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Under renovation: A new platform for the IeJSME

Kean Ghee Lim

Users of the IeJSME website will have noticed a change in the page for the submission of articles for authors submitting manuscripts. We have a new service provider. For the last few years we used a journal management system called OpusSoft. We have moved to another publishing platform called the Open Journal System (OJS) which was first released in 2002 by the Public Knowledge Project (PKP) of the University of British Columbia. It is an open source and members can contribute to develop tools in furthering their aim of democratizing knowledge and making knowledge more global and equitable. Furthermore, it can be available for free although one can pay for services in areas if help is required. Over the years the OJS has evolved to be a very versatile and complete journal management system and we are thankful that we can benefit from the efforts of many. The key driving philosophy is that knowledge is shared and the IeJSME is in line with that aim by being an open access journal. In addition to that, the IeJSME does not charge authors, neither for submission and review nor for publication in contrast to most other journals.

We hope that users will find the process of submission friendly, since it is similar to many other journals. The template we use follows that of other journals within the PKP umbrella. For new users we hope the guide for author will be clear enough. For technical support, the journal will be contactable by email at the address you will find on the journal website. The editorial team would like to say you are welcome to communicate with us directly.

I would like to invite all in the academic fraternity, either within the International Medical University (IMU) or outside, to look at the submissions page at our website

and click on the button to register as a user. You will be asked if you would be willing to be a reviewer and name the area of interest you have. May I also remind authors submitting manuscripts that besides the manuscript you have to upload a cover letter, a copyright transfer form and a form to declare any conflict of interest. These forms are available at the guideline for authors and are standard for most journals.

There are more things new. The appearance of the IeJSME webpage has or will also undergo some change. We have created side bars, to make access to past issues more visible on landing. This side bar is on the left and you can go to a past issue of the journal more easily. We realise that one common reason somebody logs in to our journal may be to see whether a particular article has been published so we aim to make our articles readily seen.

There is also a new section we will be setting up among the types of articles you can submit. It is entitled Medical Images. If you read the notes in that section under Guidelines to authors, it will become clear what is required. A picture, they say, is worth or paints a thousand words. I am sure you know of other journals that have images like this. The diagnosis of a medical condition is sometimes all said in a picture. I guess dermatology is the classic example of this. However, there can be more than pathological lesions in patients. Medical images can also come from pathological or research laboratories or public health. They can even come from the classroom. We hope this all add fun and life to our journal.

We regret the glitches any of you may have experienced in the last few months, including a time in the transition when the submission of articles was not available.

Editor-in-chief

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Synchronous Clinical Simulation: An Effective Teaching Modality in Medical Education During COVID-19 and Beyond

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Background

The spread of COVID-19 forced many countries including Malaysia to switch from on-campus learning to exclusively online learning. The modality of the synchronous session allows the learners to interact with the instructor and obtain instant feedback. The purpose of this study was to evaluate the effectiveness of synchronous simulation among medical students in clinical years in the absence of hospital-based clinical education.

Methods

This was a prospective observational study involving 54 clinical year students, conducted in the simulation lab at International Medical University. Scenarios for each session were built around clinical skills targeting specific learning outcomes. The perception of the simulation session was evaluated using a 5-point Likert Scale. Synchronous debriefing followed each simulated session allowing active participation by all students. Focus group discussion was conducted among 6 students who volunteered representing online participants to obtain feedback on their learning experience.

Results

The highest mean scores were obtained for the items referring to team communication (4.09 ± 0.734), debriefing (4.06 ± 0.811) and timetabling (3.92 ± 1.007). Results from the focus group discussion revealed that: simulated sessions assisted in application of knowledge by observing their peers; the repetitive process of observing and performing was preferred over observing per se; observing the performance of peers from the same cohort was preferred, and critiques on technical logistics were reported.

Conclusion

The synchronous simulation sessions were well received by the students. It is believed that this will be a novel teaching modality to adopt even after the passing of the pandemic.

Keywords: *Clinical teaching, medical student, medical education, simulation, synchronous, teaching modality*

Introduction

COVID-19 led numerous governments to execute lockdown plans to contain the spread of the virus. As a result, on-campus learning was phased out in favour of online/distance learning.¹ Due to the cessation of hospital-based clinical training, students in the clinical year have been at a disadvantage in medical schools around the world. However, this does not imply that clinical exposure and experiential learning are no longer available. Since the pandemic lockdown began, researchers have been looking for ways to adapt to the new normal without jeopardising learning, particularly in medical education, which relies heavily on patient interaction for experiential learning.

Simulation is a method or technique to produce an experience without going through a real event. It is a useful modality to supplement training in real clinical situations and has an established role in the education and training of healthcare professionals. It has great potential to help alleviate the negative effects of the COVID-19 crisis.²⁻⁴

Synchronous learning is not new, and it includes online methods such as video conferencing, live-streaming lectures, teleconferencing, and live chatting. Synchronous simulated learning is simulated

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learning that is real-time where groups of students watch peers experiencing clinical simulation sessions and participate in the discussions after the sessions.^{5,6}

Nothing, after all, beats face-to-face instruction. To maintain physical distancing and reduce over-crowding in the wards, in line with the guidelines by the Ministry of Health and Ministry of Higher Education, our medical school decided to permit clinical year students in year 4 and 5 to return to campus and the wards in small groups but with many limitations to ensure safety. This meant that many students were still marooned at home with an online tutorial, task-based learning (TBL), and case-based discussions.

Methods

To address this new challenge and to provide some clinical experience to those who could not get enough face-to-face time, we decided to run a synchronous simulation in which clinical year students observed their peers perform in a safe simulated environment in real-time. Thereafter, a synchronous post-simulation debriefing was conducted. We believed that by doing so, they would be able to improve their clinical knowledge and be more effective when they were permitted back into the wards once the pandemic ended.

Study Design

This was a prospective observational study involving 54 clinical 4th year students during the emergency posting which was conducted in October 2020 at the clinical skills and simulation lab on the clinical campus of International Medical University, Malaysia. The target groups were small groups of students timetabled and allowed on campus when COVID-19 restrictions were eased. Consecutive

small groups of 9-10 students attending class were selected and invited to participate. All students were briefed on the process and were willing to allow live streaming of their sessions for their peers watching from outside campus due to the restriction of numbers allowed on campus. Written consent was obtained from students participating in the onsite simulation before the enrolment. All students invited from each small group consented. Students were from the same cohort, but not the entire cohort was recruited.

The conceptual framework of the Synchronous Simulation Learning Cycle was developed based on Kolb's Experiential Learning Cycle theoretical model.⁷ Scenarios for each session were built around clinical skills targeting specific learning outcomes. Synchronous debriefing followed each simulated session allowing active participation by all students.

Clinical skills included in the scenario designs

The scenarios for each session were built around clinical skills targeting specific learning outcomes for the 4th year students. The clinical skills included psychomotor, communication, procedural, clinical reasoning, interpretation of data, teamwork, attitude, patient safety, ethics, and professionalism.

Resources Utilised

IT support was required to manage the internet platform, Microsoft Teams, and high-fidelity manikin (Laerdal 3G). Simulation Lab was equipped with essential medical equipment including defibrillator, resuscitation trolley, drip stand, intravenous fluid, syringes, personal protective equipment (PPE), airway, oxygen therapy devices, and simulated patient records.

The session was conducted in three parts:

Part I

1. Online instructions with details of the flow of the session.
2. The sessions were scheduled in the timetable.
3. Scenarios were prepared, programmed, and tested before the teaching session.
4. Staff were informed in advance of the required resources for the day and type of moulage.
5. We identified and ensured that the fidelity of the learning environment was appropriate to the scenario.
6. A short pre-briefing was carried out before the synchronous simulated session for the learner onsite and those online to ensure they were on the same page.
7. The interactive features of the manikin and system in the simulated setting were introduced and informed to the students.
8. As with any simulated session, we created a safe psychological environment, reinforcing the need for respect, confidentiality, and trust among all onsite and online students who participated in the session.
9. Consent for recording was obtained from students.
10. Safety of onsite participants was ensured by following the school’s pandemic safety guidelines.
11. Finally, students were given the scenarios and sessions were carried out.

Part II - Synchronous Simulation session

The session on average, lasted for 15 minutes and the flow was controlled by the faculty in charge. At the end of that experience, there was a synchronous debriefing followed by a questions and answers session with the students. The Kolb Cycle⁷ was used to create a conceptual framework to understand and describe the Synchronous Simulated experience. (Figure I & II)

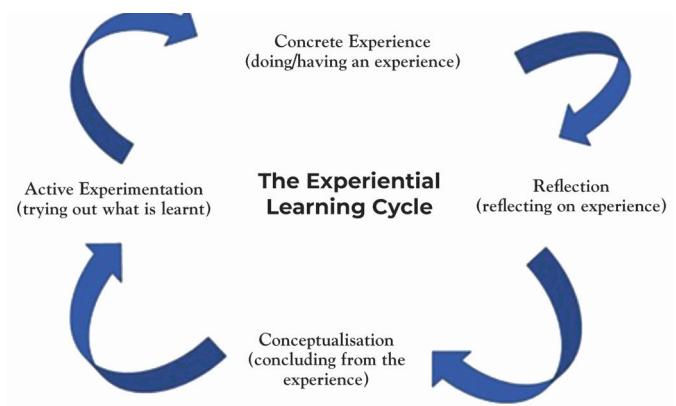


Figure I: The experiential learning cycle

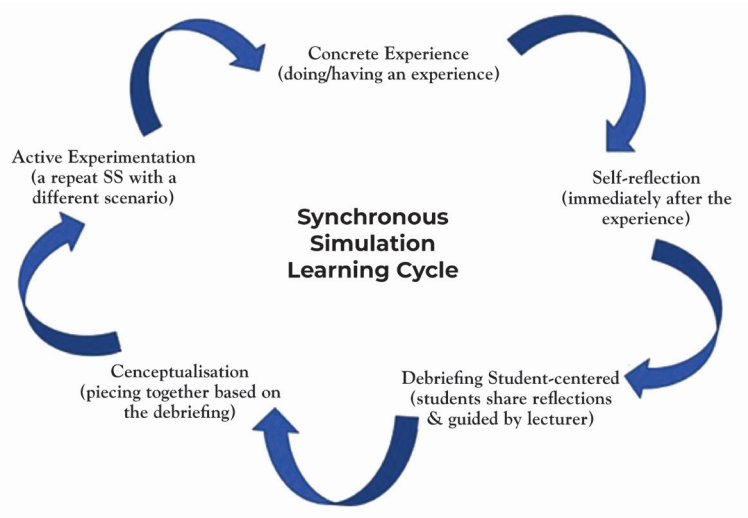


Figure II: Synchronous simulation learning cycle

Part III - Evaluation of Synchronous Simulation session

A focus group discussion was carried out with 6 students who volunteered when an invitation for session to obtain feedback on the learning experience was sent out to represent the online participants. Data were analysed using SPSS Version 25.

Data Collection: The simulation session was evaluated using a 5-point Likert Scale.

Focus group discussion was conducted among six students representing online participants to obtain feedback on their learning experience.

Results

Statistical Analysis

This 5-point Likert questionnaire was used to measure the students' perception on simulated session. The frequency was collapsed into Agree, Neutral and Disagree. The mean, standard deviation and the median were calculated using 5-point Likert scale.

The highest mean scores of 4.09 (SD = 0.734), 4.06 (SD = 0.811) and 3.92 (SD = 1.007), respectively, were obtained for the items referring to understanding team communication, debriefing discussions, and the need for a timetabled session. However, the synchronous sessions should be timetabled so that all the students will be able to participate in the debriefing discussions from home. (Table I)

Table I – Students' perception on the simulation experience (n=54)

NO	ITEMS	RESPONSE	FREQ (%)	MEDIAN	MEAN (SD)
1	These sessions built my confidence to face the actual clinical situations	Agree	34 (62.94)	4.00	3.56 (0.945)
		Neutral	11 (20.4)		
		Disagree	9 (16.66)		
2	I believe that these simulated sessions prepare me for the actual clinical environment	Agree	37 (68.52)	4.00	3.61 (0.979)
		Neutral	7 (12.96)		
		Disagree	10 (18.52)		
3	I will learn faster (shortened learning time) when I start in the actual environment after the simulated session	Agree	39 (72.22)	4.00	3.85 (0.899)
		Neutral	11 (20.37)		
		Disagree	4 (7.41)		
4	I now understand closed loop communication in a team	Agree	44 (81.48)	4.00	4.09 (0.734)
		Neutral	9 (16.67)		
		Disagree	1 (1.85)		

5	These sessions helped me understand clinical reasoning	Agree	41 (75.93)	4.00	3.87 (0.848)
		Neutral	8 (14.81)		
		Disagree	5 (9.26)		
6	I was able to see the students' performance clearly	Agree	24 (44.44)	3.00	3.22 (1.269)
		Neutral	14 (25.93)		
		Disagree	16 (29.63)		
7	The debriefing discussion was helpful for my learning	Agree	46 (85.20)	4.00	4.06 (0.811)
		Neutral	4 (7.40)		
		Disagree	4 (7.40)		
8	The session should be timetabled	Agree	37 (68.52)	4.00	3.92 (1.007)
		Neutral	11 (20.37)		
		Disagree	6 (11.11)		

Discussion from the focus group revealed that: simulated sessions assisted in the application of knowledge by observing their peers; preference for the repetitive process of observing and performing than observing per se; observing the performance of peers from the same cohort was preferred, and critique on technical logistics were reported.

Reliability Analysis

Internal consistency of the eight items was measured using Cronbach's alpha index which estimated a value of 0.878. This value was generated without discarding any items, which is considered very good for a test based on Kaplan and Saccuzzo's threshold.⁸ All corrected item-total correlations (CITC) were above .30. The lowest CITC is .521 for Item 4 which revealed a squared multiple correlation as 50.9%.

Discussion

Synchronous simulation is not new but was not the first choice for teaching and learning as face-to-face simulation was the preferred choice. Nevertheless, it has been utilised and found useful for remote teaching and learning. The pandemic has made us rethink how to innovate and optimise teaching and learning to ensure that the clinical training of medical students is not compromised.¹ Our students, being accustomed to face-to-face learning have had to adapt to this change unwillingly. Students stated that they still preferred to be in the real environment as they felt their learning would be more meaningful. (Table II)

Table II – Focus group discussion and feedback from students who participated online

No.	COMMENTS
1	<p>Theme 1: Clinical learning</p> <ul style="list-style-type: none"> • The simulated sessions help revise what has been learnt • Watching in itself may not help but getting to perform and then watching again would be better (repetitive) • I prefer going to ED and watching in the real environment • Unable to see certain actions by participants because the view is blocked by them. • I think watching a peer from the same cohort would be better than watching seniors because we may not have the knowledge the seniors have • I suggest that we replay the video recording during the debriefing so that we can see what we missed
2	<p>Theme 2: Logistics</p> <ul style="list-style-type: none"> • Audio occasionally echoing • Maybe each student in the simulation room should have a microphone on them • I used earphones (with muffs) while watching so I was able to hear well • During the debriefing, we could not see the comments written by the group watching their peers perform

The questionnaire showed good internal consistency thus underpinning the data obtained from students. For the item on confidence, 62.94% (n=34) said the workshops helped them feel more prepared to tackle real-life clinical scenarios when they got to the simulation lab. Following these sessions, they believed they had a better understanding of clinical reasoning (75.93%, n=41) and closed-loop communication (81.48%, n=44) when they got to go to the ward. It is possible that comparing true face-to-face learning to synchronous learning is not fair. It is more meaningful to review and identify the gaps after one begins synchronous learning to make the sessions meaningful and feasible given the current

situation. Given that most teaching fraternity believe that learning in an actual setting is the gold standard for being clinically competent, it is no surprise that students believe the same. Their expectations have been pre-set and conditioned by traditional teaching practices and they enter medical school expecting to become competent doctors only if the teaching is such. Little wonder that almost all the respondents felt they would need to be in an actual environment to learn effectively and gain confidence. (Table II) Setting up a pre-session briefing, setting ground rules with the students, and making clear the expectations of the synchronous simulation sessions before the sessions has been found to mitigate negative perceptions

among students and promote better participation.⁹

The challenges were the technical issues, individual student expectations, faculty buy-in and changing availability of on-campus learning. Others seem to have had similar challenges with the synchronous sessions.⁶ To overcome the issues with the audio and visuals of the simulated sessions during the debriefing, students suggested recording and replaying of the simulated sessions during the debriefing session.

Conclusion

This evaluation that we conducted after initiating the synchronous simulation has been very useful, as it has

helped us identify areas that need improvement. It has also given us an insight into the students' perspectives and opinions as being the recipients of these sessions. We have begun to make changes and intend to, after a period, re-evaluate to ensure that the synchronous sessions at the very least be adjuncts to actual clinical learning since the restrictions led by the pandemic are most likely going to stay indefinitely.

The students were receptive to the sessions as these were the closest to the actual experiences at the peak of the pandemic. These sessions can still be conducted synchronously to support the face-to-face sessions that are also still limited after the pandemic.

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A Cross-Sectional Study on the Knowledge, Attitude and Practice of Hand Hygiene among Adults in the Chowrasta Market, Penang

Woan Ching Chang¹, Elvina Yuh Harn Lau², Yi Xuan Goh³, Yen Wen Tan⁴

Background

The community plays a crucial role in practising effective hand hygiene to prevent disease transmission. Several studies conducted on hand hygiene practices among healthcare practitioners show positive outcomes in decreasing disease transmission particularly during the COVID-19 pandemic. However, studies related to hand hygiene among adults in the local communities are scant.

Aim

This study aimed to determine 1) the level of knowledge, attitude, and practice of hand hygiene, and 2) the relationship between demographic factors and hand hygiene practice among adults in a local community in Penang.

Methods

This was a cross-sectional quantitative survey combined with direct observation of hand hygiene practice. A self-administered questionnaire on knowledge and attitude towards hand hygiene, and an observational checklist of hand hygiene practice were adapted to measure the variables studied. Non-random quota sampling technique was used to recruit the required 398 sample size.

Results

The study found that the level of knowledge using an internationally commonly used 12 item questionnaire was good. Attitude towards hand hygiene measured on another 7 item questionnaire was also good. A majority of the participants (73.9%) had a good level

of hand hygiene practice. No significant relationship was found between age, gender, level of education, and hand hygiene practice.

Conclusion

Local health authorities are urged to continue to emphasise to the public on the importance of hand hygiene to reduce disease transmission in the community. Further studies are recommended to explore the possible barriers that hinder people from adopting good hand hygiene practice.

Keywords: *adults, attitude, hand hygiene, knowledge, practice*

Introduction

Hand hygiene is fundamental to prevent transmission of infections. Effective hand hygiene is defined as the action of washing hands with soap and water or using an alcohol-based hand rub antiseptic solution to minimise the growth of microorganism or pathogens.¹ Adhering to effective hand hygiene practices is highly emphasised during the COVID-19 pandemic outbreak.² In addition, World Health Organization stresses the importance of engaging public on proper hand hygiene as one of the strategies to prevent the spread of coronavirus in the community.¹

The Ministry of Health Malaysia recorded a total of 4,848,314 cumulative case of COVID-19 in Malaysia as of October 2022.³ Similar to countries such as United States, India and Brazil, the coronavirus infected millions within our local communities in the last three years. The outbreak of hand-foot-mouth

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disease within this country was at a record high of 22,463 cases; 12.8 times higher when compared to the previous year.⁴ Communicable diseases will remain a public health concern from time to time, even if there are periods of calm in between storms.

Hand hygiene is one measure to combat such transmissible diseases. There are standard operation procedures on infection control by the Ministry of Health but may still be a gap in the knowledge, attitude, and practice of proper hand hygiene in the community. Chowrasta market is one of the large marketplaces in Penang Island. Visitors, representing the diverse populations in Penang, come from various socio backgrounds and ethnic groups. Prior to the Covid-19 pandemic outbreak, Penang Island received more than 20 million domestic and international tourists from January to March 2019.⁵ There is a high potential risk of direct transmission of diseases in the community, through poor hand hygiene.

Based on the past literature review, there are many studies related to hand hygiene. However, these studies show inconsistent findings in different contexts. There is limited study on hand hygiene among the public in Malaysia. Most of the studies were focused on healthcare providers or students, and much less on adult residents in the community. Researchers in a past study reported that most healthcare professionals have good level of knowledge on hand hygiene.⁶ This is consistent with a systematic review on studies published between 2015 and 2019 where its findings revealed that nurses had the highest hand hygiene practice (80%; 95% CI:74%-87%) among other healthcare providers.⁷ However, in Khartoum, Sudan, Yousif and colleagues reported that only 35.6% of the healthcare providers achieved a satisfactory

knowledge level on hand hygiene.⁸ Undergraduate students (80.4%) however, were found to have poorer knowledge and were not able to perform all the essential steps of hand hygiene.⁹ Hussain discovered that healthcare workers had a high level of knowledge but poor level of hand hygiene practice.¹⁰

With regard to hand hygiene attitude, Yousif and colleagues found a majority of the healthcare providers showed a negative attitude towards hand hygiene practice due to time constraint.⁸ However, another study revealed that 77% Indonesians had positive attitude towards hand washing practice during COVID-19.¹¹ Among the participants, 95.4% reported their intentions to practise hand washing even after the pandemic. Eshetu and colleagues discovered that more than half of the school children exhibited a positive attitude towards hand hygiene practice.¹² They found no significant association between demographic factors and attitude towards hand hygiene. Nuwagaba *et al.* reported a significant relationship between level of attitude and knowledge of hand hygiene practice among the university students.⁹

This study, therefore, aimed to address gaps by determining 1) the level of knowledge, attitude, and practice on hand hygiene and 2) the relationship between demographic factors (age, gender, education level) and practice on hand hygiene in a local community in Malaysia. The outcome of this study will leverage on the importance of hand hygiene in the public. Hand hygiene should become a daily activity that is imperative in maintaining public health. It is essential to focus not only on healthcare providers but also on adults in the community.

Research Model

The conceptual framework of this study was guided by the theory of Planned Behavior.¹³ Accordingly, the intention to execute a behaviour is determined by attitude, subjective norms, and perceived behavioural control of an individual. The stronger the intention on a behaviour, the better the likelihood of the person to perform the task. It is believed that an intention to act by an individual is related to his/her level of knowledge and attitude towards a course of action.

The aim of this study was to measure the knowledge, attitude and practice of hand hygiene and its relationship to demographic factors. We defined knowledge operationally as the level of understanding about good hand hygiene practice and diseases transmitted due to poor hand hygiene and attitude referred to behaviour towards hand hygiene practice. Knowledge and attitude were measured using a questionnaire. Practice referred to the action of performing hand hygiene using the 5-step alcohol hand rub technique with a sufficient amount of alcohol sanitizer and time spent for hand rub recommended by the Ministry of Health Malaysia.¹⁴

Methods

This cross-sectional quantitative survey employed a self-administered questionnaire to examine the level of knowledge and attitude on hand hygiene; and an observational method to determine hand hygiene practices among adults visiting the Chowrasta market in Penang, Malaysia.

Based on the data obtained from the Operation Executive, Chowrasta market, the sample population consists of 6000 Malaysian adults every week on

average. With this, the targeted sample size required was 398 based on Raosoft software calculator, with 5% margin error, 95% confidence interval, 50% distribution rate and 10% attrition rate. A non-probability quota sampling method based on ethnics (46.3% Malay, 43.2% Chinese, 10.5% Indian) was used to recruit the participants according to the proportion of three main ethnics in Penang, Malaysia.¹⁵ The sample size required for Malay, Chinese, Indian was 184, 172 and 42, respectively.

The instrument consisted of four sections. Section A was demographic data consisting of age, race, gender education level and job status. Section B, a 12-items questionnaire using "true" and "false" scoring system was adapted from Suen and Rana to measure level of knowledge on hand hygiene.¹⁶ The tool has been validated by a panel of experts from infection control and public health in Switzerland, Australia, Korea, Hong Kong, Taiwan, Singapore and Malaysia. Excellent validity and reliability results were reported in past studies using the instrument, the outcomes of which offer valuable information to enhance hand hygiene practice and public health.¹⁶⁻¹⁸ There are two components in the instrument: types of disease transmitted by poor hand hygiene (7 items), and statements related to proper hand hygiene practice (5 items). One mark was awarded to each correct answer and zero mark for incorrect answer, with total scores ranging from 0-12. Score of 9-12 indicated good knowledge, 6-8 moderate knowledge and 0-5 poor knowledge on hand hygiene.

Section C was another questionnaire that was adapted from Rosen and colleagues to measure level of attitude towards hand hygiene practice.¹⁹ The tool has been tested and validated, and it created a

sustainable social norm of effective hand washing in various study populations.^{20,21} It consists of 7-items using 5-points Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree). The higher the score, the higher level of attitude towards hand hygiene practice. Lastly, Section D was a checklist adopted from Malaysia Policy and Procedures on Infection Prevention and Control to observe hand hygiene practice of participants.¹⁴ It consisted of 7-items using “performed” and “not performed” scale based on the 5 steps of alcohol-based hand rub technique (5 items), sufficient amount of alcohol sanitizer (1 item) and time spent (20-30 seconds) recommended for hand rub (1 item). A good hand hygiene practice is considered when an individual practises all the steps of hand hygiene; while poor hand hygiene indicates that a person fails/misses any step of the hand hygiene.

The original instrument is available in English version. For this study, Section A (demographic data), section B (knowledge on hand hygiene) and section C (attitude towards hand hygiene practice) were translated into Bahasa Malaysia. The translation process using forward and backward method involved two bilingual translators who are experts in Bahasa and English. The translated questionnaire was validated by a panel of three content experts. A test and retest approach on 30 samples was used to compare inter-translating items between Bahasa Malaysia and English to ensure the reliability of the instrument in different versions.²² Reliability values of 0.949 for section B and 0.859 for section C for both test and retest indicated good reliability of the translated instrument for the study.²³ During the pilot study, reliability results obtained for section B (KR-20 of 0.956), section C (Cronbach's Alpha of 0.979)

and section D (Intra-class Correlation Coefficient of 0.839) indicated good to excellent internal reliability of the instrument for Bahasa Malaysia and English versions.

Data collection was conducted from October to December in 2020 during the Malaysia Movement Control Order (MCO) period. A restricted number of visitors was allowed at one time, and all visitors were required to clean their hands using alcohol hand rub before entering the market. Participants were approached by the researchers while they were in the queue at the entrance point of the market. The purpose and nature of the study were explained to each participant prior to data collection. Participants who consented for the study were given a numbered sticker and invited to complete the self-administered questionnaire on parts A to C. Each of them was then identified by another researcher using the numbering system in completing part D observation scale. Participants were observed for alcohol hand rub practice from a short distance away from their front view to minimise the Hawthorne effect. No duplicated response was ensured by obtaining self-declaration from the participants. At the end of the survey, a total of 398 samples based on the three ethnic groups responded to the study within the data collection time frame. Participants' information and survey response were secured with password protection, and no names were revealed to maintain their anonymity and confidentiality.

Data was analysed using SPSS software version 26 for descriptive and inferential statistics. Normality test was done in ensuring data had met the assumptions prior to selection of parametric test for this study.

Ethical approval to conduct this study was obtained from the International Medical University Joint-Committee on Research and Ethics [Project ID: BN1/2020 (PR-49)]. Permission for data collection was also granted by the Assistant Officer of Environmental Health of Penang Town Hall.

Results

A total of 398 people participated in the survey. More than half of the participants were 21-40 years (n=224, 56.3%) followed by >40-60 years (n=161, 40.4%) and >60 years (n=13, 3.3%). Their mean age was at 40 ± 10.1 years. Women accounted for 76.1% of the sample. There were 184 (46.3%) Malays, 172 (43.2%) Chinese and 42 (10.5%) Indians. The

majority (52.35%) had secondary school education. Few (4.7%) had only primary level education and 43% had tertiary education.

The overall level of knowledge on hand hygiene among public adults was good with a mean score of $11.78 \pm 0.77/12$. All participants correctly identified, 7 items, that watery stools, flu-like symptoms, hand-foot-mouth disease, skin ulcers and eye infections could be transmitted with poor hand hygiene and diabetes could not. However, 5% were wrong about human immunodeficiency virus (HIV). Table I shows that more than 93% of the participants indicated their understanding on the statements related to hand rub techniques, use of sanitizer and cleansing effect of water temperature.

Table I: Correct responses to statements on hand hygiene among participants

ITEM	NUMBER	(%)
1. Always keeping my hands clean may lower my body defense mechanism.	385	(96.7)
2. Hands should be held under water while lathering with soap.	384	(96.5)
3. An alcohol-based hand sanitizer that contain 40% alcohol sufficient for hands disinfectant.	393	(98.7)
4. Rubbing my hands until soap forms a lather for 10 seconds before rinsing is enough for hand disinfection.	389	(97.7)
5. Temperature of water makes no difference in terms of the cleansing effect of hand cleaning.	372	(93.5)

As indicated in Figure I, the overall attitude on hand hygiene practice among participants was good (mean $4.05 \pm 0.09/5$). Almost all of the participants disagreed and strongly disagreed that practising hand hygiene

was inconvenient (99%), frustrating (100%), optional (98.5%), not practical (100%), troublesome (100%), irritating (98.2%) and harmful (100%) to them.

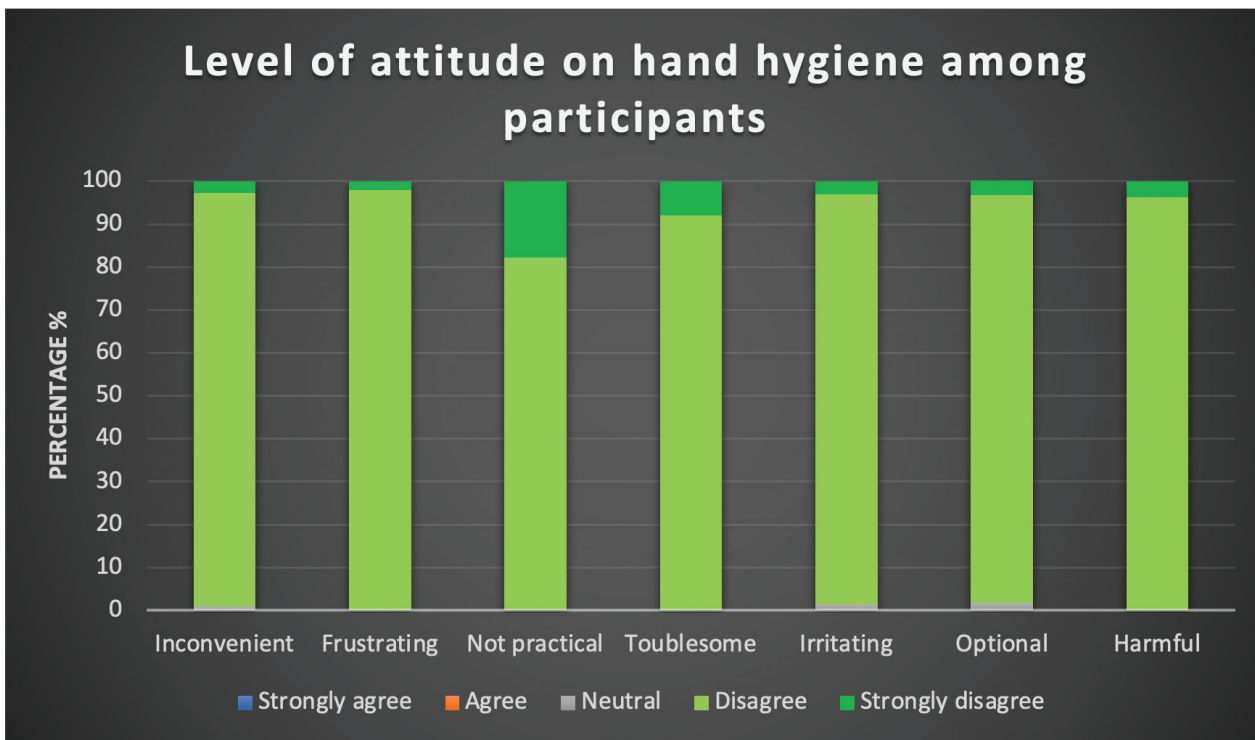


Figure I: Level of attitude on hand hygiene among participants

In relation to hand hygiene practice using hand rub, 73.9% (n=294) of the participants demonstrated a good performance while the rest were judged poor. The majority of the participants adhered to the 5-steps of proper hand rub techniques with sufficient amount of alcohol sanitizer and time required for hand rub. However, a quarter of them missed out one or more steps during the survey.

Relationships among demographic factors with level of hand hygiene practice (good and poor category) was analysed using Pearson Chi-Square. The study showed no significant relationship between age, gender, level of education and hand hygiene practice ($P > .05$) (Table II).

Table II: Relationship between age, gender, level of education and practice on hand hygiene among participants

Variables	f	Good hand hygiene practice	Poor hand hygiene practice	Pearson Chi-Square		
		f (%)	f (%)	X ²	df	p-value
Age						
21-40 years	224	162 (72.3)	62 (27.7)	0.956	2	0.620
> 40-60 years	161	123 (76.4)	38 (23.6)			
> 60 years and above	13	9 (69.2)	4 (30.8)			
Gender						
Male	95	72 (75.8)	23 (24.2)	0.238	1	0.625
Female	303	222 (73.3)	81 (26.7)			
Level of education						
Primary	19	12 (63.2)	7 (36.8)	1.969	2	0.374
Secondary	208	151 (72.6)	57 (27.4)			
Tertiary	171	131 (76.6)	40 (23.4)			

* $p < 0.05$

Discussion

In this study, the level of knowledge on hand hygiene among the local community was good. This finding is consistent with other studies that reported a good level of hand hygiene knowledge among healthcare workers.^{24,25} Although there may be differences in terms of healthcare related knowledge between adults in a market place and healthcare workers, participants in current study demonstrated a good knowledge level on types of disease transmitted by poor hand hygiene, and hand hygiene practice. This may be that a majority of the participants had moderate to good level of academic qualification. Another possible reason may be the accessibility of health-related information through social media and websites. Our study did not find misunderstanding regarding the transmission

mode of HIV, noted in a study among Nepalese, who thought it was through poor hand hygiene practices.¹⁶ These may be explained by the differences in level of education and public awareness across the countries.

Good attitude on hand hygiene found in this study is in line with past studies which reported a good attitude towards hand hygiene practice among healthcare workers.^{26,27} Good knowledge on hand hygiene explains the good attitude reported in our community. Eshetu and colleagues also reported that the higher the level of knowledge on hand hygiene, the better the attitudes towards hand hygiene practice.¹² It is, therefore, necessary to increase understanding on the types and modes of communicable diseases, its consequences, and standard practice on hand hygiene among communities. The health authorities may plan

a series of health-related campaign and making use of social media to promote public awareness on related topics.

A majority of adults in this study demonstrated good hand hygiene practice using alcohol hand rub. These findings are consistent with past studies that reported good performance of hand rub among healthcare providers.^{24,28,29} Natnael and colleagues found that nearly fifty percent of the barbers and beauty salon workers in Ethiopia had poor hand hygiene practice during COVID-19 pandemic.³⁰ However, our study showed approximately one quarter of the adults in a market place did not adhere to the recommended technique on effective alcohol hand rub. Non-healthcare personnel may not recognise the importance of following the standard practice as they are neither trained nor dealing with the sick people as in the hospital settings. Many people may perceive it as time-consuming to perform all the recommended steps of hand hygiene. Such attitude could have negative influence on proper hand hygiene practice and potentially increase the risk of disease transmission in the community. Dutta and colleagues also indicated that lack of knowledge and negative belief on hand hygiene could negatively impact its good practice.³¹ Even though there is increased public awareness on hand hygiene during the COVID-19 pandemic, individuals should continue in keeping up the civic consciousness in order to prevent spreading of microorganisms. Certainly, communicable diseases through direct contact can be minimised with everyone adopting hand hygiene as their habitual practice.

Guzek and colleagues found females performed hand

hygiene more frequently than males.³² But the non-significant relationship regarding demographic factors and level of hand hygiene practice we found is in line with other studies.^{9,12,33} The good level of understanding and attitude on hand hygiene may have influence on the practice. This is aligned with the theory of planned behaviour used in the study. In view of the increased number of cases of communicable diseases in the nation, healthcare authorities should continue to further educate the public on its importance to prevent disease transmission through proper hand hygiene practice.

Limitations

The sample participants were limited to local adults visiting a public market and hence this is not generalisable to the Malaysian population. Data was collected during the COVID-19 MCO period where participants may be more adhering to hand hygiene practice. The findings of this study may not reflect the attitude and practice of population in post pandemic era.

Conclusion

The focus on hand hygiene for disease transmission prevention remains prominent in the community. Many studies support that hand hygiene can prevent a wide range of illnesses such as respiratory diseases, hand-foot-mouth disease, and gastrointestinal diseases. The outcomes of this study showed a good level of knowledge, attitude, and practice on quality hand hygiene among local community. The findings suggested that hand hygiene practice may be acquired through good knowledge and behaviour, irrespective of other factors such as age, gender or education.

Long term strategies in enhancing the public health system and for better access to healthcare facilities are required, particularly in the rural areas. Future studies in determining barriers to hand hygiene and associations between knowledge, behaviour and practice will generate new knowledge to public health. A larger sample size from West and East peninsula representing the Malaysian population is also recommended.

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Conflict of Interest

None

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Malignant Melanoma of the Foot: The Tip of an Iceberg – A Creeping Danger that Lurks Beneath the Surface

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This is a report of a patient who presented with a history of what resembled a skin-tag on the plantar aspect of his left foot, which later grew in four months, causing discomfort during ambulation. Little did we know that the growth was just the tip of the iceberg of a vicious malignant melanoma (MM) lurking underneath with metastasis.

Upon clinical suspicion, a biopsy was scheduled to obtain histopathological examination (HPE). Magnetic resonance imaging (MRI) reported the lesion to be a malignant melanoma and contrast enhance computed tomography of the thorax abdomen and pelvic (CECT TAP) surveillance and positron-emission tomography (PET) were requested to stage and guide the treatment modalities. A wide surgical resection was performed and wound was left to heal via secondary intention.

The aim of this report is to create awareness of early suspicions and detection of MM and treatment, which could lead to a better prognosis and the acceptance of post excision allowing for wound to heal via secondary intention healing.

Keywords: *Malignant melanoma, early detection, biopsy, Breslow, prognosis, secondary intention healing.*

Introduction

Melanoma is a skin malignancy that originates from melanocytes which produce melanin, the pigment that gives skin its colour. The exact cause of melanomas is not clear, but exposure to ultraviolet (UV) radiation from sunlight or tanning devices increases risk of developing melanoma.

Early detection of skin cancer ensures that malignant transformations are detected and treated prior to

spread. Melanomas are curative if detected early. A five-year relative survival rate for patients with stage 0 – AJCC Staging System for Cutaneous Melanoma is 97%, compared with about 10% for those with stage IV disease.¹

Although the long-term survival rate of patients with metastatic malignant melanoma is very poor, early diagnosis and treatment carries an excellent prognosis, with surgical excision coupled with chemotherapy often being curative.

Case

A 45-year-old gentleman presented with a left plantar skin lesion for 4 months. It was insidious in onset, gradually increases in size (Figure Ia) from a 1x1cm lesion to a 3x4cm fungating lesion without history of trauma or injury. A palpable mobile mass was found that was non-tender, firm, pink fungating lesion at the plantar region – with an inguinal lymphadenopathy on the ipsilateral limb. Blood investigations were within normal limits and no bony involvement was noted clinically.

A wide excision biopsy of left foot with a minimal 2cm cuff or normal tissues was performed (Figure Ib) with lymph node clearance. The histopathological reported as Malignant Melanoma, favoring Spitzoid melanoma with Breslow thickness: 15 mm, Clark's level: V, TNM staging: pT4b. The wound was sealed with a vacuum assisted dressing. CECT TAP showed left inguinal lymphadenopathy, left upper lobe lung and liver nodules. PET scan revealed a high FDG uptake at left inguinal and femoral node (Figure IIc). The patient was referred to the oncology team for targeted therapy.

The patient was followed up post operatively in the orthopedics and oncology clinics. Unfortunately, the

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disease was found to have progressed systemically, evident on routine CECT-TAP with new lesions subcutaneously and peritoneally, so the patient was offered seven cycles of intravenous (IV) Dacarbazine instead, approximately a month post-surgery. Oncologists suggested a BRAF gene mutation test, that can identify suitable patients who benefit from targeted therapy with Trametinib or Dabrafenib (BRAF inhibitors). After 10 months, the wound healed very well with secondary intention healing (Figure 1c).

Discussion

Skin cancer ranked the tenth most common cancer in Malaysia with 347 cases of skin melanoma between 2012-2016.² The skin is the most common primary site of melanoma.

A study by Kyung WN *et al.* looked into salient differences comparing melanoma of the foot versus other melanomas.³ Melanoma of the foot is more commonly acral lentiginous melanoma, where else nodular melanoma was the most common in other locations. Otherwise, no significant differences were found between gender, Clark's level, age, lymph node involvement, stage, tumour thickness and survival rates.³

PET scan using 18-fluoro-deoxy-D-glucose (18-FDG) has become increasingly popular in the staging of melanoma. The malignant cells are believed to have a higher metabolic rate, and this allows imaging an injected radio-labelled glucose analogue which is taken up by the tumour cells.⁴

Wide local excision of a melanoma remains the gold standard for treatment corresponding to Kawaguchi concept of curative margin in surgery. Balch *et al.*

evaluated 2-cm versus 4-cm margins for 1-4-mm thick primary melanomas. In their multifactorial analysis of prognostic factors, they reported that thickness, the presence of ulceration, and anatomic site were important prognostic factors and that a 2-cm or 4-cm margin demonstrated no statistical difference in overall survival or local disease recurrence.⁵

Healing by secondary intention had always been a valuable method of wound management. As cosmetic results are highly subjective, the goal in the end is patient's satisfaction. Some guidelines would be beneficial to determine the need for immediate wound closure or allowing healing by secondary intention. No universal guidelines have been established to date, however John A Zitelli⁶ outlines helpful guidelines in management of wound healing by secondary intention.

Chemotherapeutic approaches to treating melanoma show progress with research. Various combination regimens have been studied in numerous trials and have been associated with response rates ranging from 9% to 55%. The challenge for the oncologist in the future will be to identify which combination of chemotherapeutic agents, if any, will offer consistent improvement over Dacarbazine (DTIC) alone.⁴

The identification of BRAF mutation and introduction of BRAF targeted therapy has improved outcomes in patients with metastatic malignant melanoma from a standard median survival of six months to a median of 25.9-33. Six months and decreased risk of relapse up to 53% as compared to placebo in certain groups of patients.⁷ The patient in this case was not further tested for this mutation in view of logistics and financial constraints.

Conclusion

Despite potentially exciting developments in the treatment of advanced malignant melanoma, prevention and early detection remain the primary

goals in battling this cancer. Early detection of melanoma should be the goal. As wide surgical margin excision is the mainstay treatment for Malignant Melanoma, not every wound benefits from immediate skin coverage or reconstruction.



Figure I: Images of the lesions – (a) Pre operative (tumour). (b) Post resection wound. (c) Post wound healing after 10 Months.

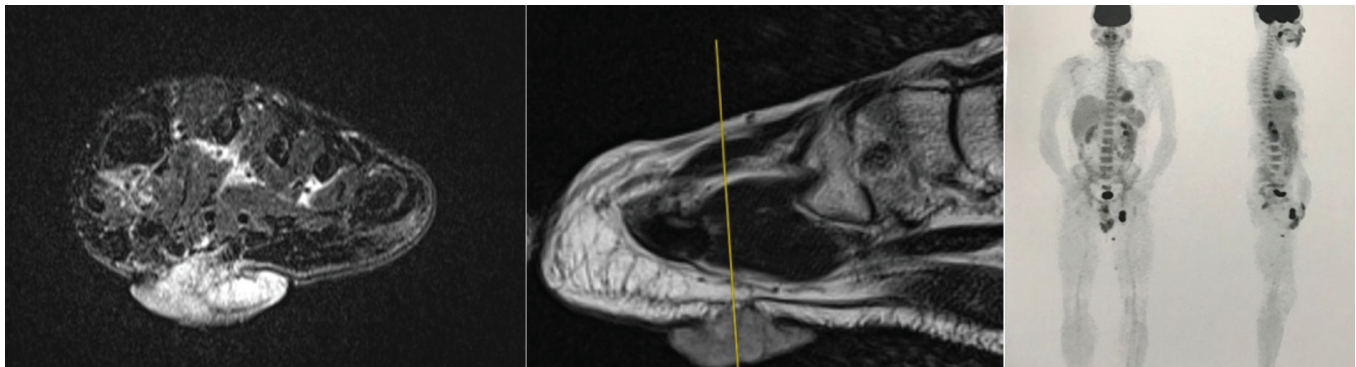


Figure II: Imaging – (a) Axial cuts of a T2 weighted MRI. (b) Sagittal cuts of a T1 weighted MRI. (c) PET scan showed high FDG uptake at left inguinal and femoral node, liver and lung nodules.

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