

# An Integrative Medicine Patient Care Model and Evaluation of Its Outcomes: The University of Michigan Experience

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## Abstract

**Background:** The demand for integrative medicine care is increasing rapidly among patient consumers, yet the integrative medicine model is not the norm in clinical practice, nor is this approach a focus in traditional medical schools. Furthermore, patient well-being and satisfaction outcomes within an integrative care model are not common in the literature.

**Objectives:** The purpose of this paper is to offer a summary of a model of integrative medicine patient care and its evaluation and outcomes from the University of Michigan Integrative Medicine Clinic.

**Methods:** Using three tools to evaluate patient outcomes and satisfaction, statistically significant outcomes were noted. The SF-12 showed positive change in the physical component score, the Holistic Health Questionnaire showed improvements in all of the subscales of body, mind, and spirit, and a unique Integrative Medicine Patient Satisfaction Tool suggested high satisfaction with an integrative approach to care.

**Conclusions:** Findings, limitations, and implications are discussed.

## Introduction

Integrative medicine as a model for patient care is increasingly visible on the world and national stage.<sup>1,2</sup> Many hospitals across the country have expanded their offerings in favor of complementary and alternative medicine in response to patient demand.<sup>3,4</sup> However, the integrative medicine model is not the norm in clinical practice. The dissemination of successful integrative medicine practice models and the evaluation of patient outcomes within such a system may be helpful to health care professionals wishing to design this kind of integration. While patient outcomes data assessing specific treatment of specific symptoms or disease states are more common, literature addressing the impact of holistic integrative treatment plans is lacking. This may reflect the difficulty of evaluating the numerous variables involved in individualized integrative plans, and the potentially wide assortment of recommendations provided by integrative providers over time. In addition, most individuals who present for care have multiple medical problems. While the relatively recent emergence of Whole Systems research is promising, literature evaluating outcomes of patients with

complex medical needs who follow an integrative medicine plan remains scarce.<sup>5</sup>

In this paper, we describe a model of integrative medicine clinical practice implemented by the Department of Family Medicine at the University of Michigan and report patient outcomes associated with its use over a 3-year period. We employed self-report questionnaires, including the SF-12, the Holistic Health Questionnaire (HHQ), and a patient satisfaction tool, to assess the nature and degree of patient change associated with this integrative approach. Indications that this was an effective model are discussed, and ways to improve clinical outcomes evaluation in integrative medicine are explored.

## The Integrative Medicine Approach

The University of Michigan Integrative Medicine Clinic (UMIMC) opened in May 2003 offering consultative services to adult patients on a self-referral cash basis. Board-certified family physicians with additional training in alternative therapies acted as specialist consultants. Pharmacist and dietitian consultations were offered as well, although outcomes

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in this report apply to physician visits only. Integrative therapies such as acupuncture, massage, and energy medicine were generally done off-site. Key features of this practice also included the dimensions of patient care detailed in the following sections.

### *Healing environment*

The UMIMC was located within an existing Family Medicine clinic that was renovated to exemplify a healing environment. Use of existing space allowed lower overhead costs, and proximity within the department offered collegial support. Aspects of a healing environment have been described.<sup>6</sup> Features in the UMIMC included soft lighting options in addition to fluorescent lights, relaxing music, a soothing water feature, comfortable furniture for practitioners and patients, and the use of natural materials such as wood instead of plastic, whenever possible.

### *Patient-centered care*

Patient-centered care speaks to a movement from provider-centered care toward decisions that primarily enhance the patient's experience.<sup>7</sup> The Institute of Medicine, as early as 2001, referred to this concept as essential to high-quality health care.<sup>8</sup> Increased communication, listening to patients, and fostering health literacy through clear dialogue are aspects of a patient-centered approach<sup>9</sup> that were implemented in the UMIMC. This was provided by patient access to adequate telephone time with office staff, initial provision of clinical care from an experienced registered nurse trained in holistic medicine, and greater access to physician time. The patient's experience was softened by providing filtered water and tea in the waiting room, offering comfortable chairs with footrests, using cloth gowns and linens instead of paper, and covering the clear red plastic needle container with a wooden case to protect patients from the visual affront of used needles.

### *Time*

Patients' desire for more time with their health care providers has been well documented in the health care literature.<sup>10,11</sup> At UMIMC, initial visits were 90 minutes. This included a complete review of medical history including all conventional and alternative diagnostic and therapeutic options used thus far, a review of all medications and supplements, and a focused examination. Follow-up visits lasted 30 minutes and focused on options for treatment of existing problems as well as evaluation of new symptoms.

### *Narrative and shared decision making*

Shared decision-making offers a way for practitioners and patients to openly and thoroughly discuss treatment options.<sup>12</sup> It also allows for the negotiation of mutually acceptable treatment plans. This is an increasingly prevalent model in conventional primary care. Listening to an individual's life story is a way to put context around specific health challenges while learning about a patient's values. In conventional clinic settings, where provider-centered models have been the norm, it has been estimated that a typical patient has less than 30 seconds to speak before being interrupted by his or her physician.<sup>13</sup> In our experience, sharing one's life story offers thera-

peutic benefits and takes 45 minutes, on average. Many times patients note an insight or connection not previously recognized, and it is not uncommon for patients to recite their story in its entirety for the first time.

### *Whole-person care*

Conventional medicine historically has viewed medical diagnoses through a problem-centered lens, splitting patients' health care needs into discrete components. In 2004, the Future of Family Medicine report underscored the need for physicians to care for the whole person.<sup>14</sup> Integrative medicine views patients holistically, as individuals with unique health care challenges. Mind, body, spirit, and emotions are acknowledged as contributing to health and disease, and are used as focal points for healing strategies. The incorporation of mind, body, spirit, and emotion in treatment recommendations may take the following form, for example, in a patient challenged by obesity, diabetes, and hypertension: (1) Mind: a relaxation practice such as breathwork or meditation reduces stress, a known trigger for blood pressure and blood sugar elevations. Such mind-body work would be recommended to the patient. (2) Body: nutritional advice that includes at least nine servings of fruits and vegetables daily, as recommended in the DASH diet<sup>15</sup> individualized strategies for healthier eating, a variety of physical fitness options, supplements, and conventional diabetes medications would be recommended. (3) Spirit: daily spiritual practice assists in lending meaning to the challenges and providing life purpose; this strategy would be encouraged. (4) Emotion: cognitive behavioral therapy, which has been demonstrated to improve weight loss and help maintain new lifestyle behaviors,<sup>16</sup> may be recommended.

### *Integration of conventional and alternative therapies*

Medications, evidence-based recommendations, practical suggestions that do no harm, and modalities offered by alternative providers were all considered in our integration of conventional and alternative therapies. Also taken into account were severity of the patient's condition, economic ability, cultural perspective, and access to various health care options. Each patient was encouraged to continue under the care of a primary care physician. The integrative physician communicated with all providers involved in the individual's care, as appropriate given privacy considerations.

### **Evaluation of the Integrative Medicine Model**

Given the relative uniqueness of the integrative medicine approach and our clinical observation of a robust responsiveness to it, we wanted to conduct a more formal evaluation of patient satisfaction and outcomes. To do so, a prospective patient survey was conducted.

### *Setting and patients*

The UMIMC is located within Briarwood Family Practice, a community-based clinic that is part of the University of Michigan Health System. In 2003–2006, the clinic saw approximately 300 patients annually on an outpatient, cash-for-services basis.

Patients eligible to participate in this survey were those who had used the UMIMC physician services from May 2003

until February 2006. Participants were required to be age 18 or older, and to have been seen in the clinic two times or more.

### Procedure

At their initial visit, patients were asked to complete the SF-12 and HHQ as part of the intake process and prior to seeing the physician. This enabled us to establish baseline values. To conduct the follow-up survey, all patients who met study inclusion criteria were contacted by mail 2–36 months after their initial visit. An introductory letter explained the goals and logistics of the survey follow-up, the schedule of contact, and included a postcard to return if the patient desired to opt out of participation. If the postcard declining participation was not received, a packet containing a consent form and the follow-up questionnaires was sent to participants 2 weeks later. Information on consent was offered, and it was explained to participants that by agreeing to complete the follow-up survey, they were giving permission for researchers to compare these results to those obtained on the same instruments at the patients' initial clinic visits. The study was approved by the University of Michigan Medical School Institutional Review Board. The questionnaire comprised the same four-page survey completed at the initial visit, plus four additional patient satisfaction questions. Patients returned the completed consent form as well as the questionnaires in an addressed, stamped envelope provided to them. A third and final survey packet was sent to patients who did not opt out and did not previously return a survey.

### Outcome measures

Patient demographics including gender, age, and ethnicity were collected at baseline. Patient outcomes were monitored using three surveys: The Holistic Health Questionnaire, the SF-12, and patient satisfaction items.

The *Holistic Health and Wellness Questionnaire (HHQ)* was developed by Bob Anderson and Robert Ivker as a means of assessing change in actions and attitudes that contribute to health. The questionnaire has items in three domains—body, mind, and spirit—which are answered using a 6-point Likert scale—type response. The *body* subscale refers to healthful behaviors such as maintaining a healthy diet and body weight, physical exercise, and so forth. The *mind* subscale refers to healthful emotional attitudes and abilities, including optimism, sense of humor, peace of mind, and ability to express emotions. The *spirit* subscale refers to actions and attitudes related to spiritual and social health, such as taking time for reflection, prayer or meditation, having faith and gratitude and a sense of purpose. We felt that this approach closely overlapped the attention to mind, body, emotion, and spirit that shaped the implementation of our integrative care model.

The *Short-Form Health Survey (SF-12)* was developed by Ware and Kosinski (Ware JE, Kosinski M, 1996). Based on the MOS Short Form Health Survey (SF-36) (Ware JE, Sherbourne CD, 1992), the SF-12 provides measures of physical and mental component summary scales (PCS and MCS, respectively). The SF-12 has been tested and validated repeatedly since its publication in 1996, satisfying examination of its psychometric properties since then.

The *Integrative Medicine Patient Satisfaction Tool* was developed by Dr. Myklebust following discussions with patients and clinic staff regarding specific language and questions that may capture the patient's experiences. Questions focused on patient rating of care using a 5-point rating scale. The four items focused on (1) overall rating of care received; (2) effectiveness of wellness plan in addressing patient's primary concern; (3) changes in patient's quality of life related to UMIMC care; and (4) the primary wellness goal of patient. The questionnaire was approved by a panel of experts that included the design team and other experts familiar with integrative clinical practices. The questionnaire was pre-tested using a pilot group to determine the time required to complete the survey, whether the participants understood the questions, and whether the questions elicited the information for which they were designed. The authors critically reviewed the results of this pretest to ensure that the questions did not contain biases or other errors. Based on the feedback received from the respondents of the pilot study, modifications were made to the survey in order to improve its construct validity.

### Analysis

Frequencies and summary statistics were calculated on all variables. In addition, frequency and percents of demographic characteristics were assessed. All outcomes were evaluated for normality of distribution, and found to meet this assumption. Means and standard deviations (SDs) were calculated for each outcome score at baseline and follow-up. Given the repeated measures design of the study, and in order to provide data analysis useful to the overall objectives, the statistical analysis focused on meaningful changes from baseline to follow-up assessment, with these changes evaluated by paired *t*-tests. Results with  $p < 0.05$  (two-tailed) were considered statistically significant.

### Survey Response

#### Participants

Of 274 patients who completed the baseline survey, 53 (19%) declined the survey by returning the postcard provided in the first follow-up mailing. Of the 217 remaining patients, 98 (45%) returned the consent form and questionnaire. Thirteen (13) of the returned HHQ forms (13%) contained missing items, which rendered them unusable. This left 85 respondents with sufficient baseline and follow-up data to comprise the study sample. Among these 85 participants (Table 1), 74 (87.1%) were female and 77 (90.6%) were white. The mean age was 51.2 (SD = 10.2) and the median age was 52.0 (range 23–82) years.

#### Purpose of visit

Most patients in the survey came to the clinic with an interest in optimizing health. Indeed, 38 patients (44.7%) reported this as the primary goal of their visit (Table 1). Another group of patients sought care to augment conventional treatment of cancer or to prevent recurrence, with 10 (11.8%) listing this as the primary objective. Pain was the main concern of 10 (11.8%) of patients, with others seeking help with mood (3.5%), bowel issues (2.4%), musculoskeletal issues (4.7%), menopause (1.2%), or other concerns (9.4%).

TABLE 1. BASELINE DEMOGRAPHICS ( $n = 85$ )

Characteristic	Number	Percent
Female	74	87
White	77	91
African American	1	1
Asian	1	1
What was your primary goal?		
Optimize health	38	44.7
Cancer	10	11.8
Pain	10	11.8
Other	8	9.4
Decrease medications	7	8.2
Musculoskeletal	4	4.7
Mood	3	3.5
Bowel issues	2	2.4
Menopause	1	1.2
Missing	2	2.4
Total	85	100
	<b>Mean (SD)</b>	<b>Median</b>
Age	51 (10.2)	52

SD, standard deviation.

### HHQ

As seen in Table 2, all of the HHQ subscales of body, mind, and spirit showed improvements over time. The biggest gains were observed on the body subscale, which showed a statistically significant increase (improvement) of 12% from an average of 72.6 (SD = 15.7) to 81.5 (SD = 15.3). A 5% improvement in the mind subscale was also statistically significant, although smaller in scope than that observed in the body score, moving from an average baseline of 85.0 (SD = 17.5) to 89.2 (SD = 19.0). A similar change was seen in the spirit subscale where the mean rose from 87.5 (SD = 17.7) at baseline to 92.0 (SD = 17.9) at follow-up, reflecting a statistically significant improvement of 5%. As a total score, the baseline mean for the HHQ was 245.8 (SD = 44.2). This rose to 262.9 (SD = 49.1) at follow-up, a statistically significant improvement of 17.1 (31.1), or 7%, over the study period.

TABLE 2. BODY, MIND, AND SPIRIT SUBSCALES ON THE HOLISTIC HEALTH AND WELLNESS QUESTIONNAIRE ( $n = 85$ )

Subscale	Baseline mean (SD)	Follow-up mean (SD)	Change mean (SD)	95% CI of difference	Paired t-test
Body	72.6 (15.7)	81.5 (15.3)	8.9 (12.0)	6.3–11.5	$t = 6.75$ ( $df = 82$ ) $p < 0.001$
Mind	85.0 (17.5)	89.2 (19.0)	4.2 (14.1)	1.04–7.4	$t = 2.65$ ( $df = 77$ ) $p = 0.001$
Spirit	87.5 (17.7)	92.0 (17.9)	4.5 (12.5)	1.7–7.3	$t = 3.2$ ( $df = 78$ ) $p = 0.002$
Total	245.8 (44.2)	262.9 (49.1)	17.1 (31.1)	10.0–24.2	$t = 4.79$ ( $df = 75$ ) $p < 0.001$

CI, confidence interval; SD, standard deviation.

### SF-12

The SF-12 also showed improvements over time (Table 3). The physical component score was mean 45.6 (13.4) at baseline, improving to 49.7 (11.5) at follow-up, with a statistically significant mean change of 4.2 (11.6). There was no significant change in the mental component score.

### Patient satisfaction

The patient ratings of care (Table 4) suggest high satisfaction with treatment. Well over half the patients rated their care as “excellent” or “best care ever” (37.6% and 24.7%, respectively). The remainder rated their experiences as “above average” (16.5%), “good” (11.8%), or “poor” (7.1%). When asked how effective the integrative medicine (IM) patient plan was in resolving the primary issue of the patient, 55.3% reported that it made “a significant difference” and 7.1% said that it “completely resolved my issue.” Approximately 19% (18.8%) said the plan was “partially effective,” 8.2% said it was “a little bit effective,” and 7.1% said the IM plan was “not at all effective.” In terms of the impact of the visits to the clinic on overall quality of life, mild improvement or greater was reported by 82.4% of the respondents. When disaggregated, these results show “radically improved quality of life” for 11.8%, “significant improvement in quality of life” for 42.4%, and “mild improvement in quality of life” for 28.2% of the clinic patients. The remainder reported no change (12.9%) or worsening condition (1.2%).

### Discussion

In the University of Michigan Integrative Medicine Clinic, an effective model of integrative health care was crafted. The focus was deliberately centered on patient well-being, from an improvement and softening of the clinic’s physical environment to a deepening and extension of communication between patients and staff. Time spent with doctors and providers was increased. Ninety-minute intake and 30-minute follow-up visits allowed patient stories to be elicited and fully heard, progress shared, and healing plans to be individually shaped. The participation of patients in their own healing was engaged through new activities and practices

TABLE 3. SF-12 PHYSICAL AND MENTAL COMPONENT SCORES (*n* = 85)

<i>Subscale</i>	<i>Baseline mean (SD)</i>	<i>Follow-up mean (SD)</i>	<i>Change mean (SD)</i>	<i>95% CI of difference</i>	<i>Paired t-test</i>
Physical	45.6 (13.4)	49.7 (11.5)	4.2 (11.6)	1.7–6.7	<i>t</i> = 3.39 ( <i>df</i> = 84) <i>p</i> = 0.001
Mental	40.2 (7.9)	41.6 (7.0)	1.3 (9.0)	0.6–3.3	<i>t</i> = 1.35 ( <i>df</i> = 84) <i>p</i> = 0.18

CI, confidence interval; SD, standard deviation.

for mind, body, emotion, and spirit, and by the union of conventional and alternative treatments.

In order to evaluate satisfaction with this model of care and degree of change in mental and physical health associated with it, we conducted a prospective patient survey.

Survey results suggested there were statistically significant improvements in all of the HHQ subscales (body, mind, and spirit) and in the physical component score of the SF-12. The data also suggested that the integrative medicine treatment plans had a greater impact on physical than on mental health. A 12% improvement in the HHQ body subscale and 9% in the SF-12 physical component score sharply contrast with the lack of improvement shown in the SF-12 mental component score and the limited improvement reflected in the HHQ mind and spirit scales. Indeed, the HHQ mind and spirit scales showed only half the improvement of

the HHQ body scale. One possible explanation is that the treatment period was of insufficient length to observe changes in mental health status within this group of patients.

High patient satisfaction scores were observed. Over 62% of responding patients called the clinic’s care “excellent” or “best care ever,” suggesting high overall approval. The elevated degree of satisfaction may have been rooted in the perceived ability of IM care to resolve patients’ primary objective, as nearly all respondents (81.2%) reported partial or full effectiveness of their patient plan in achieving the primary objective. It would be useful to understand why these patients were so pleased with their care. Satisfaction results such as these may be useful as IM clinics strive to show value within academic health systems. Our results suggest that an IM approach contributes to high levels of patient satisfaction and improved perceptions of physical health. These data lend support for the

TABLE 4. INTEGRATIVE MEDICINE PATIENT SATISFACTION TOOL SCORES AT FOLLOW-UP (*n* = 85)

<i>On a scale of 1–5, rate your care at UMIMC</i>	<i>Frequency</i>	<i>Percent</i>
Best care I have ever experienced	21	24.7
Excellent	32	37.6
Above average	14	16.5
Good	10	11.8
Poor	6	7.1
Missing	2	2.4
Total	85	100
<i>On a scale of 1–5, rate how effective your Integrative Medicine plan was in addressing your primary reason for visiting UMIMC</i>	<i>Frequency</i>	<i>Percent</i>
Completely resolved my issue	6	7.1
Made a significant difference	47	55.3
Partially effective	16	18.8
A little bit effective	7	8.2
Not at all effective	6	7.1
Missing	3	3.5
Total	85	100
<i>On a scale of 1–5, rate the effect of changes made due to your visit to UMIMC on your overall quality of life</i>	<i>Frequency</i>	<i>Percent</i>
Missing	3	3.5
Total	85	100

UMIMC, University of Michigan Integrative Medicine Clinic.

movement toward integrative health care currently seen in hospitals and private practices across the country.

In our sample, the high patient satisfaction rates observed were coincident with less impressive changes on the physical component score of the SF-12, suggesting that patients were happy with their care in spite of not achieving greater physical gains. These results are not contradictory. For instance, some diagnoses such as cancer may result in poor physical outcomes in the long term, despite improved quality of life in the short term. While the resolution of patients' presenting concerns is not always possible, the experience of integrative, patient-centered care may well result in improved emotional status and satisfaction with care.

There were limitations to the study that are worth noting. The data presented here do not represent the full complement of clinic patients. It may be that participants who took the time to complete the survey were more motivated or willing to participate because they had a more positive clinical experience. However, debate remains about what constitutes a good response in health care surveys. Some suggest that response rates of 30%–80% may be adequate,<sup>17,18</sup> a range that includes the response rate seen here. In the case of low response rates, representativeness of the sample can attenuate the nonresponse bias of the survey.<sup>19</sup> This may be the case in our survey, where the demographic profile of responders is nearly identical to that found among the clinic population as a whole: 87% of survey responders were female, while 80% of the clinic population are female; 90% of survey responders are white, compared to 91% white patients in the clinic; the mean age of patients responding to survey was 51 years, which compares well to the mean age assessed in the clinic population of 48 years. Another potential limitation was the fact that there was not a control group to which to contrast the experience of UMIMC patients. Further research would benefit from the addition of a matched comparison group from primary care within the same institution.

## Conclusions

An integrative, patient-centered clinical practice is described. Patient satisfaction and outcomes were evaluated for this practice. Our data suggest that customizing integrative medicine treatment plans based on individual needs resulted in high patient satisfaction. Furthermore, improvements in physical, mental, and emotional well-being were indicated, across the spectrum of illness. Despite the stated limitations of this study, these results are promising and should stimulate further discussion regarding the best ways to accurately evaluate outcomes in an integrative medicine clinic.

## Acknowledgments

The care offered by the University of Michigan Integrative Medicine clinic was made possible by generous contributions from Marge and Bob Alpern and by the support of the Department of Family Medicine. The UMIMC staff including Sara Warber, Ricardo Bartelme, Claudia Ogden, Jenna Wunder, Laura Baker and Leslie Shimp deserves kudos for heartfelt contributions to excellent patient care. The authors thank Bob Anderson and Rob Ivker for the development of the HHQ, Laurie Fortlage for clinical research coordination, Leslie Wimsatt and Jackie Wootton for editorial assistance, and our mentors Brian Berman and Sara Warber for their leadership in Integrative Medicine.

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