
Self-reported confidence in general competencies and skills of clinical clerks of a private medical school for SY 2021-2022: A cross-sectional study

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Abstract

Introduction During the COVID-19 pandemic, medical schools shifted to blended learning. This study aimed to determine the demographic and level of confidence of a private medical school's clinical clerks of School Year 2021-2022 on general competencies and skills.

Methods The study aimed to identify the skills that exhibited the highest and lowest levels of confidence among a group of 139 clinical clerks. Additionally, it sought to examine whether there were significant differences in confidence levels based on sex and prior clinical experience. An analytical cross-sectional study design was employed using a Google Form as the data collection tool.

Results The clerks were most confident in handwashing, and least in NGT insertion, performing digital rectal examination (DRE), and suturing. Females were more confident in history taking of obstetric and gynecologic, surgical, and medical patients, physical examination of pediatric patients, and preparing a discharge summary, while males were more confident in performing digital rectal examination. Clerks with prior medical experience were significantly more confident in foley catheter insertion, intravenous insertion, blood extraction, suturing, and performing essential intrapartum and newborn care (EINC) than those without. The results aligned with previous studies since clerks with prior experience were able to practice the skills in a psychomotor sense.

Conclusion The study revealed significant differences in the confidence level on the competencies and skills for medical practice between sex and prior medical experience.

Key words: clinical clerks, confidence, general competencies, clinical skills

When the COVID-19 pandemic hit the Philippines in March 2020, medical schools shifted to online learning and blended learning which allowed

students to obtain technical skills-training using online didactics.¹ Online learning was not common in most medical universities in the Philippines prior to the pandemic and medical students acquired their clinical skills in an actual face to face hospital setting. The medical education leading to the degree of Doctor of Medicine is a four-year program with three years studying the basic sciences and basic clinical skills and the remaining year devoted to clinical training in the

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hospital setting where the clerks are supposed to apply their basic science and clinical subjects' knowledge to actual patients. A study found that students' self-perceived confidence improved significantly after two clinical years of the medical course.² The traditional learning set-up is ideal for the acquisition and improvement of clinical skills. Although perceived confidence does not necessarily correlate with clinical competency, it can indicate a clinical clerk's ability to perform these clinical skills and participate in clinical activities. It is essential to recognize that perceived confidence may not always directly correlate with clinical competency. However, it can provide valuable insights into a clinical clerk's willingness and readiness to perform various clinical skills and actively engage in clinical activities.

Notably, previous studies have revealed that approximately 80% of Filipino medical students expressed concerns about the limitations of online learning in developing certain clinical skills. They felt that some essential clinical experiences, such as delivering a newborn, assisting in a trauma laparotomy, or managing a patient with diabetic ketoacidosis from admission, cannot be fully replicated through online educational platforms.¹ After almost two years of utilizing an online or blended set-up in Philippine medical schools, it is not yet known exactly which clinical skills students could perform with more confidence. It is particularly important to obtain these data because clinical clerks are in their final year of their medical education and they are expected to have gained enough knowledge and confidence in performing basic clinical skills, so that they can practice as general practitioners after graduation.

The study aimed to determine the demographic characteristics and level of self-reported confidence of the clinical clerks of School Year 2021-2022 on general competencies and skills regarding (a) history taking, (b) physical examination, (c) hospital report, (d) hospital documentation, (e) hospital safety protocol, (f) nasogastric tube insertion, (g) foley catheter insertion, (h) intravenous access insertion, (i) blood extraction, (j) bag-valve-mask ventilation, (k) digital rectal examination, (l) suturing, (m) wound care, (n) immunization of a pediatric patient, and (o) Essential Intrapartum and Newborn Care (EINC).

Methods

The study utilized an analytical cross-sectional study design. Convenience sampling was done. The

inclusion criteria included (1) a clinical clerk who was enrolled during the S.Y. 2021-2022, and (2) underwent blended-online and face-to-face hospital duties during clinical clerkship. The exclusion criteria included those diagnosed with any mental health disorder six months prior to the start of the clerkship. Data collection was done two to three months after the clinical clerks finished clerkship.

A minimum of 138 participants was needed from the total population of 397 students for the study. The sample size was estimated using the formula for the estimation of the population mean obtained from a previous study.³

Clinical skills are defined as skills identified and are adapted from the school's 4th year students' Competencies and Skills Achievement Report in-hospital Clinical Rotation. Prior Medical Experience was defined as those students who had previous experience in providing face-to-face health care services/patient care before start of clerkship (hospital/clinic duties, medical mission, internship, worked part-time/full-time in a hospital, etc). Science courses are defined as a Bachelor of Science degree, while non-science courses are defined as a Bachelor of Arts degree.

Google Forms were used in the data collection. Invitation to the online survey was disseminated to all clinical clerks of A.Y. 2021-2022 through a post in the batch's online group forum.

Information on the socio-demographic characteristics of participants (i.e., age, sex, premedical course, and prior clinical experience in healthcare) and self-reported confidence ranked on a 5-point Likert scale was gathered. The following competencies and skills were assessed: (1) history taking (i.e medical patient, surgical patient, neurology patient, OBGYNE patient, pediatric patient), (2) physical examination (i.e medical patient, surgical patient, neurology patient, OBGYNE patient, pediatric patient), (3) initial summary and complete database, (4) discharge summary, (5) giving of discharge instructions and prescriptions, (6) hospital safety protocols (i.e. proper donning and doffing, proper handwashing), (7) nasogastric tube insertion, (8) foley catheter insertion, (9) intravenous access insertion, (10) blood extraction, (11) bag-valve-mask ventilation, (12) digital rectal examination, (13) suturing, (14) wound care, (15) immunization of a pediatric patient, and (16) Essential Intrapartum and Newborn Care.

The data collected from Google Forms were extracted and checked for completeness of entry. Data were analyzed using SPSS version 25 (IBM, NY, USA) at a significance level set at $\alpha=0.05$. Descriptive statistics (frequency and percentages) were used to examine the demographic characteristics of the study population. Frequency and median were used for the identification of level of self-reported confidence and determination of competency and skill with highest and lowest levels. Mann Whitney U Test was used to determine whether there is a significant difference in the self-reported confidence between (a) sexes and (b) prior medical experience. Additionally, the differences were obtained between the self-reported confidence between sexes and those with and without prior medical experience.

Results

A total of 139 participants responded to the survey, and their corresponding sociodemographic profile is shown in Table 1. The results indicate that the population consisted of more females (68.3%) than males (31.7%). Among the participants, 132 (95.0%) were clerks who had undergone a science-based premedical course, and out of those, 90 (64.7%) had prior medical experience. The median self-confidence ratings for each general competency and skill range from 2 to 5. Nasogastric tube insertion, performing a digital rectal examination, and suturing have the lowest median score of 2. Skills with a median score of 3 encompass the physical examination of surgical, neurology, obstetric and gynecologic, and pediatric patients, along with foley catheter insertion, intravenous access insertion, bag-valve ventilation procedure and wound care.

Table 1. Summary of Sociodemographic profile of the respondents.

Characteristics	Frequency	Relative frequency (%)
Sex		
Male	44	31.7
Female	95	68.3
Premedical course		
Science	132	95.0
Non-science	7	5.0
With experience in healthcare prior to medical school		
Yes	90	64.7
No	49	35.3

Skills rated with a median of 4 include history taking of medical and surgical patients, physical examination of medical, surgical, neurology, obstetric and gynecologic, and pediatric patients, as well as preparing an initial summary and complete database, discharge summary, providing discharge instructions and prescriptions, proper donning and doffing, performing a blood extraction, immunization of a pediatric patient, and practicing EINC. Finally, the skill with the highest median score (5) is proper handwashing (Table 2).

There is a significant difference between the level of confidence of males and females, with females having a significantly higher confidence in the history taking of: an obstetric and/or gynecologic patient ($p=0.001$), a surgical patient ($p=0.009$), and a medical patient ($p=0.022$), as well as the performance of a digital rectal examination ($p=0.004$), physical examination of pediatric patient ($p=0.049$) and preparing a discharge summary ($p=0.017$). Males had a higher level of confidence compared to females in performing a digital rectal exam (3.0), while having

Table 2. Median level of confidence on general competencies and skills of 35% of the clinical clerks.

General Competencies and Skills	1 NOT CONFIDENT AT ALL (%)	2 SLIGHTLY CONFIDENT (%)	3 SOMEWHAT CONFIDENT (%)	4 FAIRLY CONFIDENT (%)	5 COMPLETELY CONFIDENT (%)	Median
Hx Taking (Medical Px)	0.7	2.2	12.2	64.0	20.9	4.00
PE (Medical Px)	2.2	7.9	38.1	46.0	5.8	4.00

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Hx Taking (Surgical Px)	0.7	5.0	15.8	60.4	18.0	4.00
PE (Surgical Px)	2.2	10.8	43.9	37.4	5.8	3.00
Hx Taking (Neurology Px)	3.6	11.5	33.8	36.7	14.4	4.00
PE (Neurology Px)	7.2	23.7	39.6	23.7	5.8	3.00
Hx Taking (OB-GYNE Px)	1.4	5.0	23.0	48.9	21.6	4.00
PE (OB-GYNE Px)	3.6	21.6	38.1	28.8	7.9	3.00
Hx Taking (Pediatric Px)	1.4	11.5	27.3	48.9	10.8	4.00
PE (Pediatric Px)	2.9	15.8	43.9	32.4	5.0	3.00
Preparing an Initial Summary and Complete Database	1.4	2.9	11.5	43.2	41.0	4.00
Preparing a Discharge Summary	1.4	3.6	10.1	42.4	42.4	4.00
Giving Discharge Instructions and Prescriptions	2.2	5.0	15.8	46.0	30.9	4.00
Proper Donning and Doffing	2.2	5.0	18.0	38.1	36.7	4.00
Proper Handwashing	1.4	0	2.9	20.9	74.8	5.00
Performing a NGT Insertion	33.1	22.3	16.5	19.4	8.6	2.00
Performing a Foley Catheter Insertion	11.5	20.1	21.6	28.1	18.7	3.00
Performing a Intravenous Access Insertion	18.0	20.1	30.9	23.0	7.9	3.00
Performing a Blood Extraction	11.5	12.2	24.5	25.9	25.9	4.00
Performing a Bag-Valve Ventilation	18.7	17.3	25.2	20.9	18.0	3.00
Performing a DRE	25.9	23.0	22.3	15.8	12.9	2.00
Suturing	23.7	31.7	20.9	18.7	5.0	2.00
Wound Care	5.0	12.2	33.1	31.7	18.0	3.00
Immunization of a Pediatric Px	10.1	10.8	25.9	31.7	21.6	4.00
Practicing EINC	9.4	13.7	28.1	33.1	15.8	4.00

Note: Hx = History; Px = Patient; PE = Physical Examination; NGT = Nasogastric Tube; DRE = Digital Rectal Examination; EINC = Essential Intrapartum and Newborn Care

the same level of confidence in preparing a discharge summary (4.00), and taking the history for an obstetric and gynecologic patient (4.00), surgical patient (4.00), and medical patient (4.00) (Figure 1).

Among the skills, there was a statistically significant difference between sexes in the history taking of an obstetric/gynecologic patient, a surgical patient, and a medical patient, as well as performing a digital rectal examination, physical examination of a pediatric patient, and preparation of a discharge summary (Table 3).

A notable disparity exists in the confidence levels regarding general competencies and skills between clerks with and without previous medical experience in conducting foley catheter insertion ($p=0.012$), intravenous access insertion ($p=0.029$), blood extraction ($p=0.027$), suturing ($p=0.002$), and practicing EINC ($p=0.030$). Clerks with prior medical experience had a higher median level of confidence compared to those without prior medical experience in performing a foley catheter insertion (4.00), blood extraction (4.00), suturing (3.00), and practicing EINC (4.00). There is an equal level of confidence observed between clerks with and without prior

medical experience in performing an intravenous access insertion. There was a statistically significant difference for foley catheter insertion, IV access insertion, blood extraction, and suturing, and for performing EINC between males and females (Table 4).

Discussion

General Competencies and Skills

The results revealed that among the general competencies and skills, performing proper hand washing is the skill that most clinical clerks were highly confident to execute, followed by history taking, physical examination of a medical patient, preparing an initial summary and complete database, preparing a discharge summary, giving discharge instructions and prescriptions, proper donning and doffing, performing blood extraction, immunization of a pediatric patient, and practicing EINC followed by physical examination (surgical, neurology, obstetric/gynecologic, and pediatric patients), performing a foley catheter insertion, intravenous

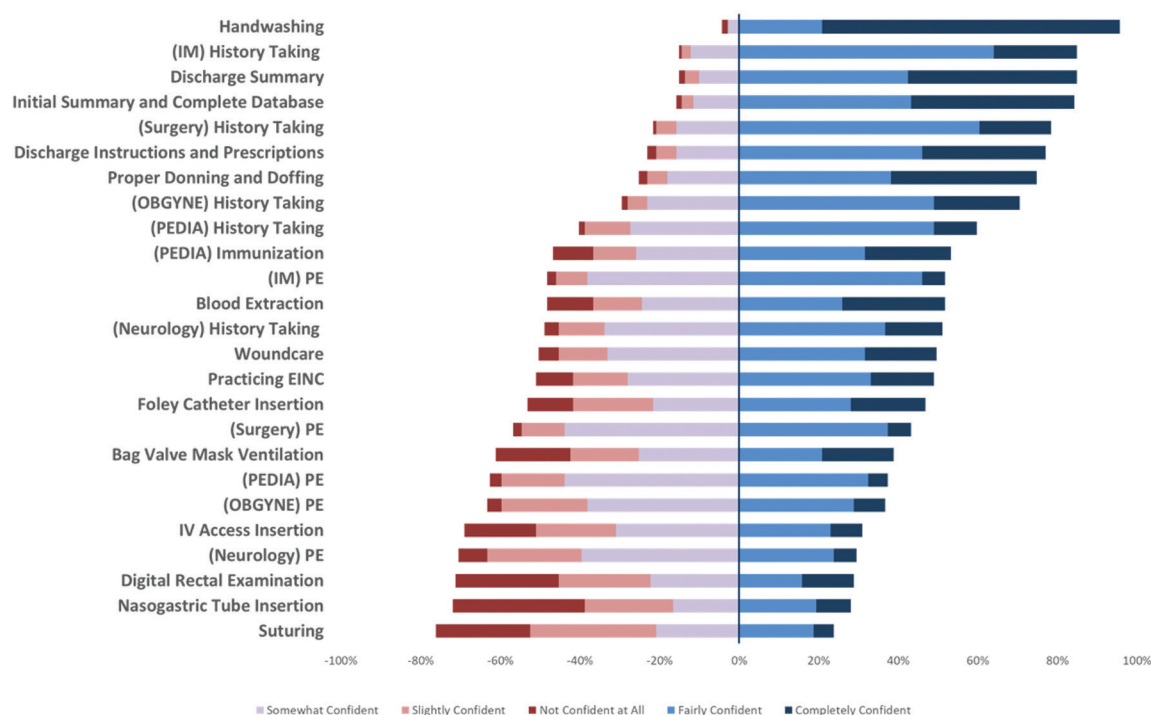


Figure 1. Ranked overall general competencies and skills of 35% of the clinical clerks.

Table 3. Comparison of the level of confidence between sexes.

General Competencies and Skills	Male		Female		Difference	p-value
	Median	IQR	Median	IQR		
Hx Taking (Medical Px)	4.00	1	4.00	0	0	0.022
PE (Medical Px)	4.00	1	4.00	1	0	0.568
Hx Taking (Surgical Px)	4.00	1	4.00	0	0	0.009
PE (Surgical Px)	3.00	1	3.00	1	0	0.435
Hx Taking (Neurology Px)	3.00	1	4.00	1	-1	0.254
PE (Neurology Px)	3.00	2	3.00	2	0	0.763
Hx Taking (OB-GYNE Px)	4.00	1	4.00	1	0	0.001
PE (OB-GYNE Px)	3.00	2	3.00	1	0	0.221
Hx Taking (Pediatric Px)	4.00	1	4.00	1	0	0.131
PE (Pediatric Px)	3.00	2	3.00	1	0	0.049
Preparing an Initial Summary and Complete Database	4.00	2	4.00	1	0	0.066
Preparing a Discharge Summary	4.00	2	4.00	1	0	0.017
Giving Discharge Instructions and Prescriptions	4.00	2	4.00	1	0	0.981
Proper Donning and Doffing	4.00	2	4.00	1	0	0.680
Proper Handwashing	5.00	0	5.00	1	0	0.921
Performing an NGT Insertion	3.00	3	2.00	3	1	0.092
Performing a Foley Catheter Insertion	3.00	1	3.00	2	0	0.331
Performing an Intravenous Access Insertion	3.00	2	3.00	2	0	0.546
Performing a Blood Extraction	4.00	3	4.00	2	0	0.798
Performing a Bag-Valve Ventilation	4.00	3	3.00	2	1	0.108
Performing a DRE	3.00	2	2.00	2	1	0.004
Suturing	2.00	2	2.00	1	0	0.724
Wound Care	4.00	1	3.00	1	0.5	0.646
Immunization of a Pediatric Px	3.00	2	4.00	1	-1	0.398
Practicing EINC	3.00	1	4.00	1	-1	0.748

Note: IQR = Interquartile Range; Hx = History; Px = Patient; PE = Physical Examination; NGT = Nasogastric Tube; DRE = Digital Rectal Examination; EINC = Essential Intrapartum and Newborn Care

Table 4. Comparison of the level of confidence of clinical clerks based on their previous clinical experience.

General Competencies and Skills	Without Prior Medical Experience		With Prior Medical Experience		Difference	p-value
	Median	IQR	Median	IQR		
Hx Taking (Medical Px)	4.00	0	4.00	0	0	0.155
PE (Medical Px)	3.00	1	4.00	1	-1	0.325
Hx Taking (Surgical Px)	4.00	1	4.00	0	0	0.103
PE (Surgical Px)	3.00	1	3.00	1	0	0.163
Hx Taking (Neurology Px)	3.00	1	4.00	1	-1	0.099
PE (Neurology Px)	3.00	2	3.00	2	0	0.085
Hx Taking (OB-GYNE Px)	4.00	1	4.00	1	0	0.339
PE (OB-GYNE Px)	3.00	2	3.00	1	0	0.335
Hx Taking (Pediatric Px)	4.00	1	4.00	1	0	0.897
PE (Pediatric Px)	3.00	2	3.00	1	0	0.377
Preparing an Initial Summary and Complete Database	4.00	1	4.00	1	0	0.919
Preparing a Discharge Summary	4.00	1	4.00	1	0	0.716
Giving Discharge Instructions and Prescriptions	4.00	2	4.00	1	0	0.194
Proper Donning and Doffing	4.00	2	4.00	1	0	0.211
Proper Handwashing	5.00	1	5.00	0	0	0.169
Performing an NGT Insertion	2.00	3	2.00	2	0	0.354
Performing a Foley Catheter Insertion	3.00	2	4.00	2	-1	0.012
Performing an Intravenous Access Insertion	3.00	1	3.00	2	0	0.029
Performing a Blood Extraction	3.00	1	4.00	2	-1	0.027
Performing a Bag-Valve Ventilation on a Patient	3.00	2	3.00	2	0	0.285
Performing a DRE	2.00	2	3.00	2	-1	0.064
Suturing	2.00	2	3.00	2	-1	0.002
Wound Care	3.00	1	4.00	1	-1	0.082
Immunization of a Pediatric Px	3.00	2	4.00	1	-1	0.072
Practicing EINC	3.00	2	4.00	1	-1	0.030

Note: IQR = Interquartile Range; Hx = History; Px = Patient; PE = Physical Examination; NGT = Nasogastric Tube; DRE = Digital Rectal Examination; EINC = Essential Intrapartum and Newborn Care

access insertion, bag-valve ventilation, and wound care. They were also more confident in performing physical examination on medical patients than on surgical, neurologic, obstetric/gynecologic, and pediatric patients. However, performing nasogastric tube insertion, digital rectal examination, and suturing were the skills that they were the least confident to perform.

Significant differences were revealed over time in a study regarding surgical interns' confidence in their technical skills, patient management skills, administrative tasks, and knowledge after the implementation of a year-long practical skills curriculum which consisted of didactic, simulation, and practical sessions.⁴ A study on pre-internship medical graduates, revealed that pre-internship training helped in improving self-perceived confidence and actual performance of nasogastric tube insertion.⁵ The COVID-19 pandemic has led to significant challenges in traditional education, particularly in the medical field. Face-to-face classes have been limited, and duty-hours restrictions have been implemented, making it more difficult for students to develop their skills with limited hands-on guidance from physicians. Moreover, access to necessary materials, equipment, and real patients has been restricted, further impacting the learning process.

This current study revealed that digital rectal examination was one out of the three skills with the lowest reported confidence. Prior to the COVID-19 pandemic, it was found that many graduating students and newly graduated physicians were insufficiently prepared for performing DRE skills and insufficient supervision by senior physicians was claimed to be the most relevant constraint for the acquisition of DRE skills.⁶ A related study revealed that among the 13 history taking and physical examination skills, rectal examination had the highest percentage of students with 0-25% confidence level.⁷ In the same study, the majority of the students reported a high confidence level (>75%) in performing 7 of the 13 history taking/physical examination skills, and only 2 of the 39 diagnostic/treatment procedure skills.⁷ In the current study, clerks reported a high confidence level in history-taking compared to diagnostic/ treatment procedure skills such as foley-catheter insertion, IV catheter insertion, bag-valve ventilation, wound care, nasogastric tube insertion, and suturing. These may be a reflection of their early preclinical years

practice of history and physical examination skills on simulated and standardized patients which were not done in diagnostic and treatment procedures. In the same study, 73.9% of the students reported a high confidence level (>75%) in history taking (surgery) and 60.8% reported a high confidence level in PE (surgery).⁷ In contrast, an average of 78.4% of the respondents reported high confidence in history taking skills (surgery) and 43.2% on physical examination (surgery) skills in this investigation. Lower percentage of the respondents in the current study reported a high confidence level in physical examination (surgery) while a higher percentage of the respondents reported a high confidence level in history taking (surgery) compared to the pre-pandemic study. One possible reason for the lower percentage in physical examination could be the limited face-to-face preceptorials during the pre-clerkship year (third year) and reduced hours of face-to-face activities in the hospital during their clerkship year.¹ The higher percentage in history taking could be a reflection of the emphasis on history taking during preceptorial sessions as this was more feasible to teach and practice by utilizing the role-playing and feedback method via video conferencing apps such as Zoom or Google Meet despite the lack of physical or face-to-face interaction.^{1,8,9}

Confidence Between Sexes

The results have shown a significant difference of confidence level between the two sexes in select general competencies and skills. Female clerks were significantly more confident than the males in performing history taking of a medical patient, surgical patient, and OB-GYNE patient, PE of a pediatric patient, and in preparing a discharge summary. This is in contrast with previous studies that reported that female medical students were viewed as significantly less confident than male medical students on overall confidence.^{7,10,11} Meanwhile, male clerks were significantly more confident in performing a DRE. This is consistent with a study that demonstrated higher self-reported scores of males on procedural confidence.¹¹

Medical Experience

The results have demonstrated a significant difference in confidence levels between clinical

clerks with prior and those without prior medical experience in the performance of these skills: foley catheter insertion, intravenous access insertion, blood extraction, suturing, and EINC. The clinical clerks with prior medical experience were reported to have a higher median self-confidence as compared to those who did not have prior medical experience.

It was revealed that clinical clerks with prior medical experience were more confident than clinical clerks without prior medical experience in clinical competencies involving procedural skills.¹² Procedural skills teaching and learning is divided into two stages: the cognitive phase, and the psychomotor phase.¹² The cognitive phase of procedural skills teaching is reinforced throughout the medical student's first three years: lectures and didactic sessions, analysis of text and case studies, videos, and demonstrations; with these activities aiding the students in conceptualization, visualization, and verbalization of the procedural skill. After the cognitive phase, the student should have been equipped with the knowledge (i.e. the anatomy, indications, contraindications, complications, and steps) necessary to perform the procedure. The psychomotor phase of procedural skills are performed in either a simulated setting (involving cadavers and mannequins) or a live patient interaction supervised by their preceptors. Medical simulation permits students to learn, practice, and repeat procedures, and gives them a safe avenue to correct their mistakes and reinforce competent performances.¹³ Procedural skills cannot be learned maximally through simulation alone. Another study found that live patient interactions cannot be replaced by online interviews, and they also cannot be replaced by medical simulations.¹³ Live patient interaction is especially necessary for procedures in which artificial settings are not easily replicable, or simply not achievable—and “the anxiety of both patient and physician, the sensation of crossing tissue plains, and working in a bloody field can rarely be reproduced”.¹² Having prior medical experience posits that a medical clerk received the opportunity to practice these procedural skills, such as foley catheter insertion, in a psychomotor sense beyond medical simulations: where they performed the skill on a patient during an encounter.¹⁴ This includes internships in hospitals to fulfill the requirements of an undergraduate degree and working in a clinic or hospital prior to getting into medical school.

A medical clerk's self-confidence is intrinsically tied to their perceived procedural competence, even if, statistically, the correlation is poor.¹⁵ Procedural confidence influences a practitioner's willingness to perform procedures and maneuvers, and provision of an accurate self-assessment of skills. Even with the blended set-up, the COVID-19 pandemic deprived medical students globally of even medical simulation opportunities, and with it, the chance to proceed to the psychomotor phase of procedural skills teaching was stunted – clerks who already had medical experience prior to clerkship are more likely to have a higher self-confidence than their counterparts in procedural skills.

In five out of the 25 skills, clinical clerks with prior medical experience showed a statistically significant difference in confidence ($p > 0.05$) compared to clinical clerks without prior medical experience. These skills are performing foley catheter insertion, performing an intravenous access insertion, performing a blood extraction, suturing, and practicing EINC. This was similar to a study where there is a significant difference in confidence on pediatric practices between students with prior experience and those without.¹⁶ Medical students who have a prior professional experience with children were reported to have a higher self-confidence as compared to those who do not have, as they already acquired the verbal and nonverbal skills to engage actively with pediatric patients.¹⁶

Conclusion

The study revealed statistically significant differences in the confidence level on the competencies and skills for medical practice between sex and prior medical experience. In terms of general competencies and skills, the highest reported confidence was in proper handwashing, followed by history taking, physical examination of a medical patient, preparing an initial summary and complete database, preparing a discharge summary, giving discharge instructions and prescriptions, proper donning and doffing, performing blood extraction, immunization of a pediatric patient, and practicing EINC. Clinical clerks demonstrated the lowest confidence when it came to performing nasogastric tube insertion, conducting a digital rectal examination (DRE), and suturing.

There was a statistically significant difference found between the perceived confidence between the sexes. Female clerks reported a higher confidence

on history taking of an OB-GYNE patient, surgical patient, and medical patient, physical examination of pediatric patient, and in preparing a discharge summary. Male clerks reported a statistically significantly higher confidence level on performing a digital rectal examination.

The results revealed that there is a statistically significant difference in the confidence level among clinical clerks who have prior medical experiences and those who did not have selected competencies and skills. Clinical clerks who have prior medical experience were reported to have a higher self-confidence in performing a foley catheter insertion, intravenous access insertion, blood extraction, suturing and practicing EINC.

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