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ORIGINAL ARTICLE

Patients' Degree of Autonomy in Choosing to be Physically Active Predicts their Response to Yoga Therapy: A Convenience Sampling Survey

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ABSTRACT

Background: Determining the predictors of patients' intrinsic or extrinsic motivation for treatment assists in developing effective treatment strategies. The practice of yoga includes physical activity. Therefore, patients' motivation for physical activity during yoga therapy may be expected to influence their involvement in the yoga program and, hence, their treatment outcome.

Objective: With this background, the study aimed to determine the association of motivation for physical activity with treatment outcomes in patients receiving yoga therapy.

Materials & Methods: Patients were recruited from a yoga therapy centre (n=389, F:M=252:137, 18-50 years; most often with diseases of the (i) musculoskeletal system or connective tissue (21.3%) or (ii) endocrine, nutritional or metabolic diseases (18.8%) (ICD-11). Assessments included (i) motivation for physical activity at baseline and (ii) treatment outcomes at baseline and after seven days of yoga and allied therapies using (i) the EQ-5D-3L and (ii) global perceived effect (GPE) scale. The intervention included yoga and allied treatments (e.g., hydrotherapy). Multivariable regression analyses (controlled for confounding variables) showed a significant negative association between (i) identified regulation for physical activity and the change in the EQ-5D-3L scores (Beta = -0.496) and (ii) external regulation for physical activity and change in EQ-5D-3L VAS scores (Beta = -0.568).

Conclusion: In summary, higher extrinsic motivation for physical activity predicted less improvement after YT. Strategies to enhance the intrinsic motivation for physical activity components of yoga as therapy are suggested, targeting increasing patients' inherent favorable experience of being physically active structured knowledg equestionnaire.

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Analysis and Interpretation: The data were analysed and interpreted in light of objective and hypothesis. The descriptive and inferential statistics in term of mean standard deviation, and paired 't' test were used for analysis of data.Theme an difference of knowledge of group was 12.73. In group, the calculated paired 't' value of level of knowledge is 24.30 and tabulated 't' valueis 2.00. It reveals that the calculated paired 't' value is greater than tabulated 't' value at 0.05 level of significance.

Conclusion: This research study shows that the post test scores are more than pre-test score. Therefore, it can be concluded that planned teaching programme is effective among primary school teachers. Hence research hypothesis is accepted.

KEYWORDS:

• Motivation for physical activity • Yoga therapy • Outcomes of yoga therapy • Patients • Regression analyses.

INTRODUCTION

Motivation for an activity lies between two extremes, which are intrinsic motivation (IM, i.e., doing an activity because of the inherent satisfaction derived from it) and extrinsic motivation (EM, i.e. motivated to obtain an outcome separable from the activity).[1]

High autonomous motivation (*i.e.,* high IM) allows for better control of one's behaviour to achieve good results compared to EM.[2] Research on motivation for physical activity (PA) has especially emphasized the connection between healthy individuals' as well as patients' motivation for PA and the health benefits they attribute to PA along with long-term adherence to PA.[3] The ancient discipline of yoga includes elements of PA, even though the end-goals of yoga extend beyond PA.[4] Traditional hatha yoga especially is a form of light–moderate PA that incorporates elements of relaxation, breathing exercises and physical postures.[5] Yoga practiced for disease management includes all of these practices specially designed for patients' requirements.[6] Hence among patients receiving yoga therapy their motivation for PA may be expected to influence their involvement in the yoga program and hence influence their treatment outcome. With this background the primary aim of the study was to determine any association between motivation for PA and the treatment outcome across patients with different chronic diseases. The study specifically determined the degree to which autonomy in motivation influenced treatment outcome. In addition to this, a secondary aim of the study was to determine whether baseline levels of motivation for PA would predict better health of the patients at baseline.

MATERIALS METHODS

Study design

This convenience sampling pre-post trial aimed to determine the influence of motivation for physical activity on patients' self-rated treatment outcomes following one week of yoga therapy and allied treatments. The nature of motivation for physical activity (i.e., intrinsic or extrinsic) was assessed using the RM4-FM questionnaire[1], and the outcomes of yoga therapy and allied treatments were measured using the EQ-5D-3L questionnaire[7] (administered before and after seven days) and GPE scale[8] (administered on day 7). The study was approved by the institutional ethical committee (approval number: PRF/YRD/PRF/YRD/023/015).

Patients / Setting

Three hundred and eighty nine patients with non-communicable diseases (group average age +/SD = 41.45 ± 8.38 years) receiving yoga therapy at a residential wellness facility in India were enrolled. A researcher directly recruited the patients in the study. Patients did not receive any incentives to participate in the trial. Patients who were 18 years of age or older were included in the trial. Patients who did not complete the seven days of treatment

or provided incomplete questionnaires were to be excluded. No patient was excluded for these reasons. Table 1 provides the patients' baseline characteristics. Each patient signed an informed consent form prior to participation.

Yoga Therapy and Allied Treatment

There was seven days of yoga therapy and allied treatments with two yoga practice sessions (i.e., 120 minutes in the early morning and 90 minutes in the evening) on each day. Each session had three types of practices, detailed below:

1. Asana, or postures (standing, sitting, supine and prone poses), 2. Pranayama [e.g., bhramari (bumblebee breathing), kapalabhati (forehead-cleansing or "skull-shining" breathing)] and 3. Guided relaxation. In addition, patients received shatkarma kriyas, defined as "six actions for cleansing" (shatkarma = six actions, kriya = cleansing practices). The shatkarma kriyas that were used are neti (nasal passage cleansing using a neti pot with lukewarm saltwater), nauli (selfpracticed abdominal massage using abdominal movements), basti (colon cleansing), dhauti (cleaning of the digestive tract,and trataka (a gazing practice).

ASSESSMENTS

The questionnaires used in the study are available in English and were translated to Hindi with the help of two bilingual experts using standard methods.[9,10]

(i) Motivation for physical activity: The RM4-FM questionnaire has 16 items[1] that assess: (i) external regulation, (ii) introjected regulation, (iii) identified regulation and (iv) intrinsic motivation. The relative autonomy index (RAI) is calculated by using a formula (i.e., RAI=2×intrinsic motivation+identified regulation − introjected regulation − 2×external regulation). RAI indicates the relative impact of intrinsic and extrinsic factors in motivation for physical activity.

(ii) EQ-5D-3L questionnaire: The 3L version of the EQ-5D questionnaire was used to determine the outcome of yoga therapy and allied treatments.[7] The questionnaire consists of five dimensions (mobility, self-care, usual activities, pain / discomfort, and anxiety / depression), with three levels of functioning each (e.g., no problems, some problems, and extreme problems). This health state classifier can describe 243 unique health states that are often reported as vectors ranging from 11111 (full health) to 33333 (worst health). In the present study, the value set for an Iranian population was used (i) as the value set for Indian population is not available 20 and (ii) considering the physical proximity and certain socio-cultural factors common to the Iranian Plateau and the Indian subcontinent.[11] A visual analog scale that scores health on a scale of 0 (worst imaginable health) to 100 (best imaginable health) was also used in this study to examine health.[2,12]

(iii) Global perceived effect (GPE) scale. The change in health status related to the treatment was assessed using the GPE scale.[8] The questionnaire has a single item (*i.e.,* "Overall, how would you rate your own quality of life as a result of your illness compared to how it was before the treatment?"). The patients responded to the question on the seven-point Likert scale (*i.e.*, very much improved to very much deterioration), with a possible score range between 1 and 7.[8]

DATA ANALYSIS

The difference in post and pre scores of the EQ-5D-3L set value scores, EQ-5D-3L-VAS scores and scores of the global perceived effects acted as patient rated treatment outcomes.

Pearson correlations were used to examine correlations between the outcomes and potential predictors. Forward steps multiple linear regression analyses (with a probability-of-F-to-enter ≤ 0.05) were carried out to determine the association of the motivation for yoga therapy with patient rated treatment outcomes. Separate models were constructed (one for each of the dependent variable). In each model, the subsections of motivation for physical activity which showed a significant relationship with the outcome variables based on Pearson correlation test were used as

predictor variables. Age, gender, and baseline EQ-5D-3L set values and VAS scores of the EQ-5D-3L were entered simultaneously in the first step of models to control the potential confounding effect of these variables in case if these variables showed a significant correlation with outcomes. Collinearity was examined using tolerance and variance inflation values, with no problems found. Data were analyzed using SPSS version 24.0. Statistical significance was set at the $P < 0.05$ level.

RESULTS

Three hundred and eighty-nine patients aged between 18 and 50 years (252 females) completed the study. The participants' baseline characteristics are provided in Table 1.

Table 1: Patients' baseline characteristics (n=389)

Characteristics	Values
Age (years)	
Mean ±SD	41.45±8.38
Range	18 to 50
Gender n(%)	
Male	137 (35.2)
Female	252 (64.8)
Education n(%)	
No schooling at all	33 (8.5)
School	200 (51.4)
Graduation	96 (24.7)
Post-Graduation	33 (8.5)
Professional	27 (6.9)

(1) Interrelationship Between Examined Predictors and Outcome

Table 2 presents the bivariate correlations between the predictors and outcome variables.

Table 2: Relationship between examined predictors and outcomes (values are coefficient of correlation)

Predictor variables	Outcome variables		
	Post-Pre difference in EQ 5D-3L scores#	Post-Pre difference in EQ 5D-3L VAS scores#	Global Perceived effect scale scores&
Age	-0.006	0.075	-0.048
Gender	-0.020	0.165**	0.037
External Regulation Scores	-0.232**	-0.368**	-0.094
Introjected Regulation Scores	0.195**	0.439**	-0.006
Identified Regulation Scores	-0.261**	-0.262**	0.005
Intrinsic Motivation Scores	-0.222**	0.409**	-0.025
Relative Autonomy Index	-0.057	-0.014	0.070
Visual Analog Scale (EQ-5D-3L)	-0.111*	-0.618**	0.068
EQ-5D-3L Set Value	-0.534**	-0.083	-0.091

*p<0.05(two tailed). **p<0.01 (two tailed). #Higher Value= better outcome &Lower Value= better outcome

The results of the final steps of the multiple regression analyses for post-pre change in outcome variable are presented in Table 3.

(i) Controlling for baseline EQ-5D-3L set value scores, identified regulation for physical activity negatively predicted the change in the EQ-5D-3L set value scores.

Table 3: Multiple regression analyses for (1) post-pre difference in total EQ5D-3L set value scores, (2) post-Pre difference in EQ 5D-3L VAS scores and (3) Global Perceived effect scale scores

Dependent Variable	Predictor Variable	B*±SE	β	p value	Change in R2
Post-Pre difference in EQ-5D-3L Set Value Scores#	Baseline EQ-5D-3L Set Value Scores	-0.457±0.041	-0.496	<0.001	0.285
	Identified Regulation Scores	-0.015±0.007	-0.122	0.024	0.009
	Adjusted R2 for the model = 0.299				
Post-Pre difference in EQ 5D-3L VAS scores#	Baseline EQ 5D-3L VAS scores	-0.577±0.045	-0.568	<0.001	0.382
	External Regulation Scores	-1.606±0.637	-0.112	0.012	0.010
	Adjusted R2 for the model = 0.389				

*Unstandardized coefficients, #Higher Value= better outcome, &Lower Value= better outcome

(ii) Controlling for baseline VAS scores, external regulation for physical activity negatively predicted change in EQ-5D-3L VAS scores.

(2) Interrelationship Between Motivation for Physical activity and Baseline health state

(i) Controlling for age and gender, introjected regulation scores and intrinsic motivation scores positively predicted baseline EQ-5D-3L VAS scores.

(ii) Controlling for age and gender, RAI scores positively predicted baseline EQ-5D-3L VAS scores.

The results of the final steps of the multiple regression analyses with EQ-5D-3L VAS as dependent variable are presented in Table 4.

Table 4: Multiple regression analyses with baseline EQ-5D-3L VAS scores as a dependent variable

Dependent Variable	Predictor Variable	B*±SE	β	p value	Change in R2
Post-Pre difference in EQ-5D-3L Set Value Scores#	Baseline EQ-5D-3L Set Value Scores	-0.457±0.041	-0.496	<0.001	0.285
	Identified Regulation Scores	-0.015±0.007	-0.122	0.024	0.009
	Adjusted R2 for the model = 0.299				
Post-Pre difference in EQ 5D-3L VAS scores#	Baseline EQ 5D-3L VAS scores	-0.577±0.045	-0.568	<0.001	0.382
	External Regulation Scores	-1.606±0.637	-0.112	0.012	0.010
	Adjusted R2 for the model = 0.389				

*Unstandardized coefficients

DISCUSSION

Patients' EM for physical activity predicted lower self-rated overall health after the course of yoga and allied therapies based on the EQ-VAS scores.[7]

Hence factors such as 'feeling that other people were expecting them to be physically active' (i.e., EM, external regulation) were less likely to result in benefit from yoga therapy'.[1] In line with these findings, at baseline (i) introjected motivation (a form of motivation that marks the first step in the internalization of motivation into personally meaningful and important goals.[14,15] (ii) intrinsic motivation, and (iii) greater autonomy (based on the RAI) in motivation to be physically active predicted better self-rated overall health at baseline.

Based on these findings of greater likelihood of improvement with yoga with greater IM for PA, since (i) yoga has components of PA[1] and (ii) PA has numerous benefits to health[1], it would be useful for yoga therapy programs, to target increasing patents' intrinsic motivation to be physically active. There are at least three commonly used strategies to augment IM for physical activity. One strategy involves enhancing the positive experience while being physically active.[13] In the present context of patients, the yoga practice session may be made more enjoyable and appear enjoyable rather than challenging for patients with pauses for rest and by allotting time for practices which each patient finds enjoyable (this may be ascertained by interaction with the patients). The second strategy to increase IM for physical activity is the addition of incentives to be physical active (in case of yoga practice this could be improving the class setting to make it welcoming, with clear display of precautions and contraindications of each asana practice, where relevant).[14] A third way to increase IM involves changing what people focus on while pursuing an activity , i.e., an immediate experience rather than long term outcomes and benefits.[15] In the case of yoga asana practice this may involve directing patients' focus to recognize short term benefits of asanas during a session such as feeling more energized or with more positive feelings (such as increased self-esteem), which have been reported in published research.[16] There should not be an excess focus on these goals as this could have negative effects based on the connection between having high expectations and hence leading to a less desirable outcome.[17]

To make the present findings generalizable, recruitment of patients from severable centers is preferable, whereas the selection of patients from a single YT center in this study limits

generalization of the findings.

CONCLUSION

In summary, greater autonomy in patients' motivation for PA predicted better health at baseline while higher EM predicted less improvement after YT than before. Strategies to enhance the intrinsic enjoyment of physical activity components of yoga as therapy are suggested, targeting increasing patients' intrinsic motivation to be active physically.

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