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A Study of Changes in Perceived Stress Following an 8 week Mindfulness intervention (Mindful Life Management)

Sivasubramoney K[1], Lekshmy K[2], SharikaMenon[3]
**Associate Professor OfPsychiatry, Government Medical College, Thiruvananthapuram.*
***Psychologist AndCounsellor, BGHUD, Mavelikara.*
****Psychologist, Princeps Academia, Thiruvananthapuram*

Abstract: *Stress has been described as a disease of the 21st century. The current pilot research was an attempt to study the effect of Mindful Life Management, a Mindfulness Based Intervention on perceived stress among a group of healthy volunteers The 10 study participants were volunteers who enrolled for the 8 week MLM program. The main tools used for the study were a specially prepared semi-structured proforma for collecting the socio-demographic data, Mini Mental Status Examination (MMSE), Perceived Stress Scale (PSS), and Five Facet Mindfulness Questionnaire (FFMQ). Each facet in FFMQ significantly varied in their mean score before and after MLM training and self- practice. Highest changes were observed in Non- Judgment and Awareness. A significant correlation was established in each facet and Five Facet Mindfulness Questionnaire Score as a whole with Perceived Stress. The paired differences of PSS between means was significant at a p value <.003. The paired difference of means of each facet in FFMQ and FFMQ score as a whole is significant at a p value <.003. The study proved that MLM is definitely an intervention which can be tried in general population who are pestered with stress of daily living.*

I. Introduction

Stress has been described as a disease of the 21st century. We knowtoday, that a human being cannot be free from the effects and influence of stress till the brain remains in a working condition. It is very important for everyone to cope with stress and it is for this reason that WHO has included coping with stress as one among the life skills which one should attempt to develop. Stress management trainersuse various techniques like hypnosis, guided imagery, massage, deep breathing and various magico-religious methods which were called as brain fooling techniques. Now-a-days, even medications are used as tools for stress management.

Mindfulness refers to the awareness that emerges, through being present in the present moment. Since the past several years, Mindfulness Based Interventions (MBIs) are gaining popularity and acceptance both among the general public and the scientific community. In the field of mental health, MBIs are used both as a general stress management strategy and as a component of various psychotherapies like Mindfulness Based Cognitive Therapy(MBCT) and Dialectical Behavior Therapy (DBT).

During the 1970s, Jon Kabat-Zinn developed the program of Mindfulness Based Stress Reduction (MBSR) (1). Kabat Zinn, defined mindfulness as "paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment by moment" (2). It is the process of intentionally cultivating an awareness of the present moment and accepting the experience without any attempt to change the experience (3). Mindfulness is considered as a skill used to modify one's experience of stress through the development of self-regulation of attention, present moment awareness and acceptance of internal experiences. Mindfulness Based Stress Reduction (MBSR) is the most popular among the mindfulness based stress reduction programs (1).

Mindfulness Based Stress Reduction (MBSR)

MBSR is a structured 8 week psycho-educational approach designed for the purpose of stress reduction and health enhancement. Currently it is also used in management of many general health problems including mood and adjustment problems. Meta-analyses and systematic reviews have reported beneficial effects of MBSR interventions (4).

Mindful Life Management (MLM)

MLM is an experiential educational stress management program developed by the Holistic and Psychosomatic Clinic of the Department of Psychiatry, Government Medical College, Thiruvananthapuram in 2009. The major components of MLM include mindfulness meditations, mindful yoga, mindful movements, life skills awareness and psycho-education on stress. The program has been functioning in the Department of Psychiatry since the past 8 years. The program is offered as two day workshop and as eight week program with

one 2.5 hours session every week on a fixed day. The participants are encouraged to spend a minimum of 30-45 minutes per day at home for self-practice.

Review of Literature

The most studied form of mindfulness training in the United States is mindfulness-based stress reduction (MBSR), developed by Jon Kabat Zinn. MBSR is a structured group program of mindfulness training developed by Kabat-Zinn (1). It is an established program shown to reduce symptoms of stress, anxiety, and depression. Several randomized controlled studies conducted since then have shown that MBSR is effective in improving mental health in clinical and non-clinical populations (5). Research over the past several years have documented significant stress reduction following mindfulness based intervention (6). Mindfulness brings about various positive psychological effects, including increased subjective well-being, reduced psychological symptoms and emotional reactivity, and improved behavioral regulation(7). Mindfulness intervention, with their emphasis on developing detached observation and awareness of the contents of consciousness, may represent a powerful cognitive behavioral coping strategy for transforming the ways in which we respond to life events (8). Mindfulness based interventions has been shown to reduce stress levels in healthy people (9). Mindful acceptance of unpleasant, threatening or painful thoughts and feelings has been suggested to buffer against the potential for depression, anxiety, and high perceived stress symptoms and improve the quality of life (10).

Methodology

The primary objective of the current research was to study the effect of a Mindfulness Based Intervention (MBI) namely Mindful Life Management (MLM) on perceived stress among a group of healthy volunteers who wanted to learn to manage stress of daily living.The study participants were volunteers who enrolled for the 8 week MLM program conducted by the Holistic and Psychosomatic Clinic of the Department of Psychiatry, Government Medical College, Thiruvananthapuram. The present study was conducted as a pilot study of a main study on the effect of MLM program on stress management of healthy individuals. The sample size of the main study was calculated based on the prevalence of stress among healthy general population. Since the main study would be the first of its kind in our part of the country, a feasibility trial was very much necessary. This feasibility trial had a sample size of 10 volunteers. There were 6 males and 4 females within the age limits of 35-55 who experienced moderate to severe stress. Every subject had received college education. No one of the subjects had any major physical or psychiatric illnesses. Those who were unwilling to follow the stipulations on practicing mindfulness during the study period and those who were educated to below 10^{th} standard were excluded in the first screening itself. Such respondents who were identified to have major physical and psychological problems were also eliminated further to finalize with a sample size of 10. There were no dropouts in the study.

Participants were selected from those who registered for the Mindful Life Management Workshop as per notification given in the social media about a newly developed stress management package. Participants were informed that the results of the study will be used for the further development of the package all the whilemaintaining their confidentiality. Those who were willing to sign a written informed consent were included in the study. Participants were also required to have a commitment to spend 45-60 minutes at home for home practice. During the first session, the goals and the format of the program were explained and the doubts of the participants were cleared.

The main tools used for the study were a specially prepared semi-structured proforma for collecting the socio-demographic data, which was filled up by the study participants, Mini Mental Status Examination (MMSE), Perceived Stress Scale (PSS), and Five Facet Mindfulness Questionnaire (FFMQ). Pre and post assessment were done on week 0 and week 9 respectively.Participants were screened with MMSE initially. Those participants with no cognitive impairment (MMSE score >/=24) were included in analysis.

Participants were requested to fill up the following questionnaires during the session 9

1. Perceived Stress Scale(PSS)
2. Five Facet Mindfulness Questionnaire (FFMQ)

Tools

Perceived Stress Scale (PSS)

The Perceived Stress Scale (PSS) is a widely used psychological instrument developed by Sheldon Cohen, to measure of the degree to which situations in one's life are appraised as stressful. The scale includes a number of direct queries about current levels of experienced stress. The PSS was designed for use in community samples with at least a junior high school education. The questions in the PSS ask about feelings and thoughts during the last month. Cohen et al has shown correlations with PSS and Stress Measures (11).

Five Facet Mindfulness Questionnaire (FFMQ)

The Five Facet Mindfulness Questionnaire (FFMQ) is a psychological measurement tool to explore mindfulness. It is based on five independently developed mindfulness questionnaires that are bound together in a factor analytic study. The questionnaire consists of 39 items. The five facets are: observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience. FFMQ is one of the most cited instruments to assess mindfulness (13). It has been adapted and validated in at least 6 countries and is useful in measuring levels of mindfulness in awide range of population with or without experience in meditation(14, 15, 16, 17).

Data collection

Data collection was done at Government Medical College, Thiruvananthapuram. The research had a single group pretest and posttest design. The entire study was completed in 9 weeks. The course on MLM was for 8 week and on week 9 plans for future practice were discussed along with posttest assessment. Pretest was performed on week 1. Before the introductory class MMSE, PSS and FFMQ were administered and the scores were considered as pretest values. In each week, a session of 150 minutes was given along with practice sessions and discussions on last week's practice. Participants were given an audio version of the meditation as CD during the second session for home practice. Participants were be asked to record the duration and type of home practice in log sheets, prepared for the purpose. Home practice log sheetswere collected from the participants on each day before the session started by a study assistant. The weekly schedule of class was as follows

Week	Topic
1	Pre assessment Introduction to Mindful Life Management and Mindfulness
2	Introduction to Mindfulness of body and mind
3	Mindfulness of body, mindful movements
4	Mindful yoga
5	Mindful yoga
6	Mindfulness of emotions
7	Mindfulness of thoughts
8	Mindfulness and life skills
9	Post assessment Plan for future practice

II. Results

Data analysis was done using frequencies, paired t test and effect size calculation. Total number of participants in the study was 10 which included 6 males (60%) and 4 females (40%). Average age of the male participants was 48.2 years and that of female participants was 41.8 years. All the participants were married. One male and one female participant were widower and widow.All participants were educated to graduation or more.All the participants received an MMSE score of 25 and above indicating no cognitive impairment.The data were statistically analyzed using Paired t- test. The Shapiro- Wilk test was utilized to establish normality of the sample. Effect size was also calculated. Table 1 charts the mean score and standard deviation of Perceived Stress Score before and after training in Mindful Life Management. The mean score of Perceived stress before MLM training was 18.80 and the same plunged down to 14.30 after training and self- practice

Table 1: Distribution of subjects according to mean score of PSS (n=10)

Pair	Mean	Std. deviation
PSS- Pre	18.80	2.53
PSS- Post	14.30	3.40

Table 2 depicts that each facets in FFMQ significantly varied in their mean score before and after MLM training and self- practice. Highest changes were observed in Non-Judgment and Acting with Awareness. FFMQ in toto also had a significance difference (95.8 to 124.9) in its mean value before and after MLM training and self- practice.

Table 2: Distribution of subjects according to mean scores of FFMQ (n=10)

Facet	Mean	Std. deviation
Observation- Pre	16.10	2.33
Observation- Post	20.10	3.11`
Description- Pre	26.00	7.20
Description- Post	32.10	4.75
Awareness- Pre	19.80	3.05
Awareness- Post	26.40	2.42

Non- Judgment- Pre Non- Judgment- Post	18.80 26.50	2.97 5.25
Non-Responsiveness-Pre Non-Responsiveness-Post	15.10 19.80	2.96 2.20
FFMQ- Aggregate- Pre FFMQ- Aggregate- Post	95.80 124.90	13.67 3.91

Table 3 illustrates that a significant correlation was established in each facet of Five Face Mindfulness Questionnaire Score as a whole with Perceived Stress Scale Score.

Table 3: Distribution of subjects according to Paired sample correlation before and after intervention in each facet of FFMQ and PSS (n=10)

No.	Pair	Correlation	Significance
1	PSS	.305	.392
2	F1- Observation	.612	.060
3	F2- Description	.872	.001
4	F3- Awareness	.360	.307
5	F4- Non- judgment	.292	.414
6	F5- Non- reactivity	.702	.024
7	FFMQ- Aggregate	.318	.371

Table 4 clearly depicts that the paired differences of PSS between means is significant at a p value < 0.003. The paired difference of means of each facet in FFMQ and FFMQ score as a whole is significant at a p value< 0.003.

Table 4 Distribution of subjects upon t- Test comparing the mean difference between pre and post test (n=10)

No	Pair(Pre and Post)	Paired differences					t	df	Sig.(2-tailed)
		Mean	Std. deviation	Std. error mean	95% confidence interval of the difference				
					Lower	Upper			
1	PSS	4.50	3.57	1.13	1.95	7.05	3.99	9	**.003**
2	F1-Observation	-4.00	2.49	.79	-5.78	-2.02	-5.07	9	**.001**
3	F2-Description	-6.10	3.84	1.22	-8.85	-3.35	-5.02	9	**.001**
4	F3- Awareness	-6.60	3.13	.99	-8.84	-4.36	-6.66	9	**.000**
5	F4- Non-judgment	-7.70	5.23	1.65	-11.44	-3.96	-4.66	9	**.001**
6	F5- Non-reactivity	-4.70	2.11	.67	-6.21	-3.19	-7.04	9	**.000**
7	FFMQ-Aggregate	-29.10	15.24	4.82	-40.00	-18.20	-6.04	9	**.000**

Table 5 vividly describes the effect size of PSS and FFMQ. The difference between means is significant (t=-6.037, df= - 9, p< .001). The effect size is 2.333. The effect size score r is .896

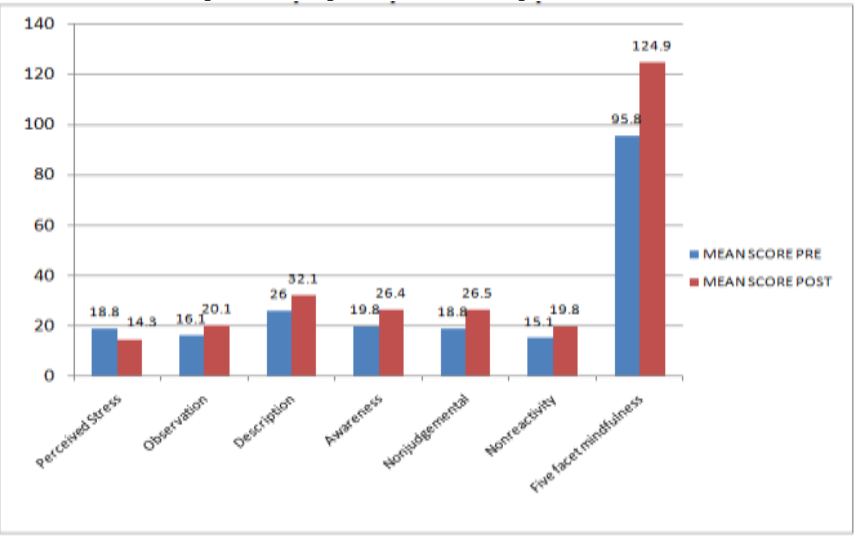
Table 5: Distribution of subjects according to effect size (n=10)

	R	Cohen's *d* (using sample 1 variance)	Cohen's *d* (using pooled variance)
Perceived stress	0.799	1.779	1.779
Observation	0.861	1.716	1.456
Description	0.858	0.848	1.001
Awareness	0.912	2.166	2.401
Non judgmental	0.841	2.589	1.804
Non reactivity	0.920	1.587	1.802
FFMQ	0.896	2.129	2.233

Figure : 1- Showing the difference between the mean scores of pre-test and post-test of variables perceived stress, Observation, Description, Awareness, Non-judgemental, Non-reactivityand FFMQ total

Fig. 1

Difference between mean scores of pretest and posttest variables perceived stress and five facets of FFMQ



Results at a glance

- ➔ The mean age of the participants was 45.6
- ➔ Perceived Stress Score before (18.80) and after (14.30) MLM training shows a significant reduction in mean score.
- ➔ Each facet in FFMQ significantly varied in their mean score before and after MLM training and self-practice. Highest changes were observed in Non- Judgment and Awareness. FFMQ aggregate score also shows a significance difference (95.8 to 124.9) in its mean value pre and post MLM training and self-practice.
- ➔ A significant Effect size is also noted.
- ➔ 6 subjects had a difference in PSS score by more than 5 after the intervention
- ➔ 6 subjects had a difference in FFMQ score by more than 25 after the intervention
- ➔ The subject who showed the highest difference in PSS score of -7 was observed to have a change in FFMQ score by 49
- ➔ The subject who scored a difference by 55 in FFMQ was also observed to have a change in PSS by -6.
- ➔ In one study subject there was an in increase in PSS score by 3. This may be due to the sudden and unexpected death of a close family member during the latter half of the study period.

III. Discussion

The study has proved that MLM is definitely an intervention which can be tried in general population who are troubledwith stress of daily living. The present study was a community study which entirely relied upon voluntary admission as subjects of the research. Since this was the first trial with an eight week long course and 45 – 60 minutes of home practice drop outs were expected. During the research it was evident that the group that was recruited had a high level of motivation to learn and practice MLM regardless of the time and effort it required. The mean score of Perceived stress before MLM training was 18.80 and the same plummeted down to 14.30 after training and self- practice. At the same time the mean of trait mindfulness as measured by FFMQ soared up from 95.8 to 124.9 with peak results observed in awareness and non- judgment facets. A community study that examined the effect of mindfulness based community programmes in reducing stress of general population held in USA also gave similar results. An impetus in this direction, that is, managing the daily stress and coping with daily stressors at the grass root level through community based programmes on mindfulness based interventions like MLM may prove very effective. The efficacy of such a step is yet to be studied (18).

Even with a small sample size of 10, the study findings had a high level of significance and effect size was also large. Data analysis using paired t test with the paired differences of PSS between means was proved to be significant at a p value <.003(95% CI). The paired difference of means of each facet and FFMQ score as a whole alsowere significant at a p value less than .003(95% CI). A meta- analysis on Mindfulness Based Stress Reduction in healthy individuals, including a total of 29 studies (n=2668) gives supporting evidences for the above stated result. Effect-size estimates suggested that MBSR is moderately effective in pre-post analyses (n=26; Hedge's g=.55; 95% CI [.44, .66], p<.00001) and in between group analyses (n=18; Hedge's g=.53; 95% CI [.41, .64], p<.00001). Results suggested large effects on stress, moderate effects on anxiety, depression, distress, and quality of life, and small effects on burnout (19).

The present feasibility trial could not classify the results on stress reduction or mindfulness increment on the basis of age, gender, or education. The subjects included physicians, psychologists, psychological counselors, and other Government employees. No stratification based on type of job could also be performed. Hence it may be concluded that stress reduction by the practice of mindfulness may be highly an individually geared one, or there may be other parameters that could come to play which were not currently researched on. An intense longitudinal study on the temporal order of change in daily mindfulness and affect during mindfulness-based stress reduction which also examined inter-individual differences in the association between mindfulness and affect and possible predictors of these differences identified that the individual differences in stress reduction or mindfulness enhancement could not be explained by gender, age, level of education, average level of mindfulness, home practice, or baseline levels of mindfulness and affect (20).

The pilot study on effect of MLM was a cross- sectional one with a limited number of healthy sample and subjects were recruited purely on the basis of their own interest and motivation. Only the immediate effect on stress and mindfulness were studied here. An intense motivation to come out of stress itself could ameliorate stress reduction. Therefore the generalizability of the results is limited. The long term effect of increasing mindfulness practice in reducing stress is yet to be studied. A double blinded randomized trial would be the best to state the results in the most empirical sense. Still, the effect of mindfulness practice through MLM in paring down stress in healthy general population cannot be side lined.

To our best knowledge, this is the first study of its kind in the state of Kerala. The delimitations implied on study as level of education and absence of major physical or psychiatric illnesses were to confirm the effect of MLM on general population. Once the effect on healthy normal individuals could be established a similar study on subjects with health problems could be investigated. The stipulation on daily practice was maintained strictly by assessing the daily log sheet before starting each class. This was helpful for the subjects to stick on to the course and home practice. An assessment of change in compassion and symptoms of stress in various domains may be added as objectives in the main study.

IV. Conclusion

The current study provides initial evidence that mindfulness based interventions could be tried with efficacy in our part of the country also. The study has proved that MLM, a structured mindfulness based intervention can be tried in general population who are pester with stresses and strains of daily living. The present study was a community study which entirely relied upon voluntary admission as subjects of the research. Further studies will definitely cover the limitations of this pilot study.

References

[1]. Kabat-Zinn, J. (1990). Full catastrophe living: Using the wisdom of your body and mind to face stress, pain and illness. New York: Delacourt.

[2]. Kabat-Zinn, J. (2003). "Mindfulness-based interventions in context: past, present, and future." Clinical Psychology: Science & Practice 10(2): 144-156.

[3]. Hayes, S. C., Luoma, J., Bond, F., Masuda, A., & Lillis, J. (2006). Acceptance and Commitment Therapy: Model, processes, and outcomes. Behaviour Research and Therapy, **44**(1), 1-25.

[4]. Grossman P, Niemann L, Schmidt S, Walach H. (2004). Mindfulness-based stress reduction and health benefits. A meta-analysis. J Psychosom Res 57: 35-43.

[5]. Fjorback, L. O., Arendt, M., Ornbol, E., Fink, P., &Walach, H. (2011). Mindfulness-based stress reduction and mindfulness based cognitive therapy – A systematic review of randomized controlled trials. ActaPsychiatricaScandinavica, 124(2), 102-119

[6]. Eberth J, Sedlmeier P. (2012) The Effects of Mindfulness Meditation: A Meta-Analysis. Mindfulness. 3(3): pp 174–189.

[7]. Keng SL, Smoski MJ, Robinsa CJ. (2001). Effects of mindfulness on psychological health: A review of empirical studies. Clinical Psychology Review. 31(6): 1041–1056.

[8]. Astin, J. A. (1997). Stress reduction through mindfulness meditation: effects on psychological symptomatology, sense of control, and spiritual experiences. Psychotherapy and Psychosomatics, 66, 97–106.

[9]. Chiesa A, Serretti A. (2009). Mindfulness-Based Stress Reduction for Stress Management in Healthy People: A Review and Meta-Analysis. The Journal of Alternative and Complementary Medicine. 15(5): 593–600

[10]. Ellis S, Brown RF, Thorsteinsson EB, Perro C. (2014). Trait Mindfulness, Affective Symptoms and Quality of Life in People with Non-Hodgkin's Lymphoma. Journal of Cancer Therapy. 5: 1114-1126.

[11]. Cohen, S. and Williamson, G. (1988). Perceived Stress in a Probability Sample of the United States. Spacapan, S. and Oskamp, S. (Eds.) The Social Psychology of Health. Newbury Park, CA: Sage.

[12]. Brown KW, Ryan RM. (2003). The benefits of being present: mindfulness and its role in psychological well-being. J PersSoc Psychol. 2003; 84: 822–848.

[13]. Sauer, S., Walach, H., Schmidt, S., Hinterberger, T., Lynch, S., Büssing, A., &Kohls, N. (2013). Assessment of Mindfulness: Review on State of the Art. Mindfulness, 4(1), 3-17.

[14]. Baer, R. A., Smith, G. T., Lykins, E., Button, D., Krietemeyer, J., Sauer, Williams, J. M. (2008). Construct validity of the Five Facet Mindfulness Questionnaire in Meditating and Nonmeditating Samples. Assessment, 15, 329-342.

[15]. Cebolla, A., García-Palacios, A., Soler, J., Guillen, V., Baños, R., &Botella, C. (2012). Psychometric properties of the Spanish validation of the Five Facets of Mindfulness Questionnaire (FFMQ). European Journal of Psychiatry, 26, 118-126.

[16]. Dundas, I., Vøllestad, J., Binder, P.-E., &Sivertsen, B. (2013). The Five Factor Mindfulness Questionnaire in Norway. Scandinavian Journal of Psychology, 54, 250-260.

[17]. Hou, J., Wong, S. Y., Lo, H. H., Mak, W. W., & Ma, H. S. (2013). Validation of a Chinese Version of the Five Facet Mindfulness Questionnaire in Hong Kong and Development of a Short Form. Assessment. Advance online publication.
[18]. Galla B. M., O'Reilly G. A., Kitil M. J., malley S. L., Black D. S. (2015) Community Based Mindfulness Program for Disease Prevention and Health Promotion: Targetting Stress Reduction.Sep-Oct; 30(1):36-41.
[19]. Khoury B, Sharma Mindfulness, Rush S. E., Fournier C. (2015) Mindfulness-based stress reduction for healthy individualsLA meta-analysis. J Psychosom Res. Jun;78(6):519-28.
[20]. Hoge E. A., Bui E., Palitz S. A., Schwarz N. R., Owens M. E., Johnston J.M., Pollack M. H., Simon N.M. (2017). The effect of mindfulness meditation training on biological acute stress responses in generalized anxiety disorder. Psychiatry Res. Jan 25. (Epub ahead of print).