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Towards improving soft skills of medical education in the 21st century: A literature review

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ABSTRACT

Global challenge forced medical education to be transformative in preparing the future health care professional. Student-centered learning (SCL) has been regarded as the most suitable medical curriculum approach to meet the health care demand. Indonesia, with its hierarchical and collectivistic culture, has long implemented SCL. The necessary skills are needed to be identified to improve the medical curriculum in Indonesia. We did a literature review to generate soft skills for the health care professionals. We distributed the list to stakeholders and medical teachers for a two-round Delphi study. We identify 26 soft skills through literature review. The Delphi study's first-round yielded 95 responses comparing the expectation and reality of the 26 soft skills in the current medical curriculum. The second round Delphi study was performed towards the similar participants to gather the final set of soft skills recommended for curriculum improvement in medical and health professions education. Soft skills, though considered necessary, are not well-understood yet. The unfamiliarity influenced the irresolute delivery of soft skills in medical schools. Faculty developments are recommended to improve the understanding and capability of teachers to facilitate the learning of soft skills.

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1. INTRODUCTION

The dynamics of health challenges in the global setting calls for reform in health care professional education, including medical education [1]. Questions raised regarding the adequacy of education in preparing the future professionals to deal with the global challenges of both communicable and non-communicable diseases [2]. Health workers and medical doctors are expected to be able to know, learn, and act according to the problems faced, comprehensively and collaboratively [3]. Soft skills in health workers have three interrelated dimensions; as a profession (professionalism), as workers (working skills), and as humans (living skills) [4]. The process of mastering soft skills is complex and requires systematic self-reflection and exposure.

The student-centered learning (SCL) approach is a recommended learning method in medical and health professions education. United nations educational, scientific and cultural organization (UNESCO) defines the skills that humans must achieve in the 21st century, such as creativity, critical thinking, collective decision making, lifelong learning, communication skills and collaboration/teamwork, information management, and social responsibility, also known as soft-skills [5]. In addition to each profession's unique

skills, soft-skills abilities will help respond to the needs of the health sector, which is always evolving according to the times and the latest scientific evidence. Resilience/adaptability and empathy are also crucial for health workers to work optimally [6]. One of them is the problem-based learning (PBL) method, which has been shown to improve mastery of soft-skills in health professions education [7]–[12]. With high soft-skills abilities, health workers are proven to be ready to work, be more apt to respond to global health problems, and provide better health services to the community [8]. Several other SCL strategies, such as simulations, the use of games, learning based on projects, the jigsaw discussion method, think-pair-share, buzz-groups, role-playing, Balint groups, are also highly recommended [13].

Medical and health professions education in Indonesia have long implemented the SCL approach to improve its quality. However, the use of SCL strategies is still far from optimal in Indonesia. Previous researches proved that several aspects and the academic environment, e.g., hierarchical and collectivistic culture, based on Hofstede's cultural dimensions [14], hinder the implementation of SCL. As a result, teachers' and students' positions in health education institutions are still far from equal, as evidenced by the lack of constructive feedback in clinical education, for example, in the fields of midwifery [15], [16] and medicine [17]. With a minimum of dialogue between teachers and students, students' mastery of teaching materials is less optimal. Many countries in Asia, Africa, and Latin America have a similar culture of society [14]. Thus, the challenge to achieve equality in the teaching and learning process, to achieve better mastery of soft skills will encounter significant challenges. Indonesia is the fourth populated country globally and the biggest archipelago country with more than 700 local languages, moving's complexity towards innovation challenges. To start snowballing Indonesian health professionals' preparation towards change leaders in the 21st century, a foundation of consensus is needed towards better mastery of soft-skills. Previous studies had investigated soft skills for 21st century. This research aims to review and categorize the skills for the 21st century in health care context. Furthermore, this research also investigated the soft skills that are relevant and important to be embedded in the medical and health professions education curriculum as perceived by the experts and practitioners in Indonesia as a country with socio-hierarchical culture.

2. RESEARCH METHOD

We performed a literature review and two-round Delphi study to identify the soft skills to be embedded in the medical and health professions curriculum. The literature review aimed to enlist the required skills for 21st century health care professionals. It provided the baseline for the Delphi study. The literature search was performed towards online databases including MEDLINE, ScienceDirect, and ProQuest using a set of search terms i.e., global health, health care workers, competencies, life skills, and soft skills. The preferred reporting items for systematic reviews and meta-analyses (PRISMA) flow was used to guide the review process. The search was projected towards available and well-acknowledged guideline or standards accommodating lists of competences and requirements in health care delivery as well as employability. The inclusion criterion were: population health care practitioners from multiple professional background e.g. medicine, nursing, dietetics, or health therapy, health care professions education (HPE) practitioners, or patient; context of study was health care practice (clinical or community-based) or health care professions education practice (e.g. curriculum or evaluation of formal education); and the study outcomes were expectation or recommendation for future competencies of doctors in dealing with health issues in the global setting. In addition, we selected original research papers that were published in 2011-2020 and using English as the language. This was to improve searching efficiency by avoiding too wide and scattered recommendations of original researches. The extraction of soft skills was then distributed via an online survey towards stakeholders, teachers in health professions, and health care practitioners. There were 26 skills in total to be included in the Delphi study.

The Delphi study's first round was conducted with 95 participants, consisting of medical doctors, medical teachers, and other health care professionals, to rate the 26 items of soft skills between expectation and implementation. The second round was carried out by distributing the questionnaire to the same participants to identify whether they agree or disagree for the 26 skills to be inserted in the curriculum, equal with other subjects related to health professions education. Hence, the third additional questionnaire was distributed to the same participants asking one main strategy of soft skills training. The ethical clearance number for this research is KE-FK-0598-EC-2020.

3. RESULTS AND DISCUSSION

There were five literatures [18]–[22] reviewed to obtain the recommendation of soft skills for 21st-century health care professionals as presented in Table 1. There were 26 recommended skills for future health care professionals to overcome the global challenge. The 26 skills were then divided into four domains of: i) Cognitive skills; ii) Intrapersonal skills; iii) Complex and systemic skills; and iv) Person and

community-based health care as described in Table 2. The domains were obtained through categorization based on similar characteristics of the skills mentioned in the included articles. An online survey consisting of those skills were distributed to the targeted population as part of the Delphi study. The Delphi study itself consisted of two-round data collection. The first round gained 95 responses towards the listed skills. The 95 respondents were faculties of medical school and representatives from the ministry of health, consisting of 61% female and 39% male. On the second round, a similar online survey was redistributed to gather an agreement from the participants in regards to what skills they recommended to be included in the curriculum of medical education in Indonesia; as many as 30 responses were received (Table 2).

Table 1. List of competence by literature review on 21st century learning skills

Source	Scope/context	List of competence
[18]	General education	Instrumental competences: Capacity for analysis and synthesis; Capacity for organization and planning; Basic general knowledge; Grounding in basic knowledge of the profession; Oral and written communication in your native language; Knowledge of second language; Elementary computing skills; Information management skills (ability to retrieve and analyze information from different sources); Problem solving; Decision making. Interpersonal competences: Critical and self-critical abilities; Teamwork; Interpersonal skills; Ability to work in an interdisciplinary team; Ability to communicate with expert in other fields; Appreciation of diversity and multiculturality; Ability to work in international context; Ethical commitment. Systemic competences: Capacity for applying knowledge in practice; Research skills; Capacity to learn; Capacity to adapt to new situation; Capacity for generating new ideas (creativity); Leadership; Understanding of cultures and customs from other countries; Ability to work autonomously; Project design and management; Initiative and entrepreneurial spirit; Concern for quality; Will to succeed.
[19]	General education	Use tools interactively (e.g., language, technology): The ability to use language, symbols and text interactively; The ability to use knowledge and information interactively; The ability to use technology interactively; Interact in heterogeneous groups; The ability to relate well to others; The ability to co-operate; The ability to manage and resolve conflicts. Act autonomously: The ability to act within the "big picture".
[20]	General education	The cognitive domain includes three clusters of competencies (cognitive processes and strategies; knowledge; and creativity). These clusters include competencies, such as: critical thinking; information literacy; reasoning and argumentation; and innovation. The intrapersonal domain includes three clusters of competencies (Intellectual openness; Work ethic and conscientiousness; and Positive core self-evaluation). These clusters include competencies, such as: flexibility; Initiative; Appreciation for diversity; and Metacognition (the ability to reflect on one's own learning and make adjustments accordingly). The interpersonal domain includes two clusters of competencies (teamwork and collaboration and; leadership). These clusters include competencies: Communication; Collaboration; Responsibility, and conflict resolution.
[21]	General education	Ways of thinking: Creativity and innovation; Critical thinking, problem solving, decision making; Learning to learn; Metacognition. Ways of working: Communication; Collaboration (teamwork). Tools for working: Information literacy; ICT literacy. Living in the world: Citizenship – local and global; Life and career; Personal & social responsibility – including cultural awareness and competence.
[22]	Health workforce (lay health workers, nurses, pharmacists, dentists, physicians and allied health professionals)	Patient-centered care: Interviewing and communicating effectively; Assisting changes in health-related behaviors; Supporting self-management; Using a proactive approach. Partnering: Partnering with patients; Partnering with other providers; Partnering with communities. Quality improvement: Measuring care delivery and outcomes; Learning and adapting to change; Translating evidence into practice. Information and communication technology: Designing and using patient registries; Using computer technologies; Communicating with partners. Public health perspective: Providing population-based care; Systems thinking; Working across the care continuum; Working in primary health care-led systems.

Table 2. Results of two-round Delphi techniques for 25 list of learning skills for 21st century

Constructs[18-22]	Soft skills	1st round Delphi (N=95)			2nd round Delphi (N=30)
		Expectation M±SD	Reality M±SD	p	Agree N (%)
Overall		4.81±0.26	3.32±0.51	0.000*	30 (100%)
Cognitive skills	Critical thinking	4.87±0.51	3.12±0.82	0.000*	30 (100%)
	Specific/ un-routine clinical reasoning	4.52±0.78	2.79±0.84	0.000*	30 (100%)
	Searching and appraise information	4.80±0.56	3.32±0.84	0.000*	30 (100%)
	Using digital technology	4.85±0.36	3.57±0.93	0.000*	30 (100%)
	Mastery local, international languages and writing skills	4.69±0.60	3.02±0.82	0.000*	30 (100%)
Intra-personal skills	Open mind	4.82±0.41	3.33±0.72	0.000*	30 (100%)
	Cautiousness in learning and working	4.92±0.28	3.36±0.87	0.000*	30 (100%)
	Prioritized ethic principles	4.95±0.22	3.44±0.92	0.000*	30 (100%)
	Reflective	4.86±0.38	3.15±0.77	0.000*	30 (100%)
	Resilience	4.77±0.45	3.21±0.87	0.000*	30 (100%)
	Respect for variation and differences	4.81±0.44	3.41±0.94	0.000*	30 (100%)
	Communication skills	4.87±0.49	3.54±0.84	0.000*	30 (100%)
	Team work	4.88±0.48	3.45±0.71	0.000*	30 (100%)
	Ability for sharing information and decision making	4.83±0.54	3.46±0.74	0.000*	30 (100%)
	Integrity and responsibility	4.87±0.42	3.71±0.85	0.000*	30 (100%)
	Initiative and leadership	4.85±0.36	3.26±0.80	0.000*	30 (100%)
Complex and systemic skills	Evidence-based	4.62±0.60	2.73±1.00	0.000*	30 (100%)
	Adaptability	4.89±0.31	3.46±0.76	0.000*	30 (100%)
	Cultural sensitivity	4.65±0.52	3.19±0.84	0.000*	30 (100%)
	Self-regulated and self-directed learning	4.87±0.39	3.52±0.80	0.000*	30 (100%)
	Balancing orientation for process and goals	4.83±0.40	3.52±0.81	0.000*	30 (100%)
	Quality orientation	4.83±0.40	3.31±0.89	0.000*	30 (100%)
	Willingness to success	4.76±0.45	3.85±0.84	0.000*	30 (100%)
Person and community-based health care	Working in partnership with patient and community	4.85±0.41	3.37±0.85	0.000*	30 (100%)
	Preventive care through all phases of life	4.86±0.40	3.02±0.79	0.000*	30 (100%)

The professional background of the participants was described in Figure 1. All of the responding participants agreed that the 26 skills should be included in the curriculum, with the highest emphasis laid on the intrapersonal skill domain, specifically on prioritizing ethical principles (mean=4.95, SD=+/-0.22 from 5-point Likert scale). Apart from it, all of the recommended skills were perceived as having been included in the curriculum. However, the gap between the expectation of its proportion and deliveries in the curriculum and the reality differed significantly ($p<0.05$). It could be inferred that the delivery of the skills needed to be improved in the future curriculum.

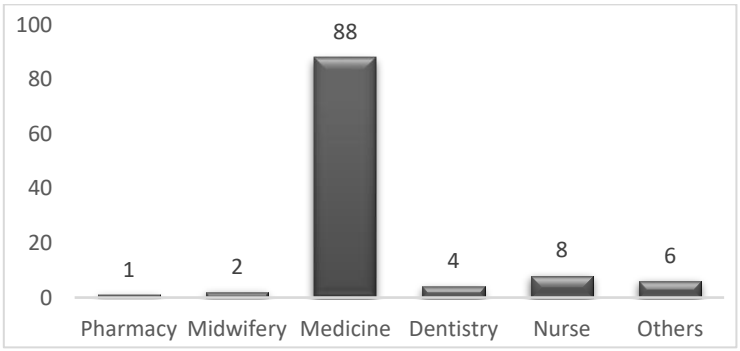

Figure 1. Professional background of the participants (n=95)

In accordance with the future curriculum recommendation, a questionnaire to evaluate the learning strategy of soft skills subjects is delivered to the same participants. Gaps between expected and implemented strategy also exist and 30% of the participant HPE teachers expect that 'role-play' methods should be the primary learning strategy to deliver the soft skills abilities. They realized that 90% of the current implemented learning approach for the soft skills was done by lecturing as can be seen in Figure 2.

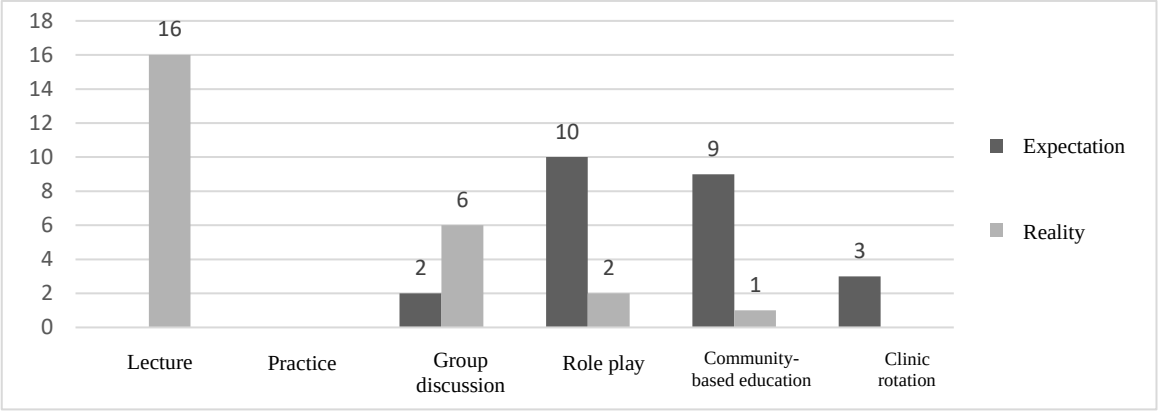

Figure 2. First-choice learning activities to facilitate soft skills acquisitions

There were gaps between the expectation and reality regarding considerable skills for 21st century health care. Soft skills gained higher recognition to deal with the global challenge. They were necessary for sustainable health care [23]. Cognitive-wise, mastery in digital technology and critical thinking ability are expected to be well-taught for future health professionals. It is relevant to the worldwide development of telemedicine. A pandemic of coronavirus disease 2019 (COVID-19) in 2020 proved that telemedicine, though still facing some regulatory and financial barriers, was regarded as beneficial to improve healthcare efficiency [24]. Intrapersonal skills (cautiousness, adherence to ethical principles, teamwork, integrity, leadership and reflectivity) were highly expected to be improved compared to the reality in the current educational practice. The ability to regulate their emotion reduced burnouts and enhance the well-being of the doctors [25]. Burnout negatively influences the performance of doctors and disrupts the quality of care [26]. Several approaches such as mentorship, clinical preparative programs, and mindfulness program for medical students are thought to overcome the burden especially for junior doctors [27]. Creating supportive environment where people feel safe and respected might lessen the emotional stress effectively [28].

A notable difference between expectation and reality was found in clinical reasoning and evidence-based medicine (EBM) skills. It reflected that teacher perceive the training of cognitive and complex skills need to be improved in the medical and health professions curriculum. Apparently, the 'clinical reasoning' and EBM are the two most familiar terms for our teachers. It indicates their comprehension of the mastery of the cognitive part of medicine, as traditional medical education focused mostly on developing cognitive and hard skills [29]. The relatively normative answers towards overall soft skills might indicate that the teachers did not have a firm grasp on the subject. Soft skills were hardly addressed and incorporated in the curriculum. Therefore, teachers found it challenging to facilitate soft skills to facilitate student learning due to a lack of understanding and guideline [30]. The development of curriculum that facilitates soft skills should be accompanied by adequate faculty development program to ensure teachers' understanding regarding soft skills and the facilitation [31]. Incorporating culture is also suggested to encourage students to be adaptive and creative in learning about soft skills [32], [33]. It is also necessary for the teachers to embed the soft skills into their daily practice especially during interpersonal interaction as role model for the students [34].

Surprisingly, participants viewed that role-play was the most suitable learning method to facilitate soft skills growth. It is admirable because they implement a more teacher-centered learning approach but were able to identify the most appropriate way of training the soft skills that require observations, constructive feedback, and continuous self-reflection. Role-play is efficiently training social cognition and emotional intelligence [35]. The cultivation of emotional intelligence refines a set of attributes that builds personal character. Educational developers nowadays, in the era of 4.0, invested in developing technology-based learning resource [36]. Using technology in daily learning activities supports the continuity of learning in the era of pandemic where distant learning is encouraged [37]. Such innovation has allowed students to perform role-play in a virtual environment. Medical e-simulation and virtual game were seen to be potential sources to improve student engagement [38]. As an experiential-based learning method, the strength of role-play lies on the opportunity for students to reflect upon their roles and scenario [35]. However, in reality, our teachers realized that they use mostly lecture-based strategy to inform the students of any knowledge. To approach the use of role play will be quite a journey. The pandemic situation has hindered interaction among teacher and students. Technology-based learning resources have vastly developed to assist the learning activity. The utilization of technology in medical education has been proven necessary to enable the continuity of learning despite of all challenges [39].

Interprofessional education (IPE) was regarded as an approach to develop soft skills [40]. Through IPE, students learn to stay objective despite of conflict and respect others despite of hierarchy [41]. It also accustoms the students to work as a team and develop their communication skills [42], which were thought to be most relevant skills regarding humanist medical practice [43]. The nurture of soft skills influenced how the students shape their character and view their professional identity [44]. When students learn in a collaborative environment, they would learn about their professional role in solving health care problems. The opportunity to learn in a multi-professional milieu benefits the students to learn about leadership and communication and reinforces the students to perceive and understand the role of other professions [45]. It allows them to reflect on the experience and shape their attitude in regards to work as part of a team. Facilitating experience-based learning, e.g., as learning in the community or clinical placement, improves professional competence, and improves reflective practice and empathy [46], [47]. Dealing with living human beings to solve their health problems facilitated students to train their hard skills and communication skills.

Provision of skills for medical students to deal with a global challenge is necessary. The current international situation demanded the health care professional be adaptive and resilient. The role of medical curricula is ensuring and promoting student well-being to improve resilience [48]. Educational intervention to foster resilience through improving students' self-efficacy and sense of control needs to be encouraged [49]. However, the study found that the teaching of communication-related skills concerning international scope, both using written and spoken communication, is not optimal. It is in line with previous study showing that medical students and graduates did not prioritize international-related competencies [50]. It might negatively influence the employability of medical graduates in the workplace, especially in the 21st century.

Despite the effort, the study posed several limitations. The majority of the responding participants were medical doctors. Therefore, the findings could not speak for other health care professions. The study also included participants from well-accredited institutions only. More comprehensive characteristics of institutions would improve the generalization of the finding. Further investigation, including wider characteristics of participants, of the professional and institutional background, is recommended. A qualitative study to investigate each item's perception based on the findings is also strongly recommended in further study.

4. CONCLUSION

Literature review identified 26 necessary skills for the 21st century health care professionals. The soft skills categorized into four domains; cognitive skills, intra-personal skills, complex and systemic skills, and person and community-based care. The Delphi study showed that the understanding about soft skills as part of the complex competence of the future health professional needed to be improved. The educational process in medical school, though labelled with SCL, was still stiff with teacher-centeredness. Learning paradigm along with teachers' understanding about SCL need to be continuously refined.

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