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Disaster management curricula: strategy to create doctors with disaster resilience in Aceh, Indonesia

N Wahyuniati¹, R Maulana¹ and I Ichsan^{1,2,*}

¹ Faculty of Medicine, Syiah Kuala University, Darussalam-Banda Aceh, 23111, Indonesia

² Tsunami and Disaster Mitigation Research Center (TDMRC), Syiah Kuala University, Darussalam-Banda Aceh, 23111, Indonesia

*Corresponding author: Faculty of Medicine, Kopelma Darussalam Banda Aceh 2311, Indonesia. Tel: +62 8116807781, Email: ichsan@tdmrc.org / ichsanmd_aceh@unsyiah.ac.id

Abstract. Faculty of Medicine of Syiah Kuala University has one special block called Disaster Management block (the last block on the curricula) on Competency-Based Curriculum of Medical Sciences with the Problem-Based Learning method. This block has four credits, allocated seven weeks learning period including one week for evaluation. The placement of disaster management block in the 7th semester (last semester) aims to allow students to implement more easily the complete basic and clinical medical knowledge and then have it integrated with the management capabilities during a disaster. This article evaluates two components: 1) Disaster management module, by comparing the content of modules used in three different academic years, the academic year 2013/2014, 2014/2015 and 2015/2016, 2) The final grade, by comparing the final grade of disaster management block in 4 years (comparing students class of 2008, 2009, 2010 and 2011). The results revealed that on every academic year there were additions and strengthening of the material to ensure that students achieve a complete learning experience, and there was a slight increase in student's grades where the number of students who receive grades A has increased while the number of students who receive grades E decreased.

1. Introduction

Indonesia is a disaster-prone country and experienced a major loss of both victims (dead, missing, injured) and property loss. Aceh province is one of the areas in Indonesia who has suffered catastrophic 9.1 magnitude earthquake followed by a tsunami on December 26, 2004. Most areas of Aceh were destroyed in a matter of minutes, more than 200,000 inhabitants were dead, missing or injured and countless properties lost or damaged. This tsunami has become a 'wake-up call' for the Indonesian nation and especially for the people of Aceh that has a very low disaster preparedness in both governments and communities level. Based on this reality, Indonesian Government then formed the Law No.27 of 2007 on disaster management, and later formed the National Disaster Management Agency (BNPB) and the Regional Disaster Management Agency (BPBD). The process of post-disaster continuous improvement in all aspects in Aceh after the 2004 tsunami included disaster education establishment. The disaster education in Aceh is a pioneer project in Indonesia and it is now implemented in school level to University level. Various strategies in the field of disaster education to



increase the better understanding and preparedness in Aceh is still to be pursued, including the strategies implemented to medical students at the Syiah Kuala University. [1,2,3]

Faculty of Medicine of Syiah Kuala University has a several local curricula, one of them called 'disaster management' which are arranged based on the determination to produce graduates who are aware of and understand that disaster management is similar to day-to-day clinical emergency management but has more victims, and wider damage to facilities as well as health and psychosocial impacts in large communities, so they are expected to overcome problems arising from disasters and coordinate with relevant agencies in disaster management. Disaster management aims to reduce or avoid, potential loss from hazards, ensure fast and precise assistance for disaster victims, and achieve fast and effective recovery. Faculty of Medicine of Syiah Kuala University has one special block called Disaster Management block (the last block on the curricula) on Competency-Based Curriculum of Medical Sciences with the Problem-Based Learning method. This block allocated seven weeks learning period, including one week for evaluation and had four credits. The placement of disaster management block in the 7th semester (last semester) aims to allow students to implement more easily the complete basic and clinical medical knowledge and then have it integrated with the management capabilities during a disaster. This article aims to explain in detail about the disaster management block which is an improvement strategy for disaster preparedness that has been conducted in the faculty of medicine of Syiah Kuala University since 2006 to produce future doctors with disaster resilience. [4]

2. Method

The method used in this article was conducted based on the evaluation of the disaster management curriculum implementation at the Faculty of Medicine, Syiah Kuala University. The author evaluates two components:

1. Disaster management module, by comparing the content of modules used in three different academic years, the academic year 2013/2014, 2014/2015 and 2015/2016. It is discovered that in every academic year there were additions and strengthening of the material to ensure that students achieve a complete learning experience. This article describes a comparison of the area of competence to be achieved by student, issues / topics competencies, topic tree, the number and qualification of college experts, lecture topics, the format of learning activities, the composition of the credits and the time allocated to each learning activities, the number and type of topic being taught, number and type of tutorial scenario, the theme/scenario of the table-top practices, the design and scenario of the disaster drill practice, and the supporting institutions involved in each academic year.
2. The final grade, by comparing the final grade of disaster management block in 4 years (comparing students class of 2008, 2009, 2010 and 2011) (as shown in figure 1). The final grade obtained from accumulate: 1) the 'process' score, consist of tutorial (discipline, attitudes, knowledge), table-top practice and disaster drill practice, 2) the cognitive score obtained from cognitive theory examination (computer based test).

The data in this article is presented in narrative form, tables and graphs. The main source of data used in this article came from disaster management module, primary data from assessment unit and academic guide book of the faculty of medicine of Syiah Kuala University.

3. Results and discussion

Syiah Kuala University as the largest and oldest National University in Aceh is committed to developing excellence in science, technology and art in seven (7) themes: Food Security; Potential Development of Coastal, Marine and Fisheries; Disaster Mitigation and Management; Climate change; Renewable energy; Life Skill and Character-oriented Integrative learning; Law and human rights

Revitalization. Syiah Kuala University now has Tsunami and Disaster Mitigation Research Centre (TDMRC) featured as a study center that collects Syiah Kuala University's resources to addressing the issue of alocal disaster, national and global aspects of knowledge and application. In line with the development roadmap of the University, Faculty of Medicine of Syiah Kuala University also made a breakthrough in its curricula by adding a disaster-related local content. Faculty of Medicine aims to produce doctors who have the competence to implement primary health care which includes professional health care services of all ages, the detection of diagnosis of any disease as early as possible is implemented in perfection, holistic, sustainable and have coordination with other health professions. [5]

Doctors graduating from Faculty of Medicine of Syiah Kuala University would have major competencies built on a foundation consisting of noble professionalism, introspective and self-development, as well as effective communication, and is supported by pillars: information management, the scientific basis of medicine, clinical skills and management of health problems. Supporting competencies that will be owned by graduates are a local content curriculum developed in accordance with the vision, mission and local conditions of Syiah Kuala University in Aceh province and therefore translated into a vision, mission, goals and objectives of the Faculty of Medicine, Syiah Kuala University. Disaster Management block is the local curricula in Faculty of Medicine of Syiah Kuala University and it is still the one and only disaster-related medical education curricula implemented in Indonesia. This block will provide a thorough understanding and skills, practical and simple according to the academic level of students in the field of disaster management. This block also emphasizes the importance of good cooperation between the medical profession with the entire community in disaster management. Disaster management block will equip students with a basic understanding of disaster, provision and what he must possess, how they are able to communicate, coordinate, and synchronize with the victims, their families and with related parties that played a role in response to various types of disasters. [6]

3.1 Evaluation of disaster management module

Learning activities in disaster management block are designed in the form of Problem-Based Learning (PBL) as follows:

1. Tutorial: The three jump method
2. Lecture
3. Table-top and field practical session: manufacturing of hazard map and disaster simulation. The practical session will be held in the community and involve many supervisors from various professions.
4. Independent learning
5. Institutional visit

The content of disaster management module from 3 academic years were being compared based on 11 categories as shown in table 1. Over these three years there were a major changes in college expert involvement where there were addition of disaster management expert on academic year 2015/2016, addition of 'management of mass chaos' in lecture topic starting from academic year 2014/2015, addition of learning activities format (lectures provided through both interactive session and e-learning method), also increase number of supporting institution involved in this curricula. Those changes aim to ensure the enhancement of curricula quality and ensure the better understanding for students.

Table 1. Comparison of disaster management module in 3 academic years. [7,8,9]

Category	Academic Years		
	2013/2014	2014/2015	2015/2016
Area of competence to be	7 areas of competence	7 areas of competence	7 areas of competence

achieved			
Topics of competence	17 topics: - 6 topics with competence level 2 - 3 topics with competence level 3A - 4 topics with competence level 3B - 4 topics with competence level 4	17 topics: - 6 topics with competence level 2 - 3 topics with competence level 3A - 4 topics with competence level 3B - 4 topics with competence level 4	17 topics: - 6 topics with competence level 2 - 3 topics with competence level 3A - 4 topics with competence level 3B - 4 topics with competence level 4
Topic tree	Disaster management cycle	Disaster management cycle	Disaster management cycle
College expert	- Anaesthesiologist (2) - Forensic specialist (1) - Pulmonologist (1) - Public health practitioner (2) - Medical education expert (2) - ENT specialist (1) - Psychologist (1)	- Anaesthesiologist (2) - Forensic specialist (1) - Pulmonologist (1) - Public health practitioner (3) - Medical education expert (1) - ENT specialist (1) - Psychologist (1)	- Anaesthesiologist (3) - Forensic specialist (1) - Pulmonologist (1) - Public health practitioner (2) - Disaster management expert (1) - ENT specialist (1) - Psychiatrist (1)
Lecture topics	- Introduction and overview of disaster and hazard - Disaster management cycle - Disaster risk reduction - Disaster preparedness of health provider - Contingency plan for health facilities - Crisis management - Incident command system - Role of health provider in hydrometeorology disaster - Role of health provider in earthquake and tsunami disaster - Post-disaster infectious diseases' management - Disaster Victim Identification Management - Mental health in disaster	- Introduction and overview of disaster and hazard - Disaster management cycle - Disaster risk reduction - Disaster preparedness of health provider - Contingency plan for health facilities - Crisis management - Incident command system - Role of health provider in hydrometeorology disaster - Role of health provider in earthquake and tsunami disaster - Post-disaster infectious diseases' management - Disaster Victim Identification Management - Management of mass chaos. - Mental health in disaster	- Introduction and overview of disaster and hazard - Disaster management cycle - Disaster risk reduction - Disaster preparedness of health provider - Contingency plan for health facilities - Crisis management - Incident command system - Role of health provider in hydrometeorology disaster - Role of health provider in earthquake and tsunami disaster - Post-disaster infectious diseases' management - Disaster Victim Identification Management - Management of mass chaos. - Mental health in disaster
Learning activities format	- Tutorial: The 3 jump method - Lecture - Table-top and field practical session: manufacturing of hazard map and disaster simulation. The practical	- Tutorial: The 3 jump method - Lecture (E-learning and interactive) - Table-top and field practical session: manufacturing of hazard map and disaster	- Tutorial: The 3 jump method - Lecture (E-learning and interactive) - Table-top and field practical session: manufacturing of hazard map and disaster

	session will be held in the community and involve many supervisors from various professions. - Independent learning - Institutional visit	simulation. The practical session will be held in the community and involve many supervisors from various professions. - Independent learning - Institutional visit	simulation. The practical session will be held in the community and involve many supervisors from various professions. - Independent learning - Institutional visit
Allocation of credits and time	4 credits (SKS), 7 weeks	4 credits (SKS), 7 weeks	4 credits (SKS), 7 weeks
Tutorial scenario (number and type)	4 scenarios: new placement setting, flood, tornado, post-disaster management	4 scenarios: rainy season, volcano eruption, tornado, post-disaster management	4 scenarios: rainy season, volcano eruption, flood (freshet), post-disaster management
Table-top practices (theme/scenario)	- Creating disaster simulation - Creating hazard map and management plan - Utilization of instruments during disaster	- Creating disaster simulation - Creating hazard map and management plan - Utilization of instruments during disaster	- Creating disaster simulation - Creating hazard map and management plan - Utilization of instruments during disaster
Disaster drill practice (design and scenario)	Disaster victim identification	Disaster victim identification	Disaster victim identification
Supporting institutions	Institutional visit to: - Indonesian's red cross - Fire department - Search and Rescue department Supporting institutions: - Aceh's Provincial health office - Aceh's Disaster management's agency - Indonesia Red Cross - Search and Rescue department - World Health Organization - Fire Department - Non Government Organizations (2 NGOs) - Disaster resilience school	Institutional visit to: - Crisis management center - Search and rescue department Supporting institutions: - Aceh's Provincial health office - Aceh's Disaster management's agency - TDMRC - Search and Rescue department - World Health Organization - Crisis management center - Non Government Organizations (2 NGOs) - Disaster resilience school	Institutional visit to: - Health crisis management center - Search and rescue department Supporting institutions: - Aceh's Provincial health office - Aceh's Disaster management's agency - TDMRC - Search and Rescue department - World Health Organization - Crisis management center - Non-Government Organizations (2 NGOs) - Disaster resilience school

3.2 Evaluation of the final grade

At the end of the block, every student will be marked a final grade which are obtained from total value of the 'process' score and cognitive score. 'Process' score obtained from tutorial (discipline, attitudes, knowledge), table-top practice and disaster drill practice, whereas the cognitive score obtained from cognitive theory examination (computer based test).

The composition of the final grades as follows:

1. Process score (20% of total score), consist of:

- Tutorial (discipline, knowledge, attitude)
- Activities report
- Practices report

2. Final cognitive theory examination with computer based test method (80% of total score)

Figure shown below showed a comparison between students' final grades in disaster management block in student class of 2008-2011. It revealed that there were a slight increase in student grades where the number of students who receive grades A has increased while the number of students who receive grades E decreased.

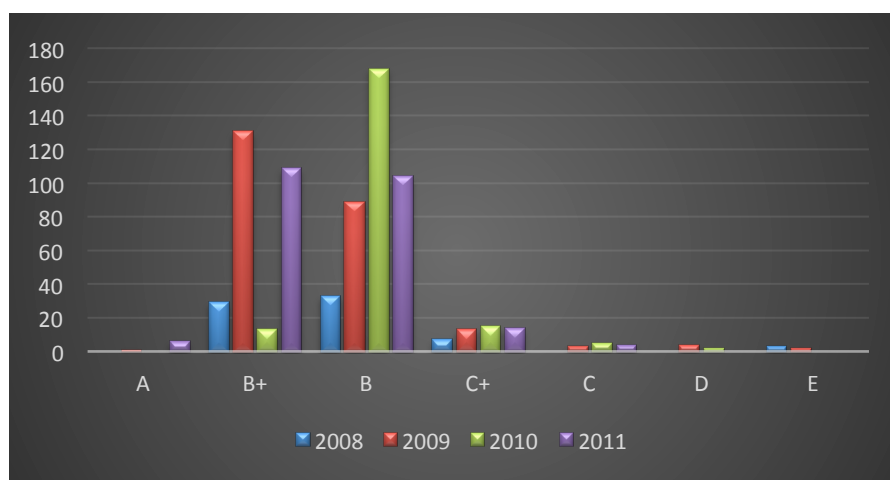


Figure 1. Comparison of students' final grades in disaster management block in student class of 2008-2011.

4. Conclusions

Disaster Management is a featured block which implement competencies: communication skills management, emergency and traumatology management, and across sectors coordination management. The concept of handling cases of emergency and trauma which is based on a priority basis to prevent death and disability would be the soul that always accompanies the medical profession when dealing with disasters.

With the provision of the above teaching concept, students are expected to have the same mindset in the future that in disaster management a medical profession may not work alone but should always be in a system and able to cooperate with everyone. Nonetheless, the medical professionalism should always be prioritized with the knowledge and skills update through various training, so that doctors will be able to conduct their role as a major part in patient care and patient safety on every disaster.

The existence of the disaster management block at faculty of medicine Syiah Kuala University need to be strengthened in the form of block module optimization, the development of innovative learning activities, increase recruitment of professional/disaster practitioner as a lecturer/tutor, disaster drill optimization, the development of innovation in evaluation of learning outcomes, cooperation expansion with another institutions to optimize the implementation of the block.

Based on the results of internal SWOT analysis and faculty self-evaluation document, together with the academic monitoring and evaluation results, Faculty of Medicine of Syiah Kuala University confident of being able to answer the challenge to produce professional future doctors with disaster resilience through the implementation and optimization of the disaster management block.

5. References

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