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Research Article

Research on Impact of Yoga on Human Psychology

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Abstract

Despite a growing body of clinical research studies and some systematic reviews on the therapeutic effects of yoga, there is still a lack of solid evidence regarding its clinical relevance for many symptoms and medical conditions. For many specific indications and conditions, there is inconsistent evidence with several studies reporting positive effects of the yoga interventions, but other studies are less conclusive. In some instances, these discrepancies may result from differences between the study populations (e.g., age, gender, and health status), the details of the yoga interventions, and follow-up rates.

To study optimal mental health, we will define and study mental health as two dimensions with a positive part and a part that is mental illness that together make up mental health. Clearly yoga intervention programs require an active participation of the individuals as do all behavioral interventions, and thus adherence might be a crucial point that limits potentially beneficial effects of yoga. It is apparent in many life style diseases, that patients must change attitudes and behaviour in order to successfully treat these diseases.

Keyword: yoga, attitudes and behaviour, quality of life and Meditation

Introduction

In the promotion of mental health, more than one perspective can be assumed. This study takes on an innovative approach by taking on two perspectives. First we will explore what mental health is and then the perspectives will be described.

Mental health is defined by the World Health Organization (WHO, 2005, p. 2) as "a state of well- being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community". The three components of this definition are (1) well-being, (2) effective functioning of an individual, and (3) effective functioning for a community (WHO, 2005, p. 2).

Mental health is too often presumed to be the opposite of mental illness and seen as the absence of mental illness, such as depression or anxiety (Keyes, 2005; Westerhof & Keyes, 2010). Although it has important consequences for individual functioning and society, mental illness represents only part of a person's functioning and mental health (Westerhof & Keyes, 2010). According to Maddux (2009) the emphasis is too much on that, which is deviant, abnormal or maladaptive. The main aim is to treat symptoms and success in therapy is measured by reduction of symptoms (Westerhof & Bohlmeijer, 2010). The

assumption is too often that mental illness and mental health are the opposites of each other and the treatment of illness keeps a person healthy (Westerhof and Bohlmeijer, 2010). Seligman and Csikzentmihalyi (2002) add to this that psychotherapies solely aimed at reducing symptoms won't lead to sufficient prevention of psychological disorders. Keyes (2005) developed from the data of the MIDUS-study (Midlife Development in the United States) a two continua model. His empirically supported model showed that a model with one dimension, whereof mental illness and mental health were the opposite poles, was unfitting. A model that was promising consisted of two independent dimensions, but also didn't fit well with the data. What almost perfectly aligned with the data, was a model whereof mental health and mental illness, where two related factors. This empirical supported model illustrate that mental health and mental illness are not on the same dimension, but they are related (Compton, Smith, Cornish, & Qualls, 1996; Greenspoon & Saklofske, 2001; Headey, Kelly, & Wearing, 1993; Masse et al., 1998; Suldo & Shaffer, 2008; Westerhof & Keyes, 2008).

To study optimal mental health, we will define and study mental health as two dimensions with a positive part and a part that is mental illness that together make up mental health. Clearly yoga intervention programs require an active participation of the individuals as do all behavioral interventions, and thus adherence might be a crucial point that limits potentially beneficial effects of yoga. It is apparent in many life style diseases, that patients must change attitudes and behaviour in order to successfully treat these diseases.

AIM

- To assess the impact of yoga on human psychology

OBJECTIVES

- To assess the impact of yoga on human psychology
- To document the improvement in depression/ anxiety/ stress level in subjects

REVIEW OF LITERATURE

The results of research on nonclinical adults is somewhat mixed. Several different types of yoga were tested. Some showed yoga to be helpful for managing stress, depression, and mood. Results of other studies suggested that other forms of exercise, such as walking, were more effective for managing depression and quality of life for older adults. The essence of yoga is the development of awareness and self-control. A yoga practice ultimately teaches, through control of the body, that we have control of the mind. "As we improve our abilities of controlling the senses from wandering during practice, the subtle quality of concentration deepens. … In time, the practice moves further internally and refinement of concentration develops as our ability to remain present is enhanced" (Swenson, 1999, p.6). This development of self-control enables the individual to be freed from the pain and suffering inherent in life. "When the senses are stilled, when the mind is at rest, when the intellect wavers not – then, say the wise, is reached the highest stage. This steady control of the sense and mind has been defined as Yoga. He who attains it is free from delusion" (Iyengar, 1966, p. 20). According to yoga philosophy, the delusion from which we suffer is "the illusion of time, space, and causation. It is only our own ignorance, our inability to discriminate between the real and unreal, that prevents us from realizing our true nature" (Sivananda Yoga Centre, 1983, p. 15).

Through the development of yogic awareness, the yoga practitioner becomes more able to separate reality from perception, truth from assumption. "Through regulation of practice, …personal insights begin to manifest. Studies with nonclinical adolescents outside of the school day showed significantly lower aggression rates, lower helplessness in school, and reduced anxiety Students who participated in yoga were able to transfer skills from yoga to other situations to relieve stress and improve

overall well-being (Stueck & Gloeckner, 2005)..

METHODOLOGY

Data Collection

This study used a mixed methods design. Mixed methods can be defined as "the collection or analysis of both quantitative and qualitative data in a single study in which the data are collected concurrently or sequentially, are given a priority, and involve the integration of the data at one or more stages in the process of research" (Creswell, Plano Clark, Gutmann, & Hanson, 2003, p. 212). The current study collected quantitative data in the form of questionnaires and qualitative data in the form of interviews and written answers to open-ended questions. Mixed methods research has four main characteristics:

(a) focusing on research questions that call for real-life contextual understandings, multilevel perspectives, and cultural influences; (b) employing rigorous quantitative research to assess the magnitude and frequency of constructs and rigorous qualitative research to explore the meaning and understanding of constructs; (c) utilizing multiple methods; and (d) intentionally integrating or combining these methods to maximize the strengths of each (Klassen, Creswell, Plano Clark, Clegg Smith, & Meissner, 2012).

More specifically, this study used concurrent mixed methods, where the two forms of data were collected simultaneously. Participants were recruited from local region of our district. GroupA: Users of the facility were predominantly female, retired, and married or widowed. Participants used the facility on a daily basis for low cost and free activities, including: exercise classes, library and computer services, lunch program, and social events such as card playing and lectures.

Group B was senior living community (non-assisted living). Residents of the facility were predominantly female, retired, and widowed. Residents of the facility lived in independent apartments and were self-sufficient for personal care, but received assistance from facility management and staff for transportation, cleaning, and cooking. As well, free activities were provided at the facility for residents, including bingo, arts and craft activities, library and computer services, and excursions to community events.

Qualitative data were collected in the form of written responses to questions from both groups and interviews from a sample of the intervention group. Qualitative data were collected to get a more in-depth and specific perspective of students in the control and intervention groups.

Qualitative data were analyzed according to Mayring's (2000) concept of qualitative content analysis. This method is based on quantitative content analysis, which Kerlinger (as cited in Prasad, 2008) defined as "a method of studying and analyzing communication in a systematic, objective, and quantitative manner for the purpose of measuring variables"

In their meta-analysis of physical activity and psychological well-being in advanced age, Netz et al. (2005) used an age inclusion criterion of a mean age of 54 years or older. Previously, however, McAuley and Rudolph (1995) included studies with participants as young as age 45, in a narrative review of physical activity, aging, and well-being. As Netz et al. indicated "any definition of 'old' is arbitrary". Netz et al. classified older adults participant groups as late middle age (54 – 60 years), young-old (65 – 70 years), and old-old (age 70 and over). This study focused on young-old and old-old participants, and recruited subjects had a minimum age of 60.

In a meta-analysis of yoga (Bonura, Aloe, Tenenbaum, & Becker, 2006), the unweighted effect size across all treatment and control groups was ES = 0.65. However, the unweighted effect size for yoga groups in studies meeting EBI standards was ES = 0.48. Using this more conservative estimate, in order to achieve a minimum power of .80, with α = 0.05, for three groups, a minimum number of 21 subjects per group was required (Cohen,

1977). In order to protect against the effects of attrition on power, a minimum number of 75 subjects was established (N = 75; n = 25). Across both locations, 100 individuals were recruited to participate in the study. Participant demographic information is presented in Table 1.

Table 1: Participants' (N = 100) Demographics

factor	catagory	F	%
Gender			
	Females	70	70
	male	30	30
Marital Status	Married	40	40
	Divorced	10	10
	Widowed	20	20
	Other	30	30
Occupational Status			
	Full-time Work	60	60
	Part-time Work	10	10
	Disabled	5	5
	Retired	15	15
	Never worked	10	10

Participants were physically active; 91 (92.90%) of them indicating that they exercised regularly, on average 3.95 days per week for 41.58 minutes.

Table presents participant preintervention exercise practices.

Instrumentation

Two forms were administered to the participants at baseline data collection: a medical history form and a demographic questionnaire. Netz et al. (2005) identified seven psychological components, which were most sensitive to change in older adults, due to exercise intervention, specifically, anger, anxiety, depression, positive affect, overall well-being, self-efficacy, and physical symptoms. Changes in these dimensions were assessed by the State-Trait Anger Expression Inventory, the State-Trait Anxiety Inventory, the Geriatric Depression Scale, Lawton's PGC Morale Scale, the General Self- Efficacy Scale, the Chronic Disease Self-Efficacy Scales, and physiological arousal. In addition, the Self-Control Schedule measured changes in participant perceptions of self-control.

The medical history form served as a screening tool for individuals for whom exercise was contraindicated, due to pre-existing health conditions. No individuals were prevented from entering the program due to the medical history form, however, modifications of exercises were provided based on participant characteristics (for instance, modified postures due to hip and knee injuries or replacements).

State-Trait Anxiety Inventory (STAI, Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983; Appendix D). The STAI is a 40-item inventory, which assesses both state (e.g., how an individual feels at a particular moment in time) and trait (e.g., how an individual generally feels) anxiety. Both the 20-item A-Trait scale and the 20-item A-State scale were utilized. The exercise literature indicates that the STAI is one of the most frequently used instruments for assessing the psychological benefits of exercise, although certain cautions are warranted, because the STAI has not been validated for exercise purposes (Gauvin & Spence, 1998). The STAI has been established as a valid and reliable tool for assessing anxiety in research and in clinical populations (Gauvin & Spence).

Because this study involved only one investigator, it was impossible to assign another person to code the interviews and responses to open-ended questions. In addition, the researcher was also the yoga instructor, so she could not observe the classes, and there were no other investigators to do this. However, special care was taken to define in detail the methods, the procedures, the features of the units of evaluation, and the properties of individual categories, so there is a clear audit trail. In addition, clear distinctions are made between categories so that accurate interpretation is straightforward and the reader could audit or replicate the study if desired. The researcher clearly stated the research

questions and designed the study around them, as Miles et al. (2014).

Data Analysis

The first hypothesis, stating that a yoga intervention would lead to improvements in psychological health, was tested using a Repeated Measures Multivariate Analysis of Variance (RM MANOVA); anger, anxiety, depression, well-being, general self-efficacy, and self-efficacy for daily living were dependent variables; time (i.e., pre, end, and one-month follow-up) was considered the within repeated factor, and treatment (i.e., chair yoga, chair exercise, and wait-list control) was used as the between-subjects factor. Significant ($p < .05$) main and interaction effects emerged, and Repeated Measures Analysis of Variance (RM ANOVA) was performed for each dependent variable separately, followed by LSD post hoc multiple mean comparisons.

Standardized effect sizes were computed to assess differences among the three groups' mean, as indicated by the main or interaction effects. The first hypothesis also stated that a yoga intervention would lead to greater reductions in state anxiety and state anger, than would exercise or waiting list conditions. State anger and anxiety, which were measured before and after 3 sessions (i.e., at the outset, middle, and end of the study), were subjected to similar analyses, but with two within repeated measures: time (3 levels) and pre-post (2 levels). Thus more interactions with treatment level emerged.

RESULTS

Data was collected across all three data points for total 100 individuals in the yoga and exercise groups, and for 34 control participants. (33+33+34)=100

Equivalence of groups at baseline. Equality of groups at baseline was tested using a multivariate analysis of variance (MANOVA) for trait anger, trait anxiety, depression, wellbeing, general self-efficacy, and self-efficacy for daily living at baseline. Levene's test of equality of variances showed non-significant ($p > .05$) differences among the three groups' variances on each of the pretest measures, indicating equal variances. Initial screening of the data indicated no significant outliers and data appeared to meet the assumptions for multivariate analysis. Overall, Wilk's $\lambda = .82$, $F(12,180) = 1.53$, $p = .12$, indicated non-significant differences among groups at pretest on the six variables. Between-subject effects for each of the dependent variables were also tested. Differences across groups were non-significant ($p > .05$) for all measures. Randomization resulted in equality of means across groups at baseline.

Table2: Follow-Up Descriptive Statistics for each Dependent Variable by Group

Variable		Follow up	
Anger		M	SD
Yoga	33	15.41	4.6
Exercise	33	16.90	5.9
Control	34	16.11	3.6
Overall	100	**16.14**	**4.7**
Anxiety			
Yoga	33	30.90	11.10
Exercise	33	33.85	11.60
Control	34	39.45	9.65
Overall	100	**34.73**	**10.78**
Depression			
Yoga	33	7.89	4.11
Exercise	33	8.65	5.98
Control	34	8.95	6.32
Overall	100	**8.49**	**5.47**
Well-being			
Yoga	33	12.50	2.98
Exercise	33	12.69	3.65
Control	34	10.98	4.11
Overall	100	**12.05**	**3.58**
Self-Efficacy			
Yoga	33	7.45	1.36
Exercise	33	8.54	1.09
Control	34	7.65	1.09
Overall	100	**7.88**	**1.18**

Data was tested using RM MANOVA; state anger and state anxiety were the dependent variables; treatment (i.e., chair yoga or chair exercise) was the between-subjects factor and there were two within repeated measures: To identify dependent variables, which contributed to the rejection of the multivariate null hypotheses, univariate RM ANOVA's were

conducted for state anger and state anxiety. The results of the MANOVA and ANOVA analyses are summarized in resent standardized effect sizes for the state effects by group across time within each session and between sessions. The analyses revealed that all time effects, pre-post effects, and time by pre-post by group interaction effects were statistically significant ($p < .001$for all, except for the interaction effect for anger where $p < .003$).

Yoga participants showed greater improvement both from pretest to posttest in each single session, and across the measurement period, although exercise participants also experienced improved psychological state.

While yoga and exercise both immediately improved state anger and state anxiety (as reflected through reduced reports of anger and anxiety after each single session), it appears that the effects are cumulative and enduring.

DISCUSSION

The current study examined the effect of Yoga on human psychology. pplied implications. As mental health issues are on the rise and the demands on schools expand to include helping students deal with mental health issues, schools may consider yoga as an intervention for students who are depressed or anxious. This may be complementary to treatment plans that include psychotherapy or medications or as an intervention to try before those therapies are applied. Yoga may also be tried if the other therapies are not feasible due to inconvenience or cost, as yoga would take place during school time, something students are expected to do anyway. The limitations to conducing the yoga class as it was conducted in this study are that the yoga instructor would have to be someone who is proficient with high school students and trained to teach them.

Future Directions in Yoga Research

Interest in yoga is slowly spreading into the scientific community. Currently, the NIH lists 13 research grants in progress in the U.S. which focus in some way on yoga processes or meditation, or on evaluations of clinical applications of yoga for conditions such as back pain, insomnia, and quality of life in chronic conditions such as cancer and HIV (Shapiro, 2006). However, while the field of yoga research continues to grow, most of the yoga research currently being conducted is low level, in terms of quantity, and nothing that will shift paradigms (Khalsa, in Weeks, 2006). In order for the mechanisms and impact of yoga to be understood and applied appropriately in therapeutic settings, more and better research is needed. “The concept is critical mass. We need replication – many well-done studies by different investigators done on different populations. This provides more confidence in the results. More review articles and meta- analyses are also useful (Khalsa, in Weeks). Khalsa projects that a major obstacle in future yoga research will be the absence of funding, due to the difficulties inherent in evaluating CAM therapy research by traditional scientific standards. Greater research is needed in order to truly understand both the underlying mechanisms of yoga, and the potential therapeutic and medical applications of this ancient practice. Furthermore, a sound scientific framework is needed to enhance research, which will facilitate investigation of both the processes and impacts of yoga.

Recommendations for research

There is need for research on the effects of yoga on major depression, there were no studies in this analysis investigating it. Another recommendation for further research would be to investigate more thoroughly what the psychological mechanism is behind yoga and deciphering what exactly makes it work.

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