ORIGINAL ARTICLE

Attitude and perception of house officers towards prescribing practice and prescribing competencies in Malaysia: A multi hospital survey

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ABSTRACT

Introduction: Prescribing errors are a significant issue in healthcare systems globally and represent an imminent risk to patient safety. These errors have the potential to result in increased morbidity and mortality. This study seeks to investigate the perceptions of House Officers (HOs) in Malaysia regarding their prescribing skills and competencies, as well as their views on the adequacy of clinical pharmacology and therapeutics training received during their undergraduate medical education.

Materials and Methods: A cross-sectional study was conducted among HOs in 9 hospitals across Malaysia. The study utilized a survey comprising 26 items to assess the HOs' perceptions of their knowledge in clinical pharmacology and therapeutics, as well as their prescribing practices during housemanship training. Data was analysed using descriptive and inferential statistics.

Results: A total of 319 HOs participated in the study, which was conducted between June 2019 and June 2021. The findings revealed that the majority of participants perceived themselves as possessing adequate knowledge to prescribe most commonly used classes of medications. Nevertheless, 45% of respondents reported feeling adequately prepared for prescribing tasks based on their undergraduate medical training. Additionally, 51% expressed confidence in their therapeutic knowledge for prescribing, while approximately 50% reported confidence in preparing and administering medications.

Conclusion: The findings indicate that HOs generally perceive themselves as confident and knowledgeable in prescribing and preparing prescriptions. However, limitations in undergraduate education on prescribing contribute to feelings of inadequate preparedness as they transition into clinical practice. Strengthening educational support in this area is essential to improving prescribing competence, ensuring patient safety, and enhancing overall clinical outcomes.

KEYWORDS:
Prescribing skills, Competency, House officers, Pharmacology and Therapeutics

INTRODUCTION

Prescribing errors are prevalent in healthcare settings globally. Particularly, house officers (HOs),i.e. trainee doctors are a common cause of these oversights.[1–3] Most medication errors are accounted for by prescribing errors (PE) that are preventable.[4–7] Medication plays a vital role in disease management and PE are an imminent threat to patient safety, which can potentially lead to increased morbidity and mortality. A prescription error is defined as 'a failure in the process of prescription writing resulting in a wrong instruction about one or more of the normal features of it'. These include right patient, right drug, right formulation and dose, right route, timing, frequency and duration of administration of drugs.[8] Whilst the occurrence of errors can take place at any stage in the process of medication usage, from prescribing, transcribing, and dispensing to administering the medications to patients, evidence shows that PE are one of the most common type of errors in healthcare settings.[5,9] Among the common PE include dose/strength errors (14.4%), omission errors (11.8%), giving unnecessary drugs (23.5%), and insufficient information (37.9%).10 In support of this, a study on paediatric department showed PE occurred in 13% of prescriptions, with 7.3% of items prescribed incorrectly; most errors were ambiguous prescriptions (61.1%) and unrecommended dose regimens (13.9%), and house officers were significantly more likely to make errors (OR 4.72, p=0.029). Notably, 30.6% of errors were potentially serious, highlighting the impact of prescriber experience on paediatric patient safety.[11] Another cross sectional study involving multicentre paediatric department reported that the overall prescribing error rate was 9.2%, with electronic prescribing showing a higher error rate than manual prescribing (16.9% vs 8.2%, p<0.05). Most errors were linked to human factors such as knowledge gaps and lack of supervision, with 1.7% having serious and 0.1% potentially fatal consequences, highlighting the need for better training and supervision of junior doctors in paediatric

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prescribing.[12] Furthermore, a study conducted at a tertiary hospital identified that of 1,045 medication error reports reviewed, 97.5% classified as near-misses and only 2.5% as actual errors. Most PE occurred during the prescribing stage (97.4%), involved wrong doses (52.3%), and affected geriatric patients (37.1%), though 99.4% caused no harm. Pharmacists detected most errors, and staff factors were the main contributors, highlighting the need for proper guidelines and preventive strategies to enhance patient safety.[13]

A first of its kind comprehensive study in Malaysia evaluating the severity of PE from 2017-2019 revealed a 1.8% (1.36 million) PE of the total 75.5 million prescriptions intervened by pharmacist.[11] Statistics from the Ministry of Health indicate a rise in reported medication errors, increasing from 2,818 cases in 2018 to 3,046 cases in 2019. Among the various types of medication errors, PE accounted for the highest proportion, with 2,878 cases (51%), followed by dispensing errors at 1,512 cases (27%) and administration errors at 1,036 cases (18%).[12] The safety guide reported factors that may lead to prescribing errors by healthcare professionals including the lack of therapeutic training and inadequate knowledge and experience on medication.[13] A review paper had corroborated such findings by reporting that prescription errors are particularly significant in that these errors constituted between 24% and 76% of all medication errors in Malaysia.[14]

Prescribing is not just about the final written prescription. It is a complex task that requires the forming of the right diagnosis followed by an assessment of benefit to harm ratio based on evidence, choosing the right drug therapy by taking into account the alternatives and the right dose regimen, and discussion about the proposed treatment and management plans as well as the benefits and adverse effects of the drugs with the patient.[15] However, several studies have shown unpreparedness for effective and safe prescribing among final year medical students and HOs.[1–4] The lack of knowledge and skills to prescribe drugs have been strongly associated with serious medication errors in a UK hospital.[16] In Malaysia, limited learning opportunities and hands-on practice have been reported, especially in private university as compared to public university.[17] There is an urgent need to review the teaching and assessment of clinical pharmacology and therapeutic to ensure safe and rational prescribing among new doctors.[3]

A key international reference for guiding and assessing safe and rational prescribing is the World Health Organization's Guide to Good Prescribing (1995). This guide outlines a structured six-step approach to the prescribing process: (i) define the patient's problem, (ii) specify the therapeutic objective, (iii) verify the suitability of the P-drug (personal drug), (iv) start the treatment, (v) give information, instructions and warnings, and (vi) monitor (stop) the treatment. These steps emphasize that prescribing is not simply the act of writing a drug order but a comprehensive clinical decision-making process. The framework has been widely adopted in medical curricula globally and serves as a foundation for developing educational content and assessment tools related to prescribing. Incorporating this model into medical education ensures that new doctors are trained to approach prescribing in a systematic, evidence-based, and patient-centered manner.[18]

However, there is limited research on Malaysian house officers' self-perceived prescribing competency. Therefore, this study aimed to determine the attitude and perception of skills and confidence in prescribing among HOs in Malaysia and to evaluate their perceived learning of clinical pharmacology and therapeutics during undergraduate medical education. This study will contribute in improving the medical education in prescribing to produce good and safe doctors.

MATERIALS AND METHODS

Study design

A cross-sectional descriptive study was conducted from June 2019 to June 2021. The HOs were recruited anonymously via hospital clinical research centres (CRC) on voluntary basis . This study was approved by Perdana University Institutional Review Board (PU-IRBBHR01934) and the Malaysian Medical Research Ethics Committee (NMRR 18-1484-42311(IIR)).

Study population

The study population comprised of 319 HOs from various government hospitals in Malaysia. Participation was voluntary and anonymous. A total of 9 out of 25 main MOH training hospitals responded to the study invitation and included in the study. The included hospitals were Hospital Kuala Lumpur, Hospital Tengku Ampuan Rahimah, Klang, Hospital Kajang, Hospital Raja Permaisuri Bainun, Ipoh, Hospital Umum Sarawak, Hospital Queen Elizabeth I and II, Hospital Serdang, Hospital Tengku Ampuan Afzan, Kuantan and Hospital Putrajaya. The Hospital Clinical Research Centre (CRC) distributed the survey to the HOs via their work emails. CRC coordinator while near to the survey completion sent multiple reminders to encourage HOs to complete the survey. On top of hospital CRC, the questionnaire was later shared in the social media platform and alumni groups to increase the response rate.

Study Instrument

The study instrument used in this research was a questionnaire in the form of an online survey. The survey link was shared to HOs via the hospitals' centre for clinical research and using the Qualtrics^{XM}. Demographic data including age, gender, race, type of medical programme and medical school from which they graduated and the training year were collected. The online survey adopted a previously validated questionnaire [19] (Prof Simon Maxwell provided the questionnaire) with minor modifications (demographics) to suit local settings. The revised questionnaire tested for validity and reliability in the previous study based on 106 responses, giving the Cronbach alpha of 0.897 and the Kaiser-Meyer-Olkin of 0.81 indicating good internal consistency of the study instrument.[20]

The survey comprised of 26 questions in total, of which 6 were multiple choice question to assess on teaching and learning in prescribing during undergraduate studies. The remainder 20 questions were 7-point Likert scale questions (strongly disagree – strongly agree) revolving around the assessment of

Table I: Association of gender, race, year of HO training, type of medical school and having formal prescribing training with the median score for 1. Knowledge to prescribe drugs, 2. Prescribing practice and 3. Confidence to prescribe and the Knowledge to prescribe, Prescribing practice and Confidence to prescribe median (IQR), (N = 319).

1. Knowledge to prescribe drugs			
Variables	**Median**	**Interquartile range (IQR)**	**P-value**
Gender			0.003*
Male	52.00	17.50	
Female	48.00	14.00	
Overall	50.00	15.00	
Race			0.006*
Malay	52.00	15.00	
Chinese	49.00	12.75	
Indian	46.00	19.00	
Others	55.00	12.50	
Overall	50.00	15.00	
Year of training			0.000*
Y1	49.00	15.00	
Y2	53.00	14.00	
Overall	50.00	15.00	
Type of Medical School			0.209
Public	50.00	14.00	
Private	50.00	16.00	
No response	48.00	20.00	
Overall	50.00	15.00	
Had formal prescribing training in medical school			0.000*
YES	52.00	14.00	
NO	44.00	15.00	
Overall	50.00	15.00	
2. Prescribing practice			
Variables	Median	IQR	P-value
Gender			0.248
Male	21.00	7.00	
Female	21.00	6.00	
Overall	21.00	6.00	
Race			0.267
Malay	21.00	7.00	
Chinese	21.00	7.00	
Indian	21.00	7.00	
Others	19.00	2.50	
Overall	21.00	6.00	
Year of training			0.004*
Y1	20.00	6.00	
Y2	22.00	7.00	
Overall	21.00	6.00	
Type of Medical School			0.003*
Public	21.50	7.00	
Private	21.00	6.00	
No response	18.00	5.00	
Overall	21.00	6.00	
Had formal prescribing training in medical school			0.000*
YES	22.00	7.00	
NO	18.00	5.00	
Overall	21.00	6.00	
3. Confidence to prescribe			
Variables	Median	IQR	P-value
Gender			0.001*
Male	21.00	6.75	
Female	18.00	6.00	
Overall	19.00	6.00	
Race			0.830
Malay	19.00	6.00	
Chinese	18.00	7.00	
Indian	18.00	8.00	
Others	18.00	10.00	
Overall	19.00	6.00	
Year of training			0.000*
Y1	18.00	6.00	
Y2	21.00	7.00	
Overall	19.00	6.00	

Table II: Median and Interquartile Range (IQR) of Items Assessing Knowledge to Prescribe, Views on Prescribing Practice, and Confidence to Prescribe

Variables	Median	Interquartile range (IQR)	P-value
Type of Medical School			0.045*
Public	19.00	6.00	
Private	19.00	6.00	
No response	16.00	5.00	
Overall	19.00	6.00	
Had formal prescribing training in medical school			0.023*
YES	19.00	7.00	
NO	18.00	6.00	
Overall	19.00	6.00	
Knowledge to prescribe		**Median**	**IQR**
I believe I have sufficient knowledge to prescribe the following drug: Analgesia		5.00	2.00
I believe I have sufficient knowledge to prescribe the following drug: Opiates		4.00	2.00
I believe I have sufficient knowledge to prescribe the following drug: Laxatives		5.00	2.00
I believe I have sufficient knowledge to prescribe the following drug: Antibiotics		5.00	2.00
I believe I have sufficient knowledge to prescribe the following drug: Emetics		5.00	1.00
I believe I have sufficient knowledge to prescribe the following drug: Cytotoxic		2.00	2.00
I believe I have sufficient knowledge to prescribe the following drug: Anti-Hypertensives		5.00	1.00
I feel I have sufficient knowledge to prescribe the following drug: Anti-Diabetes		5.00	1.00
I believe I have sufficient knowledge to prescribe the following drug: Anti-Epileptics		4.00	3.00
I believe I have sufficient knowledge to prescribe the following drug: Anti-coagulants		4.00	2.00
I believe I have sufficient knowledge to prescribe the following drugs: Anti-Histamines		5.00	2.00
Views on Prescribing Practice			
I feel that my medical school training has prepared me for prescribing medications in clinical practice		4.00	2.00
I feel stressed about prescribing medications as a house officer		4.00	3.00
I feel I have sufficient resources to aid my continued learning in prescribing		5.00	2.00
I always allocate time & resources to ensure my prescribing skills are enhanced in hospital setting		5.00	2.00
I only realize the importance of prescribing during house officer training		2.00	2.00
Confidence to prescribe			
I feel confident in prescription writing		5.00	2.00
I feel confident in accessing drug information in the hospital setting		5.00	2.00
I feel confident in therapeutic knowledge for prescribing		5.00	1.00
I feel confident in preparing and administering drugs		5.00	2.00

*Significant association ($p<0.05$). (Note: 1=Strongly disagree, 2=Disagree, 3=Somewhat disagree, 4=Neither agree nor disagree, 5=Somewhat agree, 6=Agree, 7=Strongly agree)

three main aspects, self-perceived competency to prescribe various classes of drugs, their views on their prescribing practice and confidence in prescribing.

Data analysis

The data collected were analysed using Statistical Package for Social Sciences software (SPSS version 28, IBM Corp., USA). Descriptive statistics (frequency in percentage) were applied for data analysis. Likert scale responses were reported as percentages. The median total score for 1. Knowledge to prescribe drugs, 2. Prescribing practice and 3. Confidence to prescribe were analysed for differences among gender, year of training, type of medical school and whether received a formal prescribing training in medical school to identify factors that predict high confidence in prescribing with independent variables using non-parametric independent samples test (Mann-Whitney U test for 2 samples or Kruskal Wallis test for 3 or more samples accordingly).

RESULTS

A total of 319 responses were collected between June 2019 and June 2021 from HOs working in various government hospitals in Malaysia. The overall response rate for this study was 6% (based on responses from Hospital Raja Permaisuri Bainun, Ipoh: 21 out of 345 HOs responded).

Sixty-one percentage (195/319) of the HOs were currently in their first year of house officer training while 36% (115/319) of them were in their second year and 3% (9/319) were classified as others. The majority of the HOs (98%; 314/3)19) were aged between 21 to 30 years old and only 2% (5/319) of them were aged between 31 to 40 years old. There were 112 male participants and 207 female HOs. There were 151 Malays, 100 Chinese, 51 Indian participants and 17 HOs of other races. Majority of the HOs were from the undergraduate programme while 9% (27/319) of them were from the graduate entry programme.

Learning of clinical pharmacology & therapeutics during medical school

When enquired about the number of times the HOs had practised writing up a full drug prescription during undergraduate training, 46% (146/319) of them identified the number of times as less than 5 times, 21% (66/319) of them as 5-10 times and 33% (105/319) of them as more than

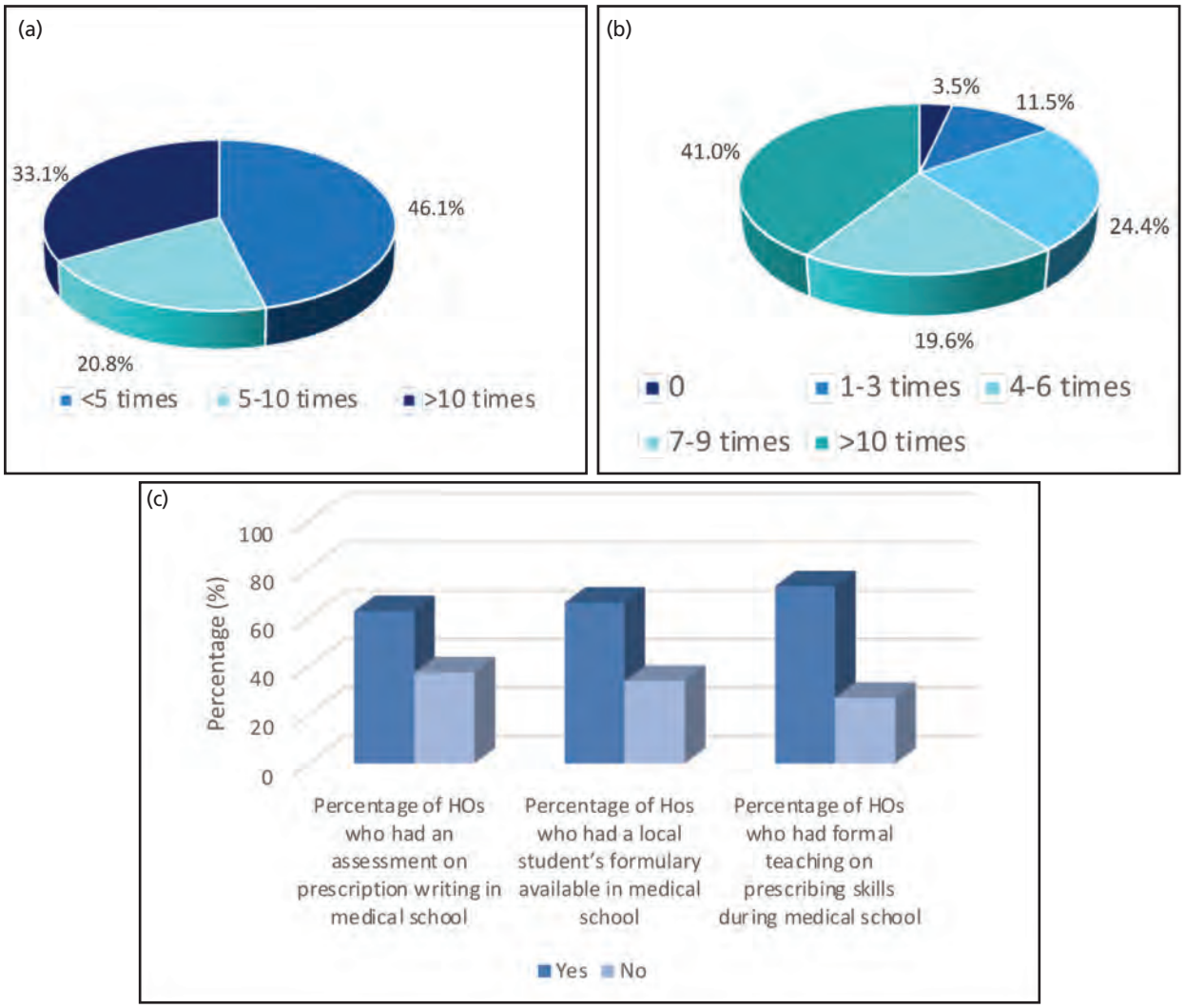

Fig. 1: (a). Number of times HOs had practiced writing up a full drug prescription during undergraduate training. (b) Average number of prescriptions written in a day in hospital practice. (c) : The percentage of HOs [i] who had been assessed on their level of competency in prescription writing during their study at a medical school, [ii] who had a local student's formulary available and [iii] who had received formal training on prescribing skills during their study at a medical school.

10 times (Figure 1a). About 63% (200/319) of the HOs confirmed that they were assessed on writing prescriptions either in the format of written or OSCE in year 4 or 5 of medical school and 66% (210/319) of them said they had a local student formulary (list of common drugs and adverse effects) available to them in medical school. Overall, a majority of 73% (232/319) responded that they had formal teaching in prescribing skills during medical school training (Figure 1c).

Prescribing practice during internship

When asked about the average number of prescription writing in a single day in hospital practice, majority of them (41%; 130/319) stated the number of times as more than 10 times, 20% (63/319) of them stated they prescribe 7-9 times, 24% (76/319) of them identified the number of times as 4-6 times and 15% (47/319) of them less than 1-3 times (Figure 1b).

Self-perceived having sufficient knowledge to prescribe

The majority of the HOs confidently said they have sufficient knowledge to prescribe the drugs such as analgesia (71%; 226/319), laxatives (72%; 229/319), antibiotics (62%; 197/319), anti-emetics (78%; 248/319), anti-hypertensives (79%; 252/319), anti-diabetics (77%; 245/319) and anti-histamines (64%; 204/319). Less than half of the HOs thought to have sufficient knowledge to prescribe some classes of drugs such as anticoagulants (48%; 153/319), opiates (46%; 146/319), epileptics (35%; 111/319) and cytotoxic drugs (13%;41/319) Figure 2). HOs reported high confidence in prescribing analgesics and anti-hypertensives but low confidence in cytotoxic drugs, reflecting limited exposure to oncology settings.

Views on HO's own prescribing practice

When asked if medical school training has prepared HOs for prescribing medications in clinical practice, 45% (143/319) of them showed agreement meanwhile 32% (102/319) of the respondents said they were stressed about prescribing

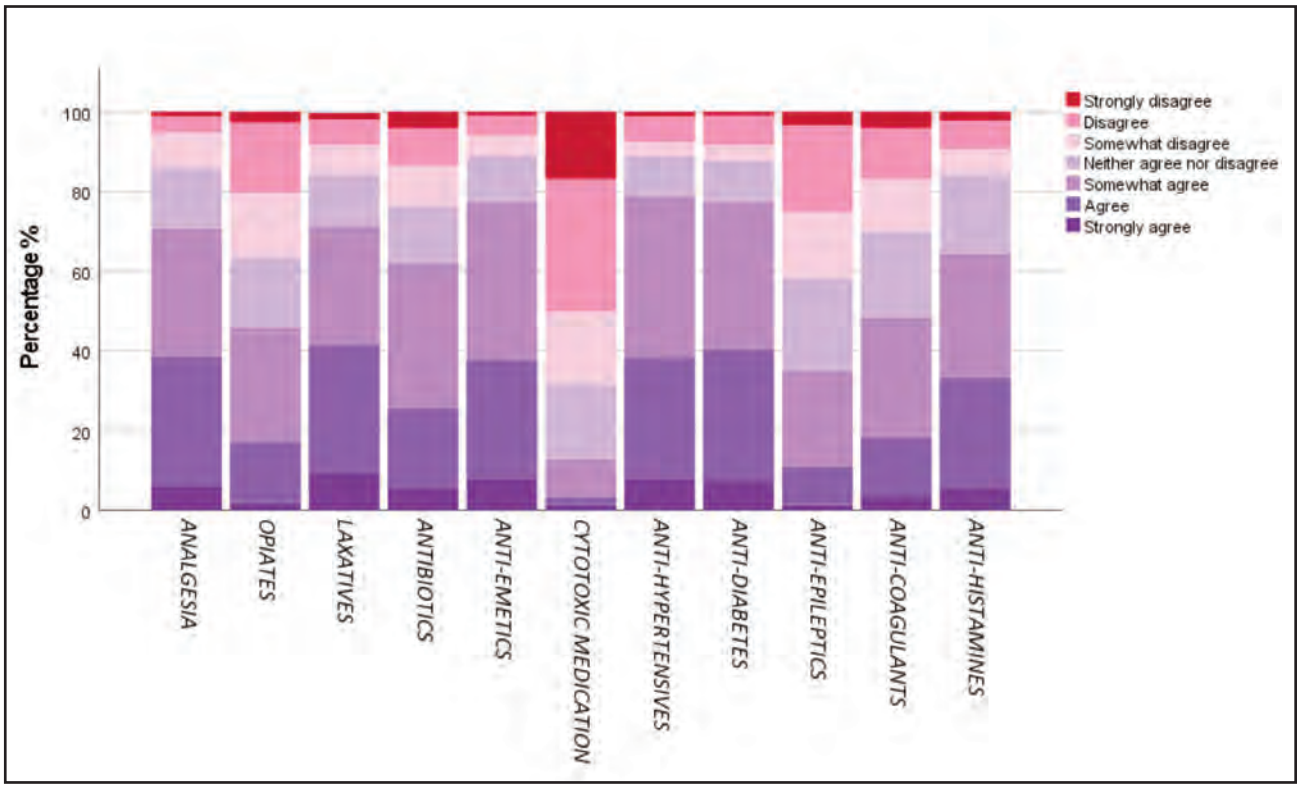

Fig. 2: Self-perceived level of knowledge of HO in prescribing various classes of commonly used drugs

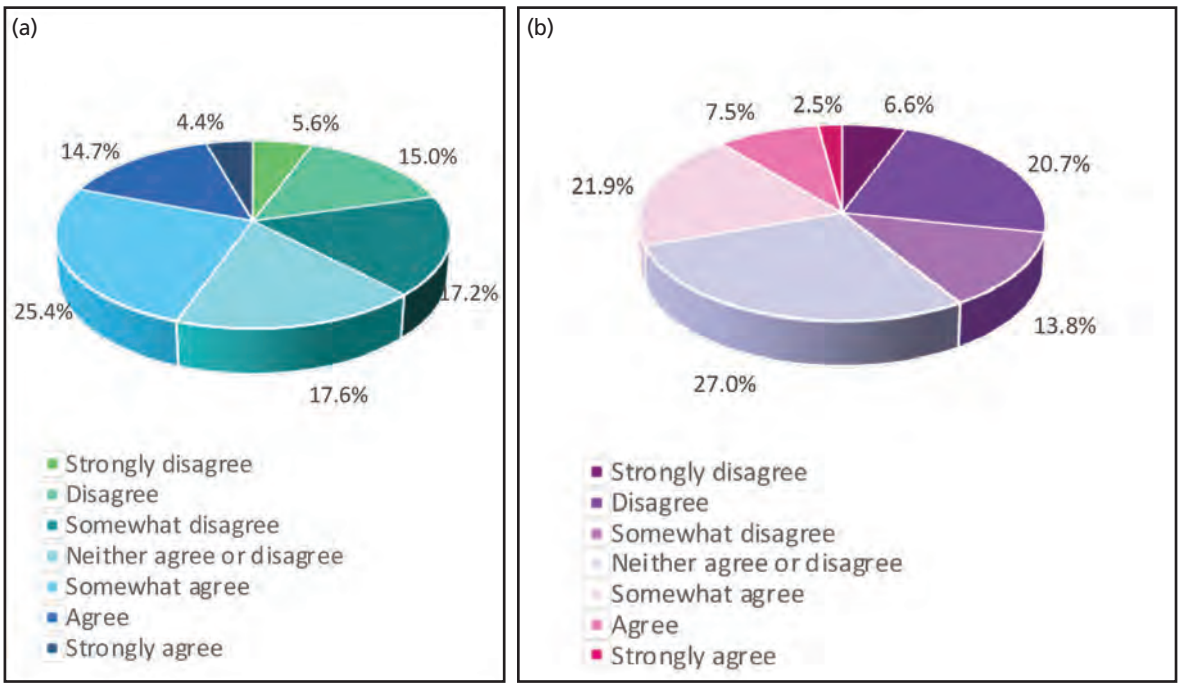

Fig. 3: Views of HOs on (a) medical school training preparing them for prescribing medications in clinical practice and (b) about being stressed when prescribing medication

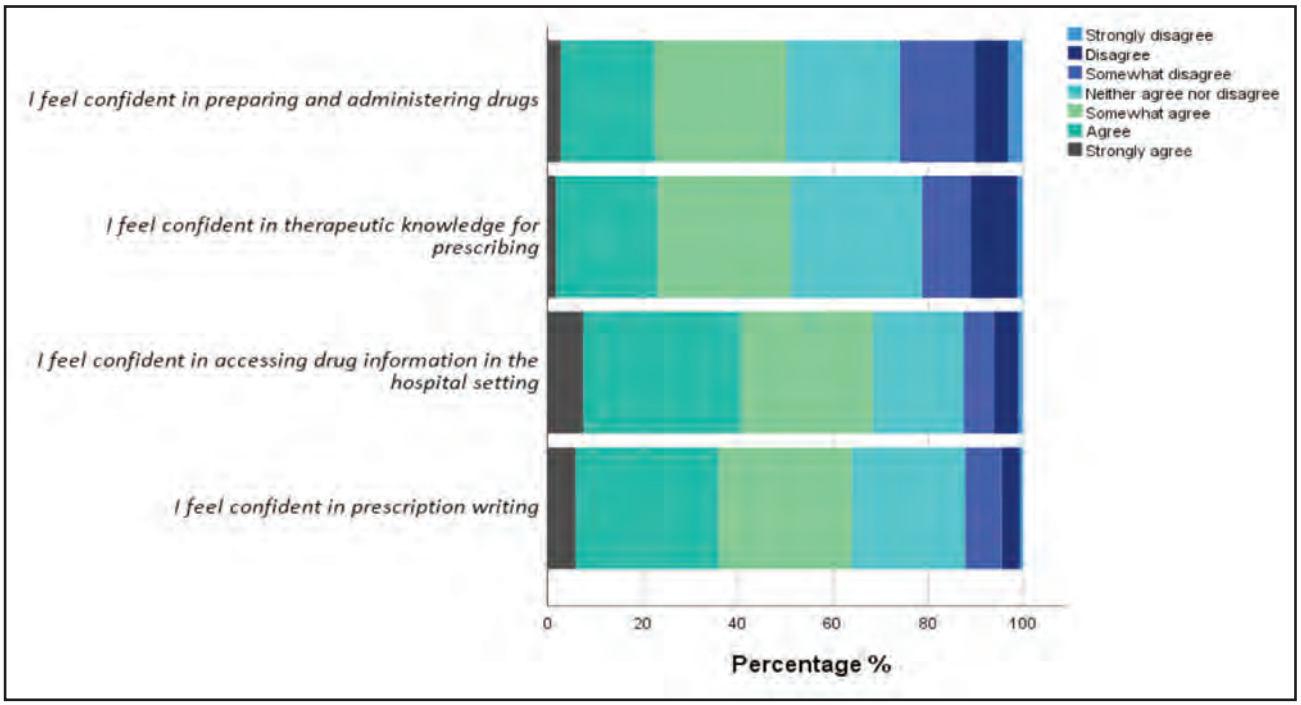

Fig. 4: Level of confidence of HOs regarding their prescribing skill

medications as a house officer. Overall, 64% (204/319) of the HOs identified themselves as having sufficient resources to aid their continued learning in prescribing. Pertaining to the improvement of prescribing skills, 57% (181/319) of them said that they had always have the opportunity to allocate the time and resources necessary for enhancing that their prescribing skills in the hospital setting. In addition, this survey found that about 68% (216/319) of the HOs felt that they had only realised the importance of prescribing during internship (Figure 3).

Self-perceived confidence to prescribe

A total of 64% (204/319) of the HOs stated that they feel confident in prescription writing. Regarding the level of confidence in accessing drug information in the hospital setting, 68% (216/319) responded positively to having confidence whereas 51% (162/319) of the study HOs expressed confidence in their therapeutic knowledge for prescribing. Besides, when enquired about confidence in preparing and administering drugs, half of the HOs (50%; 159/319) believed to having confidence (Figure 4).

Association of 1.Knowledge to prescribe drugs 2. Prescribing practise 3. Confidence to prescribe with gender, race, type of medical school, year of training and whether received a formal prescribing teaching in medical school.

The median total score for 1.Knowledge to prescribe drugs 2. Prescribing practise 3. Confidence to prescribe were analysed for association with gender, race, type of medical school, year of training and whether received formal teaching in prescribing skills during the medical school training (Table I). For Knowledge to prescribe drugs, significant association is with gender, race, year of training and for formal teaching in prescribing skills. Year 1 HOs showed a lower median (49.00) compared to Y2 HOs (53.00). For those who had formal teaching in prescribing in medical school showed a higher median (52.00) compared with those who did not receive a formal teaching in prescribing in medical school (44.00). For HOs views on their Prescribing practice, significant association with year of training, type of medical school and for formal teaching in prescribing skills. Y1 (20.00) HOs median was lower than Y2 (22.00) HOs.

For HOs Confidence to prescribing, significant association was with gender, year of training, type of medical school and for formal teaching in prescribing skills. The Y2 HOs had higher confidence to prescribe (21.00) when compared with Y1 HOs (18.00). Those who had received formal training in the prescribing of drug treatment at their medical schools were reported to have a higher level of confidence in prescribing (19.00) than those who did not (18.00).

Confidence in specific prescribing competency

For Confidence to prescribe items: 1. I feel confident in prescription writing, 2. I feel confident in accessing drug information in the hospital setting. 3. I feel confident in therapeutic knowledge for prescribing. 4. I feel confident in preparing and administering drugs, the median is 5.00 for all 4 items indicating that half of HOS somewhat agreed to the questions (Table I).

DISCUSSION

This study investigated the perceptions of House Officers (HOs) in Malaysia regarding their prescribing skills and competencies, as well as their views on the adequacy of

clinical pharmacology and therapeutics training received during their undergraduate medical education. HOs are required to demonstrate the attributes and competencies of a thoughtful, safe, and effective prescriber upon commencing their clinical practice. In the present study, a proportion of HOs reported a lack of confidence in their prescribing skills. That is unsurprising given that the majority perceived their undergraduate training in prescribing to be inadequate with minimal practice of prescription writing. Notably, this study revealed that most HOs (66%; 212/319) had practised completing drug prescriptions fewer than ten times during their undergraduate medical education, and some (27%; 86/319) reported not receiving any formal instruction on prescribing practices. The inadequate training reported may stem from a lack of practical exposure, insufficient teaching methods, or limited focus on clinical pharmacology in medical school curriculums. Supporting this study, one study highlighted the absence of formal teaching and feedback on prescription writing resulted in low competency among final-year medical students.[21] In contrast, another study found no significant difference in self-perceived prescribing competency between students with and without prescribing safety assessment (PSA) training, suggesting that the curriculum emphasizing pharmacological knowledge, early exposure, and practical experience may sufficiently prepare students for safe prescribing.[20] These findings underscore the critical importance of structured and practical prescribing training in medical school, as inadequate teaching and limited feedback can lead to poor competency, while comprehensive curricula that integrate early pharmacological education, real-world exposure, and simulation exercises have been shown to effectively enhance prescribing confidence and readiness among future doctors.

The inadequate training provided to medical students during their undergraduate medical curriculum could logically account for the lack of confidence in prescription writing for approximately 36% of HOs in this study. This shows that knowledge is a crucial factor in an accurate determination of prescribing competency among the HOs. Although many medical schools have incorporated the teaching of clinical pharmacology and therapeutics as part of the curriculum for all medical students, this study had reported that many HOs in Malaysia did not demonstrate adequate confidence in having sufficient knowledge in this area. Despite having equipped with theoretical knowledge, many newly qualified doctors still feel unprepared for practical prescribing tasks. A thematic analysis revealed that intern doctors often lack practical knowledge of prescribing, including dosage, formulations, frequency, and duration of treatment. They reported difficulties in applying knowledge from medical school to clinical practice, highlighting the need for experiential learning opportunities during their training.[22] The current study found many House Officers in Malaysia lack confidence in prescribing due to limited practical training during undergraduate education. This supports the above thematic analysis showing interns struggle with practical prescribing knowledge and applying theory to practice. Our survey expands on that analysis by quantifying how inadequate training and minimal prescription writing experience reduce confidence, emphasizing the need for early, practical pharmacology education with real-world exposure.

This study identified a gap between the skills demanded of the HOs to prescribe competently and the quantity of available learning opportunities especially hospital based prescribing training during their medical school. It might be helpful to scrutinize more closely on the total number of times the drug Kardex (medication record) which had been written by these medical students during their medical school training because it would be helpful in increasing their familiarity with prescribing practice. Not only is it a skill that the HOs will be required to demonstrate on many occasions during their work, it is also vital in avoiding the possibility of prescribing errors and the resulting adverse drug reactions from occurring, in order to maximise the effectiveness of drug therapy.[23] In addition, having sufficient information such as reference to drug formulary is important to aid with prescribing information and prevent adverse drug reactions.[24] Overall, enhancing practical training and ensuring access to prescribing resources during medical education are critical steps to better prepare HOs for safe and effective medication management.

However, the knowledge gained from having experienced many rotations during housemanship may be the reason why some other HOs believed to be competent in prescribing most classes of drugs. Their competency and knowledge about prescribing certain classes of drugs would most likely reflect the patients whom they had already attended to as well as their prescribing workload during their rotations and the supervision and guidance given by senior doctors during their attachments rather than their own theoretical knowledge alone.[2,19] Research has shown that the more numbers of clinical rotations done, the more confident the HOs were to prescribe unsupervised.[2] Of all drug classes, HOs perceived to be least competent in prescribing cytotoxic drugs. This could be because cytotoxic drugs are mostly prescribed by oncologists and the lack of exposure to that particular specialty during their housemanship. The increased clinical experience gained through multiple rotations during housemanship appears to enhance some HOs' prescribing competency, which is largely influenced by their direct patient exposure, prescribing responsibilities, and senior supervision rather than theoretical knowledge alone. Confidence in prescribing generally grows with more rotations, though limited exposure to specialties like oncology explains why HOs feel least competent prescribing specialized drugs such as cytotoxics.

Prescribing is an amalgamation of knowledge, skill and behaviour, as all of these aspects need to be contextualised with real-life patients and the real-life scenario. The Objective Structured Clinical Examination (OSCE) and structured clinical examination is widely practised across most medical schools in Malaysia for the purpose of adopting the competence paradigm for medical practice by appraising the performance of a medical doctor in terms of his/her prescribing competency. This study has shown that some HOs were not tested on their prescribing skill back in their medical school, which explains why some of them did not feel confident in prescription writing. Therefore, OSCE could serve as an effective assessment tool that can be integrated into the medical curriculum to test the students' ability in translating their learning of pharmacology and therapeutics into

practical skills.[25-26] The integration of OSCEs into the medical curriculum can play a pivotal role in enhancing both the ability and confidence of medical graduates in rational prescribing. By incorporating practical stations that simulate real-life prescribing scenarios, OSCEs allow students to apply their pharmacological knowledge and therapeutic reasoning in a controlled environment. This not only tests their ability to select appropriate drugs, dosages, and routes of administration but also reinforces safe and evidence-based prescribing practices. Additionally, OSCEs provide immediate feedback, enabling students to identify and correct errors early in their training. Such experiential learning helps graduates develop critical thinking and decision-making skills necessary for prescribing under pressure, ultimately fostering greater confidence and competence as they transition into clinical practice.[27] Furthermore, a recent systematic review demonstrated that additional prescription writing education using diverse methods such as case-based, patient-based, tutorial-based, didactic, and mixed approaches, followed by OSPE or OSCE assessments was more effective at developing prescribing skills than the absence of such targeted training.[28-29]

There are a few limitations in this study that need to be considered. Firstly, the response rate for this study is poor, therefore this study findings are based on individuals' perception on their level of competency rather than evident demonstration of prescribing competence and knowledge. Secondly, it was acknowledged that an inherent source of bias in this study arises from the fact that self-perceived competency expressed by each respondent may not reflect his/her depth of knowledge, ability as well as confidence to excel at prescription writing. Thirdly, the hospital environment may have been exacerbated and caused additional stress among the HOs due to the COVID-19. It may have caused varied clinical training and experience of the HOs, which may influence their level of confidence in prescribing.

Future research could explore the underlying factors influencing HOs prescribing practices through qualitative studies, such as interviews or focus groups, to better understand barriers to skill development. Analytical studies examining associations between demographic variables (e.g., type of medical school or prior clinical exposure) and prescribing competence may help identify key predictors, while interventional studies could evaluate targeted training programs to enhance HOs' prescribing confidence and proficiency in the hospital setting.

CONCLUSION

This study highlights areas for improvement in prescribing preparedness among House Officers, rooted primarily in gaps in undergraduate pharmacology and therapeutics education. The superior knowledge, confidence, and prescribing attitudes observed in those receiving formal training underscore the imperative to strengthen medical curricula and implement standardized competency assessments. While self-perceived measures may introduce bias, the findings nonetheless call for urgent educational reforms, including increased practical exposure and targeted training interventions. By addressing these critical areas, medical education can better prepare future clinicians to prescribe safely and effectively, ultimately enhancing patient safety and healthcare quality on a broader scale.

DECLARATION OF INTEREST

The authors report no conflicts of interest.

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