How Do Distress and Well-being Relate to Medical Student Empathy? A Multicenter Study

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OBJECTIVE: To determine whether lower levels of empathy among a sample of medical students in the United States are associated with personal and professional distress and to explore whether a high degree of personal well-being is associated with higher levels of empathy.

DESIGN: Multi-institutional, cross-sectional survey.

SETTING: All medical schools in Minnesota (a private medical school, a traditional public university, and a public university with a focus in primary care).

PARTICIPANTS: A total of 1,098 medical students.

MEASUREMENTS: Validated instruments were used to measure empathy, distress (i.e., burnout and symptoms of depression), and well-being (high quality of life).

RESULTS: Medical student empathy scores were higher than normative samples of similarly aged individuals and were similar to other medical student samples. Domains of burnout inversely correlated with empathy (depersonalization with empathy independent of gender, all $P<.02$, and emotional exhaustion with emotive empathy for men, $P=.009$). Symptoms of depression inversely correlated with empathy for women (all $P\leq.01$). In contrast, students' sense of personal accomplishment demonstrated a positive correlation with empathy independent of gender (all $P<.001$). Similarly, achieving a high quality of life in specific domains correlated with higher empathy scores ($P<.05$). On multivariate analysis evaluating measures of distress and well-being simultaneously, both burnout (negative correlation) and well-being (positive correlation) independently correlated with student empathy scores.

CONCLUSIONS: Both distress and well-being are related to medical student empathy. Efforts to reduce student distress should be part of broader efforts to promote student well-being, which may enhance aspects of professionalism. Additional studies of student well-being and its potential influence on professionalism are needed.

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INTRODUCTION

Professionalism is an essential trait for physicians and has been recognized as a core competency for physicians in training.[1] Although professionalism is a multifaceted quality, one of its central characteristics is empathy—the ability to listen to, understand, sympathize with, and provide support to another individual.[2,3] Empathy has been found to correlate with medical students' (MSs) clinical competency,[4] and the American Association of Medical Colleges has recognized the cultivation of empathy in MSs as a key goal in its consensus opinion on qualities students should possess by the time of graduation.[5]

In spite of the well recognized importance of physician empathy and the commitment of medical educators to nurture this quality, previous studies suggest that empathy declines during medical school,[6,7] and may decline even further during residency training.[8] Based on the decline in empathy through the course of medical school in several single-institution studies, a number of investigators have hypothesized the training curriculum itself may lead to or contribute to this erosion.[6,7,9] Although others have attributed the decline of compassion after starting medical school to personal characteristics,[10] learning style,[10] student abuse,[11,12] and a "hidden curriculum" of cynicism,[13,14] relationships between all factors contributing to this problem are yet to be identified.

Over the last decade, physician distress (burnout, depression, anxiety, stress) has also been recognized as an important influence on practice habits.[15–18] Personal distress during residency appears to have a negative effect on the quality of care that residents provide,[17] and may parallel a decline in empathy.[18] Studies in practicing physicians further suggest physician distress influences patient compliance,[19,20] patient satisfaction,[21,22] physician turnover,[23–25] and quality of care.[16,26] Despite these observations, little information is available on the consequences of distress among MSs.

Others have noted that distress is only one end of the quality of life (QOL) continuum, and that achieving enhanced QOL or "well-being" is the ultimate goal.[27–30] This paradigm holds that well-being goes beyond the absence of distress and is characterized by being challenged, successfully responding,

and attaining satisfaction in a variety of domains of life (mental, physical, emotional, spiritual, social).[31] Some have speculated that achieving a high degree of well-being may enhance the compassion and quality of care that physicians provide patients,[27,32–34] although limited empiric research is available in this area.[35]

We hypothesized that lower levels of empathy among MSs in the United States are associated with personal distress experienced during medical school. We further hypothesized that students experiencing a high degree of personal well-being may possess higher levels of empathy, implying that both positive and negative aspects of QOL are related to student professionalism. To test these hypotheses, we performed a multicenter study of all MSs in the state of Minnesota in which both distress and well-being were comprehensively evaluated to assess their relationship to student empathy.

METHODS

Participants

All 1,098 MSs in the state of Minnesota were eligible to participate in this study. Participation was elective and all responses were anonymous. MSs in Minnesota attend a private medical school (Mayo Clinic College of Medicine), a traditional public university (University of Minnesota—Minneapolis campus), or a public university with a focus on primary care (University of Minnesota—Duluth campus). The Mayo Clinic College of Medicine and University of Minnesota Institutional Review Boards approved this study.

Data Collection

Students were surveyed electronically in April of 2004. Participants were blinded to any specific hypothesis of the study. The survey included 118 questions including demographic information, and validated tools to measure empathy,[18,35–38] burnout,[39,40] symptoms of depression,[41,42] and QOL.[36,43]

Measurement of Empathy

Empathy is a multidimensional construct with cognitive, emotive, and behavioral domains.[44] Cognitive empathy relates to an individual's capacity to understand another person's perspective rather than being exclusively self-oriented, while emotive empathy refers to an individual's tendency to respond to feelings experienced by others. Much of the literature on physician empathy distinguishes between these domains of "detached concern" and "sympathetic emotions." While it is commonly felt that the former is the essential skill for clinicians,[3,45] other educators have highlighted the importance of both the cognitive and emotive aspects,[3,34,36,37,46,47] and emphasized the behavioral component, which involves the outward expression of these internal qualities to influence the patient encounter.[44]

The Interpersonal Reactivity Index (IRI) is a 28-item instrument with 4 separate 7-item subscales evaluating different dimensions of empathy, which are considered independently.[36] Respondents are asked to indicate how well each item on the survey describes them using a 5-point Likert scale. We included the IRI subscales which measure the cognitive (perspective-taking subscale) and emotive (empathetic concern subscale) domains of empathy in this survey. The IRI subscales have been shown to be reliable and reproducible measures of sensitivity to views and feelings of others,[17,18,36,37,48] and have been used in a wide variety of research settings, including previous studies of physicians and MSs.[17,18,38,48–50] Student scores on the IRI were compared to normative samples, which are published separately by gender.[36]

Measures of Distress

Burnout is a syndrome of professional distress that leads to decreased effectiveness at work. Although dissatisfaction at work can "spill over" into personal life, effects of burnout are primarily related to the professional sphere and distinguish burnout from the global impairment of depression.[39] For this study, burnout was measured using the Maslach burnout inventory, a validated 22-item questionnaire considered a standard tool for measuring burnout.[39,40,51,52] The instrument has 3 subscales to evaluate related but independent domains of burnout: emotional exhaustion, depersonalization (characterized by treating people as if they are impersonal objects), and personal accomplishment. Symptoms of depression were identified using the 2-item primary care evaluation of mental disorders,[41] a validated screening tool which performs as well as longer instruments.[42]

Measures of Quality of Life

Domains of QOL were measured using linear analog self-assessment (LASA), a 10-item questionnaire for measuring QOL that has been shown to be reproducible and valid in various settings,[53–62] including the assessment of physician QOL.[63] Each item asks respondents to rate their QOL in a given domain on a 0–10 numerical analog scale (i.e., mental, emotional, physical, spiritual, level of support from family/friends, level of social activity, level of fatigue, degree of legal concerns, degree of financial concerns, and overall QOL). Higher scores for each item are an indicator of higher QOL or "well-being." The overall QOL of an individual is a composite of multiple domains with the importance of each aspect weighted differently by each person. This can result in individuals rating their overall QOL higher or lower than their scores for individual domains.

Statistical Analysis

Primary analysis involved descriptive summary statistics for estimating the incidence of burnout, positive depression screen, and QOL. Comparisons to normative data were tested using 1-sample *t* tests. Empathy scores were compared by year in school, and based on the presence of symptoms of depression, degree of burnout, and QOL. The Cochran–Armitage trend test[64] was used for assessing trends in proportions by year in school, and simple linear regression was used for assessing trends in continuous variables. Comparisons between empathy and QOL were tested using Fisher's exact tests for categorical variables and Wilcoxon tests for ordinal variables. Fisher's exact tests had 90% power to detect a 5% difference between groups and the Wilcoxon tests had 90% power to detect a quarter standard deviation difference between groups. Finally, forward stepwise logistic regression

Table 1. Demographics and Characteristics of Participating Medical Students (*N*=545)

Variable	Participants *n* (%)
Female	297 (54.6)
Age <24	192 (35.4)
Age 25–30	319 (58.7)
Age >30	32 (6)
Year in medical school	
1st year	179 (32.8)
2nd year	116 (21.3)
3rd year	83 (15.2)
4th year	154 (28.3)
Other*	13 (2.4)
State of residence	
MN	334 (61.5)
USA excluding MN	178 (32.8)
Foreign	31 (5.7)
Race/ethnicity	
Caucasian	454 (84.4)
Asian	40 (7.4)
African-American	8 (1.5)
Other minority	36 (6.7)

MN Minnesota.
**i.e., research year.*

evaluated independent associations among year in training, burnout, symptoms of depression, QOL, and empathy. All tests were considered exploratory and were done using 2-sided tests with type-I error rates of 0.05. All analyses were done using SAS version 8 (SAS Institute, Cary, NC, USA).

RESULTS

Of the 1,098 MSs in the state of Minnesota, correct e-mail addresses could be confirmed for 1,087 students, 545 of whom returned surveys (response rate 50%). Table 1 shows the demographic characteristics of the responders. Compared to responders, nonresponders were more likely to be male (59% vs 45%, *P*<.001) and less likely to be first-year students (15% vs 33%, *P*<.001). Descriptive data on the prevalence of burnout and depression for this cohort are reported elsewhere.[65]

Empathy

MS mean scores for cognitive empathy were higher than a normative sample of similar-age college students (CS) (male MS=19.5 vs male CS=16.78, *P*<.001; female MS=21.0 vs female CS=17.96, *P*<.001). Similarly, higher scores were also observed for emotive empathy (male MS=21.1 vs male CS=19.04, *P*<.001; female MS=24.1 vs female CS=21.67, *P*<.001). To explore the possibility that empathy may differ at various points in the training process, we evaluated MSs' cognitive and emotive empathy scores by year in training. No statistically significant differences in levels of cognitive and emotive empathy were observed over the 4 years of medical school for either men or women.

Relationship Between Empathy and Measures of Professional and Personal Distress

To evaluate the hypothesis that personal and professional distress are associated with lower levels of empathy, we evaluated relationships between empathy and measures of depression and burnout. Empathy scores inversely correlated with measures of burnout. Specifically, increasing depersonalization was strongly associated with a decrease in both cognitive and emotive empathy independent of gender (all *P*<.02). Increasing emotional exhaustion also correlated with lower emotive empathy scores for men (*P*=.009) with a trend toward correlation for women (*P*=.076). Students' sense of personal accomplishment demonstrated a positive correlation with both domains of empathy independent of gender (all *P*<.001). Although results of depression screening did not demonstrate a significant relationship with either measure of empathy for men, symptoms of depression correlated with lower scores in both domains of empathy for women (Table 2).

Relationship Between Empathy and Quality of Life

To evaluate the hypothesis that well-being may be associated with higher levels of empathy, we next evaluated the relationship between empathy and well-being as measured by the 10 domains of QOL assessed by the LASA. For men, of the 10

Table 2. Empathy and Markers of Distress

	Mean cognitive empathy score				Mean emotive empathy score			
	Men	*P* value	Women	*P* value	Men	*P* value	Women	*P* value
Burnout								
Emotional exhaustion*								
Low (<=18)	19.8	0.183	21.3	0.634	21.7	0.009	24.6	0.076
Moderate	19.6		20.2		21.0		23.5	
High (>=27)	18.9		21.2		20.2		24.0	
Depersonalization*								
Low (<=5)	20.4	0.002	21.5	0.017	22.4	<0.001	24.7	<0.001
Moderate	19.5		20.6		21.2		24.0	
High (>=10)	18.1		19.9		18.9		22.5	
Personal accomplishment†								
High (>=40)	20.7	<0.001	22.5	<0.001	22.6	<0.001	24.9	<0.001
Moderate	18.7		19.9		20.4		23.6	
Low (<=33)	18.6		19.5		19.7		23.2	
Depression								
Screen negative (*n*=241)	19.6	0.583	21.8	0.013	21.3	0.476	24.9	0.001
Screen positive (*n*=294)	19.3		20.5		20.9		23.5	

**High score on this scale is indicative of burnout.*
†*Low score on this scale is indicative of burnout.*

	EMOTIVE EMPATHY		COGNITIVE EMPATHY	
	Increase	**Decrease**	**Increase**	**Decrease**
Men	Personal Accomplishment* Overall QOL*	Depersonalization* Increased Year in School†	Personal Accomplishment*	Depersonalization*
Women	Personal Accomplishment* Emotional Exhaustion†	Depersonalization* Depression†	Personal Accomplishment* Social Activity†	Increased Year in School* Depersonalization†

Figure 1. Factors associated with higher and lower emotive and cognitive empathy for men and women on multivariate analysis. *Asterisks* $P<.05$, *daggers* $P<.1$.

domains of QOL evaluated, only overall QOL correlated with cognitive (slope 0.74; $P=.023$) and emotive (slope 0.76; $P=.021$) empathy when both were considered as continuous variables. For women, of the 10 domains of QOL evaluated, only level of social activity correlated with cognitive (slope 0.32; $P=.044$) and emotive (slope 0.32; $P=.012$) empathy when both were considered as continuous variables.

Multivariate Analysis of Factors Associated with Empathy

Multivariate modeling evaluated independent correlations between empathy and measures of both distress (depression, 3 domains of burnout) and QOL simultaneously. Separate models were built for men and women due to differences in empathy scores and the relationships between distress and QOL with empathy by gender. For each model, year in school and measures of distress and QOL that demonstrated a relationship with empathy ($P<.1$) on bivariate analysis were included to evaluate independent associations.

A summary of factors associated with higher or lower empathy scores on multivariate analysis is presented in Figure 1. Measures of burnout, particularly depersonalization (inverse correlation) and personal accomplishment (positive correlation), emerged as contributing variables for both men and women. Other predictors of cognitive and emotive empathy differed by gender. For men, emotive empathy positively correlated with overall QOL ($P=.025$) and personal accomplishment ($P<.001$) and negatively correlated with depersonalization ($P<.001$). A trend for a negative correlation between empathy and increasing years in school ($P=.061$) was also observed. Cognitive empathy for men positively correlated with personal accomplishment ($P=.002$) and negatively correlated with depersonalization ($P=.018$).

For women, emotive empathy positively correlated with personal accomplishment ($P=.003$) and negatively correlated with depersonalization ($P<.001$). Trends toward a positive correlation with emotional exhaustion ($P=.072$) and a negative correlation with symptoms of depression ($P=.057$) were also observed. Cognitive empathy for women positively correlated with personal accomplishment ($P<.001$) and negatively correlated with years in school ($P=.046$). Trends toward a positive correlation with level of social activity ($P=.103$) and a negative correlation with depersonalization ($P=.063$) were also observed.

DISCUSSION

Previous studies report that students experience a decline in empathy and an increase in cynicism during the course of medical school.[6,7,66–69] Results of our multicenter study suggest this decline in empathy is related to aspects of student distress and QOL rather than progression through the training curriculum alone. On multivariate analysis, measures of burnout (depersonalization and personal accomplishment), well-being, and years in training were all independent predictors of cognitive and emotive empathy. Although depression also correlated with both domains of empathy for women on bivariate analysis, it had only a trend correlation with empathy on multivariate analysis controlling for other variables. These results suggest that professional burnout rather than depression may be more intimately related to declining empathy. These results are consistent with findings in residents which identify a link between empathy and distress,[18] and suggest burnout, rather than depression, has the strongest effect on residents' care of patients.[17]

While the prevalence of physician anxiety and depression have been appreciated for decades,[16,20–22,70–73] the recognition of the burnout syndrome in residents[17,74] and practicing physicians[75–79] has been a more recent observation. Few studies of burnout among MSs have been reported[80,81]; only one of which, the present study,[65] included U.S. MSs. These studies suggest that the incidence of burnout among MSs is lower than that observed in residents and practicing physicians, that it is lowest during the first year of medical school, and that it increases through training. These observations support the concept that factors that contribute to burnout occur early in physician training and may be related to both personal and curricular influences.[10,65,80]

While the influence of distress on physicians is now recognized at every stage of physician training and practice, the sources of stress and satisfaction at each time point are, in part, unique. MSs experience significant distress from adjustment to the medical school environment, perceived ethical and

professional dilemmas, first-time exposure to death and human suffering, student abuse, personal life events, and educational debt.[82] Residents face distinct challenges because of sleep deprivation, student loan debts, extended duty hours, a lack of time for personal life, and efforts to find a job at the completion of training.[17,83,84] Practicing physicians are confronted with issues regarding malpractice suits, their degree of autonomy, reimbursement issues, and challenges related to office management.[27,85–87] Other sources of distress are similar at all stages of a career, including encounters with patient death and suffering, medical errors, fatigue, and challenges in balancing personal and professional lives.[88,89]

In recent years, there has been increased interest in edifying aspects of health (high mental, physical, and spiritual QOL) in addition to the study of distress.[27,90] With respect to physicians, early efforts in this field of "positive psychology" have explored what physicians find meaningful about their work and what strategies they use to promote personal well-being.[15,28,32,33,91,92] Although respected medical educators have postulated that heightened QOL or "well-being" may have the potential to enhance professionalism,[32–34,47,93] this is one of the first studies to empirically evaluate this hypothesis.[35] Our multivariate analysis found that higher QOL in specific domains correlated with higher empathy scores among MSs, with the specific domains of QOL related to empathy varying by gender. While preliminary, our findings begin to provide insight into the complex interaction of positive and negative aspects of QOL on physician professionalism. The results emphasize the potential influence of both well-being and distress on students' professional development and highlight the need for additional research to dissect the contribution of distress, well-being, and curricular factors to student competency.

Our study has several important limitations. First, although the response rate is typical of physician surveys,[94,95] response bias remains a possibility. Second, our study is limited by its cross-sectional nature and cannot determine causality. Third, although we found correlations between positive and negative measures of QOL and measures of empathy on multivariate analysis, the magnitude of some of these correlations is small. Fourth, although this was a multicenter study and nearly 40% of participants originated from outside the state of Minnesota, the generalizability of these results to other regions of the country is unknown. The incidence of a positive depression screen among students in this survey[96–100] and the mean empathy score on the IRI are similar to other studies of MSs and young physicians,[18,35] suggesting that the distress and empathy observed in this sample is typical of MSs in the United States.

Finally, while the importance of empathy in MSs and physicians is widely acknowledged,[1] it is not known how best to promote or measure this skill. A number of methods to promote empathy have been proposed, including communication skills training,[46,49,50,101] mentoring,[2] lectures,[49,50,102] personal and shared reflection,[32–34,45,47,103–105] and promotion of physicians' own wellness.[103,106,107] Determining the effectiveness of these interventions requires the ability to measure empathy.[46] Although observation,[49,108] response to clinical vignettes, patient assessment,[109] validated survey instruments,[4,18,49,50,109–111] and self-ratings have all been used to measure empathy, each of these approaches has limitations. In this study, we used a validated survey tool to measure empathy. While such "pencil and paper" tests are surrogate measures of empathy, some studies suggest they may be meaningful surrogates.[4,48,101,112]

Our study has several important strengths. This is one of the largest studies of MS empathy and, to our knowledge, is the only study to explore the relationship between either burnout or enhanced well-being and student empathy. Students in this survey were from 3 very different medical school environments, lending generalizability to most types of institutions in the United States. Finally, the survey instruments used were validated tools that have been widely used in other samples of MSs and physicians in training, which provides a context for our findings.[17,18,35,38,49,50,80]

Our results affirm a relationship of both distress and well-being with professionalism among physicians in training and suggest that efforts to promote empathy must consider these influences. Both positive and negative aspects of personal health appear to relate to physicians' compassion, suggesting that efforts to reduce distress should be part of broader efforts to promote well-being if peak competency is to be achieved. Little is known about the effectiveness of strategies to promote well-being, and empiric research in this area is needed.[27,28,35,82,91] Prospective longitudinal studies of causes of distress and well-being among physicians in training and their causal relationship to aspects of professionalism would be particularly useful to medical school and residency training programs.[44] We initiated such studies in 2003, which are now ongoing in both MSs and residents. Although preliminary, our findings suggest that efforts to reduce distress and cultivate student well-being may also nurture empathy and promote the graduation of compassionate physicians.

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