ADDED VALUE OF MEDICAL STUDENTS IN PREVENTING MEDICAL ERRORS: A QUALITATIVE STUDY

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ABSTRACT

Medical error is a complexity on its own problem and often it will set the healthcare services in an untrustworthy position if it happens too often, and one of the components of most hospital is medical student that is currently undergoing clinical rotation to learn and understand this matter. The study was a qualitative research; data gathering was conducted through multiple interviews with medical students in Yogyakarta. Results including the role of medical student in the hospital including detecting medical error earlier, which compounds from their daily basis improving basic medical sciences and skills to achieve those abilities, and when faced with theoretical-practices gap, it will help to improve their decision-making skills and to set self-standard, but often they found “role dilemma” which make them unsure about their role placement in teams, moreover medical error prevention. Conclusions, strong foundation of basic medical sciences and skills are vital, and complementary skills such as decision-making skills and professionalism play a major role in executing medical error prevention.

Keywords: Medical Student, Medical Error, Patient Safety, Teaching Hospital

I. INTRODUCTION

Preventing medical errors in means of practice and implementation ties greatly with enforcement of patient safety. Role management, understanding role and the balance of experience and decent authority. These matters are what medical student often lacks about in daily clinical practice, whether it is rising from oneself or from it’s environment. One steps forward in adding value in medical practice as a student is recognizing one’s role fully and extendedly. Given the full understanding of one’s role, it may give confidence and better decision making. The one problem in preventing medical error is one called “the problem of many hands” which derived literally because it involves many hands in one practice of patient safety, thus requiring fully functioning decision-making team with remarkable team works, ideally.

II. LITERATURE REVIEW

Medical error is a failure of a medical process that is clearly associated with an adverse or potentially dangerous outcome. It is stated that the broadest definition of medical error / medical error includes all unexpected and dangerous / detrimental experiences / events experienced by patients because of medical professional service or a system. Medical services (in the United States) are complex at the individual, system, and national levels, it is also mentioned that in the preparation of research, new writings and guidelines regarding patient safety were released annually by researchers who are actively practicing and then applied directly to patient care.

This has implications for overwhelming practitioners, whereas in professional education (clinical education in hospital) it is still not optimally integrated, comprehensive, and continuous, this affects the level of knowledge and performance that is disrupted at the individual level and the system level caused by the non-delivery / delivery of high-quality medical services and based on evidence / evidence based.

So far, the large number of guidelines released in a short period of time, coupled with suboptimal integration, makes these guidelines expire quickly and have the potential for bias by the author's own background. At the
system level, the hospital is struggling with staffing issues, improving patient care systems and the effectiveness of handovers between shifts.

There are at least 3 categories of PAE (preventable adverse events) based on time, namely immediate, for example, massive bleeding due to overdose of anticoagulant drugs, delayed by days to months, for example, hepatitis C virus infection due to contaminated chemotherapy equipment, and annual as an Example of lethal pneumococcal infection in a patient who underwent a splenectomy / removal of the spleen for years but apparently had not been vaccinated against hepatitis C.

PAE in hospitals are divided into the following categories:

**Errors of commission** / implementation errors, namely actions that endanger the patient either because of the wrong action or the right action but carried out in an inappropriate manner (e.g. in bile removal surgery, the intestine is accidentally injured and causes an infection leading to the patient's death)

**Errors of omission** / errors due to the loss of one or more components of the service that should have been carried out, namely when there is a specific and necessary action for the patient's recovery is not performed (e.g. the patient needs beta blocker drugs but is not given so the patient experiences an early death). These types of errors are often and easily found in medical records, but errors caused by failing to follow guidelines / guidelines have their own difficulties to detect, mostly due to too many complex guidelines and partly because of the long time to determine these errors must wait until the patient is finished get all the treatment (discharged / go home).

**Errors of communication** / errors in communication, namely annoyance due to 2 or more communicants / communicators (e.g. a cardiologist does not warn his 19 year old patient not to run, then the patient runs and faints, then is hospitalized for 5 days with a diagnosis which is uncertain but what is certain is that the cardiologist knows that the patient is not strong enough to run but fails to deliver on this second chance, so when the patient comes home and runs, he dies of a heart attack)

**Errors of context** / misunderstanding of context, relationship or understanding, namely when doctors fail to recognize unique traits / things in a patient's life who successfully make the best post-discharge treatment (e.g., Patients who have low cognitive abilities to adhere to medical therapy plans or do not have ability to access advanced services)

**Diagnostic errors** sometimes have gray slices with errors of commission and errors of omission (e.g., errors of diagnosis may lead to patient overtreatment or undertreatment, some of which are errors of commission and omission).

Providing provision and the variety of patient safety materials given before medical students go to the field, the obstacle in the real environment is the difference in patient safety behavior taught by the clinical educator / doctor of each medical students. There can be differences in patient safety behavior if in their daily life, medical students find many contradictions between the materials and regulations conveyed by the faculty and the hospital and the original practice. This contradiction requires special attention as it is truly a theory-ethic-practice gap, especially in the context of clinical learning, namely the teamwork component. Teamwork is one of the important keys in patient safety under the category of coordination and cooperation to reduce the effect of the Swiss cheese model of patient safety.

The importance of recognizing the role of a team is key in preventing medical errors. Later, medical students who are currently studying at this time will occupy seats in their respective health facilities, this cycle must be improved to lead to strong attitudes and behaviors towards implementing patient safety. It was stated that the role of medical students in preventing medical errors is too often neglected. In its conclusion, it states that medical students are part of a medical team that has hidden potential.

Apart from the debate that occurred regarding the controversy over medical error, death is the 3rd leading death cause which raises 2 views, namely the first view which immediately receives information doubtly for the benefit of journalism. and politics, the second view is that which rejects because it is not in accordance with prevailing science, Deaths in the United States due to negligence of patient safety (medical error) per year are

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estimated to reach 250,000\textsuperscript{12}, if compared to other incidents, this has not only caught the attention of international journalists, but also the medical layman.

Research that focuses on patient safety in Southeast Asia is rare to find (17 studies, 5 in Singapore, 4 in Malaysia, 3 in Thailand, 3 in Vietnam, 1 in the Philippines and 1 in Indonesia). The focus of the study was 11 studies that examined administration errors, 4 prescribing errors, 3 preparation errors, 3 dispensing errors and 2 transcribing errors. Only 1 study examines the reconciliation error. Based on the results, medical errors that often occur in administration errors are time writing errors, omission errors and dosage errors. This is followed by shortages of staff, excessive workload for medical personnel and errors in translating prescriptions\textsuperscript{8}.

Elements in a hospital that can be likened to seeds, namely students who are taking the clinical education stage (especially co-assistants / medical students). They learn by seeing, listening, imitating, and asking the elements of the hospital (which is a new environment compared to classrooms full of peers).

Whereas in Indonesia the emphasis on patient safety in Medical Education has not been standardized nationally, only implemented by Ministry of Health in 2017, the emphasis in term of real consequences for patient safety actors already have an obligation as a doctor (having received SIP/legal practice sign).

Literature on patient safety continues to increase and develop\textsuperscript{9}, however the applicability to interns / medical students is not optimally involved. Under such circumstances, the question that arises next is how much attention is paid to medical students' perceptions of medical errors and what role they can play. Young medical students / doctors want to contribute to the medical staff team, but a background of lack of clinical knowledge and experience (of course self-confidence is a consideration) prevents them from reporting / systematically knowing patient safety reporting (it could be because of fear of negative assessments of its scope).

The importance of implementation regarding the essence of patient safety is expected to break the chain of medical negligence / medical error cycle, whether by focusing on curriculum or making patient safety curriculum standards for students, because doctors in hospitals who will replace the next generation, provided that, emphasizes how many things can affect the ability of students to understand patient safety, of course, this will changes over time, but over time, the results of past implementations will appear in hope that it will change the face of patient safety implementation in the medical education curriculum.

III. METHODS AND ANALYSIS

Methods used in this study was a qualitative study with analytical descriptive method, data gathering conducted using in-depth interview towards medical student of Universitas Muhammadiyah Yogyakarta with multiple follow-ups. Data gathered with health and safety protocol during pandemic and resolved using teleconference and videoconference.

The data analysis that researchers will execute was based on thematic content analysis \textsuperscript{1}. The stages of analysis activities are:

Data preparation, namely the results of interviews that have been conducted are made into the interview transcript and then the researcher reread the transcript to understand the contents of the interview that was conducted.

Organizing data, namely reducing data or processes in selecting rough data or focus data.

Perform data analysis by reducing data into the form of interconnected themes through the coding process (looking for specific data and given the name of the category). In coding the researcher used the manual analysis method with the line coding technique.

Make a summary or condensation of the codes that have been generate and then develop a theme about the relationship that can be formulated in provisional proportions.

Presenting the data in the form of pictures, tables, schemes, or discussion materials.

The resulting data is in the form of a complete description of the overall results report, both data from informants, settings, and observations from experiences in the environment where the data was collected.
IV. RESULTS

Four themes were acquired after the analytical process.

First theme, “early detection of medical error by medical students”, there were multiple attempts by medical student to address medical errors possibility, as stated by informant f1, f3, and f5:

“… it may have connection why sometimes things like this happens (medical errors) with the frequency of evaluation every month from our curriculum provider, so that we don’t forgot the basics…”

“… I know it at that time I should’ve said that the drugs were switched because the patient moves to the room next door, God that is terrifying, luckily I managed to switch it before the nurse notices (laugh)…”

“… at that time I was measuring blood pressure in one of the room (inpatient), and for some reason, I remembered that this patient was from Emergency room last night, having severe diarrhea, and he asked what medicine is this, and I recognize it as antihypertensive drug, but I don’t recall he has hypertension, then I confirmed to the main console nurse and It turns out the drugs was switched, (she screams), glad I remembered patient’s face last night (laugh)…”

In some cases, they were able to address those problems with ease, but some appears to struggle when understanding these matters.

Second Theme, “improving their basic medical sciences and skills”, this theme was pictured as a struggle when their capabilities in basic medical sciences and skills doesn’t match their expectation when used in medical errors prevention, as stated by informant f3 and f5:

“… when guarding patient safeties, it needs skills and knowledge to understand certain procedures (in each room) …”

“… it was necessary and vital for medical students to understand the basics when still in college. I knew I should learn more but the amount of material is just too much, I should chop them apart to makes task easier (laugh)…”

Third Theme, “understanding roles in their respective team”, This theme was the results of uncertainty in minds of medical student when they were sent to different environment, results in failure to identify one’s role, as stated by informant f1 and f2:

“… in Emergency room often I found that as a medical student, I still confused by what should I do, what is my role, and usually I ask my General Practitioner supervisor as for what should I do, the answers quite vary but as time goes I’ve got the hang of it (laugh)…”

“… it is like experiencing existential crisis (laugh), I don’t know what to do, and what I’m supposed to do, but I think that is the main struggle as student, some people have it easy, somedoesn’t (laugh), as for me an introvert it is quite hard even when I understand the basics…”

“… I think (thinking) it was a gap that I experienced right? (confused), because sometimes I just overwhelmed by how the procedure supposed to be and seeing the differences make my head want to explode (laugh)… but yes I think theory and practices still needs to be bridged with something, because sure it is confusing (laugh)…”

Fourth and the last theme, “improving their decision making and setting self-quality standard(s)”, this theme was the results of realization and connected to previous themes stated, when they understand that they have the burden of studying as medical students and burden of professions to train as a doctor, they were able to understand their roles, their capabilities, and setting standards for themselves, not all informant came with this, only from informant f5 as stated:

“… yes, that is problematic when encounters difficult environment that I couldn’t understand moreover control (laugh), I think apart from standards (curriculum) that campus gave, it helps me nothing when I encounters the differences in my environment that differs from the standards, but that is reality, I thought (laughs), what is
important is I as medical student have my own benchmark and ...(thinking)… whatever the situations I must prepare and make the best decisions, because if not me, who else, right? (laughs)…”

V. DISCUSSIONS

in “patient safety, the problem of many hands”\(^2\), This is a problem that arises in a context in which multiple actors / actors - organizations, individuals, groups - each contribute to the visible effect at the system level, but it remains difficult to hold every single role responsible for this effect. Efforts by individual actors, including quality improvement projects in local areas, can have the paradoxical effect of undermining system security. Many challenges cannot be resolved by individual organizations because they require coordination and action across sectors. In that accordance to the first theme, there has been multiple attempts by medical student to address medical errors possibility. In some cases, they were able to address those problems with ease, but some appears to struggle when understanding these matters.

And by means of improvement it manifested into the second theme that frequently aspired, which is improving their basic medical sciences and skills to further understand how to encounter problems in patient safety education. In curriculum implementation, the main obstacle is to make students realize that their ability must be improved in recognizing a patient safety culture in their respective workplaces, because students must understand that changing the system / culture can be a choice they have to do someday. Barriers are different for each country, even in the scope of work (hospitals and medical education institutes) have their respective barriers, ranging from policies that may hinder the application of patient safety. Third themes came when a medical students struggle to understand their roles in teams or different environments, first described by political philosopher Dennis Thompson in 2016, “the problem of many hands” was originally developed for the context of public officials.

The focus is on the challenge of how responsibility can be allocated to formulating decisions and policies of government when many different officials contribute in many ways it is then difficult to identify everyone’s causal contribution, and that resembles the matters when medical students are unable to identify the role they about to face. In the curriculum guide by WHO in 2011, a topic with the title "facing the real world" has been provided, which means that students are formed and nurtured to become leaders of patient safety in their environment. The results of patient safety material intervention given intensively before the clinical rotation period and evaluated 12 months afterward, most students showed the results of maintaining an attitude towards patient safety, and the biggest obstacle in shaping the attitude of medical students is a work environment that is permissive to small mistakes\(^6\). This makes it easier for medical students to miss important things related to medical errors that may occur. On the other hand, an environment that is strict with little things (such as reprimanding when a medical student does not check their identity) makes very detailed behavior towards the job description of each role. Of course, the internal factors that influence this are language, and the level of activity of the medical students himself. Hereby the last themes represents the awareness of medical students to achieve maturity, which is improving their decision making skills and setting self-quality standard(s), regarding the role that can be played by medical students / doctors in preventing medical errors, in his study he collected cases in which there are examples of the role of medical students in preventing medical errors, it was stated that medical student are part of a medical team whose presence is often neglected and within each of them there are abilities that have not been maximized. Medical students can be an additional layer of patient safety guard\(^7\). Recommendations were made at that time:

Improve interpersonal skills, communication, and professionalism.

Training to practice patient-centered care (Patient Centered Care) and must be able and familiar with receiving patient information that is important for their safety.

Training in practice-based learning and improvement elements and then carrying out system-based practices.

Provide appropriate medical knowledge for common causes of medical errors.\(^9\)

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VI. CONCLUSIONS

Based on the results and discussion that has been compiled, it can be concluded that the role of medical students in preventing medical errors can be described as follows:

The formation of good patient safety / attitudes toward patient safety can be influenced by the academic aspect, namely the nature to always gain knowledge and thirst for knowledge, then understand that the earliest possible preparation with skills and knowledge, as well as awareness of the role it will bring to become the main factor in enforcing patient safety and preventing medical errors.

Clinical skills and knowledge as one of the main bases in carrying out daily activities, because without them, it is like walking without direction and talking without reason and evidence. And in learning and practicing avoiding the "theory-practice-ethic gap" it must always be based on that everything that is done is important and will be bound by workplace regulations and policies, so it needs a good role appreciation.

The learning process from undergraduate to college / medical students goes through a long and hard period, and each participant has their own perception as a medical student, and this needs to be fostered so that the perception formed is always related to the role and attitude towards enforcement patient safety. Do not escape the periodic emotional and psychological management because this field of work requires a lot of time and effort, so each participant must understand that their potential is still very large in improving the system to be implemented.

REFERENCES


WEB REFERENCES