

# Effect of patient socioeconomic status on perceptions of first- and second-year medical students

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## Abstract

**Background:** Physician decision-making and perceptions of patients are affected by a patient's socioeconomic status (SES). We sought to determine if the perceptions of first- and second-year medical students are similarly affected. We also wanted to determine whether a student's own SES affects his or her perceptions of patients from a low or high SES background.

**Methods:** Two similar videos of a physician-patient interview were created. One video featured a patient of apparently high SES and the other featured a patient of apparently low SES. Differences in SES were portrayed by means of clothing, accessories and dialogue. First- and second-year medical students at the University of Western Ontario were recruited to view 1 of the videos and to answer a questionnaire using a 5-point Likert scale.

**Results:** Responses were obtained from 205 (89%) of the 231 medical students invited to participate. Respondents' perceptions of the low SES and high SES patients were significantly different in the following respects. The low SES patient was perceived to be less compliant in taking medications and less likely to return for follow-up visits; was perceived to have a lower level of social support, poorer overall health and a worse prognosis; and was perceived to be more adversely affected in his occupational duties by illness ( $p < 0.05$ ). Furthermore, second-year students who watched the video with the low SES patient were less inclined to want that patient in their practice than second-year students who watched the video with the high SES patient ( $p = 0.032$ ). One hundred and six students (52%) were categorized as having high SES and 37 (18%) as having low SES (the remaining students were categorized as having mid-level SES). Among students who watched the video with the low SES patient, the level of agreement with the statement "This person is the kind of patient I would like to have in my practice" was greater among low SES students than among high SES students ( $p = 0.012$ ).

**Interpretation:** First- and second-year medical students have negative perceptions of low SES patients on several dimensions.

status (SES), and in turn these perceptions affect the health care that the physicians provide.<sup>5,6</sup> Previous studies have emphasized the need to understand the origins of such perceptions. Using a video portraying a typical physician-patient interview and a survey administered to first- and second-year medical students, we examined students' perceptions of patients from different socioeconomic backgrounds. Our hypothesis was that medical students would have negative perceptions of low SES patients. Furthermore, we wished to determine whether any differences in perception existed between first- and second-year medical students and between students with low and high SES.

## Methods

Two videos depicting a physician-patient interview, one with a low SES patient and the other with a high SES patient, were filmed. The roles of physician and patient were played by 2 professional male actors hired by the University of Western Ontario (UWO) Standardized Patient Program. One actor played the role of the physician in both videos, and the other actor played the roles of both the low SES patient and the high SES patient. The scripts in the 2 videos were similar, differing only in terms of some of the patient responses (Box 1). Differences in the patients' apparent SES were shown through clothing, hygiene, accessories, language and script (Fig. 1, Table 1). The videos can be viewed online at [www.cmaj.ca/cgi/content/full/170/13/1915/DC1](http://www.cmaj.ca/cgi/content/full/170/13/1915/DC1).

With the help of 6 other students, we developed a survey that used bipolar 5-point Likert rating scales to capture student responses, with 1 representing the negative extreme (e.g., noncompliant) and 5 representing the positive extreme (e.g., extremely compliant). Ethics approval was obtained from the UWO Research Ethics Board.

First- and second-year UWO medical students were recruited for and participated in the study on Apr. 9 and 14, 2003, respectively, during patient-centred learning (PCL) course time. Each PCL group of 8 students was predetermined before the study by the Undergraduate Medical Education (UME) office. Assignment to PCL groups was not completely random: the UME office attempted to ensure approximately equal numbers of male and female students in each PCL group. Students in even-numbered PCL groups viewed the video with the low SES patient and those in odd-numbered PCL groups viewed the video with the high SES patient. No incentives were given to students, participation in the study was voluntary and in-

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In spite of the fact that Canada has a universal and accessible health care system, Canadians experience disparities in the delivery of health care according to their income level.<sup>1-4</sup> Physicians' perceptions of their patients can be influenced by the patients' socioeconomic

formed consent was obtained. Students were not aware that perceptions of patient SES were being measured. After presentation of the video, each student completed the survey. Students were asked to keep their knowledge of the study confidential until Apr. 15, 2003.

Two-sample independent *t* tests were used to compare responses between students who viewed the low SES video and those who viewed the high SES video (within each medical

school year). Surveys were also grouped according to students' self-reported gross family income, with low SES defined as family income less than \$61 000 and high SES defined as family income greater than \$100 999; students with a self-reported gross family income between \$61 000 and \$100 999 were excluded from this particular analysis. The responses of low and high SES students were compared with 2-sample independent *t* tests for each video.

### Box 1: Excerpts from scripts used in videos with patients of high and low socioeconomic status

D: Does your spouse work?

H: She's a high school teacher.

L: Yeah, she's a sales clerk down at the Bay.

D: What do you do?

H: I'm a partner at a law firm in downtown London, right near the corner of Richmond and Dundas.

L: I work at a convenience store in downtown London, right by Richmond and Dundas.

D: And when did these chest pains first begin?

H: I first noticed them when I was on the driving range 2 weeks ago.

L: Well, I first noticed the pain while I was washing my truck 2 weeks ago.

D: Do you remember if there were any complications involved with your birth?

H: No. As a matter of fact, my mother always said that the birth went free and easy.

L: No. My mom has always said I was the easiest birth she had. She had 6 kids.

D: How much would you say you drink in a week?

H: I have 1 or 2 single malt scotches 3 times a week or so when I'm out for dinner with clients.

L: A couple of bottles of Coors, a couple of times a week, usually when I'm watching wrestling.

D: Okay. Obviously, this chest pain is having a definite impact on your life, especially in terms of work. However, based on your history, I'm not quite sure as to the cause of your chest pain so I'm going to schedule you in for some tests this afternoon.

H (consults personal digital assistant): I've got an important meeting with an important client this afternoon. It's going to be pretty difficult.

L (consults loose-leaf page): Uhhh, I'm working a shift this afternoon. Johnny's not going to like it if I phone in sick again.

D: Okay. I might need to prescribe some medication for you after I see the results from the test. Do you have a drug plan?

H: Yes, my firm supplies one.

L: Yeah, my wife's got one from work.

D = doctor, H = patient with high socioeconomic status, L = patient with low socioeconomic status.

## Results

Responses were obtained from 205 (89%) of the 231 medical students invited to participate. Of these, 48 (23% of the total) and 58 (28%) first-year students watched the high and low SES videos respectively, while 52 (25%) and 47 (23%) second-year students watched the high and low SES videos respectively. Student characteristics are presented in Table 2. Although no significant difference in gross family income was detected for first-year students, first-year students who watched the high SES video considered themselves to be of a higher socioeconomic class than those who watched the low SES video ( $p = 0.042$ ). First-year students who watched the low SES video were significantly older (by a mean of 8 months) than first-year students who watched the high SES video ( $p = 0.015$ ).

Both first- and second-year students perceived that the low SES patient would be less compliant in taking his medications ( $p < 0.001$  and  $p = 0.001$  respectively), would be less likely to come in for monthly follow-up ( $p = 0.004$  and  $p = 0.033$  respectively) and would have a lower level of social support ( $p < 0.001$  for both groups) than the high SES patient (Table 3). Among both first- and sec-



Fig. 1: (a) Still from the video with the patient of low socioeconomic status (SES), showing both patient and physician; (b) close-up of low SES patient; (c) still from the video with the high SES patient, showing both patient and physician; (d) close-up of high SES patient.

ond-year students, there was no significant difference between those who watched the low SES video and those who watched the high SES video in perception of the patient's truthfulness about his drinking habits. Students in both years identified the patient in the low SES video as having low SES and the patient in the high SES video as having high SES ( $p < 0.001$ ), which confirmed that a difference in SES was apparent.

With further analysis, 106 (52%) and 37 (18%) surveys

were categorized as representing responses of high and low SES students respectively (data not shown). Low SES students perceived that the high SES patient was less likely to come in for a monthly follow-up ( $p = 0.049$ ). Among students who watched the video with the low SES patient, the level of agreement with the statement "This person is the kind of patient I would like to have in my practice" was greater among low SES students than among high SES students ( $p = 0.012$ ).

**Table 1: Characteristics of the portrayal of patients with high and low socioeconomic status (SES) in videos of a physician-patient interview**

Aspect of portrayal	High SES patient	Low SES patient
Accessories	Personal digital assistant, expensive-looking watch, expensive-looking pen in shirt pocket	Loose-leaf paper, Bic pen in shirt pocket
Activity that precipitated chest pain	Golfing (at driving range)	Washing truck
Activity while consuming alcohol	Dinner with clients	Watching wrestling on TV
Choice of alcoholic drink	Single malt scotch	Beer
Clothing	Dress shirt, tie, dress pants	Baseball cap, lumberjack shirt, white undershirt, corduroy pants, black boots
Hygiene	Shaved	Stubble
Occupation	Partner in law firm	Clerk at convenience store
Use of language	See Box 1	See Box 1

**Table 2: Characteristics of medical students at the University of Western Ontario participating in the study\***

Characteristic	First-year students		Second-year students	
	Video with high SES patient <i>n</i> = 48	Video with low SES patient <i>n</i> = 58	Video with high SES patient <i>n</i> = 52	Video with low SES patient <i>n</i> = 47
<b>Sex, no. (and %) of men</b>	25† (52)	32† (55)	23 (44)	23 (49)
<b>Mean age (and SD), yr</b>	22.77 (1.42)	23.45 (1.40)	24.27 (1.23)	24.26 (0.95)
<b>Estimated gross annual family income, \$‡</b>				
< 30 000	1 (2)	1 (2)	0	2 (4)
30 000 to 60 999	5 (10)	9 (16)	10 (19)	9 (20)
61 000 to 100 999	12 (25)	22 (38)	14 (27)	14 (30)
101 000 to 200 000	22 (46)	19 (33)	17 (33)	17 (37)
> 200 000	8 (17)	7 (12)	11 (21)	4 (9)
<b>Perception of family's social class</b>				
Lower class	0	0	0	1 (2)
Between lower and middle class	2 (4)	5 (9)	2 (4)	3 (6)
Middle class	16 (33)	28 (48)	27 (52)	21 (45)
Between middle and upper class	28 (58)	24 (41)	20 (38)	20 (43)
Upper class	2 (4)	1 (2)	3 (6)	2 (4)
<b>Population of home town‡</b>				
< 5000	3 (6)	6 (10)	2 (4)	5 (11)
5000 to 30 999	2 (4)	4 (7)	7 (13)	4 (9)
31 000 to 100 999	9 (19)	9 (16)	5 (10)	4 (9)
101 000 to 500 000	12 (25)	17 (29)	20 (38)	13 (28)
> 500 000	22 (46)	22 (38)	18 (35)	20 (43)

\*Data are presented as no. (and %) of students, unless indicated otherwise.

†Actual data were not available; these values are approximations.

‡Data missing for 1 second-year student who viewed the video with the low SES patient.

## Interpretation

To our knowledge, medical students' perceptions of high and low SES patients have not been evaluated in any substantial published study. Our results support the hypothesis that medical students have negative perceptions of low SES patients. The low SES patient was perceived to be less compliant; to have less social support, poorer overall health and a poorer prognosis; and to be more adversely affected with respect to his occupational duties than the high SES patient. Furthermore, second-year students and high SES students showed a greater preference to have the high SES patient in their practice rather than the low SES patient. Overall, second-year students had negative perceptions of low SES patients on a greater number of dimensions than first-year students.

These medical students' perceptions mirror some of the perceptions that other investigators have found among physi-

cians. For example, van Ryn and Burke<sup>6</sup> demonstrated that physicians are more likely to perceive low SES patients as being less intelligent, independent, responsible, rational, physically active and compliant and as having less significant career demands than high SES patients. In a study of general practitioner decision-making, Scott and associates<sup>5</sup> found that diagnostic tests were less likely to be ordered for low SES patients than for high SES patients and that low SES patients were more likely to receive a prescription. However, patient SES was not associated with a physician's decision to follow up. In our study of medical students, patient SES was not significantly associated with the decision to refer to a specialist.

The parental income of the UWO first- and second-year classes was similar to that of other Canadian medical school classes,<sup>7</sup> in that students from high-income families were overrepresented and students from low-income families were underrepresented. Our results suggest that low SES students would prefer low SES patients in their prac-

**Table 3: Medical students' perceptions of the high SES patient and low SES patient\***

Student's perception	First-year students			Second-year students		
	Video with high SES patient <i>n</i> = 48	Video with low SES patient <i>n</i> = 58	<i>p</i> value†	Video with high SES patient <i>n</i> = 52	Video with low SES patient <i>n</i> = 47	<i>p</i> value†
<b>Perceived patient behaviours and abilities</b>						
Patient's understanding of his medical problem (1 = no understanding, 5 = complete understanding)	2.2 (0.6)	2.0 (0.6)	0.23	2.1 (0.6)	1.8 (0.7)	0.11
Compliance with medications (1 = noncompliant, 5 = fully compliant)	3.8 (0.8)	3.0 (0.8)	< 0.001	3.3 (0.8)	2.7 (0.9)	0.001
Likelihood of monthly follow-up (1 = not likely, 5 = extremely likely)	3.0 (1.1)	2.4 (0.9)	0.004	2.9 (1.0)	2.4 (1.0)	0.033
Level of social support (1 = no support, 5 = complete support)	3.8 (0.7)	3.1 (0.8)	< 0.001	3.6 (0.6)	3.1 (0.6)	< 0.001
Patient's truthfulness about his drinking, $\chi^2$ (and degrees of freedom)‡	0.201 (1)		0.65	1.456 (1)		0.48
Effect of condition on ability to do job (1 = no effect, 5 = strong effect)	3.3 (0.8)	3.5 (0.8)	0.21	3.1 (0.8)	3.7 (0.8)	< 0.001
<b>Perceptions of the patient's disease</b>						
Prognosis (1 = not good, 5 = extremely good)	3.4 (0.6)	3.3 (0.8)	0.51	3.5 (0.7)	3.2 (0.8)	0.036
Severity of disease (1 = not severe, 5 = extremely severe)	3.0 (0.7)	3.0 (0.6)	0.96	2.9 (0.6)	3.0 (0.6)	0.46
Overall health (1 = extremely poor, 5 = excellent)	3.2 (0.7)	2.9 (0.7)	0.035	3.3 (0.6)	3.1 (0.6)	0.18
Discomfort or inconvenience related to chest pain (1 = no discomfort, 5 = extreme discomfort)	3.4 (0.5)	3.3 (0.6)	0.18	3.1 (0.6)	3.3 (0.7)	0.15
Likelihood of sending patient for a second opinion or to a specialist (1 = not likely, 5 = extremely likely)	3.5 (1.1)	3.4 (1.0)	0.90	3.2 (1.1)	3.2 (1.0)	0.89
<b>Future practice patterns</b>						
"This person is the kind of patient I would like to have in my practice." (1 = completely disagree, 5 = completely agree)	3.7 (0.9)	3.6 (1.0)	0.51	3.8 (0.8)	3.4 (1.0)	0.032
<b>Other</b>						
Effect of patient's SES on physician decision-making (1 = no effect, 5 = strong effect)	2.8 (1.0)	3.2 (0.8)	0.032	3.2 (0.9)	3.4 (0.9)	0.38
Description of patient's SES (1 = very low, 3 = middle, 5 = very high)	4.2 (0.6)	2.1 (0.5)	< 0.001	4.1 (0.5)	2.2 (0.4)	< 0.001

\*Data are presented as mean (and standard deviation), except where indicated otherwise.

†Two-sample independent *t* tests were used to compare responses between students who watched the video with the low SES patient and those who watched the video with the high SES patient.

‡Response options were binary (yes or no) and a  $\chi^2$  test was used to determine significance.

tices more than high SES students would. This finding complements previous work characterizing US physicians who provide high levels of service to underserved populations.<sup>8</sup> Physicians with low SES backgrounds (low parental income and education) showed significantly higher levels of service to poor patients than physicians with high SES backgrounds, even after adjustment for physician race, ethnic background and sex.

The cause of negative perceptions of low SES patients is unclear. For example, although some studies suggest that lower SES is an independent risk factor for lower compliance and follow-up attendance,<sup>9-12</sup> others have found either no correlation<sup>13,14</sup> or greater compliance among low SES patients.<sup>15</sup> Socioeconomic factors are associated with true patient differences in certain cases. For instance, physicians perceive low SES patients as being less likely to desire a very physically active lifestyle, a perception that is consistent with research findings.<sup>6,16-18</sup> However, if a physician applies such an epidemiologically supported, population-based likelihood to an individual patient, without regard for any contradicting evidence for that patient, then the stereotype is not deserved.

Several limitations of this study should be considered. First-year students watching the low SES video were significantly older than those watching the high SES video. The scripts for the 2 videos were similar, but the personality and behavioural mannerisms of the patient varied slightly between videos, which might have had an effect on student responses. The lack of an option such as "There isn't enough information to answer the question" meant that students who wanted more information were forced to choose a response on the 5-point Likert scale that might not have reflected their opinion accurately. Our study was not longitudinal, so any differences between first- and second-year students might have been due to differences in the sample itself, rather than to differences between years of education. The differences detected were subtle (none exceeded 1.0 on the Likert scale) and might not have been clinically significant. Perceptions could vary from encounter to encounter but each student viewed only 1 video; thus, it might be necessary to have subjects view more cases to achieve a more realistic understanding of perceptual differences. First- and second-year medical students do not have a great deal of contact with patients, so their perceptions are not yet shaped by real-world experience. The generalizability of this study may be limited because subjects consisted of UWO medical students only. Finally, the arbitrary low-income cutoff of \$60 999 would probably not be perceived as a low income by the average Canadian family.

Our results demonstrate that medical students have negative perceptions of low SES patients. More negative perceptions were found among second-year students, but the reason for this difference is unclear. Low SES students had a greater willingness than high SES students to have the low SES patient in their future practice. We have expanded on earlier studies by demonstrating that physicians' negative percep-

tions of low SES patients are apparent at an early stage in their training. Delineating the origins of these perceptions is an important avenue of research that needs to be explored.

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