Do Attitudes Toward and Beliefs About Complementary Medicine Affect Treatment Outcomes?

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Many patients seek help from practitioners of complementary and alternative medicine (CAM). Patients' prior knowledge of CAM and desire for egalitarian relationships with medical practitioners have been shown to increase CAM use,[1,2] as have higher scores on the Absorption scale (a measure of anxiety and "self-absorption").[3] Other personality scales do not predict CAM use.[4]

Although users of CAM might not agree, a common view among scientists is that CAM outcomes are mediated through a placebo effect[5,6]; that is, patients improve because they expect to do so. Our aims in the study described here were to assess the validity of the Attitudes toward Alternative Medicine Scale (AAMS) and to determine whether asthmatic patients who had positive attitudes toward and beliefs about CAM showed greater positive changes in outcomes.

METHODS

During 1996 through 1998, we conducted a randomized, double-blind, placebo-controlled trial among 327 patients allergic to house dust mites. The study, which took place in the counties of Hampshire and Dorset in England, was designed to evaluate the effects of a homeopathic dilution of this allergen.[7] Patients completed the AAMS and the Positive and Negative Affect Scales (PANAS) on 2 occasions: 4 weeks before and 16 weeks after study randomization. Higher scores on the AAMS indicate more positive attitudes toward CAM.[8,9] Higher scores on the 2 subscales of the PANAS indicate higher levels of the variable assessed (i.e., positive or negative affect).[10]

Spirometry and a measure of quality of life (the Asthma Bother Profile [ABP][11]) were completed at baseline and at 6, 12, and 16 weeks. Patient diaries were completed on alternate weeks throughout the 20-week study; these diaries included information on diurnal peak expiratory flow, among other outcomes.[7] Spirometry, peak expiratory flow, and ABP scores were the primary outcomes assessed.

The AAMS has received only limited validation, so we carried out a factor analysis. Correlations of baseline AAMS scores with all other baseline values were computed to determine whether personality factors or asthma severity determined attitudes toward CAM. To test whether beliefs or other baseline factors predicted outcomes, we calculated spirometry, ABP, and peak expiratory flow change scores (final scores minus baseline scores). Three multiple regression analyses were conducted with each of the 3 change variables in turn as the dependent variable; all baseline variables were considered independent.

Pearson correlations for the 2 AAMS scores (prerandomization and postrandomization) were calculated to examine AAMS score changes. Changes in AAMS scores were correlated with changes in peak expiratory flow, spirometry, and ABP scores. An analysis of variance compared baseline and posttreat-

TABLE 1—Attitudes to Alternative Medicine Scale Factor Loadings: First Unrotated Factor and First 2 Oblique Rotated Factors

Item	Factor Loadings From First Unrotated Factor	Factor 1: Oblimin Rotation	Factor 2: Oblimin Rotation
1. Alternative medicines must be subject to more scientific testing before they can be accepted	0.37	0.30	–0.15
2. Alternative medicines are merely a financial con trick	0.63	0.73	0.04
3. Alternative medicine can be dangerous in that it may prevent people getting "proper" treatment	0.51	0.50	–0.08
4. Alternative medicine is merely a fashionable fad which will soon disappear	0.69	0.73	–0.04
5. It is worth trying alternative medicine before going to the doctor	–0.24	–0.04	0.32
6. Alternative medicine should only be used in minor ailments and not in the treatment of more serious illnesses	0.51	0.54	–0.02
7. Alternative medicine should only be used as a last resort, when conventional treatment has nothing to offer	0.60	0.68	0.04
8. Alternative medicine has possible uses only as preventative medicine and is of no use once an illness has appeared	0.53	0.65	0.11
9. Conventional medicines have so many side effects that most doctors are not as well informed about them as they should be	–0.02	0.23	0.38
10. Many alternative medicines could be prescribed instead of giving people repeat prescriptions of drugs such as tranquilizers	–0.49	–0.17	0.53
11. Alternative medicine produces longer lasting and more complete results	–0.42	0.00	0.68
12. Alternative medicine represents a confused and ill-defined approach	0.49	0.45	–0.12
13. Alternative medicine builds up the body's own defenses, so leading to a permanent cure	–0.53	–0.13	0.68
14. Alternative medicine works to restore the body's own balance	–0.66	–0.26	0.67

Note. Factor loadings of |0.30| or above are significant.

ment assessments, allowing evaluation of whether patients who believed that they had received active treatment improved more than those who believed that they had received a placebo.

RESULTS

Results revealed significant improvements in forced expiratory volume in 1 second (FEV_1; $P = .006$), predicted FEV_1 ($P = .007$), and ABP scores ($P = .016$) but no improvements in peak expiratory flow. Table 1 shows the factor analysis of the AAMS. This analysis revealed that loadings from the first factor formed an unrotated principal axis; 12 of the 14 items had significant factor loadings (> .3). A screen test suggested a 2-factor solution (the first 5 eigenvalues were 4.2, 2.0, 1.2, 1.0, and 0.9). We obtained a good description of the data through use of a 2-factor solution with an oblimin rotation. The pattern matrix (Table 1) suggested that the correlated factors were attitudes toward CAM and a belief that the body varies in terms of "a healthy balance."

The correlation between the prerandomization and postrandomization AAMS scores (i.e., test–retest reliability) was significant ($r = 0.76$, $P < .001$). There were no significant correlations between AAMS scores and any of the other baseline variables. Patients with more severe asthma at study entry experienced greater improvement over the course of the study (Table 2). Those with more negative mood scores at study entry showed smaller improvements in ABP scores, and lower quality-of-life scores predicted greater improvements in scores. Variables predicting improvement in lung function and quality of life were themselves correlated; multiple regressions involving FEV_1 ($P < .001$), predicted FEV_1 ($P < .001$), ABP scores ($P < .001$), and peak expiratory flow ($P < .001$) confirmed that poorer lung function at study entry predicted significant improvement.

AAMS scores did not correlate with significant changes in outcomes. The analyses of variance comparing outcomes among patients who believed that they were receiving active treatment and among those who believed that they were receiving a placebo were not significant in regard to any of the outcomes. There was no significant interaction with treatment.

DISCUSSION

The test–retest reliability of the AAMS was acceptable, although 1 item had weak loadings on the first factor, and another item had very weak loadings on that factor. We found evidence of 2 correlated factors, indicating that attitudes toward CAM are hierarchically arranged, composed of positivity/negativity toward CAM practice as well as beliefs about the nature of health and how CAM operates.

There was no evidence that positive beliefs about CAM were associated with positive or negative affect, quality of life, or respiratory functioning. Owens et al. suggested that overall positive affect (as measured with the PANAS) is associated with greater CAM use.[3] We cannot confirm this suggestion, but we employed a measure of attitude toward CAM use in a randomized study, whereas Owens et al. employed a measure of reported CAM use in clinical practice. We failed to find evidence that either belief that CAM was being received or variations in attitudes toward CAM predicted degree of patient improvement. In addition, we found no evidence that expectancy predicted ABP scores and no evidence of any overall changes in AAMS scores during the study. ■

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TABLE 2—Pearson Product–Moment Correlations Between Changes in Outcome Variables and Baseline Measures

Baseline Measure	Change FEV_1	Change in Predicted FEV_1	Change in PEF: AM	Change in PEF: PM	Change in Asthma Bother Score
FEV_1	–0.259**	–0.189**	–0.147*	–0.023	–0.038
Predicted FEV_1	–0.334**	–0.352**	–0.069	0.006	–0.046
PEF: AM	0.030	0.077	–0.202**	–0.089	–0.028
PEF: PM	0.031	0.081	–0.097	–0.145*	–0.055
Positive affect	–0.010	0.012	0.020	0.003	0.078
Negative affect	0.046	0.072	–0.100	–0.130	–0.193**
Asthma bother score	0.072	0.031	–0.078	0.080	–0.353**
AAMS score	0.120	0.141	–0.102	–0.024	–0.023
Spirometry score	0.063	–0.025	–0.075	0.067	–0.011
Mood	0.014	0.034	0.000	–0.057	0.094
Symptoms	–0.125	–0.074	–0.060	–0.052	–0.068
Problem-free days	0.176*	0.131	0.046	–0.031	0.065

Note. FEV_1 = forced expiratory volume in 1 second; PEF = peak expiratory flow; AAMS = Attitudes to Alternative Medicine Scale. *P < .05; **P < .01.

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This brief was accepted May 23, 2002.

Contributors

G.T. Lewith conceived, developed, and managed the study. M.E. Hyland provided advice at the protocol and analysis stages in respect to health psychology input, and S. Shaw provided statistical support and contributed to the data analysis.

Acknowledgments

Support for this study was obtained from Smith's Charity, the National Health Service Executive South and West Research and Development Directorate, and Boiron. G.T. Lewith was supported by a grant from the Maurice Laing Foundation.

Human Participant Protection

Ethical approval for this study was obtained from the Southampton local ethics committee (Hampshire) and from the Bournemouth ethics committee (Dorset).

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