

“Am I cut out for this?” Understanding the experience of doubt among first-year medical students

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Abstract

Purpose: Existing research shows that medical students experience high levels of distress. The purpose of this study was to understand how medical students experience doubt, and how doubt relates to distress.

Methods: A mixed-methods study was conducted among first-year students at the Johns Hopkins University School of Medicine in June 2012. Students answered survey questions and participated in focus groups about doubt and other forms of distress.

Results: Ninety-four percent (112) of students responded to the survey, with 49% reporting a moderate or high degree of doubt. Compared to those reporting no or low doubt, students with moderate/high doubt were significantly more likely to question their purpose and identity, struggle to cope with doubt, and experience depression and emotional hardening. Twenty-eight percent of students (34/112) participated in focus groups to explore their doubt, and three themes emerged: types of doubt, ways of coping with doubt, and impact of doubt.

Conclusions: Doubt is highly prevalent among first-year medical students, affects their identity and purpose, and has positive and negative consequences. Doubt among medical students merits awareness and further study, as it may be an important mediator of students' emerging identity and sense of well-being.

Introduction

Medical students experience high rates of distress, often taking the form of depression, burnout, and loss of empathy over the course of medical training (Compton et al. 2008; Hojat et al. 2009; Dyrbye et al. 2011a). Medical student distress is further associated with negative personal consequences, ranging from thoughts of dropping out to suicidal ideation (Dyrbye et al. 2010c). Distress may be linked to important outcomes in one's professional career; for example, burnout is associated with a decline in professionalism and influences students' choice of specialty (Dyrbye et al. 2010a; Enoch et al. 2013).

One source of medical student distress that has not been adequately studied is emergence of doubt. Medical students are exposed to a range of stressors that include living away from social supports, financial debt, lack of sleep, long hours of study, and encountering human suffering and death (Compton et al. 2008). Furthermore, the medical school learning environment predisposes students to feelings of personal inadequacy, while discouraging expression of uncertainty (Murinson et al. 2010; Benbassat 2013). This combination of impactful events and a high-stress learning environment could easily lead students to question themselves

Practice points

- In addition to other forms of distress previously reported among medical students, the emergence of doubt is a highly prevalent experience among first-year students.
- Students reporting high levels of doubt are more likely than their peers to question their sense of identity and purpose, and to report depression and emotional exhaustion.
- Students also reported positive consequences of doubt, such as developing resilience to future experiences of uncertainty in medicine.
- Exploring the subject of doubt with students early in medical school may help them gain a positive outcome from this frequent form of distress.

(Murinson et al. 2010). In this study, we sought to characterize how first-year medical students experience doubt, and to investigate the relationship between doubt and other measures of distress.

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Table 1. Doubt survey questions.

#	Item
<i>In the past academic year</i> ^a :	
1	I have doubted whether medical school was the right choice for me.
2	I have doubted whether JHUSOM was the right medical school for me.
3	I have doubted my ability to succeed in the academic environment of medical school.
4	I have doubted some other part of my medical school experience.
5	My doubts about medical school have led me to question my sense of personal purpose.
6	My doubts about medical school have led me to question who I am.
<i>When I have doubts about medical school:</i>	
7	I struggle to cope with my doubts in a healthy manner.
8	The climate at JHUSOM discourages me from expressing them.
9	I am unsure where to find resources at JHUSOM to help me.
<i>Distress questions</i> ^b	
10	Do you worry that medical school is hardening you emotionally?
11	Do you feel burned out from medical school?
12	During the past month, have you often been bothered by feeling down, depressed, or hopeless?
13	During the past month, have you felt that all the things you had to do were piling up so high that you could not overcome them?

^aResponse options: strongly disagree, disagree, neither agree nor disagree, agree, strongly agree; I have not experienced doubts about medical school (coded as not applicable)

^bResponse options: Yes/No.

Methods

Study design

We conducted a mixed-methods study involving a survey and focus groups examining the phenomenon of doubt among first-year medical students at the Johns Hopkins University School of Medicine (JHUSOM) in June, 2012. We asked students to answer 13 questions embedded in an annual, online advising program survey: nine questions about doubt were developed based on literature review of medical student well-being, and four questions reflecting other measures of distress from a validated well-being index (Table 1) (Dyrbye et al. 2010b, 2011b). For the focus groups, we created a semi-structured interview guide based on literature review and expert opinion. We tested the guide in a pilot focus group, then revised it prior to use. One study team member (R.L.) served as the focus group facilitator. Questions in the survey and interview guide addressed types of doubt, coping with doubt, and impact of doubt. The distress questions on the survey addressed burnout, depression, stress, and loss of empathy.

Subjects and setting

In June of the 2012–2013 academic year, all first-year JHUSOM students were invited by e-mail to complete the doubt questions as part of a larger online advising survey. The survey was open for approximately 1 month. A second e-mail that month invited their participation in focus groups, and students signed up for one of four groups using an online scheduling form. We closed enrollment when each group reached 8–10 participants.

Data collection

We collected survey data through SurveyMonkey[®], an online survey tool. All survey data were de-identified by program staff before any analyses were conducted. We digitally audiotaped the focus groups, and audiotapes were transcribed verbatim.

This study was approved by a Johns Hopkins Medicine Institutional Review Board.

Data analysis

For the survey items, we dichotomized students based on their responses to the first three items (Table 1, questions 1–3). Students who responded “agree” or “strongly agree” to at least two of these items were classified into the moderate/high doubt group, and the remaining students into the low/no doubt group. We then used logistic regression to compare the likelihood of these groups “agreeing” or “strongly agreeing” with statements about coping with doubt and impact of doubt (Table 1, questions 5–9), and to compare the likelihood of these groups experiencing the four types of distress (Table 1, questions 10–13).

For the focus groups, one author (R.L.) transcribed the audio-recordings and then four members of the study team (R.L., R.S., J.C., G.G.) independently coded the transcripts. Each transcript was read by at least two readers, and coded using an editing style of analysis (Miller 1999). We iteratively reviewed our codes to identify major themes.

Results

Quantitative

Ninety-six percent (112/119) of first-year students completed the survey. Table 2 provides respondent demographics, which accurately reflects the demographics of the entire student class.

Forty-six percent (51/112) of students doubted (agreed or strongly agreed) whether medical school was the right choice for them, 39% (44) doubted whether JHUSOM was the right choice, and 51% (57) doubted their ability to succeed in the academic environment of medical school. Based on response patterns for these three items, 20% (23) experienced high doubt, 29% (32) moderate doubt, 22% (25) low doubt, and 29% (32) no doubt. In sum, 49% (55) experienced moderate/high doubt, while 51% (57) experienced low/no doubt.

Table 3 provides percentage and odds ratios of students “agreeing” with subsequent survey items by doubt groupings. Compared to those with low or no doubt, students with moderate or high doubt were four to 13 times more likely to question their sense of personal purpose, question who they are, struggle in coping with doubt, and perceive the JHUSOM climate as discouraging them from expressing doubt.

Table 4 provides frequency and percentage of students who endorsed each type of distress by doubt category. Overall, 54% (61) experienced burnout, 42% (47) experienced being down, depressed, or hopeless, 42% (47) experienced things piling up too much to overcome, and 34% (38)

experienced emotional hardening. Compared to those with low or no doubt, students with moderate or high doubt were twice as likely to experience being down, depressed, or hopeless and to experience emotional hardening.

Qualitative

Twenty-nine percent (34/119) of students participated in the focus groups. We did not collect demographics on focus group participants to preserve anonymity. Student responses were categorized into three broad themes: types of doubt, ways of coping with doubt, and impact of doubt (Table 5). We illustrate these themes with representative quotations.

Types of doubt

Although students shared a range of doubts, they seemed to center on two main questions: “Do I want to become a doctor?” and “Am I capable of becoming a doctor?”

Do I want to become a doctor?

Many experiences led students to question their desire to pursue a career in medicine. Examples of this type of doubt include: concerns about what the future would be like for them as physicians, the legitimacy of the healthcare system and/or the medical education system, and students’ ability to

Table 2. Demographics of 112 first-year medical students.

Demographic	Frequency and %
Gender	
Male	51% (57)
Female	49% (55)
Race	
Asian	46% (52)
Caucasian	38% (43)
Under-represented minority	13% (15)
Unknown	2% (2)

Table 3. Frequency and percentage of 112 first-year medical students who affirm each doubt statement by doubt category and logistic regression results.

Doubt item ^a	% (n) affirm statement			p Value	Odds ratio of Moderate/High Doubters “agreeing”
	Total (n = 112)	No/Low doubt (n = 57)	Moderate/high doubt (n = 55)		
I question my sense of personal purpose	54% (60)	26% (15)	82% (45)	p ≤ 0.001	12.60
I question who I am	50% (56)	26% (15)	75% (41)	p ≤ 0.001	8.20
I struggle to cope with my doubts in a healthy manner	36% (40)	21% (12)	51% (28)	p = 0.001	3.90
The climate at JHUSOM discourages me from expressing doubts	23% (26)	11% (6)	36% (20)	p = 0.002	4.86
I am unsure where to find resources at JHUSOM to help me with doubt	33% (37)	16% (9)	51% (28)	p ≤ 0.001	5.53

^aResponse options: strongly disagree, disagree, neither agree nor disagree, agree, strongly agree; I have not experienced doubts about medical school (coded as not applicable).

Table 4. Frequency and percentage of 112 first-year medical students who affirm each distress item by doubt category and logistic regression results.

Distress item ^a – I experienced	% (n) affirm statement			p Value	Odds ratio of moderate/high doubters “agreeing”
	Total (n = 112)	No/low doubt (n = 57)	Moderate/ high doubt (n = 55)		
Burnout	54% (61)	46% (26)	64% (35)	p = 0.057	n/a
Being down, depressed, or hopeless	42% (47)	30% (17)	55% (30)	p = 0.009	2.83
Things piling up	42% (47)	40% (23)	44% (24)	p = 0.725	n/a
Emotional hardening	34% (38)	25% (14)	44% (24)	p = 0.035	2.38

^aResponse options: yes/no.

Table 5. Focus group themes.

Theme	Subtheme	Examples
Types of doubt	Do I want to be a doctor?	<ul style="list-style-type: none"> • Personal future as a physician • Legitimacy of healthcare or medical education system • Maintaining identity • Financial debt • Social belonging • Work-life balance • Personal inadequacy
	Am I capable of becoming a doctor?	
Coping with doubt		<ul style="list-style-type: none"> • Extracurricular activities • Maintaining perspective through service • Supportive relationships with mentors and peers
Impact of doubt	Positive	<ul style="list-style-type: none"> • Motivation to do one's best • Drive to find a passion • Building resilience • Poor academic performance • Poor lifestyle choices • Depression • Burnout
	Negative	

maintain their identity through medical school. Doubting the medical education system, one participant said:

...if I put on a short white coat and I go to clinic once a week am I qualified to ask people questions about their illness? If I sit in lecture and then pass a bunch of tests, does that make me qualified to make decisions about other people's lives?

Another student described a struggle to preserve his identity:

I've been experiencing a lot of doubt lately that I have a clear concept of what that health and wellness is that we're trying to restore others to. If I can't maintain my own work-life balance, my own mental health, my own physical health, my own soul, for lack of a better word, then how am I in any position to help others at all?

Am I capable of becoming a doctor?

Even if students were assured they wanted to be physicians, some doubted their ability to achieve that goal. These doubts included: the financial burden of a medical education, concerns about their social belonging, uncertainty as to their personal ability, and worries about being able to maintain a satisfying work-life balance. One student described his concerns about balance:

Well, I imagine ... if you were to be a neurosurgeon and you think about what your life would be like, and maybe you wouldn't see your kids as much. I think all of us have thought about what medicine could potentially do to our lives outside of our career, and I think it would be ridiculous if none of us doubted it.

Another student described feelings of inadequacy:

I feel like at best we can meet expectations, and that scares me ..the idea that I can perform to what people can expect of me, the idea of the opportunities you've been given, and they use the phrase "leaders of medicine" so loosely here. If you pause and think about what that means I'm petrified that I'm just not going to perform to what people expect of me, so I doubt my own legitimacy of being a Hopkins med student almost every day.

One student spoke of confronting failure:

Obviously, no one's perfect and you're going to struggle at times with certain things, but I think med school is a venue where you just have failure after failure after failure, you're going to keep failing, and eventually you might reach a threshold where it's like, am I really cut out for this? Do I really have the skill sets or the knowledge or the social capabilities to do this?

Coping with doubt

In response to their doubts, students discussed a range of coping mechanisms. Participating in extracurricular activities, ranging from social clubs to sports to religious pursuits, was one common coping strategy. Students affirmed the importance of maintaining a broader perspective on their reasons for choosing medicine, for example through community service, as well as the importance of supportive relationships with both with faculty and peers. One student spoke of faculty:

I am a huge fan of our [faculty advisor], and today I feel like I could call him and be like, 'listen, I just hate life', and he'd understand. And I think they've

done a really good job of making that a very safe relationship, separate from all your evaluations and grading.

Another student described the support system of peers:

In study rooms I feel like sometimes they would turn into counseling sessions, 'cause there are plenty of times where it's like there's no way I can learn all this, I don't know what I'm doing here, everyone else is getting it and I'm not. And the fact that I'm not the only one that says that, the fact that people say that to me very openly is comforting.

Impact of doubt

Students highlighted both positive and negative aspects of their experience of doubt. On the constructive side, some described that a measure of doubt motivated them to discover a true passion or to be more conscientious as a medical student. Others felt that early exposure to doubt could help build resilience when faced with uncertainty in future clinical training. One student pointed out the value of questioning oneself:

If you don't question what you're doing then that's when you're going to start blindly charging forward, and that's when you make real mistakes. If you never accept the fact that you might be wrong then you're never going to learn anything.

Another student reflected on the preparatory value of experiencing doubt:

I think a lot of medicine is about coping with uncertainty and doing things without knowing what the outcome will be, and so, to some extent it's good that we're getting some experience with just how do you deal with doubt and uncertainty.

In contrast, students also highlighted the potentially destructive impact of doubt. Students described feeling that their doubts were adversely affecting their academic performance and their lifestyle choices, citing behaviors like insufficient sleep and exercise, poor nutrition, and binge drinking. Some students specifically connected a sense of doubt with feelings of burnout and depression. Regarding burnout, a student reflected:

I think it caused me to burn out a little bit at the end, because you see these physicians and you're like, how the hell am I ever going to get there? I think doubt about ever being able to get to that point and to get to that level of training caused me to feel kind of burned out and gave me this lack of care by the end of the year. I was kind of just going for the pass and trying to end the year.

In relation to depression, another student stated:

I definitely think chronic doubt can lead to anxiety and depression. I think it's normal for everyone to doubt themselves to some degree and I think that's a good thing. But when you're constantly doubting everything you do and every aspect then yeah, I think it can definitely lead to those things.

Discussion

Our results suggest that the existence of doubt and its management are indeed important components of medical student well-being. A striking finding from this study is the high prevalence of doubt among first-year medical students. Nearly half of these students reported moderate to high levels of doubt, largely related to uncertainty about their desire or ability to pursue a career in medicine. Furthermore, students who experienced higher levels of doubt were more likely to question their sense of identity and purpose. Students develop a variety of strategies to cope with doubt, and identify both positive and negative consequences of doubt.

A substantial proportion of students in this study reported feelings of depression, emotional exhaustion, stress, or burnout in their first year of medical school, corroborating prior research of high rates of distress among medical students (Hojat et al. 2004; Compton et al. 2008; Dyrbye et al. 2010c, 2011a). Students who responded that they experienced moderate or high levels of doubt were significantly more likely to be emotionally exhausted and depressed than their peers with low or no doubt. The combination of quantitative and qualitative results linking doubt to other forms of distress enriches our understanding of medical student distress by including the phenomenon of doubt, either as a catalyst or mediator of known forms of distress, or as a distinct form of distress.

Study participants indicated that pervasive doubt led them to question both their personal purpose and their sense of who they were. Previous work has shown that medical school is a critical time for personal development and professional identity formation (PIF) (Cohen et al. 2009; Holden et al. 2012). Cohen et al. identified several aspects of the training process that may negatively influence PIF, including pressures like high expectations and internal fear of inadequate knowledge or skills, the exclusive and hierarchical culture of medicine, and the emotional weight of facing suffering and death (Cohen et al. 2009). Our focus group participants raised many of these same issues, supporting the idea that doubt is an important factor in medical students' PIF. As the medical education community increases its training focus on identity formation, adding students' perceptions and struggles with doubt to the discourse may be useful (Jarvis-Selinger et al. 2012).

Focus group participants described both helpful and destructive consequences to their experiences with doubt. On the positive side, learning how to manage a sense of doubt early in medical school could prepare students to deal with

future uncertainty in the context of patient care. In the course of medical training, numerous morally ambiguous or diagnostically perplexing situations arise (Henry 2006). Indeed, it is hypothesized that a high tolerance for ambiguity is a determining factor in students' future practice settings and moral character formation (Geller 2013). A concerning finding of our work, however, is that students felt harboring doubt could lead to burnout and depression. Although this study did not attempt to clarify a cause and effect relationship in this regard, the authors sensed that students perceived doubt as an experience triggering rather than resulting from other types of distress. A critical question, then, is how to help students manage their doubt constructively, enhancing their growth in the face of inevitable uncertainty, rather than letting it overwhelm and discourage them.

One model of medical student well-being by Dunn et al. (2008) introduces the idea of a coping reservoir. Each student has an individual reservoir, determined by personal traits, temperament, and coping style. The reservoir can then be filled or drained by healthy or unhealthy coping methods. Furthermore, other factors like stress can drain the reservoir, while social support can fill it. This model corresponds to the processes described by students in our study. Students described many of the "depleting factors" as types of doubt, and many of the "replenishing factors" as helpful ways of coping with doubt. There is increasing recognition of the importance of physician resilience and of training medical students to be resilient (Epstein & Krasner 2013; Nedrow et al. 2013; Zwack & Schweitzer 2013). Addressing doubt as an important component of medical student distress may help educators guide students towards resilience rather than burnout during a grueling training process and challenging career.

Several limitations of this study should be considered. First, we surveyed one medical student class at one institution at one point in time. Future studies should include other institutions, and be administered at multiple points during a student's medical school career. However, given the similarity of preclinical medical school curricula nationwide, we believe the phenomenon of doubt is not isolated to our study population but instead represents the experience of many medical students across the country. Second, in order to maintain anonymity, we were not able to link survey and focus group responses. Therefore, we do not know whether those reporting high levels of doubt on the survey were those who described the impact of doubt in positive or negative terms during the focus groups. Despite this limitation, the use of a mixed-methods approach enriched our understanding of the understudied experience of doubt among medical students. Finally, doubt is a subjective experience, and our study relied on self-report. We consider, however, that each student's interpretation of doubt, as long as it is personally valid, is the most appropriate measure for the aims of our study.

In conclusion, we believe our study identifies doubt as an important factor that has been largely overlooked in the literature conceptualizing medical student distress. Doubt appears to relate to other forms of distress shown to have far-reaching negative consequences for students' personal and professional development. Further study is needed to achieve

a more nuanced understanding of the relationship among sources, severity, and consequences of doubt and to verify our findings among a larger population of medical students. As a start, however, we believe doubt should be acknowledged as a serious challenge facing medical students, and incorporated as a conscious part of a longitudinal teaching dialogue. Medical educators must now confront the task of protecting medical students from the destructive consequences of doubt, instead helping them accept and productively use their doubt to grow into self-reflective, conscientious, and contented physicians.

Glossary

Coping reservoir: A term used to describe the positive and negative strategies used to cope with stress and how they interact. Dunn LB, Iglewicz A, Moutier C. 2008. A conceptual model of medical student well-being: Promoting resilience and preventing burnout. *Acad Psychiatr* 32(1):44–53.

Identity formation: The development of the distinct personality of an individual regarded as a persisting entity in a particular stage of life; a person's mental representation of who he or she is in which individual characteristics are possessed and by which a person is recognised or known. Erikson EH. 1950. *Childhood and society*. New York: W. W. Norton. Josselson R. 1987. *Finding herself: Pathways to identity development in women*. San Francisco: Jossey-Bass.

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Acknowledgements

Special thanks to the JHUSOM class of 2015 for assistance with this research.

Declaration of interest: Funding for this project came from the Office of Student Affairs at the Johns Hopkins University

School of Medicine. The authors report no declarations of interest.

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