

# Knowledge, attitudes, and practice of leadership skills among undergraduate medical students

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**Abstract.** *Background and aim:* Medical knowledge alone is insufficient to provide excellent medical care. Modern healthcare challenges require that all physicians have leadership skills to better collaborate with other healthcare professionals and effectively lead their teams to provide the best possible care. The aim of the present study is to describe medical students' prior knowledge of leadership concepts, to assess their common practice of its main skills, and to explore their general perception of its practice by their seniors. *Methods:* undergraduate medical students enrolled in the 5th year of medicine or above were invited to fill-in an anonymous online questionnaire. 267 students (66% women) from different Moroccan medical faculties took part in the study. *Results:* 44% of the participants hold a vague idea about leadership whereas 29% were completely ignorant of its concept. 52% of respondents thought that leadership is not to be expected from medical students, and 65% did not know that leadership in healthcare would benefit the patient. In their responses to simulated situations, the participants presented optimal attitudes embracing leadership attributes regarding self-awareness, receiving feedback, teamwork, stress and conflict management. However, they presented more contrasting attitudes when it comes to time management and questioning oneself. Seniors with good leadership skills were perceived as few by half the participants. *Conclusions:* This survey highlighted the need of introducing specific leadership training programs within the curriculum of medical studies in Morocco. ([www.actabiomedica.it](http://www.actabiomedica.it))

**Key words:** Medical Students, Medical Education, Leadership, Soft Skills, Conflict Management

## Introduction

Modern health challenges require that all physicians have a considerable level of leadership skills (1). Such skills would prepare them to actively participate in promoting positive change within healthcare systems, or at least, not to oppose it. As one of the most recent significant threats, Covid-19 pandemic has unveiled healthcare systems' limitations around the globe, and revealed their weaknesses (2). During this pandemic, medical practitioners and healthcare workers

have faced numerous challenges, not only those related to understanding all aspects of the emerging new virus, but also regarding how to manage resources, and reorganize the overcrowded hospitals, uncovering a real gap of leadership skills in the medical community (3).

"Leadership" is defined as a process of influence, where the leader motivates, inspires, and aligns strategy for the team to work in a healthy environment, and boost their productivity to achieve a common goal and vision (4). Leadership skills are not only important to fill a healthcare managing position, but they

are also required to deliver high-quality patient care. Indeed, effective and active communication, time and stress management, self-awareness, decision-making and conflict management are crucial when it comes to dealing with complex medical situations. These skills are also part of the “medical leadership competency” that has been incorporated in the curriculum of many medical schools around the world (5-6).

In Morocco, undergraduate medical education is mainly focused on developing hard and clinical skills, whereas leadership and other soft-skills are limited to be part of the hidden curriculum (7). In the absence of any educational framework, medical students are supposed to acquire their leadership skills mainly by observing their seniors’ behaviours and attitudes, or based on their intuition and common sense which is influenced by the socio-cultural environment (8). To develop a “leadership training framework” for undergraduate medical students in Morocco, a growing need for a general assessment at the starting point is of paramount importance. Hence, the aim of the current study is to assess medical students’ prior knowledge of leadership concepts and their common practice of its main skills, and to explore their general perception of its application by their seniors.

## Methods

### *Setting and participants*

We conducted an online-based survey targeting undergraduate medical students enrolled in the 5th, 6th or 7th year of medical studies in Morocco. We used a Snowball sampling strategy. The anonymous online questionnaire was sent to targeted students using social media, then participants were asked to pass it on to their colleagues and friends from the same institutions using all possible communication means (emails and social media platforms). Data collection took place over the month of September 2021.

### *Survey design*

The online questionnaire comprised structured sections inquiring 5 domains; 1-General information

(sex, level of studies, medical school) 2-General knowledge about leadership; students were asked to precise if they were already introduced to the concept of leadership, to choose the appropriate definition(s) of leadership, to check the institutions where leadership should be implemented, to check the professional profiles who could practice leadership, and to decide if physicians’ leadership skills would be beneficial to the team efficacy, to the relationship with colleagues and/or to the patient. 3- Case scenarios evaluating students’ personal leadership skills where students were asked to choose one of different possible answers regarding nine (9) situations in which they should identify. These situations were designed by a medical student and a medical educator who had priorly received specific medical leadership training. These 9 scenarios assessed different skills of personal leadership (self-awareness, conflict management, stress management, time management, and effective communication), and were inspired from real situation happening on a daily basis within the medical education environment in Morocco. 4- Students’ perception about their seniors’ leadership skills where students were asked to assess the number of seniors (residents and professors) they had met during rotations, who had good leadership skills regarding conflict management, team management, effective communication, and mindfulness 5- Need for leadership training in undergraduate medical education; students were asked if introducing leadership training into their medical curriculum would be important or unnecessary.

### *Data analysis*

Excel (Microsoft® Office) was used for data coding and extraction and IBM SPSS Statistics 25 for analyses. Descriptive statistics were used for categorical and quantitative data as appropriate.

### *Ethics*

As per Moroccan law regarding the protection of persons participating in biomedical research, no ethical approval was needed for this survey-based study (Accessed 29/04/2022). Available from: <https://adala.justice.gov.ma/production/html/Fr/190513.htm>). All Participants gave their electronic consent to

participate in the study. participants' information was collected anonymously and stored with complete respect of personal data protection.

## Results

### *Population description*

We gathered 267 responses from medical students in 7 different Moroccan faculties of medicine. Most of the participants were women (66%), enrolled in 5th year of medical studies (44%), whereas 30% were enrolled in 6th year and 27% in the 7th year of medical studies.

### *General knowledge about leadership*

As shown in table 1, 44% of our participants had a vague understanding of leadership while 29% ignored everything about it. When asked to define leadership, 65% picked the most accurate definition for leadership, but 47% of them also chose definitions that are more related to management, while 14% had it wrong. According to 93% of our participants, companies are the main places where leadership can be implemented, followed by hospitals (82%), and government administrations (78%). Only 64% of our participants thought that leadership can also be applied at school.

Most of our participants believed that leadership was an asset of executive officers or head departments (89%), followed by teachers and professors (76%). However, students and nurses were thought to need/use leadership skills by only 48% and 46% of our participants, respectively. Being a physician with leadership skills was believed to be beneficial mainly for the team efficiency (87.6%), and for a better relationship with colleagues (75%). However, only 34.5% believed that leadership skills of the physician would be beneficial for the patient.

### *Students' leadership skills*

Table 2 shows participants' attitudes in 9 different case scenarios, inspired from real situations encountered by medical students on a daily basis. In the first

scenario, 99% of our participants picked answers reflecting their self-awareness and mistake self-admitting, but only 43% would think actively about it, and make sure to not repeat the mistake again. When it was required to take action in order to avoid bad consequences, only 47% of our student were willing to take accountability of their mistake and solve the situation, while 56% would try to avoid negative consequences without taking accountability, and 2% won't even care about finding

**Table 1.** General knowledge and perception of the concept of leadership among participants.

Items	N (%)
<b>Initiation to the concept of leadership</b>	
No idea	77 (28.8)
Vague idea, but not sure	117 (43.8)
A clear idea of leadership	73 (27.3)
<b>Leadership definition</b>	
Orient a group of people to be productive	126 (47.2)
Inspire a group of people to achieve a common goal and make them adhere to a bigger picture	174 (65.2)
Manage people and problems in any way	37 (13.9)
Being the example others will follow	63 (23.6)
Take the lead and find solutions to every problem yourself	85 (31.8)
<b>Leadership should be implemented in</b>	
Company	248 (92.9)
Government administration	209 (78.3)
Hospital	220 (82.4)
University	195 (73)
School	173 (64.8)
<b>Leadership can be applied by</b>	
Executive officers/Heads of departments	237 (88.8)
Teachers/Professors	203 (76)
Interns/Residents	176 (65.9)
Students	128 (47.9)
Nurses	124 (46.4)
<b>Leadership skills in a physician will benefit to</b>	
The team efficiency	234 (87.6)
The relationship with colleagues	200 (74.9)
The patient	92 (34.5)

**Table 2.** Medical students' leadership skills, as reflected by their attitudes in case scenarios.

Leadership attributes	Case Scenarios	Possible Attitudes	N (%)
<b>Self-awareness</b>	During the clinical round, you present your patient's case to the attending professor, who is known for his intimidating attitudes. When you finish presenting your case, he asks you about the patient's hemoglobin level, but you had forgotten to collect the CBC from the lab! You keep calm, you take a look at your patient, who doesn't look pale. The resident who might confront you with the truth is not present, you take your courage in both hands and you lie with a confident voice: "12g / dL". The attending professor nods and moves to the next patient.  After the round, what is your attitude?	I have already forgotten everything about it. I finish my tasks and go home.	3 (1)
		I run to the lab and collect the blood test results, and make sure that my patient's hemoglobin level is within the normal range. I put it in the file and go home. Case closed!	148 (56)
		I run to the lab and collect the blood test results, and make sure that the hemoglobin level is within the normal range. But I stay tormented all evening for lying to the attending, and I promise myself that I will never lie again about a patient's case.	116 (43)
<b>Recognizing and taking accountability of mistakes</b>	(Follow up to the previous situation)  When you check the blood test results, you find out that the actual hemoglobin level is 9g/dL. The patient suffers anemia!  What do you do?	I don't do anything. I'm not responsible anyway (the resident is), and I won't risk being yelled at by the attending for lying.	5 (2)
		I will leave the blood test results on the medical desk in a way the resident would see it and deal with it.	16 (6)
		I will look for the resident, or another senior attending and inform them about the whole situation.	120 (45)
		I go back to see the attending to inform him about the real CBC results and apologize for my mistake.	126 (47)
<b>Receiving Feedback</b>	(Follow up to the previous situation)  Suppose you decided to make up for your mistake by telling the attending professor about your patient's real hemoglobin level and apologize for your lie. He lectures you and reprimands you severely for lying.  What do you do?	I accept it, I made the mistake anyway, it's normal to be reprimanded. At least I have a clear conscience now after correcting the mistake.	215 (80.5)
		I take it badly. It's not a way of talking to anyone even if I made a mistake. After all, I did apologize!!	48 (18)
		I take it very badly, I get depressed, and I decide to drop from this rotation and not to return to this clinical ward.	4 (1.5)
<b>Time Management</b>	We are finally Friday night, after a long and tiring week. Next week will be a busy one in your new rotation starting on Tuesday, and you only have the weekend free. Monday morning you will have to sit for the current pneumology rotation final exam. In the afternoon of that same day, you have to attend a cardiology review session that was scheduled to help students get ready for the finals. Attendance to the review session is not mandatory but would be highly useful especially if you already revised cardiology lessons before.  How are you going to manage your time during the weekend?	I would chill on Friday night, do a quick cardiology review on Saturday, and work for the end-of-rotation test most of Sunday, then I would dedicate a couple hours on Sunday evening to relax and be ready for the challenging week.	187 (70)
		I immediately decide to drop revising cardiology, but to attend the review session anyway, and I'd divide my weekend between rest and work for the end-of-rotation test.	63 (24)
		I will chill all Saturday, go out and do activities that I like. On Sunday I get up late, rest most of the day and don't start preparing for the end-of-rotation exam before 6 or 8 p.m. and stay up late through the night. On Monday, I would take the exam, but I would be so exhausted to attend the review session. So, I would go home to sleep.	17 (6)

Leadership attributes	Case Scenarios	Possible Attitudes	N (%)
<b>Stress Management</b>	As the head of the department where you have your clinical rotation, will be away for the rest of the week, he has just informed you that the clinical round will begin in 10 minutes when it was not scheduled until the next day. The problem is that you have not yet prepared your patient's case presentation yet. The round usually begins from your patient's room, and you are extremely anxious.  What would be your most likely attitude?	I am very stressed. I lose my calm, move in all directions, and prepare myself to be humiliated	12 (5)
		I am stressed, but I run to see my patient, ask him questions and try to mentally organize my ideas to be able to present his case without a properly written note.	230 (86)
		I calmly wait for the round to start, preparing excuses to justify why I am not ready to present my patient's case.	17 (6)
		I leave the hospital immediately. It is better to be absent than to face a public humiliation	8 (3)
<b>Team Work</b>	You are on call in the emergency room with another medical student who is younger than you, and two nurses with whom you do not get along well. A patient, victim of a car accident arrives to the ER. The resident on call is not to be found and you do not have his phone number. Consequently, you are in charge.  What do you do?	I ignore the nurses and only involve my junior medical student to deal with the case as good as we can.	13 (5)
		I bring the team together and explain to them that we need everyone's involvement and make sure to give everyone proper instructions to follow.	223 (84)
		I'm stressed, but I take matters into my own hands, and order everyone what to do. In the absence of the resident, I am the practitioner in charge and everyone must follow my orders.	31 (11)
<b>Giving Feedback/ Team work</b>	You attend a medical discussion about a patient, between the head of your department and your attending resident. The latter gives (mistakenly) erroneous information to the professor on the basis of which an intervention decision is made. You know that this information is not correct.  What do you do?	For the sake of the patient, I intervene during their discussion to correct the erroneous information given by the resident.	28 (10)
		I wait till the end of the discussion, then I raise the issue with the resident and ask him to correct the error.	218 (82)
		I don't act. It's not my responsibility anyway, I'm only here to observe and learn	21 (8)
<b>Decision Making/ Taking responsibility</b>	(Follow up to the previous situation) Supposing you decided to talk to the resident about his mistake, but, fearing the professor's reaction, he decided not to report it and to let the patient undergo the "unnecessary" procedure.  What do you do?	I inform the patient.	3 (1)
		I inform the attending professor.	122 (46)
		I inform another resident.	117 (44)
		I don't do anything further.	25 (9)
<b>Conflict Management</b>	You are interested in research, and it turns out that your patient is an interesting case to publish. As the professor who offered you to write the article is not the easiest to approach and deal with, you decide to go talk to another "nicer" professor from your department and ask him to supervise you in writing and publishing the case report. Then you discover that there is some tension in the air between the two professors and that you have just made the situation worse by asking one to do what the other had suggested first.  What do you do?	I drop this paper and forget about it. Other research opportunities would certainly arise later.	53 (20)
		I go to see the first professor who came up with the idea for the article, and I apologize for my mistake aka involving another supervisor and ask him how to rectify the situation	78 (29)
		I admit to the second professor that his colleague came up with the idea first, and I ask him if there is a way that we could all work together as a team in this project.	122 (46)
		I write the case report and keep it. Then I go see a professor from another department or from another city and ask him to correct my paper and help me get it published without informing nor involving the first two professors.	14 (5)

a solution. While 77.5% wouldn't mind how they were given criticism if they knew they were at fault, 22% wouldn't accept receiving negative feedback in an aggressive manner, even if they had made a mistake.

In terms of time management, 30% of our participant were ineffective in planning their weekend, and as a result, they entirely missed an important task for their learning. As for stress management, 5% of our student weren't effective in coping with a stressful situation and 3% chose to leave rather than facing their responsibilities. When it comes to managing conflict, 20% of our participant would avoid the conflict, even if it means losing a good opportunity and 5% chose an option that would aggravate the conflict. The majority of the students (84%) were open to team work in an effective and inclusive way, while 12% of them were more into imposing their authority on the team, or excluding some of its individuals.

Concerning giving feedback, 10% of our participants gave it the wrong way, making it neither constructive nor beneficial while 8% didn't see an interest in giving feedback and didn't care about giving one. As for decision making, 90% of the participants took the decision to inform a senior to rectify a situation with bad consequences for the patient, but 9 % of them would not react to protect the patient.

#### *Students' perception regarding leadership skills among seniors*

Seniors with leadership skills were found to be few to rare by the participants. According to our participants, seniors were considered few to rare in terms of managing conflict (73.4%), communicating with the patients (54%), communicating with the team (50%) and managing their own stress (69%).

#### *Students' need for leadership training and preferred framework*

93% of the participants found it important to have leadership training included in their curriculum.

## **Discussion**

This study represents the very first initiative to explore the perception, and attitudes of Moroccan

medical students regarding leadership concepts and attributes. It yielded interesting results while highlighting the predisposition of the majority of students to embrace the different aspects of personal leadership despite the rarity of inspiring role models in their professional environment. We have particularly targeted students enrolled in 5th year or higher, as they would have a more consistent clinical and hospital experience, to be more capable of self-projecting in the simulated situations.

Only 27% of the participants acknowledged they had been introduced to the concept of leadership, and thought they knew what it represents. In the absence of standardized training, our students' understanding of leadership would generally come from an extra-medical context, in relation to the social or entrepreneurial leadership to which some students are exposed through their extracurricular activities (9). The majority of our participants linked the practice of leadership to the company or to the hospital, but one in three participants didn't think leadership could also be applied at school (36%) or at the university (27%). The plus-value of implementing leadership in educational institutions is now widely established and has to be more commonly visible to be endorsed by these institutions' users such as medical students (4). Furthermore, most participants felt that leadership mainly concerned people with the status of administrative manager or having the attributes of a senior in a clinical team, such as the professor. But only few of them also associated leadership with "lower" statuses in the hierarchical scale such as the student or the nurse, which underlines a deep ignorance of the leadership attributes and uses. Indeed, one can be a "leader" without being the hierarchical superior within an institution, nor the person with the greatest technical expertise in the targeted field of work (10). Several studies have highlighted the positive impact of implementing leadership within the practices of health professionals both at the individual and team levels, leading to a significant improvement of the quality of care, raising patients' safety and satisfaction (11-13), and significantly reducing medical errors (14-15).

To assess medical students' spontaneous attitudes in real life situations that would imply the application of leadership skills, we designed situations that students in Moroccan medical schools could relate to (Table 2). Throughout their answers, the majority of

our participants were embracing the essence of personal leadership even if they hadn't had a prior specific training. Indeed, the attributes of leadership can be acquired spontaneously through family education and personal experiences (16). This acquisition is also influenced by personality traits and the cultural background in which the person is imbued (17). The very first situation presented the students with a "medical malpractice" (lying about the result of a patient's blood test) that they are supposed to have committed, in order to explore their later attitudes. If all students would admit their "mistake" and try to make up for it, only 45% would question themselves for having committed it in the first place. Not questioning oneself following a fault that involves patient's safety is a threat to the quality of care that future doctors should provide at the end of their training. In the situation where the mistake would have had consequences on the patient, all the participants had chosen to correct their doing even if it would involve being reprimanded. However, five students would do nothing to save the patient who could have suffered the consequences of their mistake. This attitude testifies to a very low level of professional consciousness, which should be evaluated and rectified among every future doctor, who will have to deal with human lives (18).

Feedback allows people to become aware of one's performance and distinguish between the "excellent" and the "less good"; it aids the receivers in shaping their learning and boosting their performance (19). As a result of admitting their mistake (situation 3), the vast majority of students (81%) said they would accept negative and reprimanding feedback even if not very constructive, which is surprising and paradoxical given the human nature, which generally does not accept, or at least is not satisfied with, reprimanding feedback (20). Indeed, for negative feedback to be constructive, it must be given following precise rules and avoiding judgment and blame (21).

Time management skills were found to be lacking in 30% of our respondents who were unable to manage their weekend optimally (situation 4), which underlines the importance of learning about "time management tips" like the "to-do-list" technique (22).

Poorly managed conflict in healthcare, poor communication and ineffective team work is known to seriously and negatively impact the quality of patient care (23). Hence, these skills which are part of the core

attributes of leadership should be addressed in medical education worldwide (24).

In the present study and even if most students picked optimal attitudes to deal with stress and to resolve conflict, it would be difficult to predict the extent to which these positive attitudes would be reflected in reality.

When it comes to students' perception of leadership as reflected in their seniors' attitudes, the findings were unsurprisingly disappointing. At least half of the participating students coming from different faculties and therefore, exposed to different educational environments, described as "few" the seniors (professors, residents) who were able to effectively manage conflicts, to communicate well with their patients and their team, and to manage their stress mindfully. The lack of perception of leadership in the attitudes of seniors is not surprising as most of the latter are directly recruited on the basis of an entrance exam after graduating as physicians and do not benefit from any specific training which would prepare them to properly accomplish their mission of educators in a medical environment (7). This role goes beyond simple training in technical skills, to encompass the different aspects of the doctor's attributes and soft-skills (25). Finally, the overwhelming majority of the participants expressed a strong interest in institutionalizing leadership training for physicians as part of the medical education curriculum, as has already been demanded by students in other countries (26-27). We can no longer conceive the training of a doctor without including the core-competency of medical leadership as part of the medical education curriculum. Many training approaches were used to introduce leadership training into medical education in different universities all over the world, including project-based learning, coaching and mentoring, with generally positive outcomes (28).

### **Strengths and limitations**

One of the main strengths of the present study resides in its innovative scope, exploring a core competency (leadership) that has been deeply neglected in medical education in Morocco. The present study also has some limitations that should be taken into consideration when generalizing its results; mainly regarding the potential selection bias. As every online survey,

it was not possible to do a randomized sampling and students participated on a voluntary basis. However, it included students from 7 different medical faculties, hence covering different educational environments on a national level.

## Conclusion

In the light of the present survey's results, it is clear that leadership skills are lacking in both the teaching curriculum and training environment of Moroccan medical students, which might reduce their ability in dealing with non-technical issues that would face them throughout their career. Hence, faculty members and pedagogical committees should start thinking seriously about introducing specific training sessions regarding medical leadership and to implement all the necessary measures to achieve this objective.

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