

A Scoping review of determinants of the Graduation of Professional Competencies for Medical Education Students in Indonesia

Yani Istadi
Universitas Islam Sultan Agung,
Indonesia

Sukestiyarno
Universitas Negeri Semarang,
Indonesia
sukestiyarno@mail.unnes.ac.id

Tri Joko Raharjo
Universitas Negeri Semarang,
Indonesia

Mahalul Azam
Universitas Negeri Semarang,
Indonesia

Edy Mulyono
Universitas Negeri Semarang,
Indonesia

Abstract—The competency certificate is part of the registration requirements so that a doctor can arrange for a practice license. This competency certificate is obtained by first having to pass the Medical Profession Education Student Competency Examination (UKMPPD). In fact, many prospective doctors did not pass the test. This study aims to describe the root cause of the difficulty of obtaining UKMPPD graduation and find recommendations on how to achieve that graduation with less difficulty.

The scoping review of full-text articles published in Indonesian and English between 2010-2020 was conducted using the PubMed, Ebscohost, Garuda, Google Scholar data bases. All factors of UKMPPD graduation included in these studies were identified.

There were 19 literatures that met the inclusion and exclusion criteria. The root causes of participant failure were found to be 11 factors: the low competency of students did not meeting institutional standards, length of study that exceeded the period of study, models of initial recruitment of students who were not standard, preparatory study guidance models followed by participants not yet adopting adult learning, attendance during tutoring does not meet the minimum standards, student local test scores have not yet reached the standard limit for passing local examinations, UKMPPD try out scores are still low, student self-efficacy is still low, student motivation is lacking, self directed learning readiness and student learning approaches are not enough.

Based on these findings it is recommended: inform the initial requirements regarding Grade Point Average (GPA), length of study, have a certificate of passing the local examination and UKMPPD try out scores are tightened. Likewise information on the minimum requirements for tutoring is clearly stated. For participants who meet these initial requirements, it also needs to be informed that on the learning journey takes place, participants must have high self efficacy, motivation, self directed learning readiness and learning approach to implementation. All of these will be assessed during the process before the final evaluation is carried out.

Keywords: Doctor Competence, UKMPPD graduation, minimum requirements

I. INTRODUCTION

The discourse about the disruption of industrial revolution era 4.0 is a new challenge that must be faced with all society levels. Its role changes the paradigm of thinking and acting for community to be able to survive. Disruption invites the birth of new models with more innovative and disruptive strategies. This has penetrated the development of Information and Communication Technology (ICT) which has led to rapid internet use.

Technological developments in the disruption era led to innovative changes in various fields. In relation to the education world, technology has encouraged the digitization of education system. Innovations in the field of education occur not only in operational system, but also pay attention to the existence of existing teaching materials. Just as it has been emphasized that teaching materials innovations currently available can be felt by the availability of teaching materials in digital form, one of them is web-based teaching material [1]. Quality of learning can be improved by providing learning that tends to be simulated in accordance with the needs of workforce.

In dealing with various challenges and changes, learning process in higher education needs to be structured so that it is still able to determine the nation's competitiveness, so that the education sector continues to improve. Therefore, universities must move quickly to encourage innovation, facilitate students to become active learners by preparing a curriculum that meets the development of times based on the needs of community.

As mandated in Constitution of the Republic of Indonesia No. 12 of 2012 concerning higher education, precisely in article 35 parafigure 3. Indonesian Language Subject including a subject that must be followed by every student [2]. As a General Course (MKU) which contains scientific material, making Indonesian Language plays an important role in answering the challenges of disruption era. As

stated by the Director General of Higher Education, Indonesian Language Subject is lessons that develop students' ability to speak Indonesian Language properly and correctly, because mastery of Indonesian language can be used as a measure of one's nationalism as an Indonesian Language nation. Therefore, Indonesian Language has an important position in higher education curriculum [3].

In the MKU curriculum of Indonesian Language based on KKNi and conservation, it sets out some learning outcomes that students must have. The achievement of learning is an effort to change the students' behavior and attitudes aimed at increasing knowledge, skills and awareness of conservation values, so that it can move students to play an active role in efforts to preserve values, environment and culture for benefit of present and future generations.[4].

Based on the result of observations on scientific work material in MKU textbook of Indonesian Language used in Universitas Negeri Semarang in 2012 edition, 2016 edition, and 2018 edition with the title "*Bahasa Indonesia Pengantar Penulisan Karya ilmiah*", the following points can be identified; *first*, the existing scientific works teaching materials have not been able to meet the needs of students to understand the material in the context of lecture competencies, *second*, content of scientific works contained in Indonesian Language books is still dense in theory, *third*, problem exercises are still in the descriptions form, not yet there were variations in other types of problem training, *fourth*, teaching materials of existing scientific work have not directed students to the learning aspects of attitudes and skills, more on the aspect of knowledge, *fifth*, there has been no renewal in digital-based teaching materials.

Responding to this thing, of course, it cannot be denied that disruption era has encouraged educators to constantly develop themselves based on the demands of times. One of them is by holding innovative forms of teaching materials based on the needs of students. Because good teachers are teachers who are creative in developing relationships between competency components, one of them is communication competence in digital world or digital literacy. Teachers have rights to be creative in developing the relevance of competence components, one of them is communicative competence [5]. The more rapid information technology and internet have influenced students to manage digital information that is increasingly abundant.

One of the learning facilities that can be reached with technology is web-based learning. By this website, students can access various materials anywhere and anytime, so the learning process is more effective and efficient. With the presence of website, teaching materials can improve the learning quality, facilitate the material distribution, learning becomes more interactive [6].

Teaching materials as a form of renewal in education world in the field of literacy and especially the learning of MKU material of Indonesian Language in scientific work, to develop teaching materials requires a forum, namely the existence of *rumahbahasa.id* website as the foundation. This fact encourages students to improve their literacy skills, so the role of digitizing scientific works teaching materials in Indonesian MKU is able to answer and face the new challenges of disruption era of industrial revolution 4.0.

II. METHODS

This study uses a Scoping review method from (Arksey & Malley, 2005) by following the steps as follows: (1) determining research questions, (2) identifying relevant studies, (3) selecting studies, (4) mapping data, (5) compiling and summarizing findings, and reporting results.

Procedure

1. Determining research questions

This review is mainly to map the root of the problem in obtaining a UKMPPD graduation. The scope of the review is to identify the factors that influence the graduation of UKMPPD from existing research. The research question is: "Do these factors influence UKMPPD graduation?" "How do these factors affect UKMPPD graduation?" and "Does the research into existing factors have gaps?"

2. Identifying relevant studies

We identified the original study by searching the data base: PubMed, Ebscohost, GARUDA, Google Scholar. We use English keywords and phrases such as BOTH: factor succes OR relationship OR affect, UKMPPD OR national competency examination of medical doctors in Indonesia, factor succes AND national examination OR UKMPPD AND medical education OR medical school OR medical students and Indonesian such as "faktor" dan "berpengaruh" atau "berhubungan" atau "sukses", "Uji Kompetensi Dokter Indonesia (UKDI)" atau "UKMPPD".

3. Selecting studies

Inclusion criteria

The literature sought focuses on UKDI / UKMPPD graduation and the factors that influence it. The literature included in this scoping review has met the following criteria (1) the type of article published in full text (2) is written in Indonesian and / or English, and (2) uses articles published between 2010-2020

Exclusion criteria

Literature issued in the form of editor's letters, comments, opinions without any scientific methodology, collections of text books, conference abstracts, and proceeding books.

Selection process

This study uses a step-by-step selection process in accordance with the PRISMA diagram and can be seen in Figure 1.

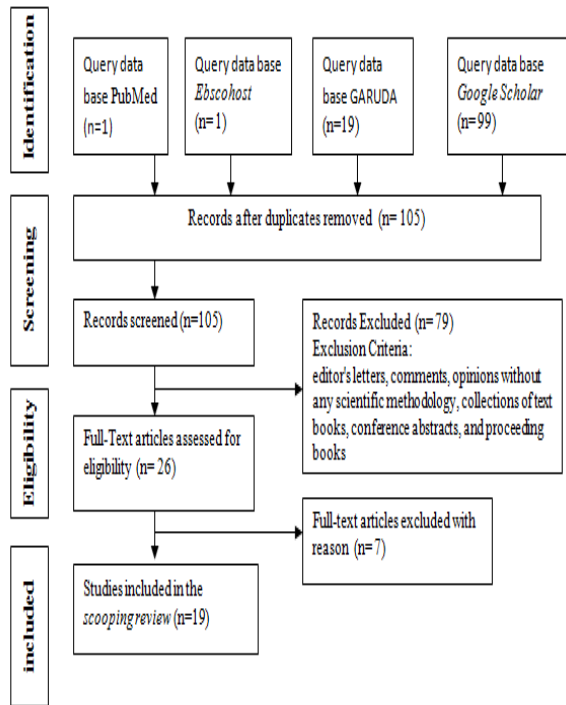


Figure 1. Flow diagram of the literature selection process procedure

4. Mapping Data

The purpose of mapping data in the scoping review is to produce a summary description of the research collection. At this stage, We has identified articles based on the classification of the pre-existing framework through research questions. We extract information from each paper into a spreadsheet. The data included are bibliographic information (author and year of publication), area and origin of the research institution, research design, participants/sample, independent variables, dependent variables, and results/findings.

5. Compiling and summarizing findings, and reporting results.

III. RESULT AND DISCUSSION

The literature selection process is shown in Figure 1. The final result is 19 literature that can be used which can be seen in table 1. There were 11 factors that influenced the graduation of UKMPPD which consisted of try out scores, grade point average (GPA), length of study, student recruitment, UKMPPD tutoring, Attendance during tutoring, local institutional assessment, self-efficacy, motivation, Self Directed Learning Readiness and learning approaches.

The try out score was found 1 article, the GPA for the Academic stage was found 10 articles, the GPA for the professional stage was found 7 articles, the GPA of the combined pre-clinic and

clinical stages was found 2 articles, the length of study at the pre-clinical stage was found 2 articles, the length of study for the clinical stage was found 2 articles, the length of study combined pre-clinic and clinical stages found 1 article, student recruitment found 2 articles, UKMPPD tutoring found 2 articles, Attendance during tutoring found 1 article, institutional local assessment found 5 articles, self efficacy found 1 article, motivation found 1 article, Self Directed Learning Readiness was found in 1 article and learning approach was found in 1 article. Part of the research design used a cross sectional design of 18 articles and a quasi experimental design with 1 article.

Discussion

What are the factors that influence UKMPPD graduation?

Eleven factors that influence the graduation of the UKMPPD have been shown through 19 articles. Researchers see 2 major factors affecting UKMPPD graduation, namely academic factors including: try out scores, Grade Point Average (GPA), length of study, student recruitment, UKMPPD tutoring, attendance during tutoring, Local Assessment of Institution, and non-academic including self-efficacy, motivation, Self Directed Learning Readiness and learning approaches.

How do these factors affect UKMPPD graduation?

Try out score

Try out is an exercise activity to test the ability to do questions. This activity was organized by the Association of Indonesian Medical Education Institutions (AIPKI). All medical professional program students can take the try out, both those who are still attending the secretariat or those who have finished the clinical secretariat and are waiting for UKMPPD. Try outs are not compulsory, but there are some institutions that require students to take try outs because the results can be used as feedback to create programs for strengthening competencies that are lacking in students so that the expectation of UKMPPD students' graduation can reach 100 percent. This is proven by (Suswati & Rahayu, 2019) that the try out score affects the passing of the Computer Based Test (CBT) and the passing of the Objective Structured Clinical Examination (OSCE). The effect on CBT graduation is possible because of the same sources in the development of question material, namely the Indonesian Doctor Competency Standard (SKDI), the same type of questions using case scenarios, the same number of questions. Whereas the effect on OSCE graduation is possible because of the similarity in thinking in solving the cases faced, only in this case what is assessed is clinical skill competence, namely history taking, physical examination, performing supporting / interpreting procedures, enforcing diagnosis / differential diagnostics, non-pharmacotherapy, management.

pharmacotherapy, patient communication and education, professional behavior.

Grade Point Average (GPA) Score

There has been a lot of evidence in the article that shows the effect of the GPA at the pre-clinical and clinical stage with UKMPPD graduation, which is both associated with CBT graduation (Ayu, Pitra, & Akbar, 2019; Pusparini, Imaningdyah, Andayani, Pribadi, & Miranti, 2016; Suswati & Rahayu, 2019), OSCE graduation (Pusparini et al., 2016; Suswati & Rahayu, 2019) nor graduation of both (Dwiyantri, 2017; Febrianti, Winda; Memah & Manoppo, 2017; Manuputty et al., 2016; Pramana, 2011; Pratiwi, Susanah, Achdiyani, & Hilmanto, 2016; Utomo & Safitri, 2014; Yuli, Puspitasari, Saputra, Berawi, & Oktaria, 2017). Likewise, the effect of the combined GPA of the pre-clinical and clinical stages on UKMPPD graduation (Wicaksono, 2011; Yuli et al., 2017). This is possible because the size of the student in completing a curriculum and the predicate of graduation is expressed in the form of a Grade Point Average (GPA). Although there is an effect of GPA on passing UKMPPD, but the effect on passing UKMPPD CBT is low, it shown by (Yuli et al., 2017) research where the effect of clinical year GPA scores is low. This is possible because clinical stage emphasizes improving clinical abilities and skills rather than the pre-clinical stage which tends to be centered on most cognitive domains and the similarity in the pre-clinical stage assessment method with the UKDI / UKMPPD (Pramana, 2011).

Length of study

One indicator of student success in pursuing medical education, which is already well known, takes longer to graduate than other academic levels is graduating on time. The pre-clinical stage of study is completed in 3.5-4 years, while the study period for the clinical stage is completed in 1.5-2 years. The long range of students completing the study period shows that there are many factors involved that influence student graduation to obtain a doctor's degree. (Utomo & Safitri, 2014) investigate the effect of study duration on UKDI / UKMPPD graduation. The result was that the group that passed UKDI / UKMPPD had an average length of graduation both at the pre-clinical and clinical stages, with a shorter length of time than those who did not pass UKDI / UKMPPD. It can be understood that those who graduate on time, both in the pre-clinical and clinical stages stages of the doctor, are a more tested product of graduates, it is proven that they belong to the group that passed UKDI / UKMPPD. Those who graduate the longer it is, the more difficult it is to take UKDI, they pass immediately. Students who take a longer study period mean they have a lot of problems following it. Some of the problems include: having worked since being a student, having a family, feeling bored because of not graduating for a long time and so on. This research is in line with (Yuli et al., 2017) research

Students recruitment

Student input plays an important role in determining the smooth journey of students so that the selection or method of student recruitment becomes one of the doors to get potential students. (Oktaria & Lisiswanti, 2018) study that examines the effect of student selection who enters the National Selection for State Higher Education Entrance (SNMPTN) or Academic Ability and Talent Tracing (PKAB), Joint Selection for National Higher Education Admission (SBMPTN), Independent Examination (UM) and Regional Excellent Seed Search (PBUD) shows that there is an influence on the graduation of UKMPPD. The highest percentage of passing UKMPPD first takers came from the SBMPTN route. This is possible because the SBMPTN exam uses exam questions designed to follow the academic principles of test development. The SBMPTN written exam is designed to measure basic abilities that can predict the success of prospective students in all study programs, namely higher order thinking skills, which include academic potential, mastery of basic study areas, science and technology and / or social fields and humanities so that students who are accepted through the SBMPTN pathway are students who have good quality. The SNMPTN and PBUD pathways, whose selection uses the candidate's report card scores during secondary education or student achievement, do not have a clear assessment standard because the assessment system for each secondary education school is different. This may be one of the factors that makes the quality of students accepted through the SNMPTN route different from the SBMPTN route. Meanwhile, the independent path selection is a test conducted locally by each university after the announcement of the SBMPTN. The questions used in the Mandiri exam are prepared by the university itself. So that the quality of the questions tested is different from the SBMPTN (Oktaria & Lisiswanti, 2018). This study is in line with research (Utomo & Safitri, 2014) which shows the same results.

UKMPPD tutoring

The study guidance carried out aims to increase UKMPPD graduation. examined the effect of this tutoring. The performance parameters carried out in this guidance program consist of input in the form of: guidance method using peer-mentorship, the process that is assessed is: frequency of guidance carried out 3 times / week for 5-6 weeks, duration of guidance 3 hours, mentor: participant ratio (1: 3-4), the progress of the test was carried out twice, and as mentors were alumni of medical graduates who worked at the University of Muhammadiyah Malang (UMM) Hospital or instructors who worked at Faculty of Medicine Muhammadiyah Malang University. This guidance activity is coordinated by one permanent lecturer of Faculty of Medicine Muhammadiyah Malang University and the scheduling of guidance per week is scheduled for the same learning material for three groups and each

week a progress test is carried out according to the learning material per week with the number of questions starting from a minimum of 25 questions then increased until the end of the meeting completes 200 questions with 1 minute each. Independent activities by discussing and discussing together the questions used for guidance activities with the mentor and deepening the theory that has not been mastered, the results of the independent activities carried out by the participants are the ability to express opinions and argue during the guidance meeting with the mentor, meaning that participants are asked to actively explain not only listening to what mentors say, participants must be able to "give knowledge" to other participants. Monitoring of mentoring activities is carried out from the beginning of preparation by holding meetings and making and agreeing on study contracts, implementing mentoring and independent activities and evaluating every week. The result is that there is an effect of tutoring on UKMPPD graduation. This research is in line with (Lidiawati, 2018) research.

Attendance during tutoring

Tutoring is an activity to assist students in obtaining a whole new change in behavior as a result of their own experiences in interaction with their environment. This means that in the guiding process, students are expected to consciously and responsibly change old habits that do not support the achievement of learning goals. In order to achieve the learning objectives, it is expected that the presence of students in the mentoring process is expected. This is evidenced by (Dwiyantri, 2017) that there is an effect of attendance during tutoring on UKMPPD graduation.

Local Assessment of Institution

To increase the graduation of UKMPPD, education administering institutions strive to organize various kinds of test activities that can be used as a measuring tool to predict students' UKMPPD graduation and as feedback. For example, Faculty of Medicine Muhammadiyah Malang University which organizes the Clinical Integration Assessment (CIA) program, which integrates knowledge, psychomotor and attitude at the professional stage and Benchmark (BM) which is a joint test between Muhammadiyah Universities throughout Indonesia (Suswati & Rahayu, 2019); Faculty of Medicine Padjajaran University (UNPAD) which held a Multidisciplinary Examination (MDE) at the pre-clinical stage (Pratiwi et al., 2016) and Faculty of Medicine Muhammadiyah Makassar which held the pre-UKMPPD selection (Dwiyantri, 2017). From these three studies, the same results were obtained, namely the local test scores carried out had an effect on the passing of UKMPPD, even the CIA was able to predict the UKMPPD CBT pass of 14.8% and the OSCE UKMPPD pass was 12.5%; BM can predict the passing of CBT UKMPPD by 19.5% while not for passing UKMPPD OSCE;

Likewise MDE can predict the completion of CBT UKMPPD of 62.97%.

There are two studies that also looked for the effect of the variable score on the medical skills module (Chandra et al., 2015; Pratiwi et al., 2016) and variables at each station such as the OSCE station value of pre-clinical communication (Lestari, Dewi, Farisa, & Arya, 2016), the results showed that both of them had an effect on the graduation of the UKMPPD OSCE.

Self Efficacy

According to (Mustaqim, 2008), Self Efficacy is a belief in a person's ability to drive motivation, cognitive resources, and a series of actions needed to meet the demands of the situation at hand. Self-efficacy plays a very important role in influencing the efforts made, how strong is the effort in predicting the success that will be achieved. This is evidenced by (Supriyati, Setiawati, & Sandayanti, 2019) research which shows Self Efficacy has an effect of $r = 0.673$ on UKMPPD cracker graduation. This means that Self Efficacy in students is able to provide great strength in working on UKMPPD questions so that they can pass.

Motivation

The influence of motivation on the graduation of CBT UKMPPD is proven by (Tridellya, Anisa, & Damayanti, 2019). Motivation to learn is a driving force within a person that can generate, ensure continuity, and provide direction for learning activities, so that learning objectives can be achieved (Baharuddin, 2009). There are several principles of adult learning: namely the existence of knowledge to learn, learning concepts, previous learning experiences, readiness to learn, learning orientation, and learning motivation (Knowles MS, Halton EF, 2011). The maximum results of the learning process can be seen if a person has motivational characteristics, namely perseverance in facing tasks, resilience in facing difficulties (not easily discouraged), shows interest in various problems, prefers to work independently, likes to find and solve problems (Sardiman, 2012). According to (Wouters A, Croiset G, Garre FG, 2016) motivation itself is proven to have a relationship with academic performance and that can have an impact on student graduation results. The higher the student's motivation in facing the exam, the higher the chance for the resulting learning success.

Self Directed Learning Readiness

Independent learning readiness, usually referred to as Self Directed Learning Readiness (SDLR) Scale, is an individual's ability to organize their own learning activities freely in their own time and way and in accordance with the credit system at educational institutions or universities (Rusman, 2013). According to (Slameto, 2013), readiness is the sum total of all individual conditions that make him ready to respond or answer in certain ways and situations. Self Directed Learning Readiness plays a

role in shaping student character to go through a predetermined learning process. Research (Tridellya et al., 2019) shows that there is an effect of Self Directed Learning Readiness on the graduation of CBT UKMPPD.

Learning Approach

The learning approach is an individual's desire and motivation and how to use appropriate learning strategies when dealing with a learning environment. In general, the learning strategy can be divided into two, namely a deep approach and a surface approach. The in-depth approach is characterized by a desire to understand the material being studied so as to produce good quality learning outcomes. A student who uses an in-depth approach has the intention to understand the learning material and is motivated by an interest in the learning material. In contrast, a surface approach is characterized by a desire to achieve minimal results with minimal effort resulting in low quality learning outcomes. Surface approach is associated with various forms of rote learning, with fear of failure as the dominant motivation. Therefore, learning approaches can affect learning outcomes. One of the learning outcomes that is assessed is the Objective Structured Clinical Examination (OSCE) UKMPPD. This is evidenced by research (Fitri & Shafira, 2020) which shows the learning approach has an effect of $r = 0.673$ on the UKMPPD OSCE graduation.

Does the existing factor research have gaps?

The articles we have reviewed suggest several gaps in their study both in terms of content / substance and in terms of research methodology.

Content / substance. Some authors suggest exploring other independent variables that may have an effect, such as the ability of mentoring and clinical supervisor supervision (Manuputty et al., 2016), communication assessment that takes place during the process of medical professional education (Lestari et al., 2016), assessment in each psychomotor competency domain (Pratiwi et al., 2016), assessment in each station and which department to see the contribution of graduation (Utomo & Safitri, 2014), giving positive feedback (Pusparini et al., 2016).

In terms of research methodology. Some authors suggest improvements such as the use of large samples (Fitri & Shafira, 2020; Suswati & Safithri, 2018; Tridellya et al., 2019; Wicaksono, 2011), and involved Medical Faculty with accreditation C in the sample (Manuputty et al., 2016).

IV. CONCLUSION

This scoping review provides the results of a synthesis of articles on the scope of UKMPPD graduation. There were eleven factors that influenced the graduation of the UKMPPD which consisted of try out scores, grade point average (GPA) Scores, length of study, student recruitment, UKMPPD tutoring, attendance during tutoring, local assessment

of institution, self-efficacy, motivation, Self Directed Learning Readiness and learning approaches.

Recommendation

1. The concepts related to UKMPPD graduation still cannot be explained in a model, so that further research is needed to see the direct and indirect effects of the eleven factors.

2. There are many other root problems in passing the exam that have not been studied such as internal factors consisting of physical factors (physiology) such as vision, hearing, body structure; Psychological factors which consist of intellectual factors which include potential factors, namely intelligence and talents as well as real ability factors, namely achievements, and also non-intellectual factors, namely certain personality elements such as attitudes, habits, interests, needs, emotions, adaptation, physical and psychological maturity actors, and spiritual or security environmental factors. External factors consist of three factors, namely: social factors consisting of family environment, school environment, community environment, and group environment; cultural factors such as customs, science, technology, arts; as well as physical environmental factors such as home facilities, learning facilities, learning environment climate (Ahmadi & Supriyono, 2004).

3. Informing the initial requirements regarding GPA, length of study, having a certificate of passing the local examination and tightening the UKMPPD try out score. Likewise, information on the minimum requirements for attendance during tutoring is conveyed clearly. For participants who meet these initial requirements, it also needs to be informed that on the learning journey take place, participants must have high self-efficacy, motivation, Self Directed Learning Readiness and learning approach in implementation. All of these will be assessed during the process before the final evaluation is carried out.

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