Exploring physician perceptions of the impact of emotions on behaviour during interactions with patients

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Background. There is relatively little research on affective influences on physician behaviour, especially on prescribing and referrals. Affects include transitory moods and lasting emotions.

Objectives. We explored physician perceptions of the impact of four mood states on perceived rates of five behaviours: talking with patients, prescribing medications and referrals for laboratory tests, diagnostic tests and specialists. We also examined whether burnout modified the impact of moods on behaviour.

Methods. A total of 188 family physicians responded anonymously to a self-reporting questionnaire that assessed the perceived rate of behaviours when in a positive, negative, tired and nervous mood and burnout level.

Results. Five analyses of variance with repeated measures on mood states and contrast analyses computed the effects of mood and burnout on the behaviours. The mood factor was found significant for each of the behaviours, in all $P < 0.001$. The respondents reported that on good mood compared with negative mood days, they talked more, prescribed less and referred less. The burnout factor was also significant: high compared with low burnout physicians had higher perceived rates of all referral behaviours. Significant mood $\times$ burnout interactions indicated that the effects of mood were stronger among high compared with low burnout physicians.

Conclusions. The physicians perceived that their moods had different effects on different behaviours: the negative mood decreased talking and increased prescribing and referral behaviours and vice versa for the positive mood. Burnout intensified the effects of moods. The incremental effects of negative moods and burnout may impair quality of health care and may be costly to health services.

Keywords. Diagnostic tests, doctor–patient relationships, family medicine, health services management, prescribing.

Introduction

The subject of affective influences on physician behaviour is not common in medical research. Since all emotions are subjective phenomena, they are usually perceived as occurring independently of clinical decisions that are based on rational and objective reasoning processes.\textsuperscript{1} Affects include both transitory mood states, such as anxiety, and more lasting conditions, such as depression and burnout. In the present study, we investigated physician perception of the impact of moods on several under-researched behaviours in the medical encounter. We also investigated whether burnout is implicated in the mood–behaviour associations.

Studies on the effects of moods

The literature on how emotional states impact physician behaviour is rather scant. A recent study found that fatigue was associated with poor communication performance of breaking bad news to simulated patients.\textsuperscript{2} Another study found that stress is associated with self-reported suboptimal care and medical errors.\textsuperscript{3} Two earlier studies reported that feelings of stress (resulting from work overload, tiredness, etc.) were associated with lowered clinical care (e.g.
lowered standards, making serious mistakes, and that stress from uncertainty was positively correlated with referrals.

Studies on the effects of burnout

There seems to be more research interest in stable or lasting affects, especially burnout, and physician behaviour. Burnout is a work-related affective response to chronic stress and involves emotional, physical and cognitive facets. Burnout was found to be associated with poor physician communication performance but a recent study reported mixed findings. Primary care physicians who had high scores on two burnout indices (emotional exhaustion and depersonalization) had longer consultations with patients having mental health issues compared with low burnout physicians. The extra time was devoted to patient-centred communication about mental health issues. On the other hand, physicians who had high scores on the third burnout index (low personal accomplishments) did not have longer consultations, had less affective communication and were less patient-centred compared with those who had low incompetence scores. Other studies have shown significant effects of burnout on physician self-reported medical errors, suboptimal patient care practices, quality of health care provided to the patients and empathy. In what appears to be the only study on burnout and prescribing behaviour, the annual cost of prescriptions per patient was greater among physicians with higher levels of emotional exhaustion than those with lower levels. The researchers suggest that burnout complicates the process of clinical decision-making resulting in inefficient management of pharmaceutical expenditure.

Aims

The above studies suggest that both transitory mood states and more lasting emotions may be associated with physician behaviour. There are very few studies on affective influences on prescribing and referral behaviours.

Do physicians believe that affective states and physician behaviours are related? In the present study, we explored the perceived effects of physician moods on several self-reported behaviours: speaking with patients, prescribing medications and referring for laboratory tests, for diagnostic tests [e.g. X-rays, ultrasound, Computed Tomography (CT), Magnetic Resonance Imaging (MRI)] and for consultations with specialists. We further examined whether burnout, a more a stable characteristic of the chronically overstressed physician, is also implicated in these perceived associations.

The research questions:
1. Do physicians perceive that their positive and negative moods impact their own behaviours during interactions with patients?
2. Is burnout level also associated with these behaviours?
3. Does burnout modify these perceived effects by interacting with the effects of moods?

Methods

Participants and procedures

The study included 188 male and female physicians from one major health service organization in Israel, family physicians, paediatricians and few internists working in community clinics and hospitals. Primary care and hospital physicians in Israel are entitled to have free time weekly to be devoted to professional development, such as participating in continuing medical education, professional seminars and conferences. The study took place during several educational seminars that qualify as continuing medical education that took place in Tel Aviv University Faculty of Medicine. A total of 259 physicians participating in the seminars were invited by the two physicians co-authoring this study to participate in the research. The two physicians handed out the research questionnaire to those who agreed, during breaks in several seminars. The participants responded anonymously to the questionnaires and handed them back to the researchers.

Study variables

Independent variables. Two independent variables: ‘transitory mood states’ (four moods) and ‘burnout’ (two levels). The moods included four states: good mood, bad mood, feeling tired and feeling nervous. Burnout included two levels: high and low.

Dependent variables. Five dependent variables: the perceived rates of engaging in five different behaviour categories: talking with patients, prescribing medications and referring for laboratory tests, for diagnostic tests [e.g. X-rays, ultrasound, Computed Tomography (CT), Magnetic Resonance Imaging (MRI)] and for consultations with specialists.

Measures

Socio-demographic details. Questions concerning age, gender, marital status, managerial status (yes/no), medical specialty, main place of work (community clinic/hospital) and work hours were included.

Burnout. Burnout was assessed by a scale taken from Kushnir and Melamed that has been validated in several studies on physician burnout. This measure was based on a conceptualization of burnout as a syndrome comprising of emotional exhaustion, physical fatigue and cognitive weariness. The measure included 14 items divided into two subscales (see below). Each item had a seven-point response scale,
ranging from ‘1’ (‘almost never’) to ‘7’ (‘almost always’).


Cognitive weariness. This was measured by six items. Sample items: ‘My head is not clear’; ‘I feel I am disorganized lately’. The burnout score is the sum total of the points in the two subscales, divided by the number of items in the total scale (14 items). Cronbach’s alpha in the present study was 0.89.

Physician behaviours. We assessed self-reported rates of engaging in five behaviour categories: talking with patients, prescribing medications, referring for laboratory tests, referring for diagnostic tests (e.g. X-rays, ultrasound, CT, MRI) and referring for consultations with specialists. The perceived rate of engagement in each behaviour category was assessed by a single seven-point scale ranging between 1 (‘50% less than usual’), 2 (‘25% less than usual’), 3 (‘10% less than usual’), 4 (‘as usual’), 5 (‘10% more than usual’), 6 (‘25% more than usual’) and 7 (‘50% more than usual’). A high score represents a high perceived rate of engaging in the behaviour under a specific mood state.

The perceived rates of behaviour were reported 20 times, as follows. For each of the five behaviour categories, the participants responded to a question that was repeated four times, each time for a different mood state: ‘on a day you feel (in a good mood/bad mood/tired/nervous), to what extent do you (talk with your patients/prescribe medications/refer for laboratory tests/refer for diagnostic tests/refer for consultations with specialists)?’

Data analysis
In order to assess the effects of moods and burnout on all behaviour categories, a series of two-way analyses of variance (ANOVAs) (4 × 2) were conducted. For each of the five behaviour categories (the dependent variables), a discrete two-way ANOVA with repeated measures was conducted. The first factor was mood, repeated on four mood states: good, bad, tired and nervous. The second factor was burnout that included two levels, high and low, determined by split-half using median scores. Next, for each of the ANOVAs, contrast analyses were performed, where the positive mood state was compared with the three negative states (bad, tired and nervous). Since none of the socio-demographic variables were associated significantly with any of the study variables, the results of the ANOVAs reported below do not include any of the background variables.

Results
Table 1 shows the demographic characteristics of the sample. One hundred and eighty eight out of 259 physicians (response rate of 72.6%) responded to the questionnaire. The sample included more males than females, more paediatricians than family physicians and a minority (10.8%) of ‘other’ physicians, mainly internists involved in primary care. The majority (75%) of the participants worked in community clinics and 27.4% were physicians in managerial positions. Only a minority of the physicians worked part-time.

Table 2 shows the results of the five separate 4 × 2 ANOVAs (each including four mood states × two burnout levels) on the five behaviour categories. The table presents the means and SDs of perceived rates of the five behaviour categories and the P values related to the effects of mood, burnout and the mood × burnout interaction in each behaviour.

Moods and physician behaviours
For all five behaviour categories, we found highly significant differences between the mood states in terms of the perceived rates of behaviour (Table 2; effect of mood in all behaviours = P < 0.001). Further contrast analyses compared the perceived rates of behaviours on the good mood days to each of the three negative mood days, in each behaviour category. The results were different for the different behaviour categories as follows.

Talking with patients. The physicians perceived that on good mood days, they talked to patients significantly more than they did on each of the negative

<table>
<thead>
<tr>
<th>Variable</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>107 (56.9)</td>
</tr>
<tr>
<td>Female</td>
<td>81 (43.1)</td>
</tr>
<tr>
<td>Medical specialization</td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td>68 (41.0)</td>
</tr>
<tr>
<td>Paediatrics</td>
<td>80 (48.2)</td>
</tr>
<tr>
<td>Other</td>
<td>18 (10.8)</td>
</tr>
<tr>
<td>Managerial status</td>
<td></td>
</tr>
<tr>
<td>Director</td>
<td>51 (27.4)</td>
</tr>
<tr>
<td>Non-director</td>
<td>135 (72.6)</td>
</tr>
<tr>
<td>Main work place</td>
<td></td>
</tr>
<tr>
<td>Community clinic</td>
<td>141 (75.0)</td>
</tr>
<tr>
<td>Hospital</td>
<td>25 (13.3)</td>
</tr>
<tr>
<td>Both</td>
<td>19 (10.1)</td>
</tr>
<tr>
<td>Other</td>
<td>3 (1.6)</td>
</tr>
<tr>
<td>Work hours</td>
<td></td>
</tr>
<tr>
<td>Full-time plus</td>
<td>49 (26.3)</td>
</tr>
<tr>
<td>Full-time</td>
<td>121 (65.1)</td>
</tr>
<tr>
<td>Part-time</td>
<td>16 (8.6)</td>
</tr>
</tbody>
</table>

aDue to missing data in some of the categories, not all add up to 188.
mood days (see Fig. 1 that shows the perceived rates of a single behaviour, talking and in all mood states). For all these comparisons, \( P < 0.001 \).

**Prescribing medications and referring for laboratory tests, diagnostic tests and consultations with specialists.** The moods had different effects on different behaviours, as illustrated in Figure 2 that shows the perceived rates of the five behaviours under a single negative mood state (‘bad mood’). On good mood days, the perceived rates of prescribing and referrals were lower than they were on each of the three negative mood days. For all these comparisons, \( P < 0.001 \).

**Burnout and physician behaviours**

Burnout was found to be a significant factor affecting perceived rates of behaviour in three out of five behaviour categories (all three referral behaviours): for laboratory tests \( (P < 0.05) \), diagnostic tests \( (P < 0.002) \) and specialists \( (P < 0.022) \). Higher burnout physicians had higher perceived rates of all referral behaviours than lower burnout physicians. Burnout was not found to be a significant factor for talking or prescribing behaviours.

**Interaction effects.** Significant interaction effects (moods × burnout) were found for all behaviour

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**Table 2**  
Perceived rates of physician behaviours under four mood states and two burnout levels: means, SDs and \( P \) values related to the results of the ANOVAs

<table>
<thead>
<tr>
<th>Behaviour</th>
<th>BO level</th>
<th>Good mood</th>
<th>Bad mood</th>
<th>Tired</th>
<th>Nervous</th>
<th>( P_{\text{mood}} )</th>
<th>( P_{\text{bo}} )</th>
<th>( P_{\text{Interaction}} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talk</td>
<td>High</td>
<td>5.83 ± 1.03</td>
<td>2.82 ± 1.43</td>
<td>3.02 ± 1.32</td>
<td>2.95 ± 1.37</td>
<td>0.001</td>
<td>n.s.</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>5.52 ± 1.17</td>
<td>3.34 ± 1.08</td>
<td>3.41 ± 1.06</td>
<td>3.23 ± 1.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meds(^a)</td>
<td>High</td>
<td>3.77 ± 1.16</td>
<td>4.55 ± 1.04</td>
<td>4.37 ± 0.88</td>
<td>4.49 ± 0.92</td>
<td>0.001</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>3.85 ± 1.03</td>
<td>4.44 ± 0.93</td>
<td>4.29 ± 0.83</td>
<td>4.40 ± 0.91</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lab(^b)</td>
<td>High</td>
<td>3.63 ± 0.92</td>
<td>4.72 ± 0.83</td>
<td>4.56 ± 0.76</td>
<td>4.82 ± 0.84</td>
<td>0.001</td>
<td>0.05</td>
<td>0.027</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>3.83 ± 1.04</td>
<td>4.44 ± 0.95</td>
<td>4.30 ± 0.94</td>
<td>4.40 ± 1.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diag(^c)</td>
<td>High</td>
<td>3.52 ± 0.97</td>
<td>4.67 ± 0.76</td>
<td>4.57 ± 0.77</td>
<td>4.70 ± 0.75</td>
<td>0.001</td>
<td>0.002</td>
<td>0.030</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>3.70 ± 1.05</td>
<td>4.35 ± 0.91</td>
<td>4.35 ± 0.91</td>
<td>4.34 ± 0.95</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cons(^d)</td>
<td>High</td>
<td>3.45 ± 1.10</td>
<td>4.71 ± 0.95</td>
<td>4.78 ± 0.87</td>
<td>4.66 ± 0.83</td>
<td>0.001</td>
<td>0.022</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>3.67 ± 1.26</td>
<td>4.33 ± 0.94</td>
<td>4.22 ± 0.97</td>
<td>4.39 ± 0.90</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\( \text{bo, burnout.} \)

\(^{a}\text{Prescribing medications.} \)

\(^{b}\text{Referring to laboratory tests.} \)

\(^{c}\text{Referring to diagnostic tests.} \)

\(^{d}\text{Referring to specialists.} \)

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**Figure 1**  
The effects of mood and burnout on talking with patients: perceived rates of talking among high and low burnout physicians in four different mood states
categories except prescribing medications ($P < 0.01$ for talking, $P < 0.027$ for referrals for laboratory tests, $P < 0.03$ for referrals for diagnostic tests, $P < 0.002$ for referrals for consultations). The effects of mood on perceived rates of behaviour were stronger among physicians with high burnout levels compared to those with lower burnout. Thus, among physicians with high burnout levels (compared to those with lower burnout), there were larger differences between the perceived rates of behaviours on a good mood day compared with the negative mood days.

Discussion

There is a plethora of research on physician burnout but it mainly concerns the causes rather than the consequences this condition. There is less research on the effects of moods on physician behaviour. The present findings, albeit on self-reported behaviours, add to the rather scant literature on the effects of moods and burnout on physician behaviour.

The effects of moods

The results suggest that the positive and negative moods were perceived as having different effects, depending on the category of behaviour. Two descriptive patterns emerged. Firstly, the physicians perceived that the positive and negative moods had opposite effects on all behaviours. Secondly, they perceived that the mood states affected talking with patients in the reverse direction to all other behaviours.

Figure 1 that depicts a specific behaviour (talking with patients) under four moods, and Figure 2 that illustrates the effects of the bad mood on five behaviours, can help understand how these patterns are combined. The physicians perceived that on good mood days compared with negative mood days, they engaged more in talking with their patients, but engaged less in prescribing medications and referring for laboratory and diagnostic tests and for consultations with specialists. Conversely, they believed that they did the opposite on negative mood days—talked less and prescribed and referred more. In other words, they perceived that when talking was increased (on good mood days), prescribing and referrals were reduced and when talking was reduced (on negative mood days), they believed that the opposite occurred for the other behaviours. It is as if on good mood days, talking was increased ‘at the expense’ of prescribing medications and making referrals and the opposite happened on negative mood days.

The effects of burnout

Prescribing behaviour was not associated at all with burnout level. However, burnout did have direct and indirect effects on the referral behaviours. Firstly, higher burnout compared with lower burnout physicians reported that they engaged more in all referral behaviours. Secondly, the significant mood $\times$ burnout interactions suggest that burnout level modified the effects of moods on four of the behaviours. Thus, higher burnout compared with lower burnout physicians perceived the effects of moods to be stronger. In other words, among high burnout physicians, there were larger differences between behaviours on good mood compared with negative mood days than among low burnout physicians. We interpret these results as
suggesting that chronic burnout intensified the impact of daily moods on the perceived rates of physician behaviour.

An interesting mood × burnout interaction was found for talking with patients. Contrary to what one might expect from high burnout physicians with depleted emotional resources, they reported more talking than low burnout physicians, on good mood days. On the other hand, this group of physicians reported that they talked less than those with low burnout levels, on all three negative mood days, as might be expected. One way of interpreting these results is to suggest that the high burnout physicians experienced good moods to be beneficial for their professional conduct more than did the low burnout physicians.

These results support some of the findings reported earlier.7 Primary care physicians, with high burnout (according to two out of three burnout indices) had longer consultations or talked longer about psychosocial issues with patients with mental health issues. In this sense, ironically, for some patients, physician burnout was beneficial to health care quality. It is difficult at this stage to integrate these findings with ours since the two studies used different research and measurement approaches. However, these results seem to be interesting enough to warrant further studies.

A general comparison of mood and burnout effects

The effects of moods on the perceived rates of behaviour were stronger than the effects of burnout. This finding is important because the current literature is focused mainly on the effects of burnout and has much less to say on daily or transitory moods. It is possible that the differences in the extent of the effects of moods and burnout are associated with awareness level. Perhaps physicians were not as aware of burnout, a constant long lasting type of background affect, as much as they were conscious of their fluctuating daily moods. It would be interesting to compare in further studies the nature and extent of the effects of transitory mood states as opposed to lasting burnout.

Implications and suggestions for further research

Moods, prescriptions and referrals. If the impact of moods on the perceived rates of behaviour represents a real phenomenon and if the rates of prescribing and referrals are needlessly increased on negative mood days, then physician negative moods may be detrimental to health care quality. Indeed, specific physician moods such as nervousness, anxiety and tension have been found to be negatively associated with patient outcomes.18,19 Moreover, the rates of prescribing and referrals have obvious financial implications and therefore, it is possible that affective conditions, fluctuating or stable, have an impact on health care costs.

Positive moods and talking. It was beyond the scope of the present study to explore the meaning of the perceived increased rates of talking associated with good mood days. This would require a different empirical approach; for example, observational methods to assess physician behaviour or an experiment that induces various moods, followed by analyses of the contents of conversations in the medical encounter. Vignettes and unobtrusive questions would be even more sophisticated ways of measuring behaviour.

If it is confirmed in further research that having a good mood is consistent with talking or communicating more with patients and making fewer unnecessary referrals, this would be consistent with the conclusion that positive moods may benefit health care quality. The coincidence of increased talking and reduced referrals on good mood days (and vice versa on bad moods) found in the present study may reflect indicators of patient-centred communication, that means ‘exploring and validating patients’ concerns and basing treatment on deep understanding of symptoms, feelings, ideas and expectations’.20

The benefits of physicians’ ability to engage in more patient-centred communication have been highlighted in previous studies that found that it incurs lower health care costs because it is associated with lower rates of referrals to specialists and diagnostic tests.21,22

A further study has shown that patient-centred communication is associated with both lower costs of diagnostic tests and increased attention devoted to the patient.20

Moods and burnout combined. The findings suggest that moods may have a more substantial impact on behaviour than burnout. The results also suggest that burnout may even intensify the effects of moods. Therefore, the incremental impact of negative moods and high burnout may be especially detrimental to health care quality, especially as recent studies have shown alarmingly high rates of burnout in all medical specialties and among medical students and residents.10

Limitations

This exploratory study has several limitations. Firstly, physician behaviour was self-reported and may have been subject to retrospective recall bias and perhaps social desirability effects. Although the majority of the cited studies of affective influences on behaviour have relied on self-reports, this exclusive reliance on self-reports is obviously a major limitation in research that strives to be evidence based. In future, it is essential to apply objective measures of behaviour. Furthermore, it is important to combine objective and subjective measures so that the study is not restricted by biases that are caused by a common method. Another limitation is the cross-sectional research design.
A better design would involve a prospective design that follows up the behavioural consequences of mood states and burnout in a group of physicians.

The generalized nature of the study is another limitation. The respondents assessed behaviours that were not tied to a specific medical problem. Since the range of health complaints encountered in the clinic is vast, further studies should focus on specific categories of illnesses for example those that require extensive attention and emotional investment, as opposed to routine care. Lastly, another limitation is the focus on primary care physicians. It would be interesting to replicate the study in more varied samples of physicians with diverse specialities and occupational settings.

Conclusions
The present findings, albeit on self-reported behaviours, suggest that physician behaviour may be affected by both daily moods and by more lasting affective factors and that high burnout may intensify the effects of transitory moods. The incremental effects of transitory and lasting affective conditions on physician behaviour should be further studied as they may be costly to health systems and affect health care quality.

Declaration
Funding: none.

Ethical approval: Local institutional human rights committee. Authorization to administer the questionnaires was given by organizers of the seminars. Participation of physicians was anonymous and voluntary.

Conflict of interest: none.

References