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CLINICAL STAGE STUDENTS' READINESS AND PERCEPTION TOWARDS SELF-DIRECTED LEARNING

Syska Widyawati[1,2], Setyawati Budiningsih[1,3], Anwar Jusuf[1,4]
[1]Postgraduate Program, Department of Medical Education, Faculty of Medicine Universitas Indonesia, Jakarta – INDONESIA
[2]Department of Ophthalmology, Faculty of Medicine Universitas Indonesia/ Cipto Mangunkusumo Hospital, Jakarta – INDONESIA
[3]Department of Community Medicine, Faculty of Medicine Universitas Indonesia, Jakarta – INDONESIA
[4]Department of Pulmonology, Faculty of Medicine Universitas Indonesia/ Persahabatan Hospital, Jakarta – INDONESIA

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ABSTRACT

Background: Self-directed learning (SDL) as part of student-centered learning, has been applied in medical education curriculum in Indonesia since the Competency-Based Curriculum was introduced. Students' perception towards SDL concept in relation to clinical stage and how it is applied are important to identify problems from students' point of view. This study aimed to see SDL readiness and its correlation to academic achievement; and to obtain student perceptions towards SDL.

Methods: A cross-sectional quantitative study was conducted in the Faculty of Medicine Universitas Indonesia (FMUI) from April to June 2013, involving 209 of year 4 students to see SDL readiness and its correlation to academic achievement. Qualitative methods with phenomenological approaches were used to obtain student perceptions of SDL.

Results: 71.3% of students were in the category of ready for SDL with a mean score of 57.03 (SD 7.416). Among students' characteristics, significant mean difference was found in type of education program. The international class group had a higher mean score than the regular group (p 0.014). SDLRS scores did not correlate with student academic grades. Students' perceptions towards SDL were in accordance with known concepts, and students preferred SDL rather than teacher-centered learning in the clinical stage with suggestions of improvement in some areas.

Conclusion: Clinical stage students were ready to conduct SDL. International class students seemed more ready for SDL. Students at year 4 clinical stage had good perception of SDL. This positive perception would provide sufficient readiness for the implementation of SDL in medical education.

Keywords: clinical stage students, clinical stage medical education, self-directed learning

PRACTICE POINTS

- Students' readiness to apply SDL in learning the way they adapt to the existing learning methods and achieve these abilities.
- Students' perceptions towards SDL concept in relation to clinical stage education are important so that problems can be identified from the students' perspective.

*corresponding author, contact: syska.widyawati@gmail.com

INTRODUCTION

Medical students undergoing clinical stage have been facing various challenges. New roles and new tasks are common challenges which may lead to stress among students. Students also deal with an increased workload and limited time to study, contributing to student's dissatisfaction and sometimes burnout. About 59% of students experienced stress at the beginning of clinical stage. In terms of learning methods, clinical stage education encounters a shift from classroom teacher-centered learning to real patient settings.[1,2] Challenges during clinical stage also result in students not getting enough opportunities to practice their skills.[3] Hence, it is critical for medical students to develop a learning strategy to support their performance and overcome their difficulties.

Self-directed learning (SDL) is a relatively new learning concept that places students to be responsible for their own learning with or without the help of others. As a characteristic of adult learning, students who apply SDL determine the learning goals themselves, and with internal motivation determine their own ways to achieve these learning objectives.[4-6] Self-learners are better in choosing study strategies and adapting them to different situations, which positively influence their academic achievement. Moreover, SDL concept is considered important for lifelong learning, an essential requirement for a physician.[7] SDL will bring students to be readier to face challenges and changes in medical practice, even after they graduate.[8]

Some studies have reported the application of SDL in medical education. Research held in Faculty of Medicine Universitas Indonesia (FMUI) clinical practice modules found that most of the modules had applied learning and teaching methods that were suitable for active learning.[9] However, data regarding to students' readiness to implement SDL showed a distinctive result. In Asia, SDL readiness was found low and the influence of lecturer was still highly intense.[10] Study conducted in five medical schools in Indonesia also showed that only half of the students had a high level of SDL readiness.[11] Nonetheless, very few studies have been conducted to see how SDL was applied in clinical stage in particular.

Students' readiness to apply SDL in clinical stage learning will determine their success in adapting to the existing learning methods and achieving their abilities. Students' perceptions towards SDL concept in relation to clinical stage education and how it is applied are becoming important to learn so that problems can be identified from the perspective of students as SDL perpetrator. Therefore, this study aimed to see SDL readiness among clinical stage students and its correlation to academic achievement; and to obtain students' perceptions towards SDL.

METHODS

This study was a cross-sectional study, conducted in FMUI from April to June 2013, involving 209 of year 4 clinical stage medical students. Inclusion criteria were all fourth-year medical students that already registered in clinical stage. Naturally there were two kinds of class in FMUI, regular program and international class program; both of which were also included and analyzed. The international class program group was characterized with a one-year extra study abroad to gain the bachelor or master's degree before entering the clinical stage. Students that did not answer all the questionnaire completely were excluded.

A quantitative study was carried on to see SDL readiness among students and its correlation to their academic achievement. The measurement of the readiness of students to do SDL was done by using a modified SDLRS questionnaire.[12] The questionnaire was given at one of the class sessions with the permission of the module organizer. The score for each student were categorized into; ready if the score was 54 -80, rather ready if the score was 27 - 53 and not ready if the score was 0-26. Academic parameters associated with SDL student readiness were performance indexes at both pre-clinic and average clinical module values. SPSS version 18 was employed for data analysis. SDLRS scores were tested for correlation with each academic value using the Pearson Test. A cut-off of $p < 0.05$ was used to determine statistical significance.

Too deepen the understanding, students' perception towards SDL and their perspective on how they applied SDL in the clinical stage were explored as a

qualitative study with phenomenological approach. Focus group discussion (FGD) was the chosen method to collect ideas from students that already answered the questionnaire. The FGD consisted of eight students which were randomly selected from module groups. After three FGDs were conducted, the information was considered saturated. Audio recorded documentations from FGDs were then transcribed, coded and analyzed to see the patterns and the themes of phenomenon among students in regard to SDL perception.

This study has been ethically approved by FKUI-RSCM Research Ethical Committee. All students participated voluntarily and informed consent was obtained before they participated in the study. The ethical clearance reference number for this study is 249/H2.F1/ETIK/2013.

RESULTS AND DISCUSSION

As many as 209 of the 230 year 4 FMUI students filled out the modified SDLRS questionnaire with a mean score of 57.03 (SD ± 7.416). The highest percentage was students with the ready category. Distribution of student SDLRS score categorization is shown in Table 1.

Table 1. SDLRS Scores According to Readiness Category

Readiness categories	Total n = 209	Percentage (%)
Ready	149	71.3
Rather ready	59	28.2
Not ready	1	0.5

The average distribution of SDLRS scores in groups of student characteristics were shown in table 2. Significant mean differences were obtained in the international class categories which had higher scores than the regular class (p 0.018). There is no similar study comparing international and regular class medical student in terms of their SDL readiness. However, this result could be understandable since adult learning module has been integrated in international class program. The presence of adult learning module in international class program could be a point of difference that regular program students did not experience. This module is arranged to prepare and equip year 1 international class students with learning skills needed during their study and develop a lifelong learning habit among them.[13] Adult learning is an essential learning principle assuming that an adult is independent, self-directing, able to integrate learning to daily life demand and motivated both externally and internally.[14] Readiness itself was one of characteristics of adult learning, in which adults are considered to be ready to learn what they need to know to manage the situations and problems they face.[15] Moreover, there is no prior study conducted to measure SDL readiness among clinical stage medical students specifically. A study reported by Gyawi et al found that the readiness among year 1 medical student in their study were 72.7% using the original SDLRS questionnaire developed by Fischer.[16] Although no other study has measured the clinical stage students' readiness, the ability of SDL should be increasing by time along with their maturity.[17]

Table 2. Correlation between Student Characteristics and SDLRS Scores

Student characteristics	SDLRS mean scores	p value
Sex:		
a. Male	56.85 (SD + 8.147)	0.77
b. Female	57.17 (SD + 6.819)	
Type of education program:		
a. Regular class	56.45 (SD + 7.513)	0.018
b. International class	59.56 (SD + 6.476)	

It should also be noted that in our study the number of international students was not balanced compared to regular students. International class programs students were only 18.66% of the total students. In addition, the other difference factor is that in the international class group students were one year older than the regular class because they had the opportunity to study in medical education institutions abroad. These factors could explain the difference obtained between international and regular class students.

The SDLRS score did not correlate with the average academic score of the pre-clinical stage nor with the clinical stage academic score, with each p value of 0.733 and 0.093 respectively (figure 1 and 2). A study reported by Kidane et al also found similar result. The practice of lecture-based tests influences more

to students' score or grade point average (GPA) and do not fully represent students' insight to SDL.[18] On the other hand, a study by Khiat reported that SDL correlated significantly to students cumulative GPA. Among the SDL indicators being analyzed by Khiat, goal setting, time management, procrastination management, assignment preparation and exam preparation were found to be very significant indicators.[19] The evaluation currently carried out in both the clinical and preclinical stages has been focusing more on assessing the students' achieving competence in the field of medical education rather than assessing the students' SDL readiness. The learning process itself has not much been used as a component of assessment.

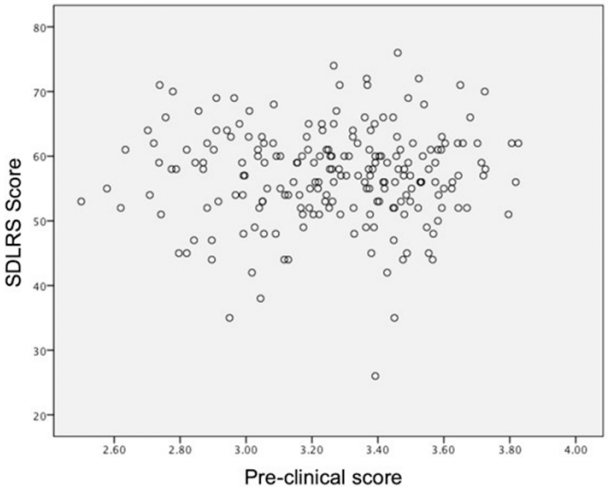

Figure 1. Correlation between SDLRS Score with the Average Academic Score of the Preclinical Stage (r 0.024)

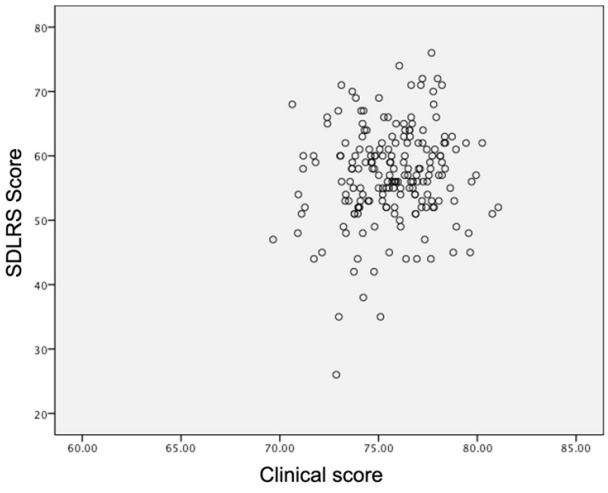

Figure 2. The Correlation between SDLRS Scores with the average academic score of the clinical stage (r 0.122)

Phenomenology study was then conducted through focus group discussions. SDL were understood by most students as a learning strategy carried out actively by students. It was considered a determinant of the direction and method of learning.

> *"….. in my opinion in SDL, students are required to be more active than before. This is appropriate, when we use high school curriculum in high school, the students are more active. So, it's like continuing from high school. I think this is positive, we are required to improvise even though the external conditions are less supportive. In the past, the external conditions actually supported us, so we were constantly fed and we accept finished food. Now we have to cook and process it ourselves."*

It is known that students face a transition from high school to higher education, including medical school. The ability to apply SDL is essential for students to deal with the rise of knowledge they encounter during medical school. Besides, SDL is considered as a protective factor against academic burnout, as reported by Barbosa *et al.*[20] Supporting and providing medical students to develop strategies for SDL will help them manage their learning promote their well-being.[20]

Students prepared themselves at the beginning of the module by asking friends who had participated in the module, and also had read the guidebook, student logbook and *Standar Kompetensi Dokter Indonesia* (SKDI) or Indonesian Doctor Standard Competency.

> *"….. Our group is also equipped with SKDI, to help us more directed. For this section, it is more focused on the competencies; I can set my targets during the clinical stage, at least I should be able to manage the diseases in category 4. While the disease is in the category 3, maybe I will just observe how the management is. However, that does not mean we do not learn about the procedure (management)."*

This finding was similar to a study reported by Mafinejad *et al.*[21] Students who used study guidebook had significantly higher post-test mean score compared to control group, and they found the study guidebook useful. The use of study guidebooks on medical education could be potentially useful in motivating self-learning among students.[21]

The methods used by students to achieve learning objectives in a module were mostly by reading textbooks and gathering information from resource persons (lecturers, residents) through discussions.

> *" .....I prefer textbooks, journals; or I chase what I don't know through information that I share with residents or from consultants when I ask them. Because the tutorial is very helpful for me. Because it attached faster"*

The roles of fellow students were both as friends to discuss and also to share experiences of joy or sorrow.

> *".... even in the class, when I don't understand something, that's when my friends are very helpful especially those the one that like to read. They become our resources. I always believe them. If I don't believe them then why I am bother asking them. Even though sometimes there are doubts, for example if it's a bit different compared to what I have read, I usually try to find the right answer by reading other resources".*

The role of the lecturer in clinical stage education was considered quite important by all students, namely as resource persons who provide direction and feedback. Most lecturers were considered to give enough time for students to explore their own knowledge in discussions or clinical activities with patients before giving feedback at the end of the activity.

> *"..... in my opinion the role of the teacher is important, because they know better and they can deliver to us quickly, considering our time is only 3 weeks, ... now it's already good, the important thing is there are teachers in each session, don't let us go alone. If we're leaved alone, we will be lost".*

Almost all students preferred the SDL approach with sufficient guidance for learning in the clinical stage.

> *"..... I agree more with SDL, but with a note that there must be a strict supervision from the counsellor or supervisor. Because if it goes wrong, there needs to be a correction from the supervisor".*

The resources available to medical students have been vary. A study conducted in Australia showed that traditional resources, such as textbooks and written notes, were still the most frequently used learning resource. In addition, students also used question banks and online teaching videos.[22] Moreover, the role of group discussions between teacher and medical students were considered important. Annamalai *et al* reported that small group discussion could increase students' thought process and helped students to have a better communication skill.[23] The synergy of traditional resources as well as discussions is important for students' learning achievement in medical education.

When we were discussing areas that needs to be improved, identifying problems becomes widespread to various challenges that arise in structured learning at the clinical stage such as limited time, supervision and the scheduling of activities. Regarding the implementation of SDL in the clinical stage several areas needed to be improved according to students, namely:

1. More case-based learning methods or health issues were held rather than just discussing theories;
2. Tutorial needed to be included in every module;
3. Residents' involvement needed to be well prepared so that the discussion and supervision process could work well for both parties;
4. Providing feedback by lecturers in all areas of education (Cipto Mangunkusumo Hospital and all network hospitals) still needed to be improved so that all clinical lecturers could provide constructive feedback.

Kohan *et al* reported challenges and barriers to SDL implementation. This study found that some factors could impede SDL, such as cognitive barriers (information overload, lack of focus on learning), communication barriers (inadequate coping skills, inadequate writing skills) and educational environment barriers (heavy workload, role ambiguity).[24] This finding supported problems identified in our study above. Our study found that students highlighted the needs of improvement on learning method, discussion and communication skill among lecturers especially in providing feedbacks. Early recognition of students' problem in implementing SDL is important to enhance the quality of learning in medical education, including in clinical stage settings.

This study was conducted before COVID-19 pandemic, but it is still relevant to be discussed. Medical students are facing more challenges since medical teachings have been delivered mostly online nowadays, thus SDL methods becomes essential. A study across many medical schools in United Kingdom shows an increased use of online resource by medical students for independent learning. Many other studies reveal that independent learning was growingly applied when we were forced to transform the face-to-face teaching and learning to virtual-based and task-based learning.[25] Therefore, in this situation SDL readiness becomes an important capacity.

This study provided data of students' SDL readiness in clinical stage education. It also attempted to compare and analyze the SDL readiness difference between international and regular class students, which was not investigated in other studies. Nonetheless, the limitations of this study included the measurement conducted that used only questionnaires. This questionnaire was certainly not enough to measure the attitudes and behaviors that were actually implemented. Though, to get a better and deeper understanding the students' perspective to SDL implementation, this study tried to include a qualitative analysis on students' perception towards SDL obtained from focus group discussions. This study did not attempt to analyze other cofounding factors that could affect students' SDL, such as students' self-esteem, learning motivation, student-teacher interaction and clinical practice stress.[26] Instead, this study only included the study programs (international vs regular program) in the analysis. Another important limitation is that this study only conducted cross-sectionally. Students' perception towards SDL and their implementation is an evolving process and can mature by time.17 Future research in the form of observation, reflection documents or opinions from parties other than the students themselves could be more able to measure the behaviors of students implementing SDL. Following-up on SDL implementation among students is also important to see the maturity process of students' SDL eventually.

CONCLUSION

The proportion of students with a high SDLR score was greater than the middle or low score. The SDLRS score obtained did not correlate with student academic score both the preclinical and clinical stages. International class program students had a significantly higher SDLRS score compared to the regular class.

Students' perceptions of SDL were in accordance with the existing concepts. The application of SDL by students at the clinical stage has also been in accordance with many concepts of independent learning that need to be trained and become an advantage in clinical stage education.

RECOMMENDATIONS

We suggest that SDL should be introduced in medical education, including clinical stage education to enhance the medical students' learning ability. We also recommend for further research to be conducted in regard to current condition to identify how students apply SDL in hybrid-learning or self-learning as well as their SDL readiness. Future researches in the form of cohort study which include more students and more factors being analyzed are suggested to get a better understanding on how clinical students apply SDL and its influencing factors.

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COMPETING INTEREST

The authors declare that there are no competing interests related to the study.

LIST OF ABBREVIATIONS

SDL: self-directed learning

SDLRS: self-directed learning readiness score SD: standard devioation

SKDI: standar kompetensi dokter Indonesia

AUTHORS' CONTRIBUTION

Syska Widyawati – developing research proposal, collecting data, data analysis and publication manuscript.

Setyawati Budiningsih – developing research proposal and publication manuscript, and supervising the research

Anwar Jusuf – developing research proposal and publication manuscript, and supervising the research

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