strategy. Some clinical teachers and education coordinators had diagnostic conversations with students, while others assessed the students' previous grades.

We re-evaluate their weakness, then we guide them to fix it and learn by them. We have to find the core problems. For example, if their weakness is related to infectious disease, then we have to guide them to review their weakness with a specific method. (IntvKp1, academic staff)

Remediation programme planning encompassed the study objectives, materials, assignments, learning activities and assessments. Some respondents mentioned that the remediation programme aimed to improve students' performance so that, beyond achieving a passing grade, they could become competent physicians based on the Indonesian Doctors Competency Standard, emphasising the clinical skills required in a general practitioner.

All study plans refer to the Indonesian Doctors Competency Standard, and several competencies are only nice to know but others should be mastered. (IntvKP1, academic staff)

Required resources

Based on the FGDs and in-depth interviews, we identified the resources required for a remediation programme, including clinical teachers, education coordinators, allocated time and dedicated infrastructure. The number of clinical teachers and education coordinators involved in the remediation programme was considered sufficient, and they were committed to the students' remediation process.

The ratio of clinical clerkship students and clinical teachers is equivalent and sufficient. (IntvSp2, academic staff)

The study schedule was organised at the beginning of the remediation process. In distance learning, most of the activities were conducted in the afternoon to prevent hospital service disturbances.

When we enter any department, we are given a weekly schedule of materials and lecturers. (GW7, first clinical year)

Remediation Process Learning Activities and Assessment

Learning activities

The learning activities for remedial students and regular students were quite similar. However, there were some modifications made to the remedial learning process, including changes to the learning strategy (distance learning), implementation of a two-way learning process, provision of additional assignments, special guidance given for special-case students and integration of the learning process with clinical activities.

The activity between regular and remedial students is similar, whether it is journal reading, case report, pre-test or post-test. This is due to the online system during the pandemic. (IntvKp3, academic staff)

Distance learning was conducted via video conference with an emphasis on cognitive learning, including discussion, journal reading and webinars. According to the respondents, the learning activities in distance learning were quite intense and dense. A two-way learning process was employed, with opportunities for discussion with the clinical teachers.

The discussions from lecturers are quite intense, including guides for making prescriptions. If we fail, then the lecturers will teach us again. (MW1, second clinical year)

I asked the students to make a slide and present it. I wanted to see their basic knowledge during the discussion. They were motivated to read and learn to make the discussion more interesting. (IntvKp5, academic staff)

Assignments varied by department, though, in general, they included reading journals and presenting literature reviews, videos, cases and slides. Several departments allowed some leniency in remedial students' assignments. In particular cases, the student was treated differently.

The weekly assignments include case presentation, literature review, journal reading or videos, but it can be different depending on the clinical teachers. (MP7, third clinical year)

Special cases included students undergoing their second or third remediation programme, which needs special attention. We provide extra time for them. We look for the problem that made them fail and use special techniques/learning strategies in supervising them. (IntvSp2, academic staff)

The learning process before the pandemic integrated clinical activities within the hospital, including inpatient, polyclinic and emergency unit settings. Students could thus practise clinical skills and participate in bedside teaching. However, exposure to clinical skills during the pandemic was limited.

Before working from home, we were actively engaged at the hospital. In an inpatient room, we can learn from the patient's medical record, while at the polyclinic, we practised history taking. (MP1, fifth clinical year)

Remediation assessment

The assessment method for remedial students before the pandemic consisted of a CBT, a prescription test and an oral examination. During the examination, remedial students were examined by different examiners. In contrast, during the pandemic, assessments were performed online using Google Forms, and clinical examinations were conducted via video

conference. The assessment components were attitude, assignments and the final examination, including clinical reasoning skills.

The final examination was precisely, such as CBT, OSCE, prescription, oral examination. (IntvSp2, academic staff)

The assessment included clinical reasoning to develop working diagnoses. For example, in the physical examination, is it possible for her to apply it to the patient? How is her clinical reasoning to develop differential diagnoses? How does she establish a working diagnosis? In the OSCE, there is a literature review, attitude and given tasks. (IntvSp1, academic staff)

Evaluation of the Learning Process and the Outcomes

After the remediation process, respondents reported that there was an improvement in the students' grades and performance.

He previously did not pass, but he passed after the remediation, which means that there is an improvement in his grade. (IntvKp4, academic staff)

Several steps were required to enhance outcomes, including improvisation of the evaluation strategy, optimisation of time and learning activities based on underlying needs and documentation and data on students' challenges. During the in-depth interviews, the teaching staff stated that the students memorised previous examination questions, so updated question banks were needed. Students also reported that they would benefit from an improved examination system with more time and access to the internet.

They memorised the questions, so I changed the questions and made randomisation. (IntvSp4, academic staff)

To optimise the learning activities, additional supervision was provided for remedial students based on their needs. However, the learning schedule was crucial for a successful remediation process.

We re-analysed the remedial students' weaknesses and problems so that we can give additional supervision. It has to be this way but, due to the staff's agenda, sometimes we adjust. (IntvSp2, academic staff)

Students expressed that there was a lack of transparency in determining remedial status, so it is necessary to provide feedback from the teaching staff to identify the weakness and underlying problem of each remedial student.

We did not know our grade, and suddenly we were informed that we did not pass. We did not know the problems, and they did not want to show the grading components. (MW6, third clinical year)

The education coordinator has to document remedial students' problems, which is accessible to all teachers. For example, there has to be a list of remedial students along with their academic record, so that other teachers are aware of the students' problem. (IntvSp1, academic staff)

DISCUSSION

This study explored current clinical clerkship remediation processes to provide a reference for developing high-quality clinical clerkship remediation programmes. FGDs for remedial and regular students were completed to understand their perspectives on the on-going remediation programme and in-depth interviews with clinical teachers and education coordinators to obtain their thoughts and experiences related to the remediation process. Four themes were identified in this qualitative study.

The first theme that emerged in this study concerned the factors underlying the need for remediation. The causes of failure were classified into academic factors, such as insufficient clinical reasoning and clinical skills, and non-academic factors, such as attitude, absence, dishonesty and mental health. Students lacking clinical reasoning skills tended to master theories but were unable to demonstrate the skills during examinations (14). In some cases, a lack of clinical skills was the reason for the low grades, which were caused by incomprehensive and uneven physical examination tutorials as well as clinical teachers' tight schedules limiting their ability to conduct bedside teaching (7, 14). In addition, students' attendance was identified as the primary attitude-related issue, both in this study and another (15). Pinyopornpanish, who reported that attendance issues in the final year were commonly associated with low self-motivation and the presence of an underlying disease (15). Dishonesty is often caused by a need to be acknowledged, resulting in a tendency to take the easier but dishonest path, which is highly forbidden in school (16). Apart from that, mental disorders such as stress, anxiety, depression and learning disabilities commonly affect medical students due to several factors, including academic, financial and social stressors (17, 18). Thus, the presence of a psychiatrist or psychologist in the remediation programme can significantly benefit students with mental health issues (11, 17, 18).

The second theme explained how an adequate remediation process is organised. First, the chief of the programme and the remediation management team must be chosen. In this study, the remediation programme was organised based on the model by Kalet et al. (19). The programme comprised three stages: planning, execution and evaluation. During the planning stage, the remediation objectives must be clearly determined (20). Students are selected based on their failing grades and

an exploration of the underlying causes. A diagnostic conversation is suggested to discuss and capture the problems from the students' perspectives (21). Planning also includes the provision of needed resources, including highly committed teaching staff, dedicated time and adequate infrastructure. Optimal remediation programmes rely on the institution providing the necessary resources (22, 23).

The execution stage consists of two components: the learning activities and assessment, which constitute the third theme of this study. The learning activities of remedial and regular students were remarkably similar in this study, which contrasts with remediation programmes implemented at other institutions. At the University of Colorado, for example, the remediation programme uses an individual approach emphasising practise, feedback and self-reflection; of the 151 remedial students in this programme, 90% demonstrated improved results after remediation (24). Similar observations were made at Seoul National University (25). These results suggest that individual or small-group learning elicits better outcomes and is thus recommended (26). Special-case students, or students with recurrent enrolment in the remedial programme, also need individualised treatment. Recurrent failure is usually caused by professionalism issues, a lack of individual guidance and a negative environment (11, 27).

Before the COVID-19 pandemic, remediation learning activities were conducted entirely at the hospital and included discussion, scientific meetings and clinical activities, such as bedside teaching. The pandemic has caused significant changes in the execution of medical education, which has been altered to distance learning. During distance learning, the cognitive aspect of education functions well. However, the clinical skill component becomes a challenge (1). Thus, it is highly suggested that remedial learning activities be performed individually or in small groups at the hospital under the

supervision of teaching staff in compliance with strict COVID-19 protocols. These activities integrate bedside teaching, clinical knowledge tutorials, standard physical examinations, counselling and group activities. Feedback and self-reflection should be emphasised throughout the learning process.

Assessment is the final component of the remediation programme. The most common assessment methods used are multiple choice questions (MCQs), OSCEs, a prescription test and an oral examination. Hauer et al. stated that the assessment method can be similar or different between rotations (26). However, varying assessment methods will result in a more effective assessment (9). It is recommended that the assessment method be chosen based on the students' needs. For example, students who are challenged by clinical reasoning and interpersonal communication should be assessed with an OSCE, while students with limitations in clinical knowledge should be assessed with MCQs (22). The examiners should also be different between rotations to avoid subjectivity (24).

The final stage of the remediation process, which comprises the fourth theme identified in this research, is the evaluation of the learning process and outcomes. The learning process is evaluated through improved student performance and competency achievement. According to Woodberry, the criteria for the success of a remediation programme include students achieving their expected competencies (22). Krzyzaniak stated that a remediation programme must have measurable and expected outcomes (13). This present study has identified several areas for improvement to enhance the remediation programme, which includes optimising time and learning activities, documenting data on remedial students' progress and refining assessment strategies. The management team for the remediation programme should allocate more time for the remediation process (26) and learning activities should be performed individually or in groups (25). Detailed

documentation on remedial students should include examination results, feedback, learning activity logs, attitude and behaviour notes and individual assessment outcomes (24, 28). In addition, improved assessment strategies, particularly high-quality item banks and assessment systems, are crucial. An assessment method must be dependable, valid, accurate, cost-effective and widely accepted, as well as have an educational impact (29).

This study was successful in providing an overview of the remediation programme in Indonesia. However, this study had several limitations. First, the results are specific, as the study was performed at a single medical education institution in Indonesia. Second, the remediation process was conducted in a distance learning environment due to the adaptations required during the COVID-19 pandemic. However, this is the first study to explore the remediation process for the clinical clerkship portion of medical education in Indonesia. The study can serve as an overview and a reference to improve the quality of current remediation programmes by revealing the causes of students' failure.

CONCLUSION

Based on respondents' perceptions, both academic and non-academic factors play a key role in the students' failed grades, which necessitate remediation. The remediation programme during the clinical stage consists of planning, execution and evaluation. A structured remediation programme guideline should be developed to organise and standardise remediation processes during clinical clerkships. To improve the quality of the remediation process, the factors underlying the need for remediation should be determined for the appropriate learning strategy.

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ETHICAL APPROVAL

Ethical approval was obtained from The Ethical Clearance Committee, Faculty of Medicine, University of Syiah Kuala-RSUD Dr Zainoel Abidin (No.: 114/EA/FK-RSUDZA/2020).

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