

ORIGINAL ARTICLE

Relationship Between Level of Confidence and Readiness to Work Among Medical Graduates: A Cross Sectional Study in a Public University

Aneesa Abdul Rashid¹, Norhafizah Mohtarrudin², Sazlina Shariff Ghazali¹, Wan Zul Haikal Hafiz Bin Wan Zukiman³, Farina Mustaffa Kamal⁴, Nurul Amelina Nasharuddin⁵

¹ Department of Family Medicine, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia Serdang, 43400 UPM Serdang, Malaysia

² Department of Pathology, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Serdang, 43400 UPM Serdang, Malaysia

³ Department of Internal Medicine, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Serdang, 43400 UPM Serdang, Malaysia

⁴ Department of Veterinary Pathology & Microbiology, Faculty of Veterinary Medicine, Universiti Putra Malaysia, Serdang, 43400 UPM Serdang, Malaysia

⁵ Department of Multimedia, Faculty of Computer Science and Information Technology, Universiti Putra Malaysia, 43400 Serdang, Malaysia

ABSTRACT

Introduction: Junior doctors' readiness for work positively impacts their well-being. Confidence in performing essential workplace skills is a contributing factor to work readiness. The aim of this study was to assess the level of confidence, and other factors associated with work readiness among medical graduates. **Materials and methods:** A cross-sectional study was conducted at a public Malaysian university, involving all medical graduates from 2020 to 2022. Participants were given an online survey asking to rate their confidence levels in generic, practical, and personal skills, as well as their overall confidence and readiness to work, using the "Confidence and Readiness to Work as a House Officer Questionnaire," which uses a Likert scale from 1-5. Higher scores on the questionnaire indicated higher levels of confidence and readiness. **Results:** The readiness level was 2.96 (0.85). The overall mean (SD) confidence level of the participants was 3.10 (0.85), while for overall generic, practical and personal skills were 3.87 (0.53), 3.32 (0.61) and 3.66 (0.69), respectively. Significant correlations were found between the level of confidence in all the generic, practical, personal skills and readiness to work. Furthermore, the participants' overall reported level of readiness was significantly correlated with their levels of work readiness ($r=0.734$, $p<0.001$). No significant associations were observed between sociodemographic factors and readiness to work. **Conclusion:** Medical graduates' readiness to work strongly correlates with their confidence in the skills required as house officers. It is recommended that future research investigate additional factors that contribute to work readiness.

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Corresponding Author:

Aneesa Abdul Rashid, Dr Fam Med
Email: aneesa@upm.edu.my
Tel : +603-97692956

INTRODUCTION

Readiness can be defined as the state of preparedness or the willingness to be prepared for a certain situation. In the field of healthcare, the readiness to work has been recognised as a critical factor that has a positive impact on various aspects of well-being, such as job satisfaction and work engagement (1). It has been observed that medical graduates often express a sense of unpreparedness upon completing their undergraduate

training, especially in light of the recent COVID-19 pandemic (2,3). In a study conducted in the United Kingdom (UK), it was found that initially, medical graduates reported feeling less prepared to work. However, as time progressed, specifically after one year of graduation, a significant percentage of graduates from the years 1999/2000, 2002, and 2005 reported feeling more prepared. The percentages were 36.3%, 50.3%, and 58.2%, respectively (4). Similarly, a number of studies conducted in Malaysia among the final-year medical students and medical graduates revealed low levels of readiness to work, which subsequently improved following intervention or after one month of working (5,6).

The importance of being prepared for employment especially in the healthcare field, which includes job contentment and work involvement is a vital element that has been observed to have a beneficial effect on an individual's state of being (1). Insufficient readiness to join the labour force can result in physical, mental, and emotional exhaustion for the person, accompanied by a corresponding decline in self-assurance levels (7,8). Researchers have discovered that the demanding academic curriculum, frequent exposure to critical illness, and interpersonal conflict within the workplace significantly influence the well-being of medical students and graduates, even though other occupations may experience comparable levels of stress (9).

Overall, the factors that affect work readiness are mainly professionalism and personal factors, clinical and practical skills, and curriculum design.

There were several studies in Australia that investigated factors related to work readiness in the healthcare profession, including those in medicine. One identified factors associated with professional and personal factors which are (i) proficiency in work, (ii) social intelligence, (iii) organisational acumen, and (iv) personal characteristics (1). Organisational representatives emphasised the significance of social intelligence in terms of work readiness (1).

Other important factor is clinical skills as essential competencies for graduates, which graduates felt unprepared for (10). Another research surveyed final year healthcare students with varying ages and revealed that a heavy academic workload during placements hindered their ability to acquire important clinical and technical skills (11). Furthermore, the students expressed concerns about their inadequate knowledge of the healthcare and clinical government systems in their respective countries. Furthermore, studies have shown that the lack of basic or advanced life support training in professional institutions' core curriculum negatively impacts graduates' confidence and competence in emergency situations, thereby, reducing their readiness to enter the workforce (12).

Still on this note, research findings indicate that insufficient direct clinical exposure can have a detrimental effect on the preparedness of medical graduates to join the workforce (2). The COVID-19 pandemic has further exacerbated this issue by leading to a shift towards remote teaching methods and a reduction in hands-on instruction. As a result, medical graduates have reported feeling less confident and prepared because of a lack of practical skills (8). Additionally, the pandemic has indirectly impacted the readiness of final year medical students to transition from students to doctors, with many student assistantships being cancelled or postponed due to pandemic-related restrictions (13).

The identification of the curriculum's design has been recognised as a crucial element that impacts the level of preparedness of medical graduates for their work. A research study carried out in the United Kingdom revealed that a curriculum with early and regular exposure to clinical settings and real-world clinical experiences, helps graduates feel more equipped for professional practice compared to an older curriculum model (14). Likewise, in a separate study also conducted in the United Kingdom, participants felt unprepared due to the absence of problem-based learning sessions, unlike graduates who had experience such sessions as part of their curriculum (2).

Being ready for work or employment is crucial for medical students' education, with significant impacts on their health and the quality of their future professional pursuits. Numerous factors have been recognised as potential influencers of preparedness for employment. Hence, our research objectives are to evaluate the level of readiness to work and the factors influencing it, including confidence level among medical graduates.

MATERIALS AND METHODS

A cross-sectional survey using questionnaires was carried out at a public university in Malaysia from December 2020 to February 2022. Data was collected from all 159 medical graduates from the years 2020 to 2022, including those who repeated the exams, using the universal sampling method. The participants were given the online survey links via email and WhatsApp by researchers.

In order to measure confidence and readiness, the adapted International Medical University (IMU) Student Competency Survey was utilised (5,15,16). The adaptation of this survey has been discussed in detail elsewhere. In summary, changes included retaining estimated Practical Skills experience while modifying self-perceived confidence and Practical Skills assessment sections. Personal Skills assessment items were reduced, and response formats standardised. The adapted questionnaire focused on self-perceived confidence and readiness, omitting Competency Assessment from the original (6). In this study, the questionnaire underwent further refinement through consultations with field experts to ensure its appropriateness for the target population. Additionally, the content validity ratio (CVR) was obtained for each item of the questionnaire. All items scored a CVR ratio greater than 0, with the majority ranging from 0.6 to 1.0. The final questionnaire, comprising of 75 questions, was titled the "Confidence and Readiness to Work as a House Officer" Questionnaire (17).

The questionnaire comprised of four parts. The first part focused on Clinical Experience, specifically the practical

skills acquired during undergraduate training. This section included 47 questions based on the students' logbooks and the requirements set by the Ministry of Health for completing house officer training. Of these questions, 18 assessed whether the participants had performed the procedures, while 29 evaluated if they had observed the procedures. However, for the purpose of this study, this section is not discussed here. This is because the focus of this study was confidence level, and due to the vast data this section has, we chose to focus on the confidence level.

The second part assessed confidence levels in three areas: Generic Skills (6 questions), Practical Skills (12 questions), and Personal Skills (7 questions).

The third part consisted of a single question that measured Overall Confidence.

Lastly, the fourth part evaluated readiness for work with two questions. The first question asked participants to rate their level of readiness to begin work tomorrow, while the second question inquired about the most daunting aspect of starting work, providing a list of options to choose from. For this study, the second question is not reported in this study.

A Likert scale of five-point ordinal scale was employed for participants to rate their confidence or readiness levels. Higher scores indicated better levels of confidence or readiness to work. The original authors of the tool, which was initially used to assess confidence and readiness among senior students, had set the minimum level of confidence at 'three' and readiness of 'four' for their final year students. This standard was established at a local Malaysian University (5,15,16).

The data collected was analysed using IBM Social Package for Social Science (SPSS) version 26. Sociodemographic factors and levels of confidence and readiness were presented as median with Interquartile Range (IQR) for continuous variables and as counts (n) and percentages (%) for categorical variables. The relationship between median readiness and sociodemographic factors (gender and marital status) was examined using Mann-Whitney U test. The associations between religion, ethnicity and the number of clinical experience (practical skills during undergraduate) and readiness to work were analysed by the Kruskal-Wallis test. Furthermore, the correlations between readiness levels with age and confidence level were assessed using the Spearman correlation, with p values less than 0.05 considered statistically significant. This study protocol has received ethics approval from the Ethics Committee for Research Involving Human Subjects Universiti Putra Malaysia (JKEUPM-2020-341).

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Ethical Clearance

The study was granted approval by the Ethics Committee for Research Involving Human Subjects of Universiti Putra Malaysia [JKEUPM-2020-341] in October 2021.

RESULTS

All 159 medical graduates participated in the study. Table 1 shows the sociodemographic data of the participants. Most of the participants were female (n=110, 69.20%), single (n=159, 99.40%), of Muslim faith (n=90, 56.60%) and of Malay ethnicity (n=87, 54.70%).

Table 1: Sociodemographic data of participants

Factors	n	%
Age median, (IQR)	25.00 (0)	
Gender		
Male	49	30.80
Female	110	69.20
Current Marital Status		
Single	158	99.40
Married	1	0.60
Religion		
Islam	90	56.60
Christian	11	6.90
Hindu	26	16.40
Buddha	30	18.90
Others	2	1.30
Ethnicity		
Malay	87	54.70
Chinese	39	24.50
Indian	28	17.60
Others	5	3.10

Table II shows participants' confidence levels in various skills and readiness categories. The overall mean (SD), out of a range of 1-5, for General Confidence and Readiness was 3.10 (0.85) and 2.96 (0.85), respectively. "inserting urinary catheter (female)" and "prescribing IV fluid (format of writing)" in the Practical Skills section reported the lowest mean confidence at 3.09 (0.82), while Generic Skills had the highest average confidence mean (SD) at 4.10 (0.66), 4.01 (0.68) and 4.10 (0.66) for "taking a history of new admissions", "performing relevant examination as first assessment of new admissions," and "recognising sick patients" respectively. In the Personal Skills section, participants reported the highest confidence in "teamworking" with a mean (SD) score of 3.57 (0.81), while the lowest confidence was in "referring cases to seniors" with a score (SD) of 3.57(0.81).

Table II: Mean confidence level for Generic Skills, Practical tasks, Personal skills, General Confidence and Readiness

	Mean (SD)	Median (IQR)
Confidence Level		
Generic Skills		
1. Taking a history of new admissions	4.10 (0.66)	4.00 (1.00)
2. Performing relevant examination as first assessment of new admissions	4.01 (0.68)	4.00 (0.00)
3. Make initial plan of management for new admissions	3.41 (0.73)	3.00 (0.00)
4. Recognizing sick patients	4.01 (0.66)	4.00 (0.00)
5. Functioning as a team member in assessing and managing sick patients	3.98 (0.71)	4.00 (0.00)
6. Prioritizing and managing ward work	3.74 (0.78)	4.00 (1.00)
Overall	3.87(0.53)	3.83(0.67)
Practical Skills		
1. Starting resuscitation in hospital	3.24 (0.83)	3.00(1.00)
2. Intravenous (IV) line insertion (adult)	3.42 (0.92)	3.00(1.00)
3. Blood taking (adult)	3.84 (0.93)	4.00(2.00)
4. Inserting urinary catheter (male)	3.17 (0.90)	3.00(1.00)
5. Inserting urinary catheter (female)	3.09 (0.94)	3.00(2.00)
6. Do basic suturing and tie	3.19 (0.90)	3.00(1.00)
7. Prescribing common medications (format, not dosage)	3.47 (0.80)	4.00(1.00)
8. Requesting radiological investigations like chest X-ray (CXR), and Computed tomography (CT)	3.40 (0.87)	3.00(1.00)
9. Do a comprehensive review on patients during ward rounds	3.40 (0.80)	3.00(1.00)
10. Referring cases to another department	3.17 (0.87)	3.00(1.00)
11. Assisting operations	3.11 (0.88)	3.00(1.00)
12. Prescribing IV fluid (format of writing)	3.09 (0.82)	3.00(1.00)
Overall	3.32(0.61)	3.31(0.77)
Personal Skills		
1. Team-working: e.g. sharing ward work, arranging rosters	3.92 (0.82)	4.00(2.00)
2. Finding out the ward routines/protocols on your own	3.70 (0.84)	4.00(1.00)
3. Handling criticisms from your senior colleagues	3.62 (0.96)	4.00(1.00)
4. Coping with additional, unexpected tasks	3.60 (0.89)	4.00(1.00)
5. Managing own time on and off work	3.62 (0.86)	4.00(1.00)
6. Working independently away from home	3.59 (0.93)	4.00(1.00)
7. Referring cases to seniors	3.57 (0.81)	4.00(1.00)
Overall	3.66 (0.69)	3.71 (0.86)
Overall confidence	3.10 (0.85)	3.00(1.00)
Readiness	2.96 (0.85)	3.00(1.00)

Range score for confidence level 1-5 (higher indicates higher confidence level)

Table III illustrates the correlation between mean confidence in skills and participants' readiness to work. Significant correlations were found between the level of confidence in all Generic Skills (r range=0.359-0.454) ($p<0.001$), Practical Skills (r range=0.339-0.549) ($p<0.001$), Personal Skills (r range=0.360-0.504)

($p<0.001$), with readiness to work. Furthermore, the participants' overall reported level of confidence was significantly correlated with their levels of work readiness ($r=0.734$, $p<0.001$). Essentially, the overall level of readiness reported by medical graduates significantly correlated with their levels of readiness to work.

Table III: Correlation between Medical Graduates' Confidence Level and Readiness to Work

Confidence level	Readiness to work (N=159)	
	r ^a	p
Generic Skills		
Taking a history of new admissions	0.454	<0.001**
Performing relevant examination as first assessment of new	0.392	<0.001**
Make initial plan of management for new admissions	0.447	<0.001**
Recognising sick patients	0.359	<0.001**
Functioning as a team member in assessing and managing sick patients	0.443	<0.001**
Prioritising and managing ward work	0.426	<0.001**
Overall Generic Skills	0.544	<0.001**
Practical Skills		
Starting resuscitation in hospital	0.436	<0.001**
Intravenous (IV) line insertion (adult)	0.431	<0.001**
Blood taking (adult)	0.410	<0.001**
Inserting urinary catheter (male)	0.461	<0.001**
Inserting urinary catheter (female)	0.500	<0.001**
Do basic suturing and tie	0.532	<0.001**
Prescribing common medications (format, not dosage)	0.403	<0.001**
Requesting radiological investigations like chest X-ray (CXR), and Computed tomography (CT)	0.339	<0.001**
Do a comprehensive review on patients during ward rounds	0.437	<0.001**
Referring cases to another department	0.549	<0.001**
Assisting operations	0.491	<0.001**
Prescribing IV fluid (format of writing)	0.463	<0.001**
Overall Practical Skills	0.654	<0.001**
Personal Skills		
Team-working: e.g. sharing ward work, arranging rosters	0.402	<0.001**
Finding out the ward routines/protocols on your own	0.434	<0.001**
Handling criticisms from your senior colleagues	0.360	<0.001**
Coping with additional, unexpected tasks	0.504	<0.001**
Managing own time on and off work	0.415	<0.001**
Working independently away from home	0.401	<0.001**
Referring cases to seniors	0.502	<0.001**
Overall Personal Skills	0.541	<0.001**
Overall Confidence		
Level of confidence to work as a house officer	0.734	<0.001**

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

a- Spearman correlation

We found no significant association between medical graduates' sociodemographic and their readiness to work.

DISCUSSION

The level of readiness to work to assume the role of a House Officer holds great significance in shaping the trajectory of a novice physician's career. To gain a comprehensive understanding of the variables that may influence readiness, we conducted this research among individuals who have graduated from medical school.

In the current study, the participants demonstrated elevated levels of confidence in their Generic Skills and Personal Skills in comparison to their Practical Skills, with the least pronounced average confidence level in the latter category. Among the Practical skills the skills with the lowest confidence levels included tasks like "inserting urinary catheters in females" and "writing formats for prescribing intravenous (IV) fluids", with an average score of 3.09 out of 5.00. It is worth mentioning that the mean score for "inserting urinary catheters in females" in this study was higher than that in a previous study at a private university in Malaysia that addressed the same question (5,15). This difference may be due to the study at the private university being conducted during the participants' final year posting, where they had not completed their training, unlike the medical graduates in this study. This current study also found lower scores for the "format of writing in prescribing IV fluids" compared to earlier studies in the same institution and other studies in the UK that investigated preparedness levels in procedural skills (5,16). The variability of the results may be attributed to differences in teaching approaches, students' self-perception of their skills, and clinical exposure levels (2,5,18). In another UK study, participants scored higher in procedural skills (5.00 out of 6.00) compared to paperwork and treatment area. However, it is important to note that this study involved participants who were already working in as doctors, hence, the higher scores (2).

In the Personal Skills section, participants reported the highest confidence in "teamwork" with a mean score of 3.92 (out of a possible 5), while the lowest confidence was in "referring cases to seniors" with a score of 3.57. However, contrasting results were found in other studies conducted in a private Malaysian university, where over 80% of final year medical students reported being "comfortable" in referring cases to seniors (5,15,16). This could be attributed to the "senior clerkship" system in that university, where final year students acted as house officers, shadowing senior doctors. Interestingly, a study by Foong et al. in another public university reported the highest confidence level in "working in a diverse group" with a mean score of 3.76 (19), suggesting that the Malaysian medical curriculum emphasizes teamwork.

For readiness for work, the participants in this study achieved a mean score of 2.96, which is lower than the minimum scores of 3.00 to 3.97 reported in a previous

study conducted in a Malaysian private university (5). The obvious cause to this could be due to the COVID-19 pandemic may have disrupted the student's clinical teaching, particularly towards the end of their studies. Students had less clinical experience due to the restrictions during this time (20). Hence, this could have a heavy impact on the student's readiness level to work, as demonstrated in a Singaporean study where medical graduates felt unprepared for their duty mainly due to the pandemic (21).

On another note, the higher scores obtained compared to our study could also be attributed to the level of exposure the students received through their six-month clinical rotation "senior clerkship program", which provided them with the opportunity to practice as shadowing house officers prior to entering the workforce making them better prepared to work (5,22). These increased readiness levels were also shown to be similar in a study done in Singapore where the mean levels of preparedness was 2.38-3.07 prior to a Student Assistantship Programme (SAP) which prepare for practice as junior doctors, which later increased to 4.32-4.48 after the SAP (21). We believe that these programmes offer students a glimpse into the actual job responsibilities, indirectly helping them prepare and enhancing their confidence and readiness for work post-graduation.

Previous research reports a direct relationship between self-confidence and work readiness among graduates(7), which aligns with the results of our study. Individuals with a certain level of confidence tend to be better prepared for work, as they possess a sense of responsibility, expertise, better communication skills, and a positive attitude. (7) A study investigating the relationship between work readiness skills, career self-efficacy, and career exploration found that low confidence levels can hinder graduates' readiness to work (24). Another study conducted among medical and dental graduates in Australia revealed that students felt more confident and work ready with an increasing amount of clinical skills practice (25). Our findings align with the idea that graduates with greater confidence in their work are more prepared to join the workforce.

We did not find any sociodemographic factors that were significantly associated with readiness to work among medical graduates in this study. This puts demographic status in a positive light, as the diversity in background should be a level ground in terms of career progression in this field. Two studies in Australia done among graduate nurses and junior doctors undertaking placements in rural areas also echoed our results on the non-significant result (26,27).

Although this study provides valuable insights, it is important to acknowledge its limitations such as the small sample size, which focused solely on one

institution, potentially limiting the generalisability of the findings to other contexts or settings. Furthermore, self-reported measures of confidence and readiness to work may not accurately reflect actual levels of competence, and assessment by independent observers could yield different results. Lastly, the study was conducted during the COVID-19 pandemic, which may have impacted the clinical exposure of medical students.

Despite limitations, this study highlights the importance of identifying factors that positively influence work readiness, which can ultimately benefit both the worker and the workplace.

CONCLUSION

This study demonstrates low levels of readiness to work among medical graduates. We found a strong connection between the confidence in basic medical skills and the preparedness of medical graduates for work. Therefore, it is imperative to conduct further research and interventions to enhance the confidence level of medical graduates prior to starting their work, leading to improved readiness for their jobs.

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