Structured Abstract

Objective: To review and synthesize the state of research on a variety of meditation practices, including: the specific meditation practices examined; the research designs employed and the conditions and outcomes examined; the efficacy and effectiveness of different meditation practices for the three most studied conditions; the role of effect modifiers on outcomes; and the effects of meditation on physiological and neuropsychological outcomes.

Data Sources: Comprehensive searches were conducted in 17 electronic databases of medical and psychological literature up to September 2005. Other sources of potentially relevant studies included hand searches, reference tracking, contact with experts, and gray literature searches.

Review Methods: A Delphi method was used to develop a set of parameters to describe meditation practices. Included studies were comparative, on any meditation practice, had more than 10 adult participants, provided quantitative data on health-related outcomes, and published in English. Two independent reviewers assessed study relevance, extracted the data and assessed the methodological quality of the studies.

Results: Five broad categories of meditation practices were identified (Mantra meditation, Mindfulness meditation, Yoga, Tai Chi, and Qi Gong). Characterization of the universal or supplemental components of meditation practices was precluded by the theoretical and terminological heterogeneity among practices. Evidence on the state of research in meditation practices was provided in 813 predominantly poor-quality studies. The three most studied conditions were hypertension, other cardiovascular diseases, and substance abuse. Sixty-five intervention studies examined the therapeutic effect of meditation practices for these conditions. Meta-analyses based on low-quality studies and small numbers of hypertensive participants showed that TM®, Qi Gong and Zen Buddhist meditation significantly reduced blood pressure. Yoga helped reduce stress. Yoga was no better than Mindfulness-based Stress Reduction at reducing anxiety in patients with cardiovascular diseases. No results from substance abuse studies could be combined. The role of effect modifiers in meditation practices has been neglected in the scientific literature. The physiological and neuropsychological effects of meditation practices have been evaluated in 312 poor-quality studies. Meta-analyses of results from 55 studies indicated that some meditation practices produced significant changes in healthy participants.

Conclusion: Many uncertainties surround the practice of meditation. Scientific research on meditation practices does not appear to have a common theoretical perspective and is characterized by poor methodological quality. Firm conclusions on the effects of meditation practices in healthcare cannot be drawn based on the available evidence. Future research on meditation practices must be more rigorous in the design and execution of studies and in the analysis and reporting of results.
Objectives of the Review

2. Methods
   Overview
   Key Questions and Analytic Approach
   Literature Review Methods
   Literature Synthesis
   Peer Review Process

3. Results
   Topic I. The Practice of Meditation
   Mantra Meditation
   Mindfulness Meditation
   Yoga
   Tai Chi
   Qi Gong
   Characteristics of Meditation Practices
   Search Results for Topics II to V
   Topic II. State of Research on the Therapeutic Use of Meditation Practices in Healthcare
   Control Groups Used in Studies on Meditation Practices
   Topic III. Evidence on the Efficacy and Effectiveness of Meditation Practices
   Hypertension
   Cardiovascular Diseases
   Substance Abuse
   Methodological Quality of Included Studies
   Summary of the Results
   Topic IV. Evidence on the Role of Effect Modifiers for the Practice of Meditation
   Summary of the Results
   Topic V. Evidence on the Physiological and Neuropsychological Effects of Meditation Practices
   Summary of the Results

4. Discussion
   The Practice of Meditation
   State of Research on the Therapeutic Use of Meditation Practices in Healthcare
   Evidence on the Efficacy and Effectiveness of Meditation Practices
   Evidence on the Role of Effect Modifiers for the Practice of Meditation
   Evidence on the Physiological and Neuropsychological Effects of Meditation Practices
   Strengths and Limitations
   Future Research
   Conclusions

Abbreviations

Appendixes
   Appendix A. Technical Experts and Peer Reviewers
   Appendix B. Development of Consensus on a Set of Criteria for an Operational Definition of Meditation
   Appendix C. Exact Search Strings
   Appendix D. Review Forms
   Appendix E. Excluded Studies and Nonobtained Studies
Appendix F. References of Multiple Publications (Topics II to V)
Appendix G. Summary Tables for Topic II
Appendix H. Characteristics of Clinical Trials of Meditation Practices for the Three Most Studied Conditions
Appendix I. Characteristics of Studies Included in Topic V
Appendix J. Characteristics of Studies on the Physiological and Neuropsychological Effects of Meditation Practices

References and Included Studies

List of Studies Potentially Relevant to the Review

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