

Mindfulness Based Stress Reduction (MBSR) for migraine headaches in working women

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ABSTRACT

Women are natural multi taskers. This enables women to manage homes, children, jobs, in laws and many more roles and responsibilities. She works like a well oiled machine shifting gears efficiently. Sometimes there are stressors in her pathway. These stressors often cause aches and pains. This paper is an attempt to alleviate migraine headaches through a Mindfulness Based Stress Reduction programme. The sample consisted of 35 working teachers of the age group 33 to 54. Purposive Sampling technique was used. All the chosen subjects were victims of migraine headaches at least twice in a month. The Five Facet Mindfulness Questionnaire (Baer, et al., 2006) was used to understand the level of Mindfulness prior to the intervention. The Holmes-Rahe Stress Inventory was used to understand the Life Stressors in the Women's life. The intervention was carried out in 8 sessions. After the intervention, the subjects were again asked to keep a journal of their headaches. They were again assessed for mindfulness and stress. Results indicated that the headaches had reduced by 50% at least in all the women. Moreover, there was a marked improvement in their stress levels and improved awareness and non judgmental items in the Five Facet Mindfulness Questionnaire.

Keywords: *Migraine headache, Women, Mindfulness*

Migraine is a debilitating, often powerful form of headache that is many times accompanied by sensitivity to light, nausea or vomiting sensations, fatigue, blurring vision among many other symptoms. The ICD 10 diagnoses Migraine, Unspecified as “a neural condition characterized by a severe recurrent vascular headache, usually on one side of the head, often accompanied by nausea, vomiting, and photophobia, sometimes preceded by sensory disturbances.” The migraine headache often affects more number of women than men. Also, the Migraine headache is triggered by various factors such as Stress, Certain types of Foods, Caffeine, Changes in the Climate, Changes in the Sleeping Patterns and many more. Sometimes the headache is on one side of the head only. The migraine headache lasts from four hours to three days for some people.

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Signs and Symptoms of Migraine Headache

Most common symptoms of Migraine include, nausea, ear pressure, pain around the eyes, facial pressure, dizziness, heightened light sensitivity, blurred vision or double vision, intermittent or continuous stabbing pain behind the eyes or one eye, sharp pain or a band of pain in the forehead or one side of the face, sleeplessness, mood disorders etc. Unexplained nasal congestions or sinusitis is also seen in some people. Sometimes a burning sensation in the mouth or tongue is also experienced. Facial contractions are also experienced by some people.

Causes of Migraine Headache

Earlier scientists were of the opinion that inappropriate blood flow to the brain causes Migraine. But recent research into the biological causes suggest that when overactive nerve cells sends signal that in turn activate “the trigeminal nerve”, (which is the fifth cranial nerve which is responsible for the sensation in the face and certain motor activities such as chewing/ biting). This activation causes release of certain chemicals which in turn cause the lining of the blood vessels in the brain to swell, causing headache. The cause of Migraine is also hereditary in nature. When one inherits a faulty nervous system, it triggers migraine.

Migraine is also triggered by intake of some food items. Alcohol and Tyramine (an amino acid found in red wine, cheese, smoked fish and other foods), monosodium glutamate, caffeine, phenylalanine (in certain nuts, fruits and seeds) all are known triggers. Sudden and intense exercise can also trigger Migraine, but moderate exercise can reduce the intensity of headaches. Sometimes, the female hormone estrogen levels, ovulation and pregnancy hormones can also act as trigger for the Migraine headache. Bright lights, overly shrill noises, certain specific odors also cause Migraine headaches. Some changes in barometric pressure brought on by weather changes also cause Migraine.

Stress is one of major causes of Migraine headaches. Stress resulting from a busy lifestyle, lack of proper diet, sleep and psychological factors also cause stress related Migraine headaches especially among women, are caused and triggered due to stress. Working Women have been found to be more stressed due to their responsibilities of managing home and workplace. To achieve Work-Life balance, the working woman strives hard and many of them are plagued by sleeplessness, fatigue, lack of family support, guilt among many other stressors. This paper is an attempt to alleviate migraine headaches among working women through a Mindfulness Based Stress Reduction programme.

The key to managing the life of a person with migraine headache begins with stress coping mechanisms. Attempting a healthy lifestyle with healthy and timely diet, keeping oneself hydrated, sleeping on time, and practicing emotional stability goes a long way in managing migraine.

Mindfulness meditation is one such technique based on Non judgmental observation, awareness of the present, and a gentle understanding of the underlying mechanism of pain. This is a wholesome procedure involving listening to our body and its feelings without any criticism and striving for a calm acceptance of the happenings in the present. This brings forth a self nurturing awareness that can be cultivated through calm observation of one’s inner being. This enhances self awareness greatly and opens our mind to honoring the wholesomeness of our selves. When regularly practiced Mindfulness meditation is a healing cure to anxiety, depression and many other stress based disorders. In this study Mindfulness

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MBSR is being used as an intervention to reduce Migraine headaches among working women.

The concept of Mindfulness Based Stress Reduction (MBSR) was initially developed by Professor Jon Kabat-Zinn at the University of Massachusetts Medical Center in 1970s. This method uses a combination of Mindfulness Meditation, Body Awareness, Yoga and explores the pattern of behavior, thought and action. This programme is an eight week activity based helping technique used to overcome troubles caused by stress.

REVIEW OF LITERATURE

Pressman et al (2019) in a community based MBSR program for moderate to severe migraine headache on 60 participants, it was concluded in the pilot study concluded in 2018 that MBSR works well to reduce the severity of migraine headaches evident from the headache diary maintained by the participants. This was a randomized trial program. The registration for the full program is ongoing.

A research was conducted for overcoming the stress of 201 caregivers of Dementia patients by Liu, Sun and Zhong (2018), the results indicated that MBSR decreased depression and carer anxiety among the caregivers of dementia patients.

In a meta analysis of Mindfulness Meditation practice for Primary Headaches by Gu, Hou and fang (2018), it was concluded that compared to other meditation techniques, Mindfulness based stress reduction showed significant positive effects on reducing pain intensity. It was also concluded that a minimum of eight weeks of mindfulness practice reduces pain intensity significantly. This study also recommended use of Mindfulness for alleviating other pain based disorders as an alternative therapeutic technique.

In a study with contrary findings, Anheyar et al (2019) in a research on 185 participants with chronic headache, reported that the symptoms did not reduce due to MBSR/ Cognitive Therapy. The therapeutic intervention did not reduce pain intensity or frequency.

Huang and Shi (2016) conducted a study of effectiveness of MBSR among 418 survivors of breast cancer, the effectiveness of MBSR was tested to overcome the stress related to coping with the rehabilitation process. With an objective to understand the feasibility, safety and effects of the standard 8 week MBSR programme for adults in a pilot controlled randomized trial by Wells et al (2014), it was concluded that MBSR had no dropout rates and had no adverse effects. Also the trial had highly effective results in the duration of the headache, the feeling of disability and showed improved self efficacy and better mindfulness.

Bakshani et al (2015) in a study on perceived pain intensity and quality of life of 40 patients with chronic headache, it was concluded that the intervention with MBSR showed significantly reduced pain intensity and improvement of quality of life of the patients with chronic headache. Similar results were reported by Schmidt et al (2010) in a controlled trial on patients with headache, it was reported that MBSR is an effective intervention to reduce the symptoms of headache.

To evaluate the effectiveness of enhanced MBSR intervention against regular stress management for headaches by Seminowicz et al (2010) it was reported that in all the 98 participants' clinical MRI findings show that MBSR showed better response to treatment and reduced headaches.

Mindfulness Based Stress Reduction (MBSR) for migraine headaches in working women

Since it is seen that women are the major population afflicted with migraine headaches, it was decided to use MBSR to help women overcome the migraine headaches.

METHODOLOGY

The objectives for the study were as follows:

1. To identify the significant difference in Stress levels of migraine sufferers among different age groups
2. To identify the significant difference in facets of Mindfulness of migraine sufferers among different age groups
3. To identify the significant difference in Before, After and Follow- up Phases in the facets of Mindfulness of migraine sufferers.
4. To identify the significant difference in Before, After and Follow- up Phases in Stress levels of migraine sufferers.

The Null Hypotheses framed for the study are as follows:

H 1. There will be no significant difference in Stress levels of migraine sufferers among different age groups

H 2. There will be no significant difference in facets of Mindfulness of migraine sufferers among different age groups

H3. There will be no significant difference in Before, After and Follow -up Phases in facets of Mindfulness of migraine sufferers.

H 4. There will be no significant difference in Before, After and Follow- up Phases in Stress levels of migraine sufferers

Thirty five teachers in the age range of 33 to 54 were selected by the Purposive Sampling method. The participants were sufferers of migraine headaches for a continuous period of minimum two years (Frequency being minimum twice in a month). The participants were encouraged to maintain a headache journal. The tools administered to the participants were The Five Facet Mindfulness Questionnaire (Baer, et al., 2006) and The Holmes-Rahe Stress Inventory (Holmes and Rahe, 1967).

The Five Facet Mindfulness Questionnaire

This test contains 39 items measuring five facets of Mindfulness such as Observation, Description, Awareness of actions, Non-judgmental experience, and Non-reactivity. It is based on a factor analytic research study of the five independent mindfulness questionnaires. This factor analysis yielded five factors that represent mindfulness. This questionnaire has direct and reverse scored items. The five sub-factors of mindfulness showed strong internal consistency (Cronbach's alpha >.70) (Choi, Sung-Youl, 2015). Construct validity for proving usefulness of the scale is relatively high and stable (Baer et al., 2008)

The Holmes-Rahe Stress Inventory

The Holmes-Rahe Stress Inventory(1967) was used to understand the Life Stressors in the participants life. It consists of 43 life changing stressful events. The participants were asked to tally the stressful events respectively. A total score of over 300 is considered to be highly stressful and the person is considered to be at high risk to develop stress related disorders. The reliability of the scale was found sufficient and the rank ordering remained extremely consistent ($r = 0.96 - 0.89$) among patients ($r = 0.91$ to 0.70). (Gerst et al., 1978). Rahe carried out a study by successfully testing the validity of the stress scale as a predictor of illness (Rahe., 1970).

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The participants were administered the Mindfulness Based Stress Reduction (MBSR) for 8 sessions. The intervention was carried out individually and in small group sessions. The participants were encouraged to listen to their bodies, be self-aware and observe pain without reactivity. The thought and emotions associated with the migraine pain were disentangled. Moreover, they were encouraged to practice nonjudgmental attitudes towards their life stressors. They were taught simple breathing exercises and relaxation exercises. The participants were encouraged to observe the onset of migraine and pamper themselves, thus increasing the comfort factor and hence disassociating pain all the time focusing on the present thoughts and feelings without judgment.

After the intervention, the subjects were again asked to keep a journal of their headaches. They were again assessed for mindfulness and stress. A follow-up of the tests were conducted after a period of six months. The collected data were analyzed using SPSS version 21.

RESULTS

The results were initially analyzed for the levels of stress faced by the migraine headaches sufferers were as follows.

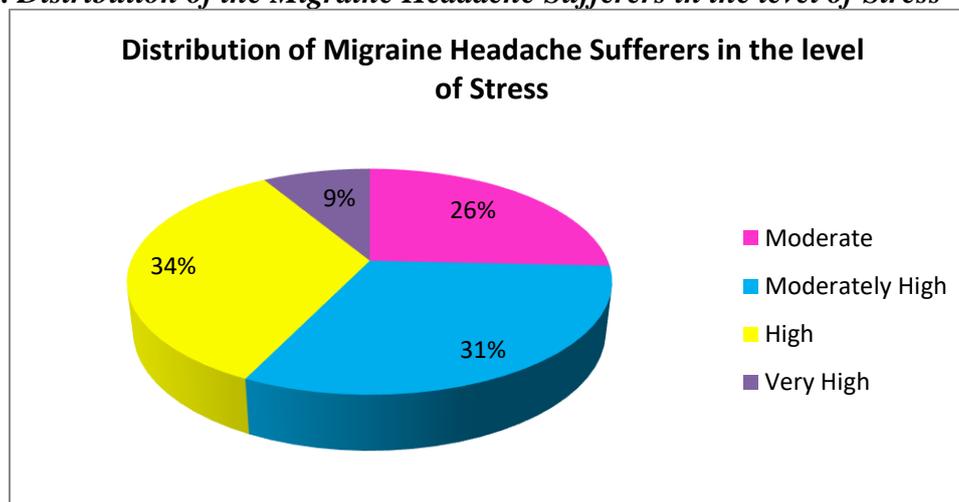
Table 1 Distribution of the Migraine Headache Sufferers in the level of Stress

N=35

S.No	Stress Levels	Number of Participants	Percentage of Participants
1	Moderate	9	26%
2	Moderately High	11	31%
3	High	12	34%
4	Very High	3	9%
5	Total	35	100%

The above table shows that the all the participants of the study faced stress. It can be seen that 26 percent of the women face moderate Stress level and 31 percent of the participants face moderately high Stress levels. It can be seen 34 percent of the participants face high levels of stress, while 9 percent of the participants face very high stress levels. The above data is also represented diagrammatically below.

Figure 1. Distribution of the Migraine Headache Sufferers in the level of Stress



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An Independent sample t test was used to analyze the significant difference in Stress levels among migraine sufferers of different age groups.

Table 2. Mean, Standard Deviation and t value for Stress levels of different Age groups of Migraine Sufferers

N = 35					
Variable	Age	N	Mean	Standard Deviation	t
STRESS	33 to 43 years	18	338.56	45.000	0.21 N.S
	44 to 54 years	17	342.06	54.229	

N.S = Not Significant

The above table indicates that there is no significant difference in the Stress levels of migraine sufferers of different age groups. Thus, the Hypothesis, “H1. There will be no significant difference in stress levels of migraine sufferers among different age groups”, is accepted.

The Mindfulness facets in the present study are Observing, Describing, Awareness of actions, Non judge mentality, and Non reactivity. An Independent sample t test was conducted to find any significant differences in the level of Mindfulness among different age groups of migraine sufferers.

Table 3. Mean, Standard Deviation and t value for Mindfulness facets of different Age groups of Migraine Sufferers

N = 35					
Variables	AGE	N	Mean	Standard Deviation	t
OBSERVING	33 to 43 years	18	11.78	2.962	0.69 N. S
	44 to 54 years	17	12.53	3.448	
DESCRIBING	33 to 43 years	18	13.06	2.645	0.85 N. S
	44 to 54 years	17	14.00	3.808	
AWARENESS	33 to 43 years	18	15.06	3.472	1.39 N. S
	44 to 54 years	17	13.53	2.982	
NONJUDGMENTAL	33 to 43 years	18	15.89	2.867	0.33 N. S
	44 to 54 years	17	15.53	3.538	
NONREACTIVIY	33 to 43 years	18	14.28	4.240	0.18 N. S
	44 to 54 years	17	14.53	4.017	
TOTALFFMQ	33 to 43 years	18	70.06	7.734	0.02 N. S
	44 to 54 years	17	70.12	7.705	

N.S= Not Significant

The above table shows that the t values are not significant for any of the facets of Mindfulness and for the total test also. Hence there is no difference among age groups in the facets of mindfulness. Thus, the Hypothesis, “H 2. There will be no significant difference in facets of mindfulness of migraine sufferers among different age groups” is accepted.

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A One Way Repeated Measures ANOVA was conducted to compare the effect of the MBSR Intervention on Mindfulness in the Before, After and Follow-up Phases.

Table 4. Mean and standard Deviation of Mindfulness in Before, after and Follow-Up Phases of Intervention among Migraine sufferers

N = 35

S.No	Factor	Mean	Standard Deviation
1	Before Intervention	70.09	7.60
2	After Intervention	147.54	10.74
3	Follow - Up	130.69	9.69

Table 5. Repeated Measures One Way ANOVA Analysis of Variance (within group sample) for Mindfulness

N = 35

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Mindfulness	Sphericity Assumed	116154.876	2	58077.438	1663.696	0.01
	Greenhouse-Geisser	116154.876	1.848	62856.974	1663.696	0.01
	Huynh-Feldt	116154.876	1.949	59584.877	1663.696	0.01
	Lower-bound	116154.876	1.000	116154.876	1663.696	0.01
Error(Mindfulness)	Sphericity Assumed	2373.790	68	34.909		
	Greenhouse-Geisser	2373.790	62.829	37.782		
	Huynh-Feldt	2373.790	66.280	35.815		
	Lower-bound	2373.790	34.000	69.817		

Table 6. Pair wise Comparisons for Before, After and Follow-up Phases of Mindfulness among Migraine Sufferers

N = 35

(I) Mindfulness	(J) Mindfulness	Mean Difference (I-J)	Standard Error	Significance
Before	After	-77.45*	1.60	0.01
	Follow- Up	-60.60*	1.31	0.01
After	Before	77.45*	1.60	0.01
	Follow -Up	16.85*	1.30	0.01
Follow -Up	Before	60.60*	1.31	0.01
	After	-16.85*	1.30	0.01

Three paired samples tests were performed to understand the effect of MBSR in the Before, After and Follow-up phases on Mindfulness. The above table shows that there is a significant mean difference in the Before and the After Phases (M=-77.45, SE=1.60). Also there is a significant mean difference in the Before and Follow-up Phases (M= -60.60, SE=1.31).

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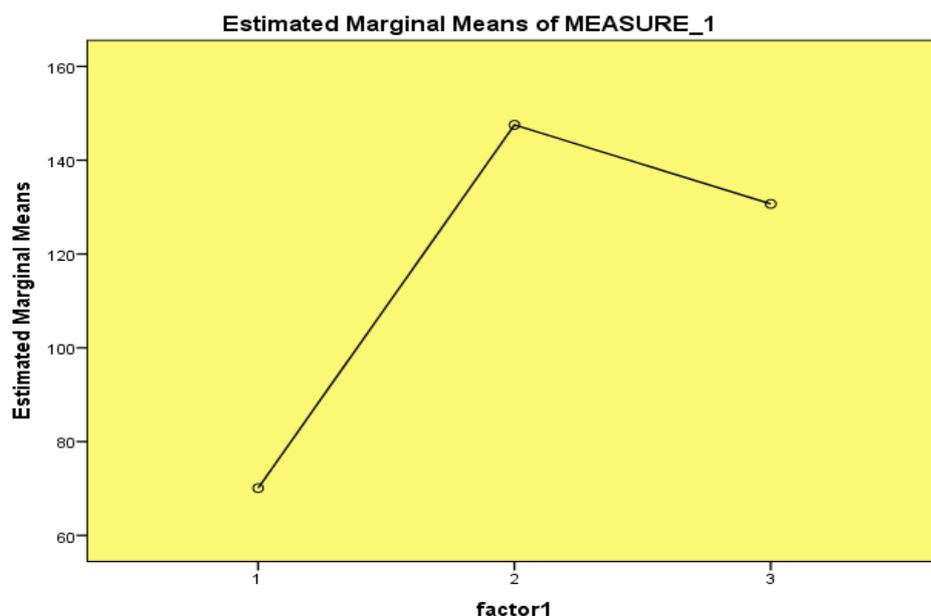
The above table shows that there is a significant mean difference in the After and the Before Phases (M=77.45, SE=1.60). Also there is a significant mean difference in the After and Follow-up Phases (M= 16.85, SE=1.30).

The above table shows that there is a significant mean difference in the Follow-up and the Before Phases (M=60.60, SE=1.31). Also there is a significant mean difference in the Follow-up and After Phases (M= -16.85, SE=1.30).

Thus the Hypothesis “H3. There will be no significant difference in Before, After and Follow-up Phases in facets of Mindfulness of migraine sufferers.” is not accepted.

The same difference is also shown in the figure below.

Figure 2. Mindfulness during Before, After and Follow-up Phases of Intervention among Migraine sufferers



The above graph shows that there is significant difference in the Mindfulness scores from Before to After, and After to Follow Up Phases. It can be clearly seen that the increase in Mindfulness levels effecting from the MBSR intervention shows a clear decrease in the After phase and the effect shows maintenance in the follow-up phase as well.

Similarly, Stress scores were also analyzed in the Before, After and Follow-up Phases using repeated Measures ANOVA.

Table 7 Mean and standard Deviation of Stress in Before, after and Follow-Up Phases of Intervention among Migraine sufferers

Descriptive Statistics			
	Mean	Standard Deviation	N
Before Intervention	340.26	48.98	35
After Intervention	202.43	38.30	35
Follow-up	227.94	45.11	35

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The above table shows the Mean and Standard Deviation for Stress for the Before, After and Follow- up Phases of Intervention.

Table 8 Repeated Measures One Way ANOVA Analysis of Variance (within group sample)for Stress

Source	Type	III Sum	df of	Mean Square	F	Significance
Stress	Sphericity Assumed	376392.248	2	188196.124	105.772	0.01
	Greenhouse-Geisser	376392.248	1.804	208624.235	105.772	0.01
	Huynh-Feldt	376392.248	1.899	198186.596	105.772	0.01
	Lower-bound	376392.248	1.000	376392.248	105.772	0.01
Error(Stress)	Sphericity Assumed	120989.752	68	1779.261		
	Greenhouse-Geisser	120989.752	61.342	1972.394		
	Huynh-Feldt	120989.752	64.572	1873.714		
	Lower-bound	120989.752	34.000	3558.522		

**Significant at 0.01 level

The above Table shows that there was a significant difference in the Stress levels of the participants in the pre, post and follow up phases.

The F (2, 1.80) =105.77 which is significant at the 0.01 level (p=0.000).

Table 9 Pair wise Comparisons for Before, After and Follow-up Phases of Stress among Migraine Sufferers

(I) Stress	(J) Stress	Mean Difference (I-J)	Standard Error	Significance
Before	After	137.82*	10.76	0.01
	Follow-up	112.31*	10.99	0.01
After	Before	-137.82*	10.76	0.01
	Follow -up	-25.51*	8.26	0.01
Follow-up	Before	-112.31*	10.99	0.01
	After	25.51*	8.26	0.01

*Significant at 0.05 level.

Three paired samples tests were performed to understand the effect of MBSR in the Before, After and Follow-up phases on Stress. The above table shows that there is a significant mean difference in the Before and the After Phases (M=113.82, SE=10.76). Also there is a significant mean difference in the Before and Follow-up Phases (M= 112.31, SE=10.99).

The above table shows that there is a significant mean difference in the After and the Before Phases (M=-137.82, SE=10.76). Also there is a significant mean difference in the After and Follow-up Phases (M= -25.51, SE=8.26).

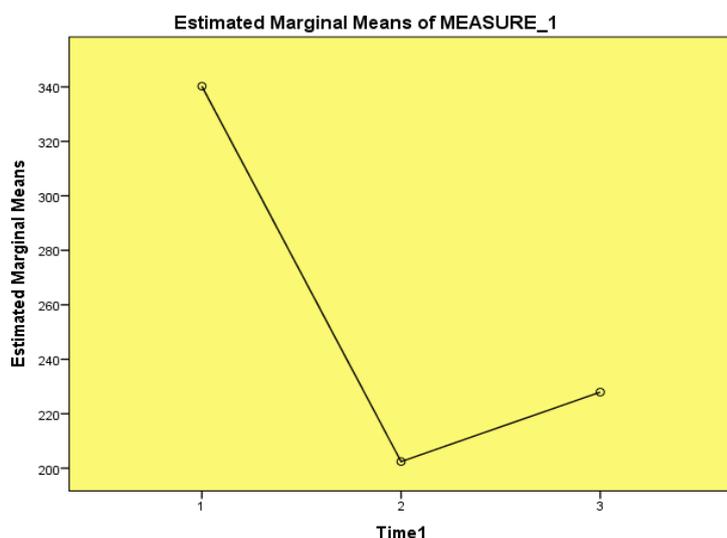
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The above table shows that there is a significant mean difference in the Follow-up and the Before Phases ($M=-112.31$, $SE=10.99$). Also there is a significant mean difference in the Follow-up and After Phases ($M= 25.51$, $SE=8.26$).

Thus the Hypothesis, "H 4. There will be no significant difference in Before, After and Follow-up Phases in Stress levels of migraine sufferers" is not accepted.

The above difference is also explained in the figure below.

Figure 3. Stress levels during Before, After and Follow-up Phases of Intervention among Migraine sufferers



The above Graph shows that there is significant difference in the Stress scores from Before to After, and After to Follow Up Phases. It can be clearly seen that the reduction in Stress levels effecting from the MBSR intervention shows a clear decrease in the After intervention and the effect shows maintenance in the follow up phase as well.

The eight week MBSR intervention is highly effective in reducing the Stress and increasing the Mindfulness of Working women with Migraine headaches. This was also qualitatively verified from the headache journals that all the participants maintained. There was a significant reduction in the pain intensity and duration. An interview with the participants showed that most of them were now highly aware of the triggers of their headaches and practiced mindfulness as an SOS for alleviating the symptoms of migraine headaches as the situation arises.

Implications for further Research

1. The present study was conducted only with working women. Further research can be conducted with non working women as well.
2. The sample for the present study is very small. The same intervention can be tried with larger populations.
3. The present study was conducted specifically for migraine headaches. Research of MBSR effectiveness can be carried on for alleviating varied aches and pains.

CONCLUSION

The eight week MBSR intervention program was very effective in increasing the Mindfulness and reducing the Stress levels of the participants. Mindfulness based Stress reduction focused on increasing Awareness of the bodily states, increased observation and describing the present feelings and developing non judgmental attitude and forging increased non reactivity.

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Conflict of Interest

The author declared no conflict of interest.

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