

**DIMENSIONS OF
MOTIVATION FOR
CONTINUING MEDICAL
EDUCATION OF
PRIMARY CARE
PHYSICIANS**

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The purpose of this study was to examine the reasons and underlying dimensions of the motivations of primary care physicians for participating in continuing medical education (CME). Physicians rated the importance of 18 reasons for participating in CME on a Motivation for Continuing Medical Education (MCME) Inventory. Results indicated that the most important reasons were maintaining competence, increasing knowledge and skills, staying up to date, and enhancing patient care. The least important reasons were financial gain and improving their professional image and work situation. Comparisons of physicians' reasons for CME with the desires of the public and legislative bodies revealed both similarities and differences. A principal components analysis of the MCME items yielded six relatively independent underlying motivational dimensions accounting for 71% of the total variance: Competence and Patient Care, Collegial Interaction, Professional Enhancement, Efficiency, Respite from Practice, and Legal Concerns. It is suggested that these motivational dimensions may be helpful in the planning of continuing medical education programs.

AUTHORS'NOTE: We thank the anonymous referees and R. Barker Bausell for their helpful comments. This study was supported by grant NIH 5 R18 HL30566 from the National Heart, Lung and Blood Institute, National Institutes of Health.

The major objective of this study was to examine the underlying dimensions motivating primary care physicians to participate in continuing medical education (CME). A Motivation for Continuing Medical Education (MCME) Inventory was administered to a representative sample of primary care physicians who were participating in continuing education activities. Understanding these motivations is thought to play a critical role in serving the needs of medical practitioners through the design of appropriate training programs. For example, Fox and Harvill (1984) reported that physicians' self-assessed motivation to learn was strongly correlated with their participation in CME. The degree to which these motivations are understood by program planners can be helpful in providing physicians with more attractive state-of-the-art updates on medical practice and care.

Although the various reasons physicians seek continuing medical education have been discussed, their specific motivations have not been studied extensively. In their review of this literature, Richards and Cohen (1980) classified these reasons into five categories: (1) an integral part of professionalism, (2) an interest in topical subjects, (3) a means of validating or modifying prior learning and behavior, (4) a means of attaining an identified learning or behavioral objective related to specific patient cases or problems, and (5) a change of pace from practice routine and an opportunity for social contact with other physicians.

The few methodologically sound studies that exist do support the impact of CME on improving physician behaviors (Abrahamson, 1984; Haynes et al., 1984; Lloyd and Abrahamson, 1979). In a factor analytic study of physicians' reasons for participating in continuing education, Cervero (1981) reported four motivation-related factors: (1) to maintain and improve professional competence and service to patients, (2) to understand oneself as a professional, (3) to interact with colleagues, and (4) to enhance one's personal and professional position. At the time of the Cervero study, however, the possibility that increasing licensure requirements or the increasing frequency of malpractice litigations may play some motivational role was not taken into account.

The major purpose of the present study was to examine the reasons and underlying dimensions of primary care physicians' motivations for participation in CME. This was ascertained from physicians' responses to and the factor structure of a new Motivation for Continuing Medical Education (MCME) Inventory that reflects current medical practice issues. Additionally, the degree to which these dimensions interrelate with physician characteristics, their previous CME activities, and the value they place on the different approaches to CME (for example, journals, formal short courses, correspondence courses, pharmaceutical representatives, and so on) was examined.

METHODOLOGY

PROCEDURE AND SUBJECTS

A survey was designed to collect background information, specialty and board certification status, preferences for various CME activities, CME attendance in the past year, and motivational reasons for participating in CME. A set of 18 items making up the Motivation for Continuing Medical Education Inventory (MCME) was constructed after reviewing the relevant literature and interviewing physicians to obtain their perceptions of possible motivating influences. Participants were asked to rate on a 7-point Likert scale how important each reason is for their own participation in CME. The scale ranged between 1 (not important) and 7 (very important).

Surveys were administered in 1984 to all physicians attending four continuing education courses in family practice or internal medicine sponsored by the Department of Postgraduate Medicine and Health Professions Education at the University of Michigan Medical Center. Out of a total of 208 course participants, 177 physicians (85% of the total) completed the survey. After eliminating surveys with incomplete data, 170 remained for analysis. A total of 71 participants were classified as family practitioners and 99 as internists based on the criterion of

spending at least 75% of their time in one or the other specialty. There were not significant differences in background characteristics between the family practice (FP) and internal medicine (IM) groups. Overall, 89% of the sample were men and 11% were women. The distribution for FP was 92% (65) men and 8% (6) women, and for IM 87% (86) and 13% (13) women. The average year of graduation was 1967 for FPs and 1966 for IMs. Compared to 57% of the IMs, 69% of the FPs were board certified. The FPs and IMs also were similar in their participation in CME activities. Both groups attended between two and three formal CME courses in 1983, and received from 25 to 50 hours of Category 1 CME credit from these courses.

STATISTICAL ANALYSES

The mean rating and rank of importance for each of the 18 motivation items on the MCME were calculated. These items were then intercorrelated and the resulting correlation matrix was subjected to a principal components analysis followed by an oblimin oblique rotation (Frane et al., 1983) in order to ascertain the dimensions of motivation underlying these reasons for CME participation. Squared multiple correlations of each item with the remaining items were included in the diagonal of the correlation matrix as initial communality estimates. Kaiser's unity rule, the scree test, and factor meaningfulness and interpretability were used to determine the number of factors to retain (Guertin and Bailey, 1970). Motivational dimensions or subscales were formed from the factors by including items having a factor loading greater than 0.50 on a factor. Intercorrelations among the factors were obtained to assess the degree to which they are related. Reliability coefficients were calculated for each motivational dimension/subscale, and each item was correlated with the remaining set of items in its subscale and with the remainder of the total set of items. An item-subscale correlation that is greater than the item-total correlation provides some indication of the validity of the item and subscale. Pearson Product-Moment corre-

lations were used to correlate the score for each subscale with physicians' background characteristics and CME preferences.

RESULTS

The ratings of importance of the reasons for attending CME activities, along with the rank orders of each reason, are provided in Table 1. The ratings indicated that the most important reasons for participating in CME centered around maintaining competence, increasing knowledge and skills, staying up to date, and enhancing the care provided to their patients. The least important reasons were financial gain, improving their professional image, and advancing their work situation. Complying with relicensure and recertification laws and reducing the likelihood of malpractice also were not very strong motivators. A Spearman-rho correlation of the mean rank orderings of these motivational reasons between family practitioners and general internists indicated a high degree of similarity in the importance of reasons for CME participation given by the two groups ($r_s = .94$; $p < .001$). Similarly, results of principal components analyses performed separately for each group revealed similar factor structures; thus only the results for the combined group are discussed here.

MOTIVATIONAL DIMENSIONS

Results of the principal components analysis revealed six underlying motivational dimensions—Competence and Patient Care, Collegial Interaction, Professional Enhancement, Efficiency, Respite from Practice, and Legal Concerns,—that accounted for 71% of the total variance. The intercorrelations among the five factors indicate that they are relatively independent of each other. The average correlation among these factors was 0.11. The largest correlations were between factors 1 and 3 ($r_f = .26$), factors 2 and 4 ($r = .29$), and factors 3 and 4 ($r = .29$). These correlations suggest small positive relationships between efficiency (factor 4) and both collegial interaction (factor 2) and

TABLE 1
 Ratings of Importance of Reasons for CME Participation for 166 Primary Care Physicians
 and Factor Loadings for Motivational Dimensions Following an Oblique Rotation

Item	Item		Factor						Correlation	
	Rank	Mean Rating	1	2	3	4	5	6	Item-Subscale	Item-Total
To maintain my professional competence	1	6.0	.83						.80	.43
To better serve my patients	2	5.8	.78						.83	.49
To find out about new developments	3	5.8	.83						.78	.46
To acquire new knowledge and skills	4	5.7	.80						.78	.46
To better meet specific patient needs	5	5.4	.52				.71		.57	.47
To increase proficiency with patients	6	5.2				.80			.50	.45
To improve my efficiency	7	4.8			.70				.51	.44
To affirm that I am still up to date	8	4.8		.54					.28	.47
To increase work satisfaction	9	4.5						.92	.40	.55
To comply with relicensure laws	10	4.4							.29	.19
To get away from my practice	11	3.9				.85			.54	-.01
To combine a vacation with CME	12	3.9				.86			.54	.08
To reduce the likelihood of malpractice	13	3.7					.56		.29	.39
To interact with colleagues	14	3.6		.84					.44	.27
To interact with noted physicians	15	3.5		.86					.51	.27
To advance in my present work situation	16	3.3			.56				.48	.43
To enhance my professional image	17	3.2			.85				.46	.20
For financial gain	18	2.0	-.76						-.45	-.09
Eigenvalue of unrotated factor			5.06	2.75	1.74	1.15	1.10	.94		
Percent of variance accounted for by unrotated factor			28.1	15.3	9.6	6.5	6.1	5.1		
Coefficient alpha reliability of factor			.71	.64	.76	.59	.69	.45		

NOTE: Scales for each item range from 1 = not important to 7 = very important; only loadings greater than .50 following an oblique rotation are reported. Corrected item-subscale and item-total correlations are based on 166 cases. Factor 1, competence and patient care; factor 2, collegial interaction; factor 3, professional enhancement; factor 4, efficiency; factor 5, respite from practice; factor 6, legal concerns.

professional enhancement (factor 3), as well as between professional enhancement and competence/patient care (factor 1). Factor reliabilities were moderate, ranging from .45 to .76. In general, item-subscale correlations were greater than item-total correlations.

The items contributing most to factor 1 included maintaining professional competence, finding out about new developments in the field, serving patients better, acquiring new knowledge and skills, and better meeting the specific needs of patients. The negative loading for the item concerning financial gain indicated that this item is inversely related to all the other items on the factor. This factor subscale was characterized as a "General Competence and Patient Care" motivational dimension. The reliability coefficient (.76) and item-subscale and item-total correlations indicate that this is a fairly coherent scale.

Two of the three items loading highly on factor 2 dealt with collegial interactions, whereas the third addressed job satisfaction. This factor was considered a "Collegial Interaction" dimension. Factor 3 reflected physicians' concerns about professional image, being up to date, and advancing their work situation, and was labeled "Professional Enhancement." The fourth factor contained items addressing efficiency and proficiency with patients. This subscale was labeled "Efficiency." Factor 5 was titled "Respite from Practice" because it contained items concerning time away from practice and combining a vacation with CME courses. Factor 6 included the malpractice and relicensure items, and was called the "Legal Concerns" motivational dimension.

RELATIONSHIPS BETWEEN MOTIVATIONAL DIMENSIONS AND PHYSICIAN CHARACTERISTICS

Physician characteristics, past CME activities, and perceived value of various sources of CME were examined to determine if they were significantly related to these six underlying motivational dimensions. Motivations concerning Competence and Patient Care were positively associated with a higher value placed on reading journals ($r = .27, p < .01$) and textbooks ($r = .22, p < .05$)

TABLE 2
Intercorrelations Among Motivational Factors Following an Oblique Rotation

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Factor 1 - Competence and patient care	1.00					
Factor 2 - Collegial Interaction	-.04	1.00				
Factor 3 - Professional enhancement	.26	.16	1.00			
Factor 4 - Efficiency	.06	.29	.29	1.00		
Factor 5 - Respite from practice	-.03	.13	-.06	-.00	1.00	
Factor 6 - Legal concerns	.11	.14	.13	.12	.05	1.00

as sources of CME. Interest in Collegial Interaction had a positive relationship with the number of credit hours received from correspondence courses ($r = .23, p < .05$). Physicians who indicated they had taken a vacation in conjunction with CME courses, in contrast to those who had not, tended to rate Respite from Practice as a more important reason for CME ($t = 4.52, p < .001$). Respite was also positively associated with more frequent informal consultations with colleagues ($r = .20, p < .05$). Respite, however, was inversely associated with the number of hours per week spent reading journals ($r = -.31, p < .01$) and textbooks ($r = -.29, p < .01$). Vacations are one form of respite from practice; informal consultations with colleagues may be another form of enjoyment for practitioners.

None of the physician background characteristics (for instance, age, years of practice, board certification), attitudes toward the value of different sources of CME, nor their degree of actual participation in CME activities during the previous year (number of courses, CME credits) were differentially related to the Professional Enhancement, Efficiency, or Legal Concerns dimensions.

DISCUSSION

Results of this study lend support for six motivational dimensions that underlie primary care physician's reasons for participating in CME: Competence and Patient Care, Collegial Interaction, Professional Enhancement, Efficiency, Respite from Practice, and Legal Concerns. The MCME Inventory did contain current motivational reasons resulting in dimensions not included in previous factor analytic studies, such as efficiency and legal concerns. The similarity of the other four factors obtained in the present study (that is, Competence and Patient Care, Collegial Interaction, Professional Enhancement, and Respite from Practice) and those found by others (for instance, Cervero, 1981) lends support to their validity as CME motivational dimensions. It is of interest that efficiency is identified as a separate motivating factor. In view of the changes in health-care reimbursement and

different modes of medical practice now being introduced, practicing physicians appear to recognize the need to improve their manner of operation.

In the mid- to late 1970s, 24 states adopted legislation mandating CME participation for reregistration of the license to practice medicine, and another 10 state medical societies adapted similar requirements for membership (Journal of the American Medical Association, 1985: 254). These laws appeared to result from a concept that CME provided a handle on medical practice and that manipulation of that handle would result in direct and desirable effects on medical practice. Participation in CME was perceived as a means of maintaining competency and imparting new knowledge and skills, providing reassurance, and stimulating intellectual curiosity. These were the most important reasons also given by the physicians in this study.

It was hoped that CME participation would lead to improved patient care, fewer instances of malpractice, and reduced health-care costs (Stross and Harlan, 1978). There is some evidence in the medical literature to support these hopes (Haynes et al., 1984) and this study of physician motivation provides additional reasons as to why these beneficial effects have been difficult to quantify. It is noteworthy that although concern for malpractice and relicensure constituted an independent, identifiable dimension of motivation, it was the least important in terms of the amount of variance accounted for and the least coherent in terms of reliability and item-subscale correlations. This, along with the relatively low ratings of importance of these items, suggested that the primary motivations for pursuing CME are not defensive reactions to threats of malpractice and relicensure, but rather stem from concerns about maintaining competence and providing higher-quality care. There may be a discrepancy between some of the factors motivating physicians to participate in CME and the desires of society as a whole and the legislatures who have enacted these laws.

The Professional Enhancement, Efficiency, and Legal Concerns subscales were not differentially related to individual physician characteristics in the study, suggesting that motivational dimen-

sions were not perceived differently on the basis of these physician characteristics. These dimensions, therefore, appear to be salient for all these primary care practitioners. Because the variety of potential CME activities is limited, physicians with differing motivations might still involve themselves in and value similar CME activities simply because these activities are all that are available (Rockhill, 1983).

These findings must be considered in light of the limitations of this study. The dimensions derived from any factor analysis reflect the items included in the questionnaire and may therefore not reflect the entire universe of physician motivations. Another caveat stems from potential self-selection bias in this sample of physicians; our subjects were drawn from physicians already participating in formal CME courses, and their motivations may differ from those of physicians who do not seek CME provided by an academic medical center.

Given the limitations of the study, there are some implications that may be drawn for the practice of CME. It would be advantageous to tailor CME activities in a manner that incorporates all six of these motivational dimensions. Some physicians are attracted to CME activities that provide enhanced opportunities for social contact with colleagues whereas others are attracted to activities emphasizing information about new medical advances. Still others might find courses describing improvements in daily medical practice more interesting. The value of assessing and meeting the various needs of physicians is self-evident. CME that is unidimensional or fails to take into consideration the various motivating factors of practicing physicians may decrease the likelihood of attracting physicians in order to provide them with current practice updates. Motivation, which is thought to contribute substantially to learning, seems at the very least to be worthy of consideration in planning and implementing CME. Further steps might be taken to refine the process of identifying motivational factors that increase interest in CME, in planning programs utilizing these factors, and in promoting these factors as objectives of CME to potential participants.

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