RETROSPECTIVE REVIEW OF FEEDBACK FROM MEDICAL STUDENTS FOLLOWING THE INTEGRATION OF DISASTER MOULAGE AS A PART OF PERSONAL AND PROFESSIONAL DEVELOPMENT CAMP (PPD CAMP) GAME ACTIVITIES.

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ABSTRACT

Background: Merging disaster training with professional and personal development (PPD) camp game activity is a new technique of teaching learning method (TLM) that can be both time saving and cost saving. Professional and personal development (PPD) camp is a part of National University of Malaysia syllabus for improvement of soft skills among medical students, leadership and teamwork. Methodology: A simple modified disaster moulage was introduced to the PPD camp in year 2015 and students were asked to fill a feedback form to assess perception of interest, benefit and knowledge. This study is a retrospective review of the feedback forms. Results: A total of 240 respondents attended PPD camp in 2015 provided feedback. The results showed majority of respondents (95.5% n=229) found the disaster moulage either very interesting or interesting and 85% of the students (n=225) liked it. Sixty nine percent found the moulage very beneficial. From an open ended response, 67.9% (n=101) answered that this moulage resulted in increased knowledge of handling emergency cases and 42.1% (n=101) respondents answered that this moulage can improve teamwork. When applying Likert scale (1 to 5, least to most preferable) in comparing with other game activities in the PPD camp, disaster moulage ranked highest in enjoyment (3.99+/- 1.06) and benefits (4.19+/-1.01). Conclusion: Including disaster moulage as part of PPD camp game activity is generally accepted among medical students. Questionnaire in assessing pre and post knowledge and benefits are required for further evaluation of this new method.

Keywords: *moulage, disaster, teaching learning method, personal and professional development*

INTRODUCTION

Training of medical students in response phase of disaster would require a huge amount of resource such as finance and teaching staff. Disasters response phase training for medical students in National University of Malaysia (UKM) are done 5 to 6 times per year at every batch of emergency department attachment.

Professional and personal development (PPD) camp has been developed as a core subject in National University of Malaysia for improvement of soft skills among medical students. According to Juriza et al., leadership and teamwork are the important aspects to be developed in the PPD camp.[1] Each camp includes the whole batch of the year, which consists of range of 200-300 students per batch. It will be time saving and cost saving to introduce an introduction to response phase of disaster in a camp which would cover the whole batch

In 2015, disaster moulage was introduced in the camp to replace one of the non-clinical team building activities. Students in groups of 12-15 will be tasked to manage on site real time disaster victims. The scenario involves pre-hospital triaging, assessment and treatment of disaster victims which includes treatment of tension pneumothorax, open pneumothorax, head injury and fractured long bones. Students are required to manage the victims using any resources available such as waste, paper and plastic bottles. Following the moulage, feedback forms were given to students to fill. This study retrospectively analyzes the collected feedback forms

METHODS

This is a retrospective review of feedback forms obtained from medical students that participated in the introduced 2015 PPD camp disaster moulage. The general objective is to assess medical student's perception on introducing disaster moulage as a component of PPD camp based on the feedback form. The specific objectives were to determine the level of interest, perception and comparison with other game activities among medical students towards the disaster moulage in PPD camp. Inclusion criteria were all final year students who participated in the moulage and filled the feedback forms. Exclusion criteria were incomplete feedback forms and students who were unable to participate in the moulage.

The sample size was calculated according to formula by Kish L. 1965[2], where sample size = •n = $(Z1-\alpha)^2(P(1-P)/D2)$ where •$Z1-\alpha = Z0.95 = 1.96$ (For CI of 95%, Z=1.96.) P= prevalence is equal to 0.76 (Nidaa et al 2016)[3], hence 1.96^2 x 0.76(1-0.76) / 0.05. The sample size for 5% error was 280. However feedback forms from the whole batch of 5th year medical student who attend the 2015 PPD camp which was only 242. Data was collected and analyzed using SPSS version 23. Ethical committee approval obtained on 30th March 2017 reference No. UKM PPI/111/8/JEP 2017-213.

PPD came game activities

The PPD game activities or explorace was done on the third day of the camp. The students were divided into 20 groups, which each group consist of 11 to 12 students. They will have to complete tasks in five different stations in order to complete the game activity. The game activity includes Station 1 a blindfolded assignment and leadership. A selected leader form the group will guide group members who are blindfolded to avoid dangers. Station 2 is relaying message

through whispering. Station 3 is a task in composing a song. Station 4 and 5 is the introduced moulage station and reporting of the incident to the commander. In the moulage there were three victims, which were standardized patients, simulated as a tension pneumothorax, open pneumothorax and head injury. Makeup was using fake blood and dough to create the wounds and injuries. A confused but stable patient was injected in the scene as a deviator. Students were expected to perform field triage and basic first aid using whatever equipments available. The scene was a bomb blast in a stationary shop, and there were A4 papers, pens, masking tape and bottles. The students will have to apply their creativity and medical knowledge in order to perform makeshift stabilization of patients. The students then would relay the injuries and treatment done for the victims at station 5 to the field commander. After completion of the game activity, there was a session of debriefing and the feedback forms were distributed.

Feedback form

This is a feedback form that was given out to the students in order to gauge the interest and benefit gained. The feedback form was prior to this study and it was not a questionnaire that required any validation. This study analyses the feedback form in a retrospective manner.

Question 1 assesses the student's interest in the activity of the moulage, which was questioned in a Likert scale from not interesting at all to very interesting. Question 2 assesses in a one answer manner, whether the students prefer to have this activity or not. Question 3 to 6 assesses the outcome and benefit that the students perceived to gain from this activity. The last question is more of a comparison in terms of planning, enjoyment and benefits between all stations in the outdoor explorace. As this was a retrospective study, simple audit statistics were the only calculation possible.

Answers form subjective or open ended questions, such as question 5 was categorized into five different groups manually. Response with the same keywords such as communication, critical thinking during disaster, teamwork and ect. were grouped collectively.

Data collection

This study analyses the feedback form which was stored. The feedback form was filled after the moulage activity, as it was given to the students to fill. There was no time limit in filling the forms. As it was a simple form, students took approximately less than 10 minutes to fill. Incomplete form will be excluded from the study. Forms were collected by the organizing committee and stored for further reference.

RESULTS

A total of 240 feedback forms fulfilled the inclusion criteria, which reflects the number of students that participated in the moulage and filled the feedback forms. The first question was a Likert scale to determine the interest of the students towards the moulage. Thirty three percent (n=94) found the disaster moulage interesting, 35% (n=84) students found it very interesting. Fifty-one students had moderate interest towards the moulage and 4.6% (n=11) were less interested. None of the students found that it was not interesting at all.

Table 1: Interest level among 2015 PPD camp disaster moulage participants'

	Frequency (n)	Percent (%)
Less interested	11	4.6
Moderately interested	51	21.3
Interesting	94	39.2
Very interesting	84	35.0
Not interested at all	0	0
Total	240	100.0

Question 2 was to assess whether the students liked the moulage or not. Question 2 was a more objective question with only 3 answers whether the students enjoyed it / liked it or not.

85.4 % of the students (205) like the disaster moulage stations while 4.6 % (n=11) did not like it. Ten percent (n=24) they don't know whether they like it or not.

Question 3 assesses the student's perception on the benefits of this moulage in improving personal and professional skills during emergency situations. All the students answered the question about their perception on benefit

Table 2: Benefit in improving personnel and professional skills among 2015 PPD camp disaster moulage participants'

	Frequency(n)	Percent(%)
Yes	209	87.1
No	10	4.2
Don't know	21	8.8
Total	240	100.0

Question no.4 is to assess the student perception of overall outcome of this activity. It is a multiple choice answer with an open ended stem for selection that was not available. The questions were whether the moulage was fun, or made them understand PPD better, or whether they are being able to think outside the box. They were able to select more than one response. Sixty-seven-point five percent students (n=162) thought they had fun during the disaster moulage. Fifty three percent (n=129) of the students they find the disaster moulage helped them understand the PPD better. Eighty-point four percent of students (n=193) think they could think outside the box. To elaborate further, thinking out of the box would mean the ability of students to apply their clinical skills in situations that is not normally encountered during daily practice. For an example, this moulage tests the students to perform first aid response without normal hospital equipments. Bottles and stationary were given to test the ability of students to create makeshift first aid equipment.

Question number 5 was an open ended question. The question was a subjective question on two important aspects in medicine that was learnt during this session. This subjectively assesses two important aspects regarding student's perception on learning points from the moulage. The response was manually categorized into five different groups.

The subjective answers were categorized into 5 major groups which were:

Table 3: Perception of 2015 PPD camp disaster moulage participants'

Categorical answers from the subjective response	Percentage	Number
1. Know how to handle emergency cases	67.9%	(n=163)
2. Critical thinking during disaster	29%	(n=71)

3.Learning about proper communication in disaster situation	27 %	(n=65)
4. Learn about teamwork,	42.1 %	(n=101)
5. Learn how to triage with limited resources	23%	(n=57)

Question 6 was about the perception of students regarding enjoyment, benefit, planning and testing team work and communication of all five stations in the explorace in PPD. The students are asked to rate from least preferable 1, to 5 most preferable. Below is the average and standard deviation.

Table 4: Comparison among all 5 stations in perception among 2015 PPD camp participants (Activity was rated from 1(least preferable) to 5 (most preferable) for each station)

	Station 1	Station 2	Station 3	Station 4	Station 5
You enjoyed the most	3.31 +/-1.10	3.09 +/- 1.11	3.11+/- 1.24	3.99 +/- 1.06	3.39+/- 1.16
You benefited the most	3.04+/- 1.00	3.06+/- 1.10	2.72 +/- 1.23	4.19 +/- 1.01	3.78+/- 1.00
Well planned	3.65 +/- 1.04	3.17+/- 1.06	3.12 +/- 1.19	3.54 +/- 1.26	3.42+/- 1.06
Test team work	3.95+/- 1.05	3.56+/- 1.14	3.53+/- 1.20	3.5+/- 1.07	3.50+/- 1.24
Test communication	3.93+/- 1.04	3.8+/- 1.17	3.38 +/- 1.20	3.81+/- 0.96	3.39 +/- 1.27

Station 1 was blindfolded activity, where leaders of each team would have to guide their team members who were blindfolded. Pebbles were scattered on the floor and the team members would have to avoid in with guidance from the team leader. Station 2 was conveying message through whispering. A message was passed to a team member and then passed to their each other colleague in a mannerly fashion. The message from the last student was compared from the first to see the amount of alteration. In station 3, the students would have to compose a song based on patriotism. The disaster moulage which is station 4 and 5 scored highest for the most enjoyed and most beneficial. It was the second-best station for planning and communication testing.

DISCUSSION

Leadership and teamwork are two important aspects of personal and professional development (PPD) that is included in the camp objectives. As a part of the teaching-learning method (TLM) for PPD, three outdoor camps are scheduled for the medical students with main emphasis on teamwork and leadership[1]. To

determine the final year students' perception on the introduction of disaster moulage, feedback survey following the PPD game activities has been performed. Two hundred and forty students answered the first self-assessment survey in 2015 after they attended the third camp in their final year. The questionnaire contained six questions cover teamwork and leadership aspects. The student's perceptions on whether they have achieved the learning outcomes were rated on five-point Likert scale. Majority of the students had either agreed or strongly agreed that they have high interest and benefits following the disaster moulage course. The outdoor camp was perceived by students as a beneficial learning activity for building teamwork and leadership. Performing moulage in an outdoor camp is time and cost saving due to the involvement of the whole batch, in comparison to traditional attachment teaching which was done in several small batches throughout the final year.

As a result, from the first question of the feedback form, student's perception of the interest 39.2 % (94 students) find the disaster moulage is interesting, 35% (84) students find it very interesting and 4.6% (11) they find it less interesting. No student answered that the moulage is not interesting at all. Question two assesses whether the students like the moulage or not. This is related to question number one, and it is as a conformity question. Eighty five percent of the students (205 students) liked the disaster moulage stations while 4.6 % (11) did not like it and 10 %(24) they don't know whether they like it or not. This indicates that majority of the students liked the disaster moulage stations. Four-point six percent (4.6%) of the students who did not like it correlated with the 4.6 % who find it less interesting in question no 1. This indicates the same group of students did not like it and did not find it interesting. These results similar to the Saudi Arabia study (Nidaa et al 2016) where most of the students (76 %) found it interesting.[3.] From this survey it could be generally accepted that from the student's perception, introducing response phase disaster moulage in PPD was interesting and beneficial.

Adoption of this course would help to increase the human resources among many medical students or junior practitioner available for dealing with disaster situations

Question 3 assesses the student's perception on the benefits of this moulage in improving personal and professional during emergency situations. Eighty-seven points one students (87.1 % 209) of the students perceived that disaster moulage is beneficial. A small minority of students 4.2% (10) did not think this disaster moulage is beneficial to personal and professional development. This study correlates with the study done by IM Saiboon et al 2011[4]. According to the study there were significant increase in term of understanding (t value = 5.596; p = 0.001) and confident level (t value = 5.259; p = 0.002) from pre- to post-moulage exercise.[4] This increase was measured using a paired T-test. The students rated that their confidence and understanding of the principle of major incident management has improved considerably following the moulage session. This correlates with the current study in which students perceived the moulage as giving overall benefits.

Question no.4 is to assess the student perception on this activity. All the students answered the question of their perception wither the disaster moulage station is fun, or was made them understand PPD better, whether they are being able to think outside the box,

Question number 5 is to assess subjectively the two important aspects

about the student's perception regarding learning points from the moulage five themes generated. Highest two responses from the students is that the introduction of moulage in the PPD camp activity is increases knowledge in handling emergency cases (67.9%, n=163) and improves teamwork (42.1%, n=101). The emergency cases that were simulated such as open pneumothorax, open long bone fracture and head injury provides training ground for students to practice first aid treatment in disaster scenario. Hands on practice were available for all students in the 10 minutes given for treatment, as there were 3 victims per group. Teamwork was also important in managing, where the team leader would divide the team into 3 smaller groups. Students learn on impromptu task assignment. Communication was less applied because the use of handheld transmitter was limited. This can be correlated to the study by IM Saiboon et al 2011[4], that even though 2 way handheld transmitter was use in training medical students, from a pre- and post test, confidence level did not increase significantly. Triage was not taught to the students prior to this activity, hence the inability of the students to appreciate its application in this scenario.

Question 6 is about the perception of students regarding enjoyment, benefit, planning and testing team work and communication of all five stations in game activities in PPD. Station 1 is about blindfolded assignment and leadership. Station 2 is regarding relaying message through whispering. Station 3 is about composing a song. Station 4 and 5 is the disaster moulage. The students are asked to rate from least preferable 1, to 5 most preferable. Station 4 scored the highest score in the likert scale which was 4.19 +/- 1.01 in which students perceived most beneficial. This is mostly due to the medically oriented activity in comparison to other activities which was non-medical. Station 4 is the moulage station, where as the 5th station is reporting the findings and treatment in station 4. It also scored the highest in the most enjoyable station, which were 3.99 +/- 1.06. This is probably due to the nature of this station which required adrenaline rush and tactical planning as well as basic clinical acumen. Students also perceived the need for disaster training exposure, in correlation to a study by Barrimah et al, where 229 students endorsed the idea that a training course is needed with a mean likert score of 3.66/5[5]. Planning of the station was not on the first line probably due to the chaotic nature of this station; however that was the design of this station. Improvements in planning of this station were done in subsequent camps, where participants were given 1 day to search and create makeshift equipments for first aid. The students were not prepared for team building and communication as they did not have any knowledge on team leading, triaging and assigning responders in disaster, as they are just finished fourth year and did not yet went through emergency medicine posting.

CONCLUSION

Incorporation of disaster moulage in Personal and Professional developmental (PPD) camp is a novel time saving and cost-saving method of introducing pre hospital disaster response phase to a whole batch of undergraduate medical student. In perspective of majority of medical students, adoption of disaster moulage in the PPD camp was found to be both interesting and beneficial. Medical student would understand disaster management better when they enjoy learning about it. However, further randomized control trial is recommended prior to incorporating this in the professional and personal camp curriculum.

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APPENDIX 1: PPD camp feedback form

Kindly fill in this survey on the newly introduced station (disaster moulage –station 4 and 5). There is no need to put any personal details. Thank You. Please return this questionnaire to Dr Nik Azlan

1. How do you find this activity?

A. Not interesting at all B. Less interested C.Moderate D. Interesting E. Very interesting

2. Do you like it?

A. Yes 2-No 3. – Neither

3. Did you benefit from this in terms of improvement of personal and professional skill in emergency situation

A. Yes 2. No 3. Don't know

4. What did you get from this activity? (You can tick more than one)

___ Fun
___ Understand PPD better
___ Able to think outside the box
___ Other: (specify)

5. Give 2 important aspects of medicine that you learnt from this activity

A) _____
B) _____

6. Please rate each station activity in term of 1(least preferrable---→ 5 most preferable)

	Station 1	Station 2	Station 3	Station 4	Station 5
You enjoyed the most					
You benefited the most					
Well planned					
Test Team Work					
Test communication					