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Gaps in Preparedness for Independent Medical Practice Among Indonesian Medical Graduates: A Cross-Sectional Study

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ABSTRACT

Ensuring that medical graduates are adequately prepared for independent medical practice is a fundamental responsibility of medical faculties worldwide. However, recent literature indicates that many new medical graduates feel insufficiently prepared to manage complex clinical problems despite completing their training. This national cross-sectional study assessed the preparedness of Indonesian medical graduates for independent medical practice. A questionnaire adapted from the Indonesian Medical Competency Standards measured preparedness across six domains, including clinical skills, patient management, practical procedures and skills, communication and teamwork, clinical guidelines and protocols, and personal development and well-being. Responses were rated on a six-point Likert scale and collected electronically via snowball sampling. A total of 270 recent graduates from 50 medical faculties across Indonesia completed the survey (response rate: 17.5%). Graduates reported a high overall level of preparedness (mean 5.26 ± 0.56 out of 6). Respondents from outside Java and those trained in lower-tier hospitals (Types C and D) demonstrated significantly higher preparedness in the clinical and personal development domains ($p = 0.011$ and $p = 0.017$, respectively). Despite these favourable findings, preparedness was lowest for managing complex cases involving cognitive, psychological, and circulatory disorders, suggesting a potential gap in clinical exposure during training. Indonesia's medical education and internship programmes appear effective in preparing graduates for independent practice. Nevertheless, enhanced clinical exposure and structured supervision, especially in complex case management, is essential for enhancing graduates' competence and confidence.

Keywords: Preparedness for practice, Independent medical practice, Medical graduates, Clinical competence, Internship, Indonesia

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INTRODUCTION

Preparedness for practice encompasses the knowledge, skills, and professional behaviours required for independent and lifelong medical practice (1, 2). Over the past decade, it has been extensively studied as an indicator of how effectively medical education equips graduates for real-world clinical responsibilities.

Internationally, studies from the United Kingdom (UK) indicate that most newly qualified medical graduates report adequate preparedness for medical practice; however, persistent gaps remain in prescribing, emergency management, and teamwork skills (3, 4). Similarly, Miles et al. (4) highlighted that UK graduates felt underprepared to manage complex health conditions, including neurological disorders and chronic pain, as well as to cope with uncertainty and pharmacological complexities. In Australia, although medical graduates generally feel prepared to practice medicine, they report feeling insufficiently prepared to provide nutritional care, engage in clinical governance, respond to errors, and ensure patient safety (5).

Regionally, medical graduates in Malaysia report low levels of confidence and readiness to practice, which may contribute to increased stress and adversely affect their performance during internships (6). These findings suggest that preparedness for medical practice—including complex case management and interprofessional collaboration—remains a global concern.

In Indonesia, medical education comprises a preclinical phase, a clinical clerkship phase, and a national exit examination, followed by a one-year internship programme required for full licensure to practice independently. This internship, mandated by the Ministry of Health, serves as a transitional phase into clinical practice rather than a formal component of the medical curriculum. The programme involves one year of service in a hospital or primary healthcare setting under the supervision of a trained senior doctor (7). Nonetheless, despite the global emphasis on transitional training programmes, limited research has examined the efficacy of Indonesia's internship system in preparing graduates for independent medical practice.

The Indonesian Medical Competency Standards (IMCS) delineate the expected competencies of medical graduates across six domains: clinical skills, patient management, practical procedures, communication and teamwork, clinical guidelines and protocols, and personal development and well-being. These standards serve as a national framework guiding curriculum design, assessment, and licensure.

Therefore, this study aims to determine the level of preparedness of medical graduates for independent practice after completing their medical internships and identify specific domains in which preparedness may be insufficient, highlighting areas for improvement in medical education and internship training.

METHODS

Preparedness for practice encompasses the knowledge, skills, and professional behaviours required for independent and lifelong medical practice (1, 2). Over the past decade, it has been extensively studied as an indicator of how effectively medical education equips graduates for real-world clinical responsibilities.

Questionnaire Development

A nationwide, online, questionnaire-based cross-sectional study was conducted in March 2021. The questionnaire was adapted from the instrument developed by Miles et al. (4), which evaluated the preparedness of medical graduates for independent practice. This instrument was selected because it aligns closely with the IMCS, particularly in domains such as clinical procedures, communication, and professionalism. This ensured conceptual equivalence between the original instrument and Indonesia's competency-based medical education framework. The adaptation process comprised five stages.

- a. Forward translation: The original English version was translated into Indonesian by a medical education specialist with over five years of experience in teaching medical English and curriculum development.
- b. Expert panel review: A panel of three medical education specialists (two of whom were medical internship graduates) evaluated the translated version for semantic accuracy, cultural appropriateness, and domain relevance. All experts held postgraduate qualifications (master's degrees) in medical education and had professional experience in medical schools.
- c. Back translation: The Indonesian version was translated back into English by a sworn translator. Two Indonesian internship graduates residing in English-speaking countries reviewed the back-translation for semantic accuracy and alignment with the local clinical context.
- d. Pretesting and cognitive interviews: The preliminary version was piloted among 20 internship graduates from 13 medical faculties. The participants provided feedback on item clarity, comprehension, and response interpretation. Content validity was assessed through expert consensus during the panel review and pilot testing stages.
- e. Finalisation: The final version was converted into an electronic format using Google Forms for distribution.
- f. The final questionnaire comprised 56 items organised into six domains: (a) clinical skills, (b) patient management, (c) practical procedures and skills, (d) communication and teamwork, (e) clinical guidelines and protocols, and (f) personal development and well-being. Participants were asked to rate their perceived preparedness retrospectively before and after completing the internship programme. Responses were recorded on a 6-point Likert scale, ranging from 'totally not prepared = 1' to 'totally prepared = 6'. The demographic data included sex, age, year of entry, graduation from medical school, medical faculty name, and internship placement site.

Participants and Recruitment

Snowball sampling was employed to recruit participants. The initial respondents were contacted directly and invited to refer or forward the survey link to other eligible internship graduates within their professional or academic networks. This approach was selected to maximise participation and geographic representation across multiple institutions and provinces in Indonesia.

The target population comprised 1,544 Indonesian medical internship graduates from 30 provinces, who completed internships between May 2020 and February 2021. Access to contact data (including names, internship sites, and phone numbers) was granted with

institutional approval from the National Medical Intervention Coordination Board and was used in accordance with the ethical guidelines for participant confidentiality. The role of the coordinator involved facilitating communication, coordinating supervision logistics, and distributing administrative information to interns.

A convenience sample of eligible graduates was contacted via WhatsApp and other social media platforms, where they were provided with a secure link to the online survey. To encourage participation, respondents were entered into a lottery for 20 gift vouchers, each valued at 100,000 Indonesian Rupiah. Given the high professional workload during the pandemic, a 3-day reminder period was implemented to encourage responses while minimising disruptions. No additional follow-up was conducted after the initial reminder period.

The inclusion criteria were completion of the internship between May 2020 and February 2021, and consent to participate in the study. The exclusion criteria were incomplete responses and duplicate entries. Only respondents who completed all the core sections of the questionnaire were included in the final analysis.

Owing to the voluntary nature of participation and limited follow-up, non-response bias could not be assessed and is acknowledged as a study limitation.

Additionally, information on the accreditation levels of internship hospitals was collected and categorised according to the Indonesian Ministry of Health classification system:

- a. Type B hospitals: Regional hospitals offering comprehensive services with multiple specialist departments.
- b. Type C hospitals: District-level hospitals with limited specialist services and infrastructure.
- c. Type D hospitals: Smaller community hospitals that provide general medical services with minimal inpatient capacity.

Data were collected in March 2021, approximately one month after the participants completed their internship.

Data Analysis

Data were exported from Google Forms into Jeffreys's Amazing Statistics Program (JASP) software (version 0.18.2.0) for statistical analysis. Only fully completed responses were included in the dataset, and no imputation was performed for missing data to ensure accuracy and transparency.

The analysis was conducted in four sequential stages:

- a. Data cleaning and normality testing: The data were screened for completeness prior to the analysis. The Kolmogorov-Smirnov test, histogram inspections, and Q-Q plots were used to assess the normality of the preparedness score.
- b. Reliability analysis: The internal consistency of each preparedness domain was evaluated using Cronbach's alpha.

- c. Descriptive statistics: The mean preparedness scores were calculated for each domain on a 6-point Likert scale (1 = totally unprepared to 6 = totally prepared). Mean and standard deviation were reported in line with previous studies that used similar instruments (e.g., Miles et al. (4)).
- d. Inferential comparisons: To compare preparedness across participant characteristics, the Mann–Whitney U test was used for group comparisons. A *p*-value < 0.05 was considered statistically significant for all analyses.

RESULTS

Reliability analysis of the preparedness for practice questionnaire revealed excellent internal consistency across all domains, with Cronbach's alpha values ranging from 0.919 to 0.975, indicating high reliability of the adapted instrument (Table 1). A Cronbach's alpha value of ≥ 0.70 is generally considered acceptable for internal consistency (8).

Table 1: Cronbach's alpha value for each preparedness for practice domain

Preparedness for practice domain	Cronbach's alpha value
Clinical skills	0.975
Patient management	0.948
Practical procedures and skills	0.938
Communication and teamwork	0.950
Clinical guidelines and protocols	0.919
Personal development and well-being	0.934

Characteristics of Respondents

A total of 270 respondents (out of 1,544 eligible internship graduates; response rate: 17.5%) completed the questionnaire and met the inclusion criteria for the analysis. The respondents represented 50 medical faculties and 66 internship sites across 23 of Indonesia's 38 provinces.

Figure 1 shows the distribution of respondents by the province where their medical university was located. Although respondents were drawn from various regions with medical faculties in Indonesia, there was a higher representation from West Java, South Sulawesi, and Central Sulawesi, reflecting the concentration of medical schools and internship placements in these areas.

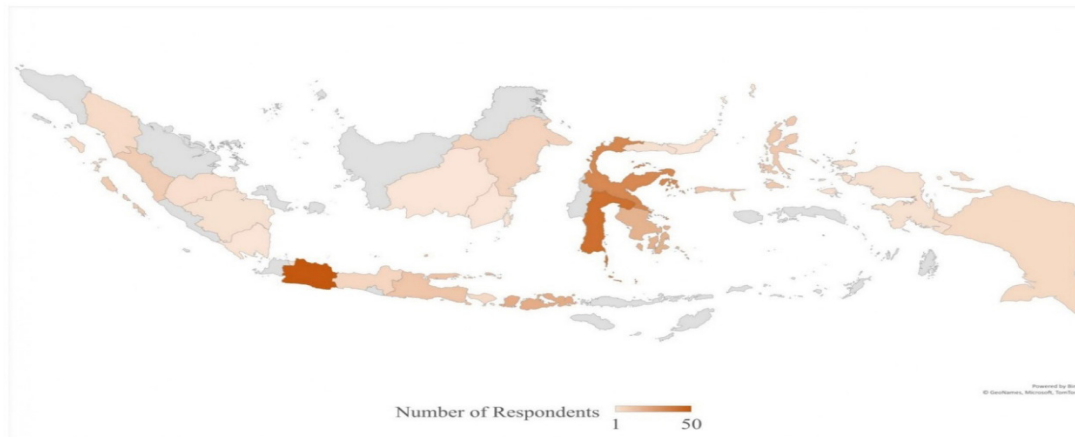


Figure 1: Map of distribution of respondents by province in Indonesia (n = 270).

Table 2 presents the respondents' demographic data. Respondents from universities outside Java reported significantly higher preparedness scores (mean = 5.32 ± 0.56) compared to those from Java (mean = 5.18 ± 0.56 ; $p = 0.011$), suggesting regional variation in training outcomes. Similarly, graduates who completed their internships in lower-accredited hospitals (Types C or D) demonstrated significantly higher preparedness scores than those in Type B hospitals ($p = 0.017$). No statistically significant differences were found based on sex, length of study, or medical school accreditation.

Table 2: Demographic data of the respondents and mean preparedness scores (max = 6)

Variable	Category	n	%	Mean $\pm$ SD	95% CI	p-value
Sex	Male	94	35	5.25 ± 0.63	-0.17–0.12	0.74
	Female	176	65	5.27 ± 0.52		
Length of study	5–6 years	142	53	5.30 ± 0.53	-0.22–0.05	0.231
	> 6 years	128	47	5.21 ± 0.59		
Region of university	Java	119	44	5.18 ± 0.56	0.04–0.31	0.011*
	Outside Java	151	56	5.32 ± 0.56		
Medical school accreditation	A (Excellence)	129	48	5.21 ± 0.55	-0.03–0.25	0.113
	B (Very good)	141	52	5.30 ± 0.57		
Internship hospital accreditation	Type B	71	26	5.14 ± 0.57	0.04–0.34	0.017*
	Type C or D	199	74	5.30 ± 0.55		
Total		270	100	5.26 ± 0.56		

Notes: *Mann-Whitney U test significance level: p -value < 0.05 = significant.

Preparedness for Practice

Overall, medical graduates reported a high level of preparedness for medical practice, with an overall mean score of 5.26 ± 0.56 (95% CI: 5.19–5.33) out of 6. Most graduates felt confident about beginning independent clinical practice after completing the internship programme.

Table 3 shows the descriptive statistics for each preparedness domain, including mean, standard deviation, median, range, and 95% confidence intervals. Across the six domains, communication and teamwork (mean = 5.45 ± 0.62 , 95% CI: 5.37–5.52) and patient management (mean = 5.37 ± 0.61 , 95% CI: 5.30–5.44) received the highest ratings, suggesting strong perceived competence in interpersonal collaboration and patient care management. Conversely, clinical skills (mean = 5.16 ± 0.58) and practical procedures and skills (mean = 5.24 ± 0.66) scored lowest among the domains, indicating a relative gap in procedural skills preparedness. Median scores across all domains ranged from 5.15 to 5.71, while minimum scores ranged from 2.63 to 3.57—a small subset of respondents perceived lower preparedness in selected areas.

Table 3: Descriptive statistics of preparedness for practice domains

Preparedness for practice domain	Mean $\pm$ SD	Median (Min–Max)	95% CI
Clinical skills	5.16 ± 0.58	5.15 (3.57–6.0)	5.09–5.23
Patient management	5.37 ± 0.61	5.43 (3.29–6.0)	5.30–5.44
Practical procedures and skills	5.24 ± 0.66	5.25 (2.63–6.0)	5.16–5.32
Communication and teamwork	5.45 ± 0.62	5.71 (3.0–6.0)	5.37–5.52
Clinical guidelines and protocols	5.38 ± 0.62	5.50 (3.0–6.0)	5.31–5.46
Personal development and well-being	5.25 ± 0.62	5.14 (3.29–6.0)	5.18–5.33

Consistent with the earlier findings in Table 2, Table 4 shows that graduates from universities outside Java reported significantly higher preparedness scores than those from Java, particularly in the domains of clinical skills ($p = 0.007$), practical procedures and skills ($p = 0.003$), and personal development and well-being ($p = 0.034$). On average, the mean difference between the two groups was approximately 0.14–0.16 points across these domains, representing a small but meaningful increase in perceived readiness among graduates trained outside Java.

Similarly, graduates who completed their internships in lower-accredited hospitals (Types C or D) demonstrated higher preparedness scores than those trained in Type B hospitals, with significant differences in clinical skills ($p = 0.021$), practical procedures and skills ($p = 0.002$), and personal development and well-being ($p = 0.047$). These results suggest that graduates from smaller hospitals may have experienced greater clinical engagement and procedural responsibility, contributing to stronger self-perceived preparedness.

No statistically significant differences were found in the patient management, communication and teamwork, or clinical guidelines and protocols domains by university region or hospital accreditation level—these competencies were perceived as consistently strong across the subgroups.

Table 4: Comparison of preparedness mean scores by university region and internship hospital accreditation level

Variable	Preparedness for practice domain (Mean)					
	A	B	C	D	E	F
Region of university						
Java	5.17	5.37	5.24	5.43	5.36	5.24
Outside Java	5.15	5.37	5.24	5.46	5.41	5.26
<i>p</i> -value	0.007*	0.071	0.003*	0.213	0.133	0.034*
Effect size (Cohen's d)	0.19	0.13	0.21	0.09	0.10	0.15
Internship hospital accreditation level						
B	5.10	5.33	5.17	5.44	5.36	5.20
C or D	5.21	5.40	5.30	5.45	5.41	5.30
<i>p</i> -value	0.021*	0.147	0.002*	0.117	0.238	0.047*
Effect size (Cohen's d)	0.18	0.11	0.24	0.12	0.09	0.16

Notes; *Mann-Whitney U test significance level: *p*-value < 0.05 = significant.

A = Clinical skills; B = Patient management; C = Practical procedures and skills; D = Communication and teamwork; E = Clinical guidelines and protocols; F = Personal development and well-being

Table 5 summarises the mean preparedness scores for all 56 items of the preparedness for practice questionnaire, ranked from highest to lowest. Scores were rated on a six-point Likert scale (1 = totally not prepared to 6 = totally prepared), and scores below 5.0 were considered areas of relative weakness.

Overall, graduates rated most of the items above 5.0, confirming a high level of self-perceived preparedness across competencies. The top 10 highest-rated items primarily represented interpersonal and routine competencies, including respecting patients (mean = 5.57), history taking (5.56), communication with patients and colleagues (5.55–5.56), and prioritising patient safety (5.46). These findings indicate that graduates felt most confident in communication, teamwork, and professional conduct, which aligned closely with the competencies emphasised during the internship phase.

Conversely, the lowest-rated items were concentrated in complex clinical management and procedural skills. Graduates reported lower preparedness to handle patients with cognitive (4.69), psychological (4.73), neurological (4.91), and circulatory (4.96) disorders, as well as to assist with normal childbirth (4.95). These items represent less frequently encountered or exposed conditions during clinical rotation.

Table 5: Preparedness for practice scores (ranked highest to lowest)

Code	Preparedness for practice score	Mean	Rank
Top 10 highest-rated items			
B2	Respecting/appreciating the patient	5.57	1
A1	History taking	5.56	2
D3	Communication with colleagues	5.56	2
D1	Communication with patient	5.55	4
D2	Communication with the patient's family/companion	5.54	5
D6	Patient handover to the colleagues (transfer patient)	5.53	6

(Continued on next page)

Table 5. (continued)

Code	Preparedness for practice score	Mean	Rank
A9	Conduct appropriate management for common symptoms such as nausea, pain, and others	5.52	7
D5	Conducting consultations with senior colleagues	5.48	8
E1	Prioritising patient safety in clinical practice	5.46	9
D4	Working effectively in a multidisciplinary team	5.46	10
E4	Applying the infection prevention protocols	5.45	11
E3	Understanding the principles of medical ethics, including confidentiality and approval of medical treatment	5.43	12
A7	Taking an accurate drug history	5.43	13
B3	Discussing the treatment options with the patient, including the existing benefits and risks	5.42	14
C4	Conducting urethral catheterisation	5.42	14
C5	Suturing	5.42	14
F5	Implementing the responsibility	5.42	17
A2	Examination skills	5.39	18
C2	Prescribing the medicine and treatment (including oxygen and fluid) properly and clearly	5.38	19
A5	Requesting appropriate investigations (e.g., blood test, radiology)	5.374	20
B7	Taking the time to conduct health promotion and disease prevention	5.34	21
A20	Completing medical records correctly and accordingly	5.32	22
B1	Agreeing with the patient for each medication management plan that is provided	5.32	22
B4	Discussing medication with the patient, including medicine side effects	5.32	22
B5	Understanding the influence of social/cultural environment on a patient's condition	5.32	22
A22	Making a patient discharge resume	5.31	26
F1	Realizing limited self-ability	5.31	26
A21	Making a referral letter	5.31	28
C1	Conducting injection action (taking blood, injecting the medicine, others)	5.31	28
A4	Deciding which laboratory tests/investigations are required	5.30	30
F3	Responsible for lifelong learning and independent professional development	5.29	31
A3	Making diagnostic	5.29	32
B6	Understanding the influence of disease on the patient's psychological and emotional health	5.28	33
F7	Able to work independently, based on condition	5.23	34
C3	Conducting IV canulation	5.22	35
F2	Making task priority and time management	5.22	35
E2	Understanding medicolegal aspects in clinical practice	5.19	37

(Continued on next page)

Table 5. (continued)

Code	Preparedness for practice score	Mean	Rank
A10	Making a patient's diagnosis or management based on scientific evidence critically	5.18	38
A6	Interpreting investigation	5.17	39
F4	Maintaining personal health, including stress management	5.17	39
C7	Conducting NGT (Nasogastric tube)	5.14	41
F6	Resolving uncertainty	5.14	41
A18	Conducting the appropriate and effective management of acute pain and chronicles	5.13	43
A23	Confirming death and making a certification letter/patient's death certificate	5.13	44
A11	Handling patients with airway problems	5.06	45
A12	Handling patients with breathing problems such as acute asthma, pulmonary embolism	5.06	45
Bottom 10 lowest-rated items			
C6	Conducting minor surgery such as circumcision, excision of the superficial tumor, abscess incision)	5.06	47
A19	Responding to emergency situations effectively	5.04	48
D7	Teaching the colleagues/student	4.99	49
A13	Handling patients with circulation disorders, such as hypotension, sepsis	4.96	50
C8	Assisting normal childbirth	4.95	51
A17	Handling patients with acute pain with complex necessities such as medication for geriatric patient	4.92	52
A14	Handling patients with neurological disorders in the sensory system, such as convulsions, coma	4.91	53
A8	Understanding the interaction between various types of medicines	4.87	54
A15	Handling patients with psychiatric /psychological disorders such as drug abuse, psychosis	4.73	55
A16	Handling patients with cognitive disorders such as dementia, delirium	4.69	56

Notes: A = Clinical skills; B = Patient management; C = Practical procedures and skills; D = Communication and teamwork; E = Clinical guidelines and protocols; F = Personal development and well-being

DISCUSSION

Overview and Key Findings

This study provides a national overview of Indonesian medical graduates' readiness to practice medicine independently after completing their internship during the post-COVID-19 pandemic period. The medical school curriculum, accreditation process, national exam, and internship programme have made graduates feel prepared to practice independently (9, 10).

In general, graduates reported high levels of preparedness; however, the results also indicated gaps in their ability to handle complex clinical cases and specific procedural

skills. The graduates rated themselves as most prepared in communication, teamwork, and professionalism. Nevertheless, they demonstrated lower levels of preparedness in managing patients with psychiatric, cognitive, and neurological disorders and assisting with standard deliveries. This pattern aligns with previous studies from the UK, China, and Australia, which also found that new graduates were generally better prepared in interpersonal skills than procedural skills (4, 5, 11). A qualitative study on medical practice preparedness showed that new graduates lack confidence in practising medicine independently because of limitations in the learning process and supervision caused by the COVID-19 pandemic (12). Although the COVID-19 pandemic presented various restrictions, young doctors have opportunities for clinical practice and supervision so that they feel ready to practice medicine independently.

Regional and Institutional Differences

In Indonesia, most medical faculties are on the island of Java, which provides medical students with different experiences and opportunities to practice medicine. This study also demonstrates regional differences in graduate preparedness. Graduates from universities outside Java reported higher levels of readiness in self-development and personal well-being, whereas those from Java scored higher in clinical and procedural skills. This suggests that contextual factors, such as resident availability, clinical supervision models, and opportunities for hands-on learning, influence graduates' perceived preparedness. In Java, clinical learning generally occurs in teaching hospitals with numerous residents, reducing the direct interaction between students and clinical supervisors (13, 14). As many medical faculties outside Java do not include residents in their education, students are involved in clinical practice and have more interaction time with their supervisors. Clinical guidance during the internship significantly affects graduates' ability to provide health services independently (15). This can also be caused by graduates from outside Java feeling too confident in their abilities. Another study shows that residents are well-received as educators for medical students, which has a positive impact on the competence of students and young doctors (16–18).

Internship Experience and Hospital Type

Graduates who completed internships in Type C and D hospitals demonstrated higher levels of preparedness, particularly in the clinical and procedural domains. These hospitals typically provide broader case exposure that closely aligns with the scope of general practitioner practice. Similar findings have been reported in studies conducted in rural areas and smaller hospitals, where increased clinical responsibility is associated with higher levels of graduate preparedness (19, 20). This pattern reflects the value of practice-based learning experience (learning by doing), in which young doctors must independently manage patients across various settings. However, high case exposure may also increase workload and stress, necessitating support in the form of structured supervision, peer mentoring, and adequate mentoring systems during internships.

Curriculum Implications and Gaps in Clinical Exposure

The lowest preparedness scores were found in procedural and emergency-related competencies, such as childbirth assistance and management of psychiatric and neurological conditions. A survey of intern doctors in India revealed the same pattern (21). This underscores the need to strengthen the curriculum through simulation-based learning,

directed procedural exercises, and complex case-based learning. Moreover, medical education must emphasise the development of higher-order clinical reasoning, critical thinking skills, and interprofessional collaboration to better prepare graduates for complex clinical situations (22–24). Furthermore, given the reports of stress and burnout among physicians working in rural areas (25), mental health support, mentoring programmes, and workload management must be integrated into learning systems and internship programmes.

Strengths, Limitations, and Direction for Future Research

This study makes an essential contribution to understanding Indonesian medical graduates' readiness for medical practice using a competency-based self-assessment approach. Nevertheless, as the data were obtained through self-assessment, the results may have been influenced by perceptual bias—either a tendency to overestimate or underestimate themselves. Future research should compare these self-assessment results with objective data, such as the Indonesian Medical Doctors National Competency Examination (26), internship supervisor assessments, and patient or healthcare professional feedback, to obtain a more comprehensive picture of preparedness.

Although the level of respondent participation was moderate, the inclusion of graduates from various regions and hospital types provided meaningful national representation. Overall, these findings highlight that Indonesian medical graduates are adequately prepared in interpersonal and basic clinical skills. Nonetheless, further curriculum refinement is necessary to strengthen preparedness for complex procedures, emergency care, and mental health management.

CONCLUSION

Over the past decade, it has been extensively studied as an indicator of how effectively medical education equips graduates for real-world clinical responsibilities. This study demonstrates that medical graduates in Indonesia generally perceive themselves as well prepared for independent medical practice, particularly in the domains of communication, teamwork, and professionalism. However, the lowest readiness scores were observed in the management of psychiatric, neurological, and other complex clinical conditions, as well as in procedural skills, including assistance with normal childbirth. Graduates from outside Java and those trained in lower-tier hospitals reported higher levels of readiness—greater hands-on clinical exposure enhances confidence and competence. These findings emphasise the need to strengthen clinical training and supervision in underexposed domains, alongside integrating mental health and well-being support for interns. As this study relied on self-assessment, the results may reflect perceived rather than actual competence, underscoring the importance of triangulating results with objective assessment measures. Future research should focus on improving the curriculum and learning activities of internship programmes to ensure more equitable and comprehensive preparedness across Indonesia.

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ETHICAL APPROVAL

This study was approved by the Medical and Health Research Ethics Committee (MHREC), Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Dr. Sardjito General Hospital, with approval letter number KE/FK/0112/EC/2021.

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