

# Development of Core Entrustable Professional Activities for Indonesian Undergraduate Medical Education: The Experience of Universitas Muhammadiyah Jakarta

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## ABSTRAK

Indonesia telah melaksanakan Pendidikan Berasaskan Kompetensi (Competency Based Education (CBE) sejak tahun 2006 berdasarkan kompetensi piawaian kebangsaan doktor perubatan. Kajian ini bertujuan untuk membangunkan teras "Entrustable Professional Activities" (EPAs) bagi program perubatan prasiswazah di Indonesia menterjemahkan setiap pernyataan kompetensi kepada aktiviti amalan klinikal di tempat kerja dalam CBE. Reka bentuk kualitatif bersifat penerokaan menggunakan teknik dua pusingan Delphi yang diubah suai telah digunakan untuk kajian ini bermula Oktober hingga November 2022. Pemilihan subjek kajian adalah terdiri daripada (i) pakar perubatan iaitu pakar perubatan dalaman, pakar bedah, pakar neurologi, pakar radiologi, pakar pendidikan perubatan dan lain lain, serta (ii) pensyarah perubatan praklinikal atau klinikal yang telah mengajar sekurang-kurangnya selama dua tahun. Seramai 15 pakar terpilih dalam kedua-dua pusingan Delphi. Berdasarkan kepada kerangka kesusasteraan, sebanyak 34 aktiviti profesional perkhidmatan perubatan individu dan 17 aktiviti profesional perubatan keluarga-komuniti/kesihatan awam telah dikenalpasti dan digunakan sebagai instrumen untuk pusingan satu Delphi. Instrumen pusingan kedua Delphi yang digunakan adalah berdasarkan keputusan pusingan pertama. Pusingan pertama Delphi menunjukkan bahawa 31 aktiviti profesional perkhidmatan perubatan individu dan semua aktiviti profesional perubatan keluarga-komuniti/kesihatan awam mencapai kata sepakat. Seorang pakar mencadangkan dua aktiviti tambahan untuk aktiviti profesional perubatan keluarga-komuniti/kesihatan awam.

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*Pusingan kedua Delphi menyenaraikan peratusan persetujuan di kalangan pakar bagi semua aktiviti profesional perubatan individu dan semua aktiviti profesional perubatan keluarga-komuniti/kesihatan awam, termasuk dua aktiviti tambahan. Selepas pusingan kedua Delphi, dua tugas aktiviti profesional perubatan individu dan satu aktiviti profesional perubatan keluarga-komuniti/kesihatan awam tidak mencapai kata sepakat. Walau bagaimanapun, 94.7% aktiviti masih boleh diterima sebagai EPA Teras dalam perubatan keluarga-komuniti dan perkhidmatan kesihatan awam. Sebagai kesimpulan, sebanyak 32 dan 18 EPA teras daripada perkhidmatan perubatan individu dan perubatan komuniti keluarga/kesihatan awam telah dikenalpasti bagi program perubatan prasiswazah. EPA teras ini dijangka untuk memudahkan menterjemahkan kompetensi kepada aktiviti amalan klinikal.*

*Kata kunci: Aktiviti profesional yang boleh dipercayai; Indonesia; pendidikan perubatan; pendidikan berasaskan kecekapan; prasiswazah*

## ABSTRACT

Indonesia has implemented Competency-Based Education (CBE) since 2006 based on a national standard for physician competencies. This study aimed to develop Core Entrustable Professional Activities (EPAs) for Indonesian undergraduate medical programs to remedy the challenge of translating competencies into professional activities in CBE. Two rounds of modified Delphi were employed in October-November 2022. The research subjects selected were (i) experts in medicine such as internal medicine, surgery, medical education, etc., and (ii) medical teachers in the preclinical/clinical stage for two years or more. Fifteen experts were involved in both Delphi rounds. The first Delphi instrument referring to literature frameworks included 34 professional activities for individual healthcare tasks and 17 for family-community medicine/public health. The second Delphi instruments used were based on the first-round results. After the first Delphi, 31 individual healthcare tasks and all family-community medicine/public health tasks reached a consensus. One expert suggested two additional family-community medicine/public health activities. The second Delphi instrument listed the percentage of agreement for individual healthcare tasks and family-community medicine/public health tasks, including the two additional activities. After the second-round of Delphi, two individual healthcare tasks and one family-community medicine/public health task had not reached a consensus. However, 94.7% of activities were still acceptable as Core EPAs in family-community medicine and public health services. In conclusion, developing EPAs for undergraduate medical programs using two rounds of the Delphi method resulted in 32 individual medical service activities and 18 family medicine-community/public health tasks. These core EPAs were expected to facilitate the translation of competencies into professional activities.

Keywords: Competency based education; entrustable professional activities; Indonesia; medical education; undergraduate

## INTRODUCTION

Competency-based education (CBE) has been implemented in Indonesia since 2006 with various models. Indonesia Medical Doctor Competency Standard is one of the competency framework references for medical education in Indonesia, which includes competency areas, core competencies, lists of clinical skills and cases. Medical doctors who graduate from medical schools must comply with these standards. The standard contains competency areas, core competencies, lists of clinical skills and cases. All medical schools strive to produce competent graduates under these standards. In curriculum development, medical schools must be able to sort out those competencies and organise them into learning outcomes in several stages. In general, the undergraduate medical program in Indonesia consists of preclinical and clinical stages. Therefore, learning outcomes in the preclinical stage are pedagogically derived from clinical-stage learning outcomes and the competency standard. However, these competencies are not easily translated into learning outcomes. The preclinical stage is structured mainly in blocks based on organ systems or clinical manifestations, while the clinical stage is distributed based on rotation in major and minor departments. The major departments held for over five weeks include internal medicine, surgery, pediatrics, obstetrics-gynecology, community medicine, and public health. Minor disciplines are neurology, psychiatry, otorhinolaryngology,

dermatovenereology, radiology, anesthesiology, ophthalmology, and forensics. The difference in this approach is a second challenge for medical education, requiring longitudinal continuity between the two stages. Longitudinal characteristics in learning and assessment can encourage the achievement of better physician competence (Boursicot et al. 2021; O'Brien et al. 2019).

Entrustable Professional Activities (EPAs) are a set of professional activities that are core elements in a profession's task that could be entrusted (Ten Cate & Scheele 2007). EPAs bridge the gap between clinical practice and CBE. The core of the EPAs is defined as the essential tasks that students are expected to perform in a measurable, observable, and independently executable manner (Ten Cate et al. 2015). There are two main groups of EPAs which are core and specific. Core EPAs are more general and act as an institution for all medical tasks from various departments. Meanwhile, specific EPAs are tasks nested in each department according to specialisation. Generally, a program uses 50-100 core EPAs (Ten Cate & Scheele 2007).

The benefits of EPAs in medical education programs have been immense. EPA could operationalise competencies because it is derived from integrations among competencies in performing professional activities (Liu et al. 2021). Hence, EPA was reported to help in promoting CBE (Frank et al. 2017; Nousiainen et al. 2017; Ten Cate & Scheele 2007) and ensuring the continuity of medical education (Brown et al. 2017; Nousiainen et

al. 2017; Shorey et al. 2019). As a workplace-based performance assessment method, EPA assesses skills and behaviors and addresses best practices in Miller's pyramid competence level of 'shows how' and 'does'. EPA has characteristics of integration with learning, longitudinal engagement, clear objectives, and contributes to broad sampling across patients and assessors (Boursicot et al. 2021). Although, EPAs seems to answer the demands of medical education to promote CBE, there is limited scientific evidence on the application of EPAs in Indonesia. The absence of Core EPAs might be one obstacle to promoting EPAs application in medical education. Therefore, this study aimed to identify the Core EPAs in medical education in Indonesia.

## MATERIALS AND METHODS

This research was conducted using the Delphi method in two rounds. Delphi is a familiar method used in developing EPAs and is usually conducted in two to three rounds. In Weissenbacher et al. (2022) study, a Delphi was undertaken to define specific EPAs in Anesthesiology. Similar methods were performed to develop specific EPAs in community medicine (Francischetti et al. (2022) and Hamui-Sutton et al. (2017) for EPAs in Surgery, Obstetrics-Gynecology, and Family Medicine rotations. Likewise, Shorey et al. (2019) described the development of the EPAs using steps such as literature review, identifying activities in the clinical stage, validating the EPAs reference scale, and using Delphi to

reach expert consensus. The purpose of Delphi is to obtain consensus-based recommendations from a group of experts without having to gather in a live discussion (de Villiers et al. 2005).

Delphi is started with an instrument sent to a group of experts in the first round. The instrument consists of questions organised around a set of assumptions, solutions, or options. The development of the EPA is integral to the reference framework as a basis. In this study, the first instrument consists of the EPAs list based on the literature and reference framework were selected and reviewed by the research team. The reference framework chosen in this study was the Indonesia Medical Doctor Competency Standard and Indonesian National Qualifications Framework since the aim was to create Core EPAs for professional medical education programs generally. As it was done in a study on pediatrician education by Chen et al. (2016), EPAs were developed using Association of American Medical Colleges (AAMC) Core EPAs for entering residency as well as the pediatrics education handbook, Graduate Program EPAs, and educational guidelines in pediatrics. The EPAs in community medicine were developed using the health policies of the Ministry of Health and Ministry of Education, the national curriculum guidelines, the university medical pedagogical document, and its medical course logbook (Francischetti et al. 2022). Hamui-Sutton et al. (2017) used the Academic Internship Programs in Family medicine, Obstetrics-gynaecology,

and Surgery, the Operational Programs of several internship sites, the Accreditation Council for Graduate Medical Education (ACGME) Milestone Projects of Family medicine, Obstetrics-gynaecology, and Surgery residencies, and the “Core professional activities that can be entrusted to enter an AAMC residency: A guide for developers”. The development of EPAs at the University Medical Center Utrecht (UMC-U) draws on the Dutch Framework of medical training objectives, the CanMEDS framework, and the document Core EPAs for Entering Residency from the AAMC (Ten Cate et al. 2018). An article by Hauer et al. (2015) mentioned that the curriculum vision, EPAs by the Association of American Medical Colleges, and pre-established competencies were referenced in the development of EPAs. The above studies indicated several references for the development of Core EPAs, such as national guidelines on medical education, health policies, guidelines from organisations of medical colleges or accreditation councils, specific specialty associations, and guidelines published by universities. However, no reference exists to developing Core EPAs in Indonesia’s undergraduate medical education program. The national reference framework owned by Indonesia is mainly in the form of competencies and learning outcomes, which are not presented as physician daily activities in both individual and community care. This is different from some countries that already have Core EPAs. Therefore, this study referred to several relevant previous studies and

reference frameworks. We selected one postgraduate article by Rinaldi et al. (2022) from Indonesia setting study to provide insight into the existing Indonesian medical education system. This article described EPAs development in internal medicine, one of the major disciplines of the clerkship, and represented the most activities in primary healthcare. To provide an undergraduate corridor, an EPA-based undergraduate clinical curriculum by Ten Cate (2018), EPAs for undergraduate medical internships in Obstetrics-gynaecology and Surgery (Hamui-Sutton et al. 2017), EPAs for internal medicine clerkship by Fazio et al. (2018) were also taken into consideration.

EPAs in community medicine by Francischetti (2022) and EPAs for undergraduate medical internships in Family medicine by Hamui-Sutton et al. (2017) were insightful in setting up the initial framework for developing activities that can accommodate competencies in family-community medicine and public health. However, most experts agreed on the set of activities in this research instrument. Consensus was not obtained on only three of the 53 proposed activities. According to the experts, this indicated that the activities compiled from various sources were still acceptable for Indonesia’s undergraduate medical program. Moreover, the number of Core EPAs generated from this research was 50, which aligned with Ten Cate’s recommendations.

As an essential part of the Delphi method, consensus needed to be established as a reference for

concluding the options offered in the instrument. A consensus is defined as converging around the median response with minimal differences. Referring to de Villiers et al. (2005), Francischetti et al. (2022), and Sitlington & Coetzer (2015), this study set the consensus at 80% agreement on the activities.

Experts were identified and invited to give their opinion on the instrument. They were asked to determine the criteria for agreement and disagreement. Once the first-round results were determined, the responses were sorted and analysed. The second questionnaire was based on the first-round results. Experts recorded their opinions on the second round of instruments. This process ended when an acceptable level of consensus was reached. Experts panel was one of the issues discussed in several articles on EPAs development. An expert is someone with relevant knowledge and experience and whose opinion is respected by peers in their field. Large numbers are difficult to manage and result in low response rates, while a small sample size affects the validity of the result. Hence, the optimum number is 15-30 experts (de Villiers et al. 2005). There are several options for involving expert panels, including preclinical clinical skills course preceptors and students separately in the early stages, followed by involving expert EPAs or medical education experts (Chen et al. 2016; Weissenbacher et al. 2022). Weissenbacher et al. (2022) explained that defining EPAs involved faculty members from departments and stakeholders. The Delphi method

conducted for the Core EPA in family medicine involved faculties who are physicians and nurses who had experience in clinical supervision, including substantial experience in community medicine, and were involved in the ongoing curriculum development process at a program (Francischetti et al. 2022). Experts from family medicine, internal medicine, pediatrics, and psychiatry were also involved in the Delphi method (Hauer et al. 2015).

The subjects of this study were experts in the fields represented by both major and minor disciplines. Inclusion criteria were a medical doctor with specialisation in medical/medical education fields and registered as a lecturer in the undergraduate medical program. Purposive sampling was conducted to obtain at least 15 experts. For this expected number of panels, 18 experts were invited to participate in the study.

This research flow began with developing a research instrument based on a literature review and reference framework relevant to undergraduate medical programs (Figure 1). An initial meeting was held at the beginning of this study with expert respondents to align perceptions about EPAs and the importance of competency-based education, and informed more details about the mechanism of collecting responses for the Delphi method in this research. During the meeting, the research team explained that expert respondents would be asked to respond at least twice, the responses were self-administered by completing the instrument document that was sent



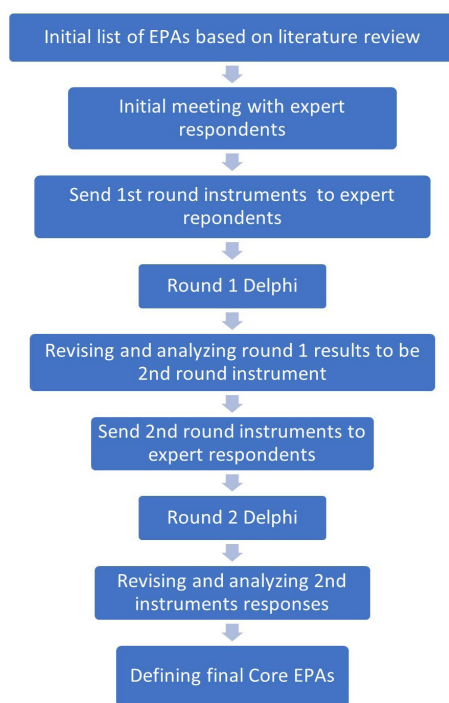


FIGURE 1: The research flow

to them via email, and the completed instrument documents were sent back to the research team email address within the expected time limit.

Expert respondents were asked to fill in their agreement (Agree/Disagree) on the tasks by considering the suitability of the tasks in the instrument to be “learning outcomes of medical education”. Experts were also asked to provide input on sentences or additional tasks. The instrument also included some prompting questions to help expert respondents remember the nature of EPAs before determining whether an activity was necessary or appropriate as an EPA for this program (Ten Cate et al. 2015). Prompting questions for this process included (i) Is the task an essential activity of the

medical profession?; (ii) Does the task require adequate knowledge, skills, and attitudes?; (iii) Does the task reflect one or more competencies?; (iv) Can the task be done independently (does not require/depend on others)?; (v) Can the task be described in terms of stages of independence during the education period?; (vi) During the education period, can the task be observed and supervised both in process and outcome?; and (vii) If there are no authority/regulatory restrictions, is the task an entrustable activity for undergraduates? The seventh question was added because there is a regulation in Indonesia that undergraduate medical students are not allowed to perform medical tasks independently and to avoid perceptions hindered by

regulations and remove the different perceptions of trust and entrust. This barrier commonly happened in the undergraduate medical programs which students cannot act independently as if a licensed medical doctor (Goh et al. 2015).

In the second round, the same expert respondents were asked to provide agreement on the activities listed in the instrument. This second round of Delphi instrument contained all activities as in the first instrument and additional activities were proposed in response to the first round, along with the frequency and percentage of overall expert responses for each task. This second instrument also included the previous responses of an expert respondent individually. The second round of Delphi was conducted using the exact mechanism as the previous round which the instrument document was sent via email, and expert respondents were asked to send the completed instrument back to the research team's email address.

Univariate analysis was conducted on expert respondents' answers at the end of the first and second Delphi rounds. Frequencies and percentages were calculated for each activity to determine whether a consensus was reached.

## RESULTS

This study included 18 expert respondents, including two internists, one surgeon, two obstetrics-gynecology specialists, two pediatricians, one neurologist, one dermatologist, one psychiatrist, one ear, nose and throat

(ENT) specialist, one ophthalmologist, one radiologist, one clinical pathologist, two community medicine experts, and two medical education experts. It showed that both major and minor departments/rotations were represented. They attended the initial meeting and were given the first round of Delphi instruments. However, 15 experts filled out the instrument in Delphi round 1 (response rate was 83.3%). The experts who did not complete the instrument were ENT specialist, ophthalmologist, and radiologist. Then in the second round of Delphi, 15 expert respondents with the same demographics were given the second instrument. All respondents sent the completed instrument back to the research team.

Based on the results referring to the literature review, the first instrument consisted of 34 EPAs by physicians in individual healthcare and 17 EPAs in family-community and public health tasks. As the result of the first Delphi round, the six individual healthcare tasks with the highest disagreement were "Issuing certificates according to the patient's condition" (26.7%), "Issuing referral letters for other medical installations" (26.7%), "Perform medical actions for health problems/injuries related to the law" (26.7%), "Perform invasive procedural actions according to patient problems in cases with emergencies" (20%), "Receive and provide referral services from second-level health facilities in accordance with the recommendations given" (20%), and "Assess the Evidence-Based Medicine (EBM) level of a treatment and make a decision regarding the



outcome" (20%) as shown in Table 1. As for the medical tasks in family-community medicine and public health (Table 2), "Actively contribute to the healthcare system and health policy development" and "Implement integrated quality management in health services" were the tasks that received the most disagreement at 20%.

At the end of the first round, it found that three activities in individual healthcare were not reached consensus, and all activities in family-community medicine and public health were agreed by more than 80% of the expert respondents. One expert from the field of Medical Education suggested two additional tasks in family-community medicine and public health, i.e., "Identify health problems at the family level that affect individual health problems (generally related to geriatrics, mental health, and palliative care)" and "Conduct family conferences for health maintenance in the family". Although some activities received less than 80% agreement, all activities in the first round with two additional activities were included in the second round instrument and provided univariate analysis results for each activity. Hence, the instrument for the second round contained 34 activities in individual healthcare and 19 activities in family-community medicine and public health.

There were no significant changes in individual healthcare activities in the second round of Delphi. "Perform medical action for health problems/injuries related to the law" showed increased disagreement up

to 40%. At the same time, "Assess the Evidence-Based Medicine (EBM) level of a treatment and make a decision on the outcome" had only a slight increase in the disagreement (27%). "Perform invasive procedural actions according to patient problems in cases with emergencies" did not change, which was agreed by 80% of experts. Meanwhile, there was an increase in approving "Issuing certificates according to the patient's condition", "Issuing referral letters for other medical installations", and "Receiving and providing referral services from second-level health facilities in accordance with the recommendations given". The two activities in family-community medicine and public health, i.e., "Actively contribute to the healthcare system and health policy development" and "Implement integrated quality management in health services", which previously had the lowest expert agreement, increased to more than 80%. Whereas one of two additional activities proposed in the first round, "Conduct family conference for health maintenance in the family" were disagreed by 27% of the expert respondents. The results of round 2 can be seen in Table 1 and 2. At the end of the second round of Delphi, 32 individual healthcare activities reached a consensus with at least 80% agreement. "Perform medical action for health problems/injuries related to the law" and "Assess the Evidence-Based Medicine (EBM) level of a treatment and make a decision on the outcome" were omitted. Therefore, the expert respondents approved 94.1 % of the individual healthcare

TABLE 1: The results of 2 rounds Delphi of medical tasks in individual healthcare

Medical tasks in individual health care		% Agreement (n=15)		Status of consensus
		1 <sup>st</sup> round	2 <sup>nd</sup> round	
1	Documenting the patient's history in the medical record	100.0	100.0	Achieved
2	Perform general medical services beginning with an anamnesis, psychiatric examination, and physical examination to patients	100.0	100.0	Achieved
3	Determine patient problems and plan supporting examinations, interpretations, and establish a diagnosis and management in cases without emergencies	100.0	100.0	Achieved
4	Determining patient problems and planning supporting examinations, and interpretation and establishing a diagnosis and management and planning management in cases with emergencies	100.0	93.3	Achieved
5	Monitor and evaluate management in cases without emergencies	100.0	100.0	Achieved
6	Evaluate management in cases with emergencies	93.3	93.3	Achieved
7	Perform non-invasive procedural actions according to patient problems in cases without emergency	100.0	100.0	Achieved
8	Perform non-invasive procedural actions according to patient problems in cases with emergencies	86.7	86.7	Achieved
9	Perform invasive procedural actions according to patient problems in cases without emergency	86.7	86.7	Achieved
10	Perform invasive procedural actions according to patient problems in cases with emergencies	80.0	80.0	Achieved
11	Performing referrals in cases without emergency	93.3	100.0	Achieved
12	Perform medical emergency services	93.3	86.7	Achieved
13	Make referrals in cases with emergencies	100.0	100.0	Achieved
14	Monitor and report the condition of hospitalized patients	100.0	100.0	Achieved
15	Perform immunization services according to risk	100.0	100.0	Achieved
16	Performing guard duty activities in the hospital	86.7	86.7	Achieved
17	Serves as a triage	93.3	93.3	Achieved
18	Consult with other relevant professions	100.0	100.0	Achieved
19	Write prescriptions and convey medical instructions verbally and in writing to other health workers as a form of delegation according to the patient's patient problem	86.7	86.7	Achieved
20	Provide health care education or counseling to individuals and deliver bad news to individuals	100.0	93.3	Achieved
21	Perform basic medical rehabilitation on patients and the community to prevent further complications of the disease.	100.0	100.0	Achieved
22	Perform and interpret supporting examinations at the first level of health services	93.3	100.0	Achieved
23	Issuing certificates according to the patient's condition	73.3	86.7	Achieved
24	Issuing referral letters for other medical installations	73.3	80.0	Achieved
25	Implement protection procedures against things that can endanger themselves and others.	93.3	93.3	Achieved
26	Receive and provide referral services from second-level health facilities in accordance with the recommendations given.	80.0	93.3	Achieved

27	Perform medical action for health problems/injury related to the law	73.3	60.0	Not achieved
28	Assess the Evidence-Based Medicine (EBM) level of a treatment and make a decision on the outcome	80.0	73.3	Not achieved
29	Present clinical cases orally	93.3	86.7	Achieved
30	Perform handover of patient care responsibilities	86.7	86.7	Achieved
31	Collaborate between health professionals in providing services with roles as leaders and team members according to the competence and authority of each profession	93.3	93.3	Achieved
32	Recognize patient conditions that require emergency action and perform initial evaluation and management	93.3	93.3	Achieved
33	Deliver Informed Consent for an action/procedure	93.3	93.3	Achieved
34	Identify failures in the health care system and contribute to a culture of patient safety	86.7	80.0	Achieved

TABLE 2: The results of 2 rounds Delphi for medical tasks in family-community medicine and public health

Medical tasks in family-community medicine and public health	% Agreement (n=15)		Status of consensus
	1 <sup>st</sup> round	2 <sup>nd</sup> round	
1 Identify problems and determine goals/targets/objectives of health services at the community level	93.3	100.0	Achieved
2 Develop a family health care program	100.0	100.0	Achieved
3 Implement promotive and preventive efforts for community and public health problems	100.0	100.0	Achieved
4 Implement health education in the context of promotive and preventive efforts at the community and public health levels.	93.3	93.3	Achieved
5 Implement holistic, comprehensive, continuous and collaborative management of community and public health problems.	100.0	100.0	Achieved
6 Manage sustainable community and public involvement in solving health problems.	100.0	100.0	Achieved
7 Advocate stakeholders for efforts to solve community/community health problems.	93.3	86.7	Achieved
8 Interpret clinical and health data to formulate community and public health diagnoses or problems.	86.7	86.7	Achieved
9 Use epidemiologic data and survey results (statistical analysis results, essentially able to use standard statistics for analysis purposes) to determine intervention targets at the community level.	86.7	86.7	Achieved
10 Select and propose the most appropriate management strategy based on the principles of quality control, cost, and evidence-based.	86.7	100.0	Achieved
11 Propose management in outbreaks / extraordinary events and disasters ranging from problem identification to community rehabilitation.	93.3	93.3	Achieved

12	Actively contribute to the health care system and health policy development.	80.0	86.7	Achieved
13	Apply the principles of effective, efficient, and sustainable resource management.	86.7	93.3	Achieved
14	Implement integrated quality management in health services.	80.0	93.3	Achieved
15	Implement specific health policies that are regional priorities.	93.3	93.3	Achieved
16	Determine individual health needs according to life cycle phases.	93.3	100.0	Achieved
17	Develop, manage, and evaluate health programs for communities and society.	86.7	86.7	Achieved
18	Identify health problems at the family level that affect individual health problems (generally related to geriatrics, mental health, and palliative care).	-	80.0	Achieved
19	Conduct family conference for health maintenance in family	-	73.3	Not achieved

activities at the end of round 2. While in the family-community medicine and public health, 18 activities had reached 80% or more agreement among expert respondents. “Conduct family conferences for health maintenance in the family” was eventually eliminated. This meant 94.7% of activities were acceptable as Core EPAs in family-community medicine and public health services (Table 3). In summary, the results of all stages of this research can be seen in Figure 2.

### DISCUSSION

There was limited research in Indonesia that identified EPAs for undergraduate medical education programs. The expert respondents identified activities that could be included as EPAs adapted to the applicable curriculum in Indonesia. A literature review was conducted to identify clinical activities in undergraduate medical programs that could be included as EPAs. Several medical institutions and organisations had also conducted literature reviews to identify activities

that can be implemented into EPAs. For example, Faculdade de Medicina de Marillia (FAMEMA) collected EPA items for family medicine through a literature review in the early stages of their research. Similarly, Utrecht Medical School had developed its own Core EPAs.

The majority of EPAs in individual healthcare services identified in this study were activities that Franschicetti et al. (2022) also described in EPAs in the domain of “integrality for the health needs of the individual”. The developed EPAs already represented history taking and physical or psychiatric examination. This is in line with the EPAs in the undergraduate Utrecht curriculum. Procedural skills are not described in more detail because the list of clinical skills that are competent for medical doctors in Indonesia is extensive, so it is expected that they will be defined more specifically in the Specific EPAs that are further developed in each department. Formulating diagnosis and proposing diagnostic tests, as in EPA3 for cases without emergencies and

TABLE 3: Core EPAs

EPAs in individual health care	
EPA 1	Documenting the patient's history in the medical record
EPA 2	Perform general medical services beginning with an anamnesis, psychiatric examination, and physical examination to patients
EPA 3	Determine patient problems and plan supporting examinations, interpretations, and establish a diagnosis and management in cases without emergencies
EPA 4	Determining patient problems and planning supporting examinations, and interpretation and establishing a diagnosis and management and planning management in cases with emergencies
EPA 5	Monitor and evaluate management in cases without emergencies
EPA 6	Evaluate management in cases with emergencies
EPA 7	Perform non-invasive procedural actions according to patient problems in cases without emergency
EPA 8	Perform non-invasive procedural actions according to patient problems in cases with emergencies
EPA 9	Perform invasive procedural actions according to patient problems in cases without emergency
EPA 10	Perform invasive procedural actions according to patient problems in cases with emergencies
EPA 11	Performing referrals in cases without emergency
EPA 12	Perform medical emergency services
EPA 13	Make referrals in cases with emergencies
EPA 14	Monitor and report the condition of hospitalized patients
EPA 15	Perform immunization services according to risk
EPA 16	Performing guard duty activities in the hospital
EPA 17	Serves as a triage
EPA 18	Consult with other relevant professions
EPA 19	Write prescriptions and convey medical instructions verbally and in writing to other health workers as a form of delegation according to the patient's patient problem
EPA 20	Provide health care education or counseling to individuals and deliver bad news to individuals
EPA 21	Perform basic medical rehabilitation on patients and the community to prevent further complications of the disease.
EPA 22	Perform and interpret supporting examinations at the first level of health services
EPA 23	Issuing certificates according to the patient's condition
EPA 24	Issuing referral letters for other medical installations
EPA 25	Implement protection procedures against things that can endanger themselves and others.
EPA 26	Receive and provide referral services from second-level health facilities in accordance with the recommendations given.
EPA 27	Present clinical cases orally
EPA 28	Perform handover of patient care responsibilities
EPA 29	Collaborate between health professionals in providing services with roles as leaders and team members according to the competence and authority of each profession
EPA 30	Recognize patient conditions that require emergency action and perform initial evaluation and management
EPA 31	Deliver Informed Consent for an action/procedure
EPA 32	Identify failures in the health care system and contribute to a culture of patient safety

EPAs in family-community medicine and public health	
EPA 33	Identify problems and determine goals/targets/objectives of health services at the community level
EPA 34	Develop a family health care program
EPA 35	Implement promotive and preventive efforts for community and public health problems
EPA 36	Implement health education in the context of promotive and preventive efforts at the community and public health levels.
EPA 37	Implement holistic, comprehensive, continuous and collaborative management of community and public health problems.
EPA 38	Manage sustainable community and public involvement in solving health problems.
EPA 39	Advocate stakeholders for efforts to solve community/community health problems.
EPA 40	Interpret clinical and health data to formulate community and public health diagnoses or problems.
EPA 41	Use epidemiologic data and survey results (statistical analysis results, essentially able to use standard statistics for analysis purposes) to determine intervention targets at the community level.
EPA 42	Select and propose the most appropriate management strategy based on the principles of quality control, cost, and evidence-based.
EPA 43	Propose management in outbreaks / extraordinary events and disasters ranging from problem identification to community rehabilitation.
EPA 44	Actively contribute to the health care system and health policy development.
EPA 45	Apply the principles of effective, efficient, and sustainable resource management.
EPA 46	Implement integrated quality management in health services.
EPA 47	Implement specific health policies that are regional priorities.
EPA 48	Determine individual health needs according to life cycle phases.
EPA 49	Develop, manage, and evaluate health programs for communities and society.
EPA 50	Identify health problems at the family level that affect individual health problems (generally related to geriatrics, mental health, and palliative care).

EPA4 for cases with emergencies, are also EPAs in the Utrecht Curriculum. EPA12 Perform medical emergency services and EPA30 are encompassed in procedural skills and basic life support as Utrecht Core EPA 5.

EPA 1, 2, 3, 5, 7, 11, 13, 14, 15, 18, 21 and 22 are basic activities performed by doctors in primary care. In addition, EPA 3, 5, and 7 involve cases without emergencies, supported by EPA 13 making referrals in cases with emergencies. Here appears to be an expert response to reduce risk in emergencies. This condition is very

much in line with Ten Cate et al. (2015) that the nature of the task influences the development, implementation of EPAs, and entrustment. In addition, a significant challenge for the development and implementation of EPAs is the medical teachers' responsibility for patient care. Pressure on patient safety may affect the development of EPAs by inserting very cautious activities. EPA 1, 2, 8, 10, 21 and 22 are also less high-risk activities.

Procedural skills are not described in more detail because the list of clinical skills for medical doctors in



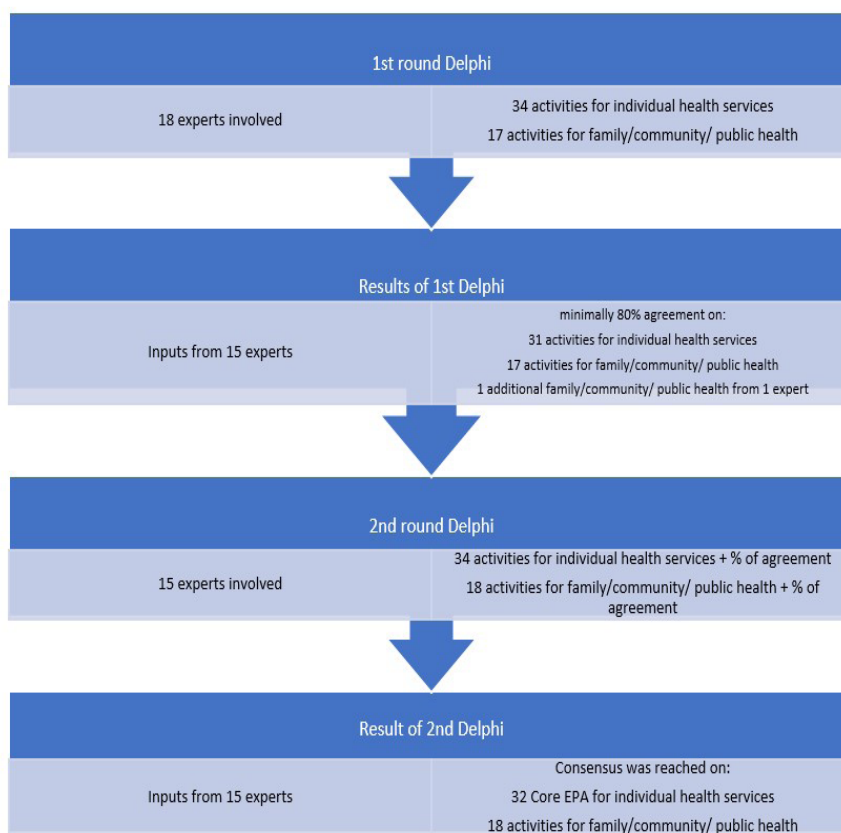


FIGURE 2: The summary of results

Indonesia is vast, so it is expected that they will be defined more specifically in the Specific EPAs that are further developed in each department.

EPA 4,6,8,12 and 30 are riskier activities because they involve emergencies. EPA9, although performed in cases without emergencies, invasive actions can impose high risk. Same goes for EPA17, where triage can deal with emergency cases. EPA10 "Perform invasive procedural actions according to patient problems in cases with emergencies" received the lowest agreement because it is riskier than EPA9 as it is performed in emergency

cases. This EPA was not agreed by three expert respondents, i.e., a dermatovenereologist, pediatrician, and psychiatrist.

EPA23 "Issuing certificates according to the patient's condition, including health certificates, sickness certificates, and death certificates", were similar to a broaden task than Core EPA 5.1 establishing the death of Utrecht curriculum. The more comprehensive activity is due to the competency of medical doctors in Indonesia.

Formulating diagnosis and proposing diagnostic tests, as in EPA3 in cases without emergencies and

EPA4 in cases with emergencies, are also EPAs in the Utrecht Curriculum. EPA12 Perform medical emergency services and EPA30 are also found in procedural skills and basic life support as Utrecht Core EPA 5. EPA16 Perform guard duty activities in the hospital, EPA28 Perform handover of patient care responsibilities, and EPA27 Present clinical cases orally are also found in Utrecht Core EPA 4.1 Patient handover documentation and presentation.

EPAs 25, 26, 27, 28, and 29, although agreed upon, these activities can be ambiguous for the expert respondents because of the questionable importance. However, EPAs 25 and 26 were described in the national standard. EPA28 "Perform handover of patient care responsibilities" (related to EPA16 Perform guard duty activities in the hospital) and EPA27 "Present clinical cases orally" also found in Utrecht Core EPA 4.1 Patient handover documentation and presentation. Similarly, EPA32 "Identify failures in the healthcare system and contribute to a culture of patient safety", which was agreed upon by both community medicine experts but not agreed by 1 of the 11 clinicians, namely the obstetric-gynecology specialist and both medical education experts. EPA29 "Collaborate between health professionals in providing services with roles as leaders and team members according to the competence and authority of each profession" is a form of EPA for interprofessional collaboration. Although EPA31 "Deliver Informed Consent for an action/procedure" is separated from the other activities, this EPA is also defined in Utrecht

Core EPA 3.1. This activity is found in the communication competency in Indonesia Medical Doctor Competency Standard.

EPA 48 is a unique addition that focuses on the life cycle perspective, according to Francischetti et al. (2022) and Hamui-Sutton et al. (2017). EPA 34 and 50 are part of the family health domain. Although it only consists of the 2 EPAs, this has become part of the diagnosing and managing health problems in the family. The community domain is described in EPA 33, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47 and 49.

The disagreement on the medical tasks in individual health care "Perform medical action for health problems/injuries related to the law" and "Assess the Evidence-Based Medicine (EBM) level of a treatment and make a decision on the outcome" are unlikely due to the risks toward patient safety. This is apparent because these tasks are not routine activities that physicians need to be mastered by the end of the education program. However, the expert response to "Conduct family conference for health maintenance in family" was omitted from the list of the core EPAs because it was considered as an activity that was already included in "Develop a family health care program".

EPAs were new to all experts involved in this study. This condition is unavoidable because the application of EPAs in undergraduate medical programs in Indonesia has not yet been scientifically proven, although some universities may have implemented them. Therefore, we conducted a

workshop introducing EPAs to the experts before data collection.

In similar studies undertaken to revolutionise the implementation of EPAs in an institution, various steps were conducted, such as aligning EPA with the vision, assessing content validity to improve the reproducibility of EPAs, and evaluating EPAs. Since this study was limited in scope and time, further research must be conducted to assess the validity and reproducibility of the EPAs defined in this study. Moreover, the selection of experts did not represent all clerkship rotations though the study included samples from both major and minor departments. The expectation of researchers to be able to satisfy all rotations experts cannot be fulfilled due to the limited time frame, while the Delphi method needs to present the results of the first round in order to be addressed in the second round. Therefore, the recruitment of other experts subsequently to the research schedule was not possible.

## CONCLUSION

This study resulted in 32 Core EPAs from individual medical care and 18 in family-community medicine and public health using two rounds Delphi method. These Core EPAs can be used as the initial step to address the ideal characteristics of CBE by implementing EPAs in undergraduate medical programs in Indonesia. For this reason, further efforts are needed to describe more detail of each EPA and the stages of its achievement. In addition, the development of specific EPAs can also

be done by referring to the results of this study. Some limitations occurred due to the lack of EPAs exposure to faculty in Indonesia and the unavailability of national standardised Core EPAs.

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