# Defining a ‘healthy role-model’ for medical schools: Learning components that count

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# Defining a 'healthy role-model' for medical schools:

# Learning components that count

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## Abstract

**Introduction:** Producing healthy physicians who act as a 'healthy role-model' in their environment must be one of the concerns of medical schools today in response to the global movement of 'health-promoting university' by the WHO (1995). However, no publications explained the 'healthy role-model' in medical school. This study aimed to fill this gap by exploring the definition and characteristics of a 'healthy role-model' for medical teachers.

**Methods:** We used a grounded theory approach by in-depth interviews and e-mail communications to 48 medical teachers from various background of 'health professions education,' 'health education and behavior'/'health education and promoter,' 'general practitioners/family medicine,' 'adolescent health,' 'internal medicine,' and 'cardiology-vascular medicine.' The medical teachers were from Indonesia, one other developing country (Bangladesh), and five developed countries (United States of America, Canada, Netherlands, Australia, and the United Kingdom). We also invited 19 medical students from Indonesia for three focus group discussions.

**Results:** We identified four categories to define a 'healthy role-model' for medical schools as persons who are seen: 1) 'physically,' 'socially,' 'mentally', and 'spiritually' healthy; 2) internalized healthy behaviors; 3) willing to promote healthy lifestyles; and, 4) a life-long learner. In each category, there are several characteristics discussed.

**Conclusions:** Our study gives the insight to define a 'healthy role-model' of medical teachers by using the characteristics of healthy people and adult learners. The first category describes the characteristics of healthy people, but cultural issues influence the perspectives of medical teachers to define a 'healthy role-model' for medical schools.

**Keywords:** 'healthy role-model', role-modeling, adult learner, grounded theory methodology

## Introduction

The clause "I will attend to my own health, well-being, and abilities in order to provide care of the highest standard" on modern-day physician pledge,[1] emphasizes how medical schools have significant responsibilities to graduate professional physicians who are not only competent in the field of medicine but also being healthy. Medical schools should provide an educational environment that guarantees the development of health physicians' characteristics can be nurtured. Medical teachers are the critical component of educational environment.[2] The first interaction when students arrive at medical school is with their teachers, and their relationship continues throughout the collegial yearly learning process. Therefore, the availability of medical teachers as a 'healthy role-model' could be a practical approach to fulfill those responsibilities.

On the other hand, role-modeling is an effective learning method in medical education.[3] The efficacy of role-modeling for the development of professional characters and behaviors has been proved in many publications.[4,5,6,7,8] Medical teachers as a 'healthy role-model' who should model healthy behavior might apply to the development of healthy physician characteristics to their medical students throughout the learning processes.[6,9]

However, based on the authors' knowledge, publications in the area of 'modeling healthy behavior' by medical teachers were not found. Most researches on healthy behavior are studied in the health education areas. Whereas, most researches in health professional education areas are focusing on 'teaching and learning methods,' 'assessment,' 'curriculum development,' and 'role-modeling,' but not 'modeling healthy behavior.' The absence of theoretical concepts and no standard criteria to define a

'healthy role-model' and their characteristics have made identifying their availability difficult. Even though the term 'healthy' has defined in the dictionary and the definition of health has explained by WHO (1948). Still, these were not enough to describe what characteristics of 'a healthy role-model 'in medical schools should have. Accordingly, in this study, we explored the definition and characteristics of a 'healthy role-model' for general medical schools using the grounded theory methodology.

## Method

### Research design

There is lack of theoretical concept about 'healthy role-model in medical schools' and therefore this study used a grounded theory approach by Corbin and Strauss.[10] Our goal is to develop the definition and characteristics of 'a healthy role model 'in medical schools conceptually. We used semi-structured in-depth interviews, electronic mail (e-mail) communication in open-ended questions, and focus group discussions (FGDs) to support our data collection. We interviewed and communicated with 48 medical teachers (41 from Indonesia and seven from other developed and developing countries) and FGDs with 19 medical students.

### Setting and participants

Originally, we recruited 41 medical teachers from different fields of medicine from Indonesia, and five developing (United States of America, Canada, Netherlands, Australia, and the United Kingdom), and four from developed countries (India, Malaysia, Bangladesh, and Philippines). Medical teachers' fields are: 'health professions education,' 'health education and behavior'/' health education and promoter,' 'general

practitioners/family medicine,' 'adolescent health,' 'internal medicine,' and 'cardiology-vascular medicine,' were purposively invited in this study. We assumed that these field background has strongly related to 'role-model' and promoting healthy behavior by modeling that we were studying. The national medical teachers (Indonesia) are representatives of their departments or colleges and are recommended by their chairmen. International medical teachers were coming from eight centers of excellence in primary care in five developed countries (United States of America, Canada, Netherlands, Australia, and the United Kingdom) and one developing country (Bangladesh). Three medical teachers from other developing countries have not responded to our query. They were purposively invited in this study since they have similar background fields with our Indonesian participants. However, medical teachers' recruitment from other countries outside of Indonesia was also done conveniently based on a close relationship with the authors' institution. Figure 1 explained each representative sample of participants.

Insert Figure 1 here

We selected medical students from the Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada Yogyakarta. This medical school was the first in Indonesia that promoted itself as a 'health-promoting campus.' Eligible medical students for the FGDs were the second, third, and fourth years of study. We assumed that these students have enough knowledge to contribute comments on the definition and characteristics of a 'healthy role model 'in medical school that defined by the national international medical teachers in this study. We added medical students for this study

because they have been interacting with many medical teachers during their learning process, thus can triangulate our data from medical teachers. We excluded the first-year students because they were new entry to the medical schools when this study was conducted. We used a randomizer research software from the Social Psychology Network[11] to randomly select medical students who were invited to participate.

## Data collection and procedure

Data collection was conducted from September 2018 to February 2019. We used a list of guiding questions: 1) What is the definition of a 'healthy role-model' in a medical school?; 2) Do medical schools need a 'healthy role-model'?; 3) Who could be expected as a 'healthy role-model' in medical schools?; 4) What characteristics must they have as a 'healthy role-model' in a medical school?; and, 5) Should all of the characteristics described be visible in a 'healthy role-model,' or is there one that must be more prominent than others? We used a positive doctor role modeling concept described by Passi et al.[12] and healthy person characteristics by Hoye et al.[13] to develop these questions. Each question was further probed by using 'What,' 'Why,' or 'How' questions.

Data collection was carried out in three phases. First, in-depth interviews and e-mail communication in open-ended questions were conducted to medical teachers in different fields of medicine from Indonesia. Second, FGDs were conducted to medical students at the Faculty of Medicine, Public Health and Nursing, Gadjah Mada University Yogyakarta. Third, e-mail communication in the open-ended question was conducted with international medical teachers.

A professional interviewer who works as an anthropologist, and had experience in conducting qualitative research, conducted the first two interviews in the first phase of

data collection. The first author observed these interview sessions. At the end of each session, the first author is giving a chance to lead the interview, while the professional interview observed the process. Feedback was given feedback after each session. In the third interview session, the first author led the interview while a professional interviewer act as an observer. The first author got feedback after the session. The professional interviewer was then allowed the first author to conduct the next interview session independently. Next, the first author conducted all FGDs with medical students. All participants were invited formally by the first author. The agreement of time and place to conduct the interviews or FGDs was communicated between the first author and participants.

In all of the interview and FGDs sessions, because the term 'healthy role-model' was new in medical school, the interviewer explained the term of a healthy person and role model in medical school before started the interview. When no more questions about the term arose, the first author began the interview and FGDs. All in-depth interviews lasted 25-60 minutes, while FGDs lasted approximately one hour. All of those were audio-recorded and transcribed verbatim. We anonymized all transcripts.

In e-mail communication, all participants were given 20 days to reply counted from the first-day the e-mail was sent. We reminded all participants who did not reply to the e-mail three days before the deadline. By sending their response, we assumed the medical teacher agreed to participate in this study.

## Data analysis

After each in-depth interview or focus group discussion session was conducted, the first author directly listened to the recording. A transcriber service agent transcribed all

transcripts. The first author examined all transcripts by checking line by line to see the congruence between the transcripts and recordings. The recordings and transcripts were used to conduct reflections and guide the next sessions of the in-depth interviews and FGDs. We followed steps of grounded theory by Straus and Corbin in analyzing our data.[10,14]

*Open coding*, in this first step of grounded theory methodology (GTM),[10,14] the first author invited two independent coders. All transcripts, recordings, and e-mail communication responses of participants were sent via e-mail because all coders lived in different cities. Each coder conducted open coding independently, then discussed it via phone. The open coding was done with the following steps. First, the reading line by line of all statements of participants conducted iteratively. Second, making 'in vivo coding' from a line by line open coding which conducted previously. Third, underlining the keywords of each statement that were chosen and wrote this statement in short sentences without eliminated the main idea of what the participants want to inform. Fourth, comparing the coding, which recently made with the coding list that has been obtained from the previous coding consistently (constant comparative), and made a new coding if there was no suitable coding with coding list. Fifth, writing the participant's statement as a quotation for every coding to explain coding that was made. All coders wrote a memo during open coding that would be discussed with other coders in axial and selective coding sessions. This memo was also useful for reflection.

List of categories and subcategories from the participant in the first phase of data collection were compared with emerging categories and subcategories from the participant in the second phase. These categories and subcategories were used to enhance our list of categories and subcategories that emerged from the first phase. The

categories and subcategories that emerge from FGDs might also be critical because it represents the characteristics that medical student want to model from their teachers who are' 'healthy role-models.' Finally, we used categories and subcategories from participants in the third data collection phase to complete our list.

*Axial coding*, in this second step of GTM, all coders discussed all categories and subcategories found in the open coding step. In the third step of GTM, *selective coding*, all coders tried to find the main category of definition and characteristics of 'a 'healthy role-model' 'in medical schools. *Theoretical sampling* is the next step of data analysis of GTM, which was done by the recruitment of medical students in the second phase and international medical teachers from several developed and developing countries in the third phase of data collection.

All analysis processes were done iteratively, constantly collecting, coding, constantly comparing, and interpreting based on the grounded theory approach until there was not a new category, and subcategory emerged. The differences between coders were solved through discussion. No new categories and subcategories emerged after we analyzed 24 in-depth interviews, seven responses in e-mail communication, and two FGDs sessions. The remaining transcripts and responses in e-mail communication in open-ended questions were used to ensure data saturation.

The coding results were then discussed with the other authors. Differences in interpretation were discussed until consensus was reached. Memos and documents from the coding steps of all coders were kept by the first author and checked by the second and third authors. The quotations were also checked whether they describe completely the category and subcategory that was represented.

### Trustworthiness

Triangulation of the study population (national and international medical teachers from different fields in medicine and medical students), triangulation of study methods (in-depth interviews, FGDs, and e-mail communication with open-ended questions), and triangulation of three data collection phase were used to increase the credibility of this study. Member checking was also done by sending the analytic results back to all participants to get their feedback. We provided thick descriptions to allow readers to determine whether the findings were transferable to their context. The result of coding data by three coders was sent to two Co-authors. They conducted an audit trail to ensure that the analysis was grounded in the data; thus, this study's dependability could be maintained. To ensure this study's conformability, the two Co-authors conducted an audit trail to check the primary researcher's detailed procedural records. These records help us assess the accuracy of these findings based on the participants' perspectives' truthfulness.

## Results

We conducted 35 semi-structured in-depth interviews, 13 e-mail communications with open-ended questions, and three FGDs sessions. Table 1 shows the participants' characteristics in this study.

Insert Table 1 here

Four defining categories for 'healthy role-model' in medical schools emerged. All participants stated that all members of medical schools, i.e., teachers, students, and staff,

should act as 'healthy role-models.' Nevertheless, all participants agreed that medical teachers are the first and critical people to be 'healthy role-model' in medical schools.

A 'healthy role-model' in a medical school is a person who is seen as 1) physically, socially, mentally, and spiritually healthy; 2) internalized healthy behaviors in their life; 3) willing to promote healthy lifestyles; and, 4) life-long learner. Furthermore, the characteristics of 'healthy role-model' in medical schools were explained in terms of the physical, mental, social, and spiritual aspects of health. One category that is 'spiritually healthy' did not emerge from overseas participants. All of these characteristics must be observable. We summarize these characteristics in Appendix 1 and explain these in more detail below with quotations.

***Definition and characteristics of 'healthy role-model' in medical education institutions***

*Category 1: Physically, socially, mentally, and spiritually healthy*

A 'healthy role-model' in medical schools must have balance in showing four aspects of health in their life: physical, social, mental, and spiritual. These characteristics should be seen by other medical colleagues, students, and staff. All participants described these characteristics by using the WHO health definition. Participants from Indonesia added spiritually healthy as written in the definition of the Law of Republic of Indonesia No. 36 of 2009. The presence of cultural values, i.e., norms, ethics, and religious values, also influences the characteristics of a 'healthy role-model' in medical schools.

*Subcategory 1: Physically healthy*

In physical aspects, a 'healthy role-model' in medical schools are people who have: good physical appearance; ideal body weight and height; enthusiasm and healthy face; good stamina; ability to do their activity without limitation caused by disease; adopted healthy behaviors to maintain their physical health, i.e., having routine physical exercise, no overeating, eat fruits and vegetable daily, drink water, not smoking, not addicted to alcohol nor drugs, routine medical checkup once every year, and is aware of any disease risk due to genetics or work.

*For the 'healthy role-model,' we should demonstrate our healthy lifestyle: no smoking, no drugs, limited medication, limited use of alcohol, attention for our weight, daily activity/sports […] (IMT05)*

*As a healthy role model, he must know a healthy behavior, have a routine physical exercise, not smoking, not an alcoholic user, and other behavior that could harm his health […](NMT11)*

*[…] when he was healthy, he was energetic,[…] and during the teaching session, he seems with preparation and not lack of sleep […](NMS02)*

*Subcategory 2: Mentally healthy*

In mental aspects, a 'healthy role-model' in medical schools are people who are: happy, low profile person, productive, hard-worker, a fun person whom others feel comfortable around, positive thinkers, honest, and brave to remind others when they practice unhealthy behavior in a healthy environment. They also know their self-limitations, never feel excessive euphoria, do not become stressed or depressed, have excellent emotional management, make priorities, have specific goals to achieve, use excellent coping skills, have good time management skills, show respect and are satisfied with their life, practice a routine of self-reflection; have a proper sleep during rest time, and pleasant attitude and work ethic.

*If we are finding it challenging to manage crises and consumed with just getting through each day, we can review our priorities. It takes time and sometimes courage*

*to push back and say 'no,' but it is crucial to be somewhat ruthless in allocating time to what is most important to us at work and home. (IMT04)*

*[...] when you are healthy, you are happy and productive. (NMT16)*

*[...] if mentally healthy, it can be seen when they have a problem, they respond not excessively [..] they still can try to cover it up. (NMS03)*

*Subcategory 3: Socially healthy*

In social aspects, a 'healthy role-model' in medical schools are people who: respect others, use technology to share only trusted information, make friends without discriminating, support others' self-development, e.g., by sharing tips on how to succeed in adopting healthy behavior, create safe environment for others, e.g., by giving constructive feedback, obedient to norms, ethics, and policy in society and environment, work as a team, practice empathy, compassion, and altruism, and live a healthy and good relationship with their partner.

*[...] We need to demonstrate empathy and a healthy outlook toward our jobs. You cannot do an excellent job if you are distracted by problems. If we are depressed, it is hard to care for other people compassionately. (IMT03)*

*[...] He can make a good relationship with people, do not like to be discriminative, not prejudiced [...] respect others [...]" (NMT01)*

*[...] in a tutorial session, sometimes there were lecturers judged us with a statement like" how you came without learned anything" [...] that is making us uncomfortable. (NMS01)*

*Subcategory 4: Spiritually healthy*

In spiritual aspects, a 'healthy role-model' in medical schools are people who: have an excellent vertical relationship with God in their beliefs, e.g., having prayer time, entrusting their life to God, teaching life lessons to others based on their experiences, and implementing the right teachings in their religion by acting with kindness toward others.

*Sometimes, when we got stressed [...], we must believe that there is another power besides ourselves. For example, when someone suffers the final phase of cancer, if he did not believe that there is another power besides his power, it is easier to get stressed. (NMT15)*

*[...] some of the medical teachers give an example during their teaching on how we have a good relationship with God; instead, we were healthy. (NMS02)*

*Category 2: Internalized healthy behavior*

To internalize healthy behavior in their life, a 'healthy role-model' in medical schools should: 1) adopt healthy behaviors consistently and continuously in their life, not only follow a particular health trend; 2) make health a basic need of their life, so they have self-motivation to be healthy and always creative to conduct healthy behavior regardless of any limitations they have; and, 3) have self-regulation to prevent the adoption of unhealthy behavior.

*No smoking, limited use of alcohol, and active life are the most important. Perseverance is essential to show the determination to try, as that will also be the same for patients. If they see and understand that their doctor also keeps trying, they will feel better understood. (IMT05)*

*[...]She adopts healthy behavior in her life, e.g., having physical exercise every day, eating healthy food[...]I remembered that I saw her walked from one building to another building for many times in that day[...]and when we met, she was smiling and said: Well, I could not take my physical activity session this morning!' Wow, she pushed herself to fulfill her passion for being healthy[...] (NMT07)*

*When I saw one teacher was smoking [...], I did not see him as 'a healthy role model 'because 'a healthy role model 'in my mind is someone who can know that what he did is right or wrong. (NMS01)*

*Category 3: Willing to promote healthy lifestyles*

A 'healthy role-model' in medical schools should: 1) commit to inviting other people in practicing healthy behavior, e.g., by sharing their stories about conducting healthy behavior; 2) teach healthy behavior that is feasible to adopt by others; and, 3) conduct

health research which benefits their environment. Therefore, they are considered the right person to consult when people struggle to adopt healthy behavior.

*Inspiring others to seek their mighty purposes[...](IMT04)*

*A person who wants to promote it, e.g., tell people around him that he brings his drink bottle wherever he goes, he prefers to walk than to drive to go to another building around him. That has inspired us [...] This person always invites people around him to try the same thing as he does. That is all we need. (NMT03)*

*[...]my physiological teacher did not only understand what they teach, but they also share their stories in detail and motivate me to have a physical exercise in maintaining my health. (NMS03)*

*Category 4: Life-long learner*

As a 'healthy role-model' in medical schools, they are knowledgeable about healthy behavior they adopt and what diseases are prevented by doing that behavior.

*Q: What characteristics must they have as 'healthy role-model' in medical schools?*
*R: Intellectual curiosity, continuing self-education. (IMT01)*

*[...] they must have a knowledge of what healthy behavior they do and what disease they can prevent by doing such behavior (NMT11)*

## Discussion

Based on this finding, a 'healthy role-model' for medical schools characterized both of the characteristics of a 'healthy person' and 'adult learner.' The first characteristic of 'healthy role-model' for medical schools found in this study described that they must be seen as a person who has physically, socially, mentally, and spiritually healthy. This characteristic is mostly similar to healthy people characteristics in Hoye et al[13] study. They conducted an exploratory study to investigate how nursing students in Indonesia and Scandinavia characterize a healthy person. Five categories were emerged to characterize a healthy person i.e., having a strong and positive body image, feeling well and having inner harmony, following the rules of life, coping with challenges, and

acting in unison with the environment according to their study. The categories in their study were different from our findings. However, many codes in their study explained similar things with our findings. For example, strong body, perfect body image, coping with everyday life, being proactive, positive attitude to life, self-presentation in the environment, etc., which also be found in this study.

A spiritual aspect of health which emerged in this study was also similar to Hoye et al.[13] In their study, Hoye et al.[13] found that only Indonesian students expressed anything about spirituality and religion in connection with health by describing 'being obedient to God' (a person who believes in God and always follows God's law" and being "thankful to God). We also found that overseas participants in this study did not mention about spiritually healthy. Therefore, these findings justified that cultural perspective could take into account all aspects of human experience, including health.[15] The spiritual aspect was also not mentioned in health definition by WHO in 1948. Possibilities to explain the different views between our respondent from Indonesia and overseas is by understanding that Indonesian society is mainly religious. By using one of six dimensions of Hofstede's model,[16,17] Indonesia has a high scoring of long-term orientation dimension, which explains that Indonesia has a pragmatic society. Hofstede's model has six dimensions, i.e., power distance, uncertainty avoidance, individualism versus collectivism, masculinity versus femininity, long term versus short term orientation, indulgence versus restraint to distinguish countries' culture from each other. Societies who score high on long-term orientation dimension, take a more pragmatic approach: they maintain some links with its past while dealing with the challenges of the present and future. Indonesians believe that important events in life will occur in the future; they believe in the next life after death and need to have a good

spiritual life. Therefore, they prepare it while keeping balance with other health aspects. The spirituality of people has a positive effect on their health. Koenig[18] conducted a systematic review of the relationship between religion/spirituality and both mental health and physical health. The term 'religion' and 'spirituality' in their study have a very similar definition, and there is overlap. Thus, they used term religion and spirituality interchangeably (i.e., religion/spirituality). The majority of studies report significant relationships between religion/spirituality and better health. First, religion/spirituality involvement has a favorable impact on a host of physical diseases and the response of those diseases to treatment. Second, religion/spirituality is related to better mental health (less depression, lower stress, less anxiety, greater well-being, and more positive emotions). Third, religion/spirituality promotes better health behaviors (less alcohol and drug use, less cigarette smoking, more physical activity and exercise, better diet, and safer sexual practices). Fourth, religion/spirituality boosts supportive social interactions and increases community trust and involvement. The religion/spirituality beliefs and doctrines encourage the development of human virtues such as honesty, courage, dependability, altruism, generosity, forgiveness, self-discipline, patience, humility, and other characteristics that promote social relationships. Participation in a religion/spirituality community also increases the flow of health information by promoting healthy behavior.

The next three characteristics were related to the adult learner which described by Knowles et al.[19] Knowles postulates that adult learners differ from learning in child learners in six respects: the need to know (Why do I need to know this?); 2) the learners' self-concept (I am responsible for my own decisions); 3) the role of the learners' experiences (I have experiences which I value, and you should respect);

4) readiness to learn (I need to learn because my circumstances are changing); 5) orientation to learning (learning will help me deal with the situation in which I find myself); and, 6) motivation (I learn because I want to). The second characteristic of a 'healthy role-model' for medical schools as a person who internalized healthy behaviors in life is related to the learner's self-concept (I am responsible for my own decision) and motivation (I learn because I want to) in adult learner characteristics. An adult person realized that health matters are their responsibility.[20,21] Therefore, they make health as their primary need and resources of everyday life by motivating themselves to adopt healthy behavior consistently in their daily life.

Practicing healthy behavior consistently is not only maintaining a 'healthy role-model' health but also will then invite other's attention to observe their behavior. Attention is an initial step in the modeling process. Their presence in the environment as a social prompt can increase others' self-efficacy[22] and lead to healthy behavior change through modeling. The modeling is a learning process where people need to put attention toward observing another's behavior, then they store the information from their observation, reproduce that behavior, and finally motivating themselves to produce that behavior continuously. This process is explained by Bandura[23] on his social cognitive theory.

The third characteristic of a 'healthy role-model' for medical schools as a person who has willing to promote healthy lifestyles could also be related to the role of the learner experience (I have experience which I value or which I reflect) in adult learner characteristics.[19] A 'healthy role-model' should realize that health does not belong to themselves. Making an environment healthier is not a personal matter. Therefore, they need to share their experiences to help others become healthier in an attempt to achieve

collective efficacy for creating the environment more healthier.[20,21] As a medical teacher, they should realize their roles as an information provider[23] not only for their patients but also for their students. Therefore, they should be aware of their characteristics and behaviors in formal and informal sessions of teaching and learning because it could influence their students' characteristics.[6,24,25] This argument was also explained by most of our participants in this study. They explained that the medical teacher is the main person for being a 'healthy role-model' because they are learning centers for students and staff in a medical school. Therefore, being aware that their characteristics would be modeled by their students is an essential thing that medical teachers have had. They should only characterize the characteristics that they want their students to have as future physicians.

The fourth characteristic of a 'healthy role-model' for medical schools is a long-life learner. This characteristic is related to readiness to learn (I need to learn because my circumstances are changing), orientation to learning (learning will help me deal with the situation to which I find myself), and motivation (I learn because I want to). As a critical person in the educational environment in medical school, medical teachers should be the right person for consultation when others met a problem in doing one healthy behavior. By practicing healthy behavior, medical teacher accumulates a growing reservoir of experience on doing one healthy behavior. A 'healthy role-model' has real experience in doing one of the healthy behaviors. Then, there is a process of reflection and abstraction (separation of things that have value and those that do not), translating things that are understood to be a principle and testing their understanding of a new situation in doing that healthy behavior. These processes are explained by Kolb[25] in his theory about experiential learning.

All of these characteristics must be observable by others in the lead to the modeling process can occur. By using social cognitive theory by Bandura,[23] we can understand this mechanism, and it has explained above. All of these characteristics are not beneficial if these characteristics are unobservable in a medical teacher who acts as a 'healthy role-model.'

However, we realized that finding medical teachers with all of these characteristics is challenging, almost impossible. Therefore, we need further study to find the medical school's healthy role model's minimal characteristics. If we insist that all of those characteristics must be seen in one healthy role model, it will cause some undesired outcomes. For example, a medical teacher who has a physical limitation caused by increasing age or chronic disease might have no chance of being a healthy role model in medical school. To prevent this outcome from happening, most of our participants explained that a person in that condition can still be a healthy role model in medical school. Because how they live with their disability and not to prevent them from behaving healthy, for example, or their limitation does not prevent them from regular activity, they deserve to be categorized as a healthy role model in medical school.

A future study can also use characteristics in this study to find the ideal, or medium, or less healthy role models in medical schools and explored what the persons do for maintaining healthy behaviour and role-modelling it. So that their 'healthy behaviour' can inspire the medical students and all '*civitas academica*' in campus.

By these findings, we suggested that these characteristics of a 'healthy role-model' should complement the characteristics of 'positive role-model' in a medical school, which was described by Passi et al.[12] Our findings give a brief description about each aspect of health in the definition of WHO. Therefore, by this finding, we could

understand that to define a healthy person is not mainly focused on physical characteristics as it is easy to observe.

## Limitations

Although this study is the first grounded theory to explore the definition and characteristics of 'healthy role-model' for medical schools, it also has some limitations. First, 'health' in spiritual aspects only emerged from Indonesian participants. Thus, readers must be careful to interpret this finding to another context that has a different culture from Indonesia. This difference emerged an exciting issue about the influence of cultural dimensions, which should be investigated in the future. Second, FGDs were conducted with undergraduate medical students who have not had a clerkship experience. The difference in educational environment between medical students in undergraduate and clerkship program might be influencing their perception of a 'healthy role-model' for medical school, which must be investigated in the future. Third, the recruitment of international medical teachers were done conveniently. However, they were world leaders in their fields and not just individual medical teachers. All of them have an essential position in their field background. Thus, they can represent worldwide perspectives of global health care.

## Conclusions

Our study provides a detailed and complete picture of the definition and characteristics of a 'healthy role-model' for medical schools—these characteristics are related to a healthy person and adult learner's characteristics. Spirituality is emerged on the definition and characteristics of a 'healthy role model' for medical schools but might

only be suitable for certain cultures. This finding may be useful as a theoretical concept to develop an instrument to assess healthy role models' characteristics in our medical teachers today. More studies are needed to determine the minimal characteristics of a healthy role model in medical school to prevent some undesired outcomes, including the stigmatization of our medical teacher's mental or physical disabilities that caused them not to deserve categorized as a healthy role model in medical school.

## Data Sharing Statement

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

## Ethical approval

This study was approved by The Medical and Health Research Ethics Committee Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Indonesia, under their file number 0946. The aim and process of data collection were well explained to participants. The written informed consent was obtained from participants before they take part in this study, and the participant informed consent included the publication of anonymized responses.

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## Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.


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Table 1. The characteristics of participants in this study

| The phase of data collection | Field of medicine | n |
|---|---|---|
| First phase of data collection (national medical teachers) | Health Profession Education | 13 |
| | Health Education and Behavior/Health Education and Promoter Association | 10 |
| | Family Medicine | 5 |
| | Internal Medicine | 4 |
| | Cardiology-Vascular Medicine | 1 |
| | General Practitioners | 8 |
| Second phase of data collection (national medical students) | Session 1 (Third year medical student) | 10 |
| | Session 2 (Fourth year medical student) | 4 |
| | Session 3 (Second year medical student) | 5 |
| Third phase of data collection (international medical teachers) | Health Profession Education /Medical Education | 1 |
| | Family Medicine | 5 |
| | Adolescent Health | 1 |

693 Appendix 1. The summary of construct on how to define a 'healthy role-model' in medical school

| Category | Subcategory | Item |
|---|---|---|
| Physically, socially, mentally, and spiritually healthy | Physically healthy | Having a good physical appearance |
| | | Having an ideal body weight and height |
| | | Enthusiasm and have a healthy face |
| | | Having a good stamina |
| | | Able to do an activity without limitation caused by disease |
| | | Adopting healthy behaviors to maintain physical health, i.e., having routine physical exercise, no overeating, eat fruits and vegetable daily, drink water, not smoking, not addicted to alcohol nor drugs, routine medical checkup once every year |
| | | Be aware of any disease risk due to genetics or work. |
| | Mentally healthy | Happy |
| | | Low profile |
| | | Productive |
| | | Hard-worker |
| | | a fun person whom others feel comfortable around |
| | | Positive thinkers |
| | | Honest |
| | | Brave to remind others when they practice unhealthy behavior in a healthy environment |
| | | Knowing self-limitations |
| | | Never feel excessive euphoria |
| | | Do not become stressed or depressed |
| | | Having excellent emotional management |
| | | Making priorities |
| | | Having specific goals to achieve |
| | | Using excellent coping skills |
| | | Having good time management skills, |
| | | Showing respect and are satisfied with life |
| | | Practicing a routine of self-reflection |
| | | Having a proper sleep during rest time |
| | | Having a pleasant attitude and work ethic |
| | Socially healthy | Respect others |
| | | Use technology to share only trusted information |
| | | Making friends without discriminating |
| | | Supporting others' self-development, e.g., by sharing tips on how to succeed in adopting healthy behavior |
| | | Creating a safe environment for others, e.g., by giving constructive feedback |
| | | Be obedient to norms, ethics, and policy in society and environment, |
| | | Working as a team |
| | | Practice empathy, compassion, and altruism |
| | | Having a healthy and good relationship with a partner |
| | Spiritually healthy | Having an excellent vertical relationship with God |
| | | Entrusting life to God |
| | | Teaching life lessons to others based on experiences |
| | | Implementing the right teachings in religion by acting with kindness toward others. |
| *Internalized healthy behavior* | | Adopting healthy behaviors consistently and continuously in life, not only follow a particular |

| | |
|---|---|
| | health trend |
| | Making health a basic need of life, having self-motivation to be healthy and always creative to conduct healthy behavior regardless of any limitations they have |
| | Having self-regulation to prevent the adoption of unhealthy behavior |
| *Willing to promote healthy lifestyles* | Having a commitment to inviting other people in practicing healthy behavior, e.g., by sharing stories about conducting healthy behavior |
| | Teaching healthy behavior that is feasible to adopt by others |
| *Life-long learner* | Knowledgeable about healthy behavior which adopted and the kind of diseases are prevented by doing that behavior |
| | Conducting health research which benefits their environment |

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# Defining a ‘healthy role-model’ for medical schools: Learning components that count

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