Chapter 4

RESULTS AND DISCUSSION

The findings of the study are divided into three main areas. The Analysis of Data Response Surface Methodology (RSM) which is a statistical tool used in Design of Experiments (DoE) is shown in section one. The descriptive statistics of the results of the tests used to collect the data (the Body Pain Intensity and Insomnia scale) during the before intervention and after intervention phases are shown in Section two. Inferential statistics are presented in the third section of the results. It examined the Analysis of Variance of each set of scores obtained before and after the intervention to draw conclusions about participant score differences within the group.

The data was analyzed using the Design Expert Software version 13 for Response Surface Methodology (RSM) for process optimization in Design of Experiments (DoE), SPSS 29 for Repeated Measures MANOVA and Atlas ti 25 were used.

Table 1

Demographic details of the participants **N = 124**

Variables	Category	Number	Percent
	36-45	43	35
Age	46-55	40	32
	56-64	41	33
Area of	Urban	63	51
Residence	Rural	61	49
	Employed	73	59
Occupation	Unemployed	51	41
	High	39	31
Socioeconomic	Moderate	47	38
	Low	38	31

Percentages are rounded off

Table 1 shows the demographic distribution of age, area of residence, occupation and socioeconomic status of participants. The age distribution in the study participants

with 36-45 years, 46-55 years and 56-64 years is 43, 40 and 41 in all the three age categories. The urban and rural residence distribution is 63 and 61, which is almost equal. Most of the participants were employed and 41% of them were home makers. Also. majority of the women belong to moderate income category. With one third of the women in high and low income families. Analyses were conducted on 124 participants using the available case data: participants with missing follow-up data were excluded.

The graphs are given below for the demographic distribution in women

Figure 14

Age distribution of the participants ***N = 124***

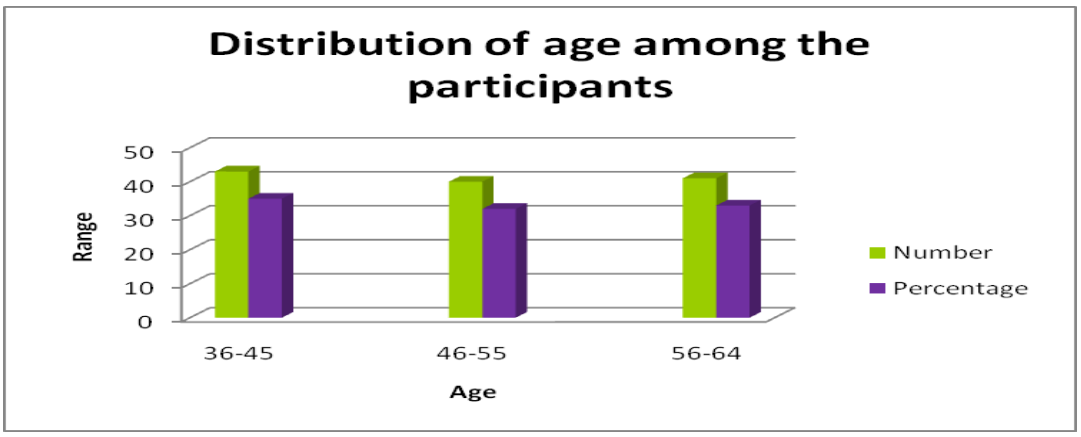


Figure 15

Occupation distribution of the participants ***N = 124***

Figure 16

Area of residence of the participants ***N = 124***

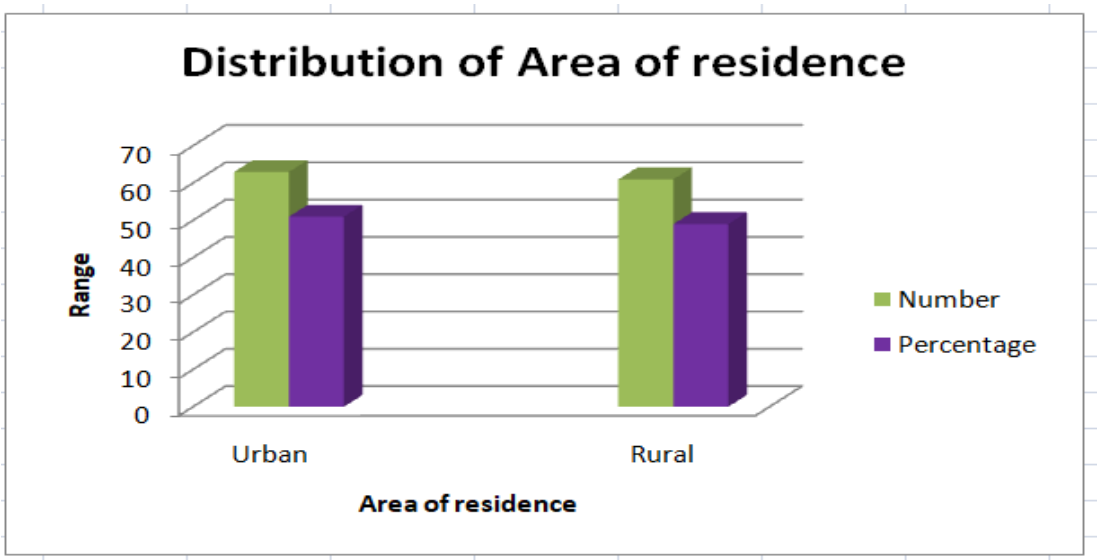
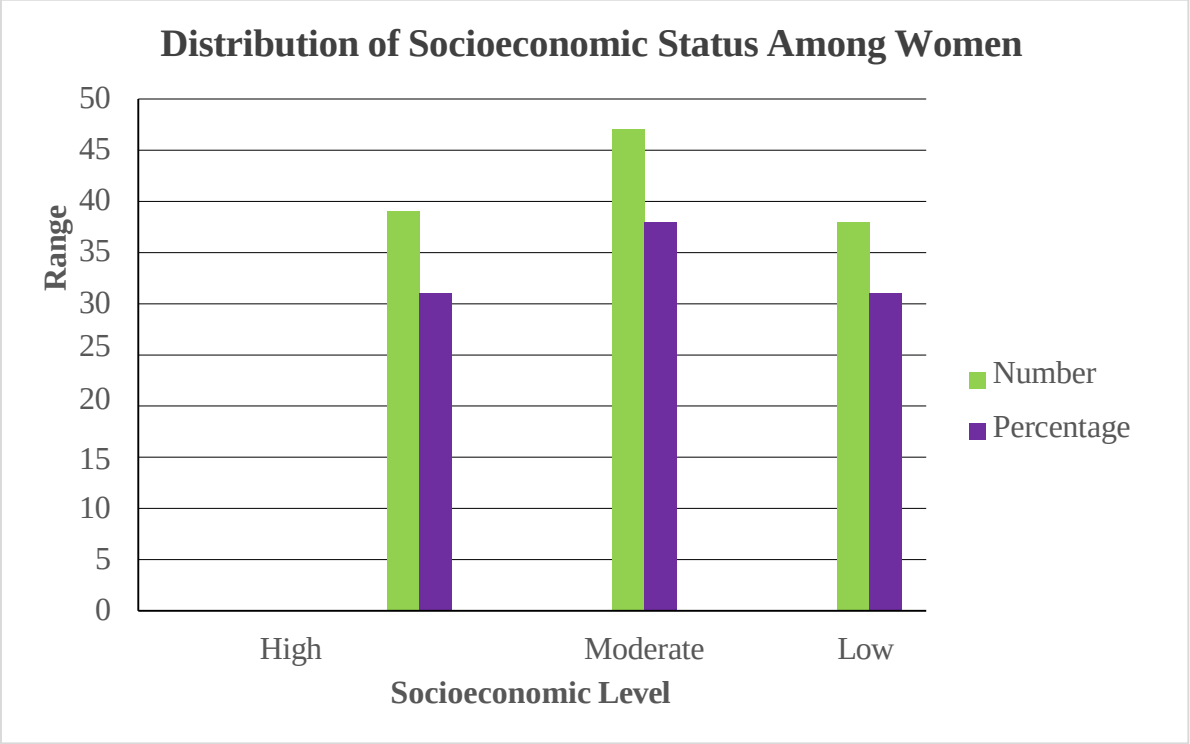


Figure 17

Socioeconomic status of the participants

N=124



The data was analyzed using the Design Expert Software version 13 for Response Surface Methodology (RSM) for process optimization.

Results

The researchers choose four factors and four responses; that is four independent variables or factors such as average pain, pain affecting normal work, pain affecting relationships and pain affecting sleep. The five dependent variables or responses are poor sleep depth, fear of insomnia, poor day time functioning and total insomnia. The tables below show the distribution analysis of all the variables.

Table 2 ***Distribution analysis of pain variables/factor***

Factor	Name	Type of Variable	Minimum	Maximum	Mean	Std Dev
A	Average Pain	Numeric	3.00	9.00	5.99	1.71
B	Pain-Normal Work	Numeric	2.00	10.00	7.30	2.36
C	Pain-Relationships	Numeric	2.00	9.00	7.04	2.10
D	Pain-Sleep	Numeric	2.00	10.00	7.18	2.18

Table 3 ***Distribution analysis of insomnia variables/responses***

Response	Name	Observations	Minimum	Maximum	Mean	Std. Dev.	Ratio
R1	Poor Sleep Depth	124	2	12	7.83	3.08	6.00
R2	Fear of Insomnia	124	2	8	5.63	2.18	4.00
R3	Poor Day time Functioning	124	2	8	5.53	1.98	4.00
R4	Insomnia	124	10	32	22.01	6.42	3.20

Tables 2 and 3 shows the mean and standard deviation values of all the factors and the responses of the different dimensions of pain and insomnia. All the pain dimensions are the factors in this analysis and insomnia is the response to the pain dimensions given in the table.

A correlation of the factors and variables especially for the response of insomnia was computed using the Design Expert Software. The results are presented in the table below

Table 4

Correlation coefficients for Insomnia with other variables of Pain scale

Variables	Insomnia
Overall Pain	0.85**
Average Pain	0.74**
Pain affecting Normal work	0.79**
Pain affecting Relationship	0.79**
Pain affecting Sleep	0.79**
Fear of Insomnia	0.86**
Poor Day time Functioning	0.85**

**** = Significant at the 0.01 level**

Table 4 indicates that there is a high positive significant correlation between insomnia and variables such as overall pain, average pain, pain affecting normal work, relationship, sleep, causing high fear of insomnia and causing poor day time functioning. This confirms the bidirectional relationship between pain and insomnia. Table clearly indicates the relationship between the overall insomnia on the pain dimensions like pain affecting normal work, relationship and poor day time functioning. The above significant correlations are indicated in the graphical representations below. These findings in the above table support Hypothesis 1 that 'There is a significant relationship between Body Pain and Insomnia among Women'.

Figure 18-24 *Correlation coefficients between variables*

Figure 18

Correlation between Overall Pain and Insomnia

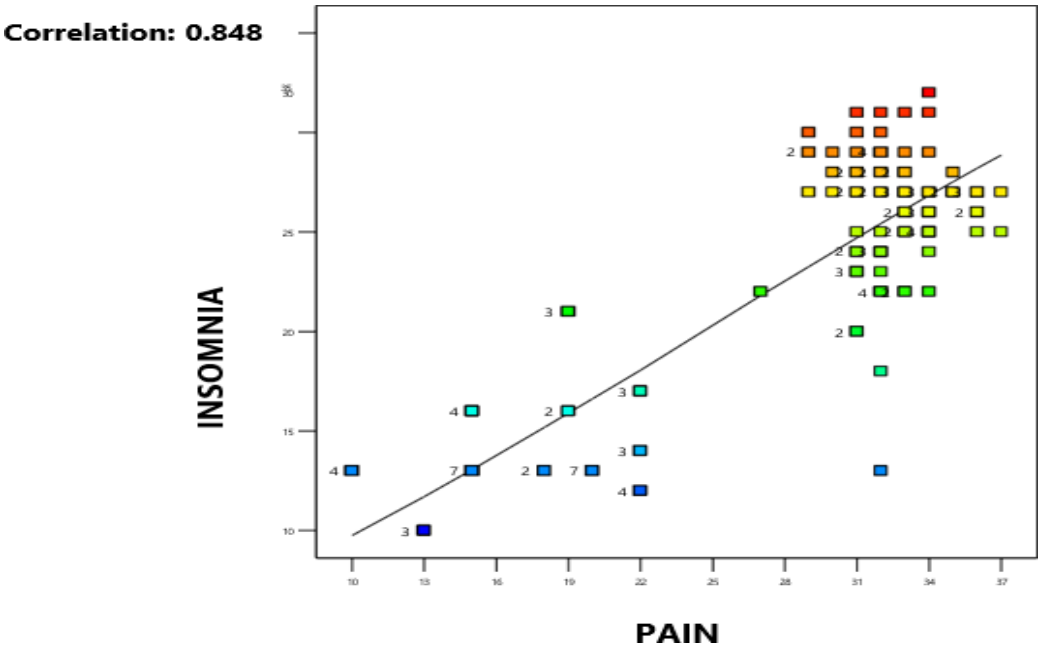


Figure 19

Correlation between average Pain and Insomnia

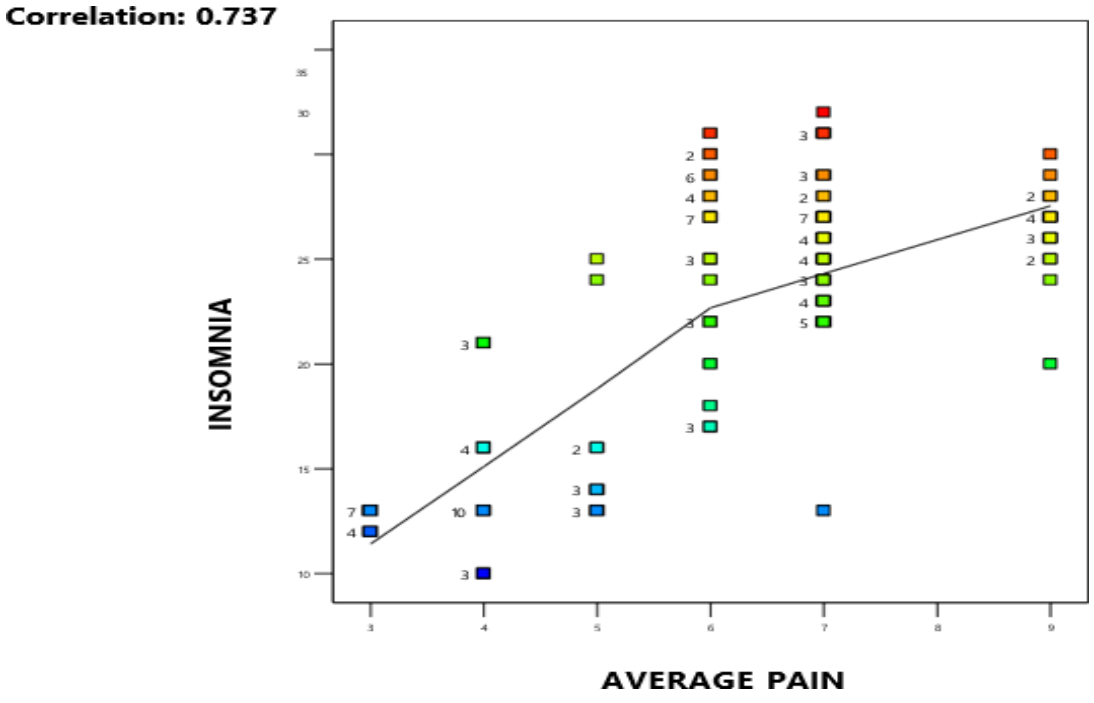


Figure 20

Correlation between Pain affecting Normal work and Insomnia

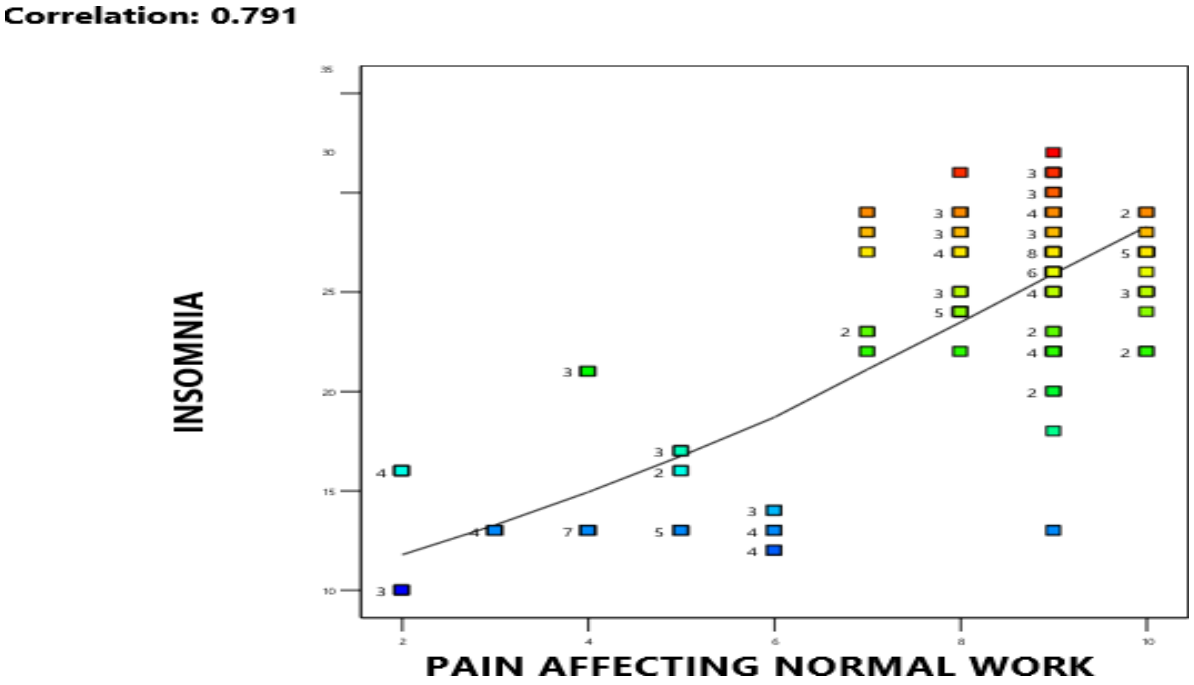


Figure 21

Correlation between Pain affecting relationship and Insomnia

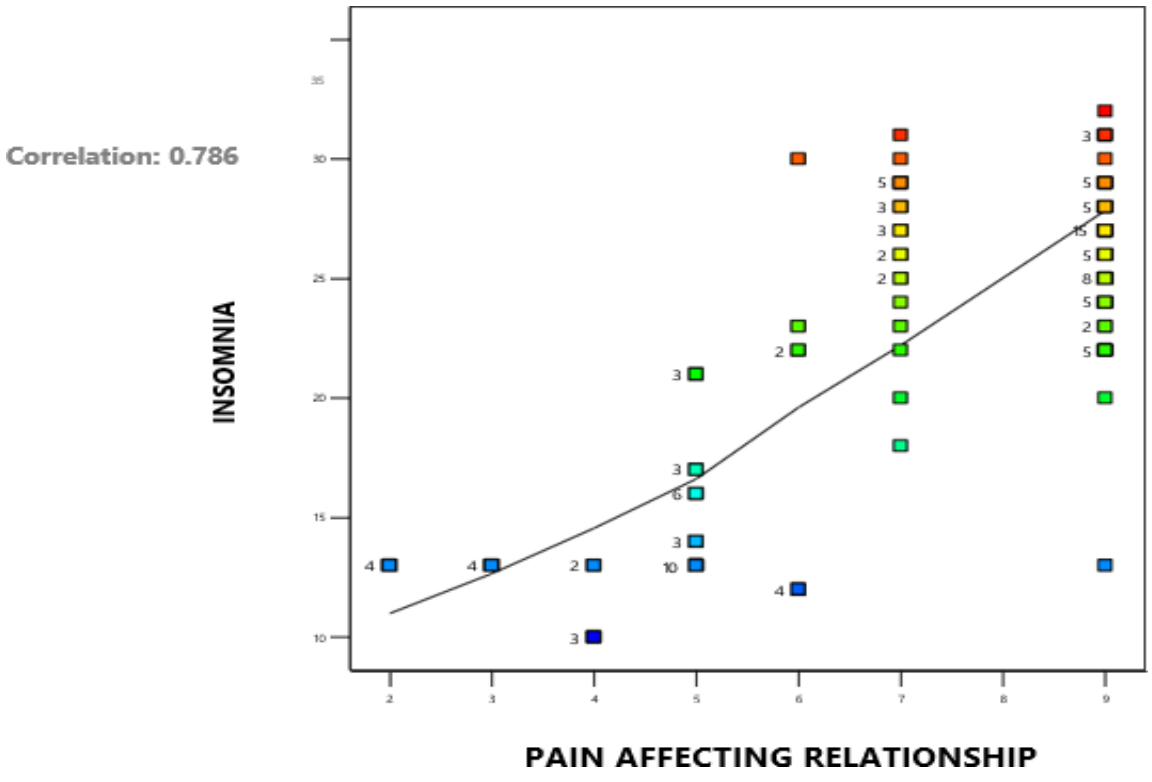


Figure 22

Correlation between Pain affecting sleep and Insomnia

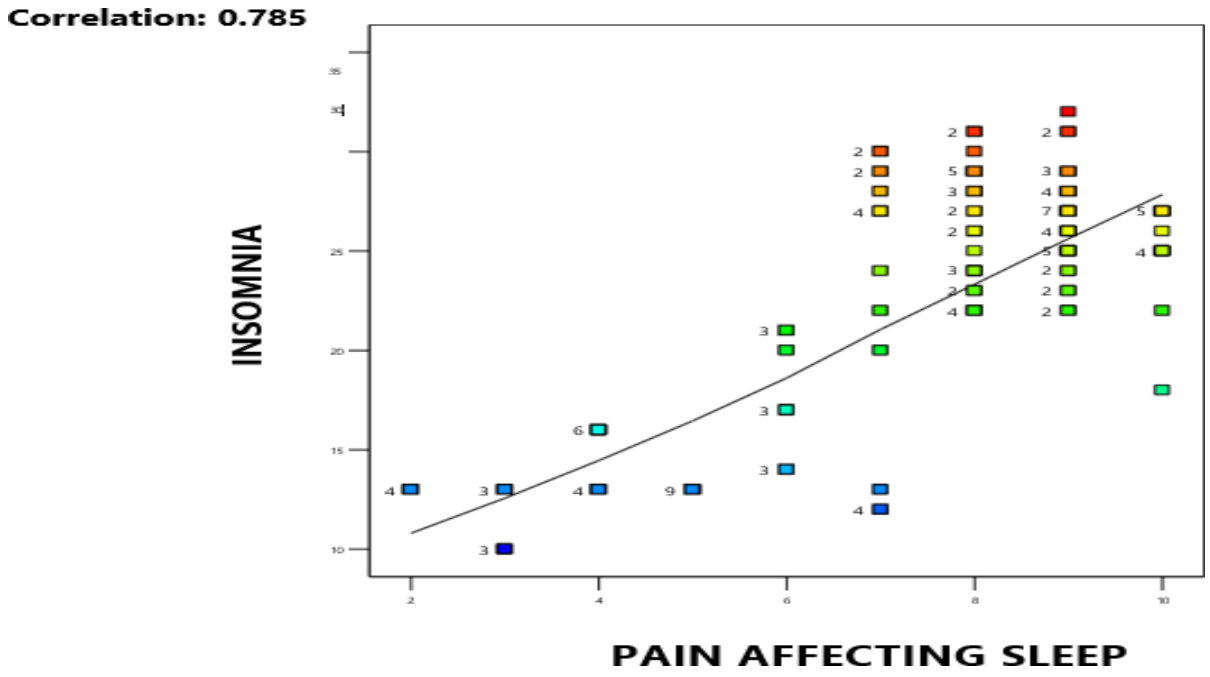


Figure 23

Correlation between fear of Insomnia and Insomnia

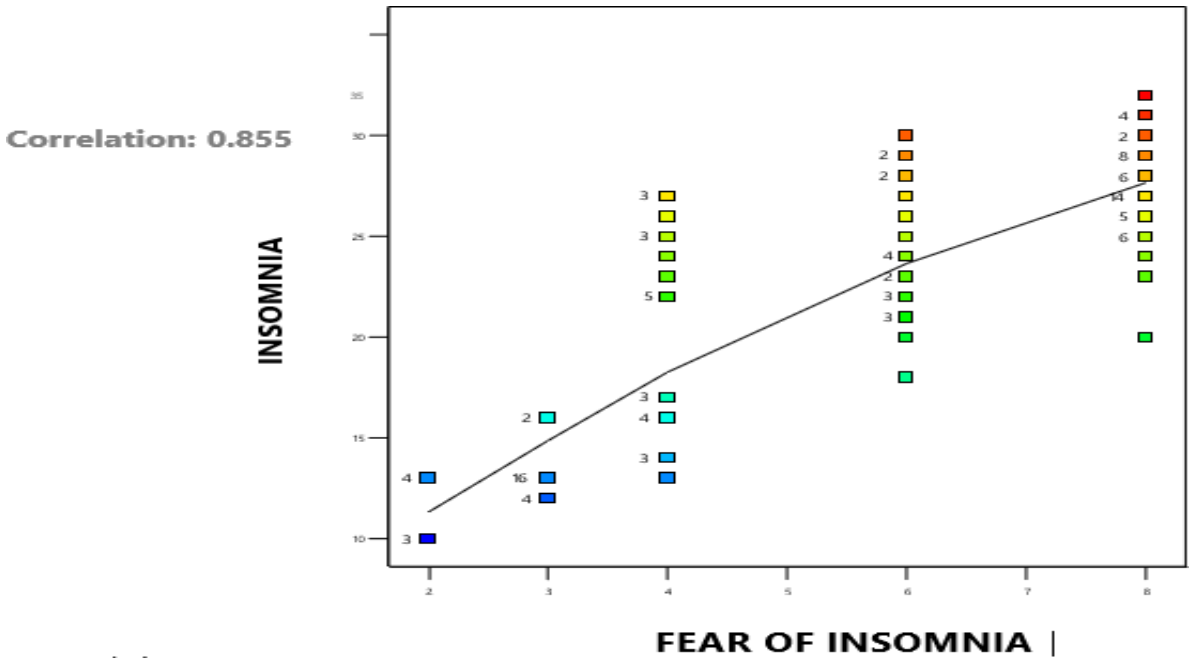
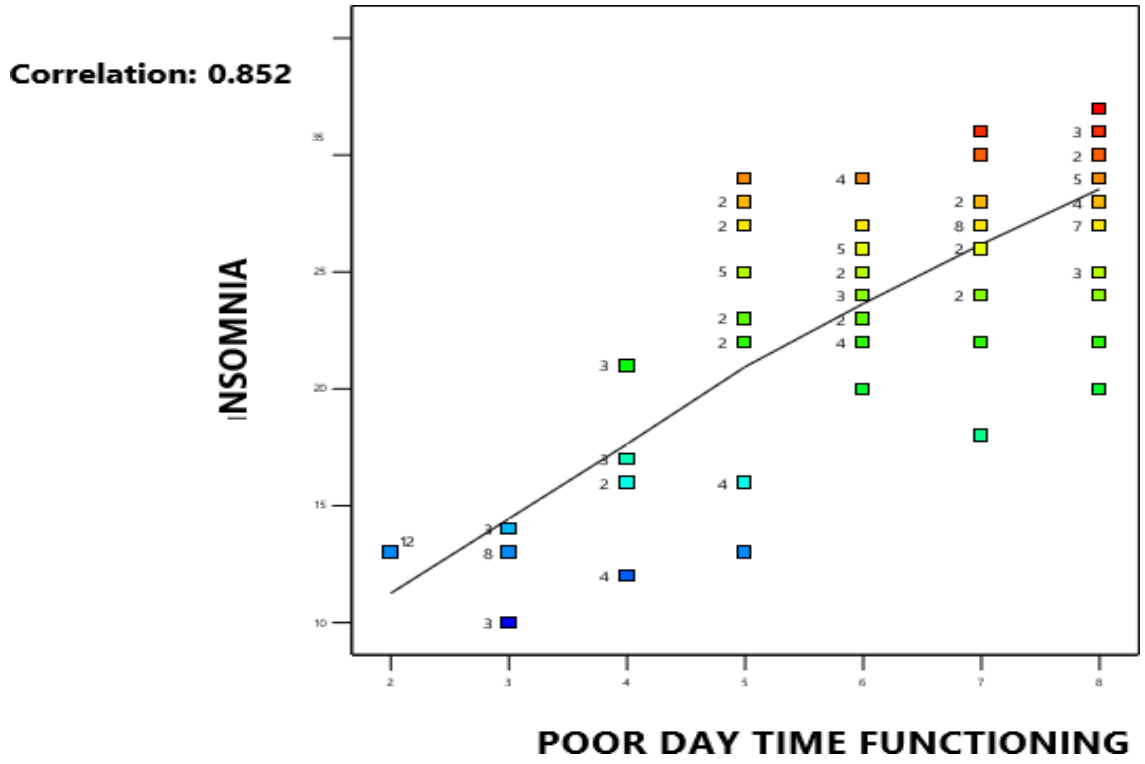


Figure 24

Correlation between Poor Day Time Functioning and Insomnia



Further, the ANOVA for Reduced Quadratic model were computed for three factors namely average pain, pain affecting normal work and pain affecting relationships and the responses of insomnia and poor sleep depth respectively.

Insomnia: The ANOVA model for reduced quadratic model was calculated for insomnia scores. The ANOVA table, model fit statistics and coefficients with Variance Inflation Factor (VIF) is presented below. The perturbation plot and optimization graphs are also given below

Table 5

ANOVA for Average Pain, Pain Affecting Normal Work and Pain Affecting Relationships for Insomnia Scores

Source	Sum of Squares	Mean df	Square	F-value	Significance
Model	**3724.13**	**7**	**532.02**	**44.69**	**<0.0001**	**Significant**
Average Pain	**92.16**	**1**	**92.16**	**7.74**	**0.0063****	**Significant**
Pain Affecting Normal Work	**46.55**	**1**	**46.55**	**3.91**	**0.0503**	**Significant**
Pain Affecting Relationship	**127.76**	**1**	**127.76**	**10.73**	**0.0014**	**Significant**
Pain Affecting Sleep	**33.27**	**1**	**33.27**	**2.79**	**0.0972**	**Significant**
Residual	1392.86	117	11.90			
Lack of Fit	**1392.86**	**110**	**12.66**	**0.005**	**< 0.1009**	**Not significant**
Pure Error	0000.00	7	0000			
Cor Total	5116.99	124				
R^2	0.7265					
Adjusted R^2	0.7150					
Predicted R^2	0.6982					
Adeq. Precision	27.3718					

- The **Model F value** of 63.21 implies the model is significant. There is only a 0.01% chance that an F value this large could occur due to noise.
- The **Lack of Fit F value** of 1.71 implies the Lack of Fit is not significant relative to the pure error.
- There is a **10.09% chance** that a Lack of Fit, F value could occur due to any other cause. Non significant lack of fit is indicative of good fit.

Table 5 shows that the model is fit. Insomnia has a significant effect on average pain levels, pain affecting normal work, pain affecting relationship and pain affecting sleep. It can be interpreted from the findings above that insomnia accounts for 72.65% of the average pain that affects normal work, relationships and sleep in combination. The model validation statistic, lack of fit is seen to be not significant, which is an indicator of a good model fit.

- The **Predicted R^2** of 0.7265 is in reasonable agreement with the **Adjusted R^2** of 0.7150: i.e. the difference is less than 0.2.
- **"Adequate Precision measures the signal to noise ratio. A ratio greater than 4 is desirable**.
- The obtained ratio of **27.3718 indicates an adequate signal**.
- This model can be used to navigate the design space

Table 5 also indicates that the model has an adequate fitness statistic. The R^2 values are high, showing a high predictive ability. This can be interpreted that insomnia predicts higher levels of average pain that affect normal work, relationships and sleep coefficients with Variance Inflation Factor (VIF) is presented below

Table 6

Coefficients in Terms of Coded Factors (Sum Contrasts) for Insomnia Scores

Factor	Coefficient Estimate	df	Standard Error	95% CI Low	95% CI High	VIF
Intercept	19.13	1	0.4523	18.23	20.02	
Average Pain	2.57	1	0.8548	0.8797	4.26	2.49
Pain affecting Normal Work	2.29	1	1.18	-0.0415	4.63	5.11
Pain affecting Relationship	3.35	1	0.9615	1.44	5.25	3.50
Pain affecting Sleep	2.19	1	1.28	-0.3492	4.73	5.15

The coefficient estimate represents the expected change in response per unit change in factor value when all remaining factors are held constant. The intercept in an orthogonal design is the overall average response of all the runs. The coefficients are adjustments around that average based on the factor settings. When the factors are orthogonal the Variance Inflation Factors are 1; if its greater than 1 indicate multi-collinearity, the higher the Variance Inflation Factor the more severe the correlation of factors. As a rough rule, if it is less than 10 are tolerable.

The table 6 indicates that Variance Inflation Factor (VIF) is greater than 1, indicating multi-collinearity. This can be due to the reason that the independent variables in the study are correlated. Multiple linear regression hereby show that insomnia predicts higher levels of pain that affect normal work, relationships and sleep too.

The fitted regression model was **Insomnia = 19.33 adds values of + 2.57 (average pain), +2.29 (Pain affecting Normal Work), +3.35 (Pain affecting Relationships) and +2.19 (Pain affecting Sleep).**

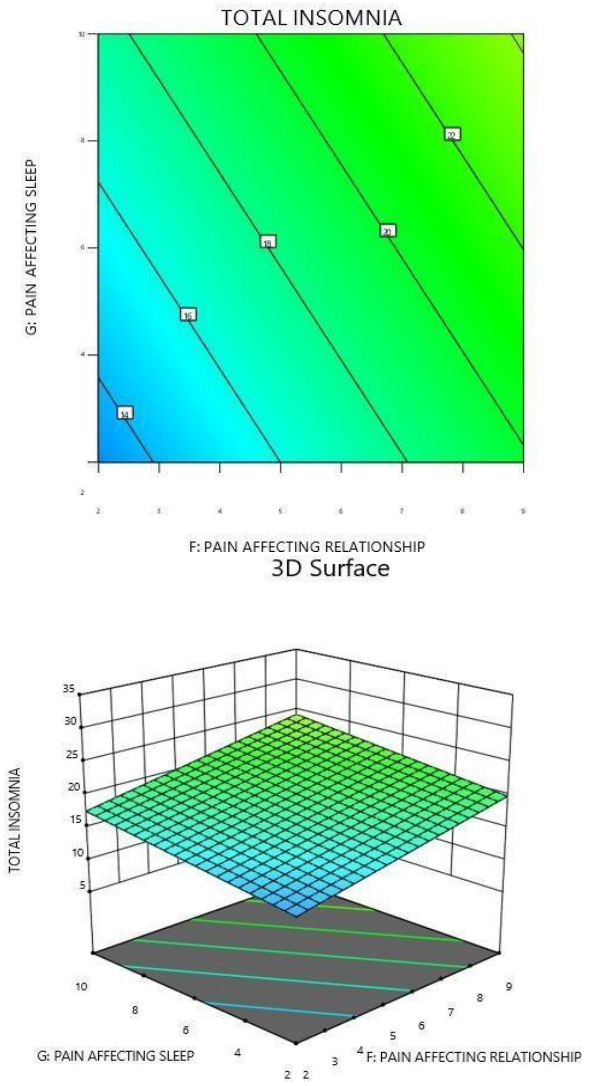
That is if a participant has insomnia, it adds 2.57 value to his/her average pain score, adds 2.29 value to the amount of pain affecting normal work, adds 3.35 value to the pain affecting relationships, and adds 2.19 to affect sleep as well. The overall regression was statistically significant (R^2=0.7265, F (7, 117) = 44.69, p =<.000.

Optimization graphs: The contour plot and the 3D graphical representations (Figure 25) showing the optimization values of the insomnia scores plotted for pain affecting normal work and pain affecting relationship values respectively.

Both the plots again indicate that for the pain not to affect normal work (score of 0) and pain not to affect relationship (score of 0), the sleep depth should be high as well. The best interaction effect for maximum sleep depth scores is shown below.

Figure 25

The contour plot and the 3D graphical representations of total Insomnia with pain affecting normal work and pain affecting relationship



As can be seen in the above graphical optimization, for a score of above near 0 in the pain affecting sleep and pain affecting relationships, the insomnia score needs to be

low and vice versa. As can be seen in the contour plot as the insomnia levels go up, the pain affecting sleep and relationships levels go up.

Poor Sleep Depth: The ANOVA model for reduced quadratic model was calculated for poor sleep depth scores. The ANOVA table, model fit statistics and coefficients with VIF (Variance Inflation Factor) is presented below. The perturbation plot and optimization graphs are also given below:

Table 7

ANOVA for Average Pain, Pain Affecting Normal Work and Pain Affecting Relationships for Poor Sleep Depth Scores

Source	Sum of Squares	df	Mean Square	F-value	p-value	Significance
Model	674.19	3	224.73	54.46	<0.0001	significant
Average Pain	14.12	1	14.12	3.42	0.0668^{NS}	
Pain Affecting Normal Work	**37.87**	**1**	**37.87**	**9.18**	**0.0030^{**}**	**significant**
Pain Affecting Relationship	**38.26**	**1**	**38.26**	**9.27**	**0.0029^{**}**	**significant**
Residual	499.28	121	4.13			
Lack of Fit	**363.23**	**60**	**6.05**	**1.71**	**< 0.1840**	**Not significant**
Pure Error	136.05	61	2.23			
Cor Total	1173.47	124				
R^2	0.5745					
Adjusted R^2	0.5640					
Predicted R^2	0.5492					
Adeq. Precision	21.2278					

The **Model F value** of 54.46 implies the model is significant. There is only a 0.01% chance that an F value this large could occur due to noise.

The **Lack of Fit F value** of 1.71 implies the Lack of Fit is not significant relative to the pure error.

There is a **18.40% chance** that a Lack of Fit, F value could occur due to any other cause. Non significant lack of fit is indicative of good fit.

Table 7 shows that the model is fit. Poor sleep depth has a significant effect on both pain affecting normal work and pain affecting relationship. It can be interpreted from the findings above that poor sleep depth accounts for 57.45% of the pain that affects normal work and pain that affects relationships in combination. The model validation statistic, lack of fit is seen to be not significant, which is an indicator of a good model fit. The formula for lack of fit is given below

Lack of Fit F-test = Lack of fit MS

Pure Error MS

where MS= Mean Square

- The **Predicted R^2** of 0.5492 is in reasonable agreement with the **Adjusted R^2** of 0.5640; i.e. the difference is less than 0.2.
- **"Adequate Precision measures the signal to noise ratio. A ratio greater than 4 is desirable"** .
- The obtained ratio of **21.2278 indicates an adequate signal**.
- "This model can be used to navigate the design space"

Table 7 also indicates that the model has an adequate fitness statistic. The R^2 values are high, showing a high predictive ability. This can be interpreted that poor sleep depth predicts higher levels of pain that affect normal work and relationships. The coefficients with Variance Inflation Factor (VIF) is presented below

Table 8

Coefficients in Terms of Coded Factors (Sum Contrasts) for Poor Sleep Depth Scores

Factor	Coefficient Estimate	df	Standard Error	95% CI Low	95%CI High	VIF
Intercept	6.55	1	0.266	6.03	7.08	
Average Pain	0.92	1	0.499	-0.065	1.91	2.43
Pain affecting Normal Work	1.76	1	0.582	0.611	2.92	3.55
Pain affecting Relationship	1.61	1	0.528	0.563	2.66	3.01

- **—**The coefficient estimate represents the expected change in response per unit change in factor value when all remaining factors are held constant. The intercept in an orthogonal design is the overall average response of all the runs.
- The coefficients are adjustments around that average based on the factor settings. When the factors are orthogonal the VIFs are 1; VIFs greater than 1 indicate multi-collinearity, the higher the VIF the more severe the correlation of factors. As a rough rule, VIFs less than 10 are tolerable.‖

Table 8 indicates that Variance Inflation Factor (VIF) is greater than 1, indicating multi-collinearity. This can be due to the reason that the independent variables in the study are correlated. Multiple linear regression hereby show that poor sleep depth predicts higher levels of pain that affect normal work and relationships. The fitted regression model was Poor Sleep Depth = 6.55 adds values of + 0.92 (average pain), +1.76 (Pain affecting Normal Work), and +1.61 (Pain affecting Relationships)

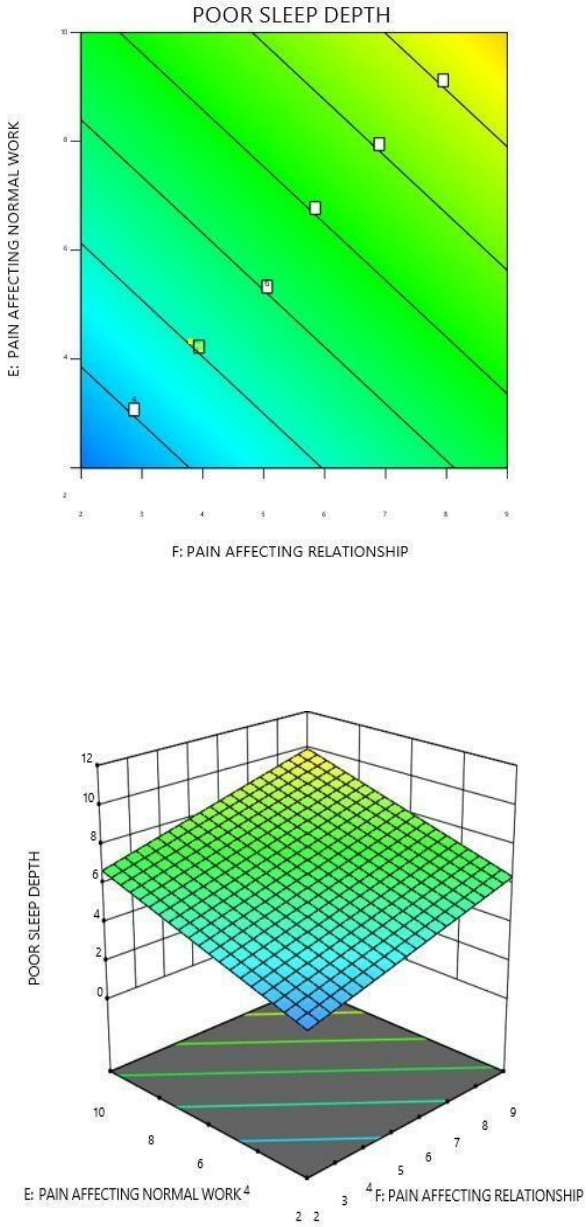
That is if a participant has poor sleep depth, it adds 0.92 value to her average pain score, adds 1.76 value to the amount of pain affecting normal work and adds 1.61 value to the pain affecting relationships. The overall regression was statistically significant (R^2=0.5745, F (4, 121) = 54.46, p =<.000.

1.1. Optimization graphs: The contour plot and the 3D graphical representations (Figure 26) showing the optimization values of the poor sleep depth scores plotted for pain affecting normal work and pain affecting relationship values respectively.

Both the plots again indicate that for the pain not to affect normal work (score of 0) and pain not to affect relationship (score of 0), the poor sleep depth should be low as well. The best interaction effect for maximum sleep depth scores is shown below

Figure 26

The contour plot and the 3D graphical representations of Poor Sleep Depth with Pain affecting normal work and pain affecting relationship



As can be seen in the above graphical optimization, for a score of near 0 in the pain affecting normal work and pain affecting relationships, the poor sleep depth score needs

to be low and vice versa. As can be seen in the contour plot as the poor sleep depth levels go up, the pain affecting normal work and relationships levels go up.

The RSM analysis indicated that reductions in insomnia of approximately 5-6 points were associated with clinically meaningful reductions in pain interference with work and relationships, suggesting that insomnia is the key leverage point for symptom improvement.

Table 9

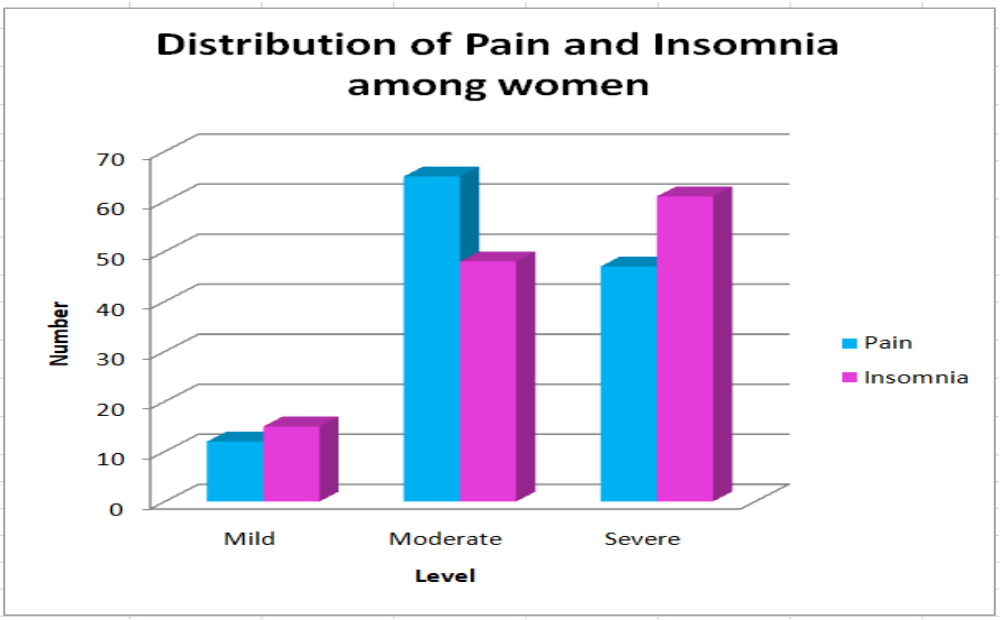
Distribution of Pain and Insomnia among women ***N=124***

Level	Pain		Insomnia	
	Number	**Percent**	**Number**	**Percent**
Mild	12	10	15	11
Moderate	65	52	48	39
Severe	47	38	61	50

Table 9 shows the approximately 90% of the participants reported moderate to severe pain and insomnia at baseline.

Figure 27

Level of Pain and Insomnia among women ***N=124***



The data was collected and analyzed using the SPSS software version 29. Pearson's Product Moment Correlation was computed to understand the relationship between insomnia and pain among the working women.

Table 10

Correlation between Insomnia and Pain among the Participants **N=124**

Variables	Insomnia	Pain
Insomnia	1	0.81**
Pain	0.81**	1

**** = Significant at 0.01 level**

Table 10 indicates that there is a significant positive correlation between insomnia and pain levels among the participants. As the insomnia levels increase, the pain levels also increase and vice versa. Hence, the hypothesis, **—There is a significant relationship between insomnia and pain among the participants"** is accepted.

The independent variable for the research, is the intervention that had four groups, the experimental group 1 which received the reiki intervention, the experimental group 2 which received the existential therapy intervention, the experimental group 3 which received the combined intervention (reiki and existential therapy) and the waitlist control group. The insomnia and pain (the dependent variables) levels were measured three times namely, prior to the intervention, henceforth called before intervention scores, after the intervention and also a follow-up. As there were three time scores for two dependent variables and four groups in the independent variable, it was decided to use Two Way Repeated MANOVA (also referred to as doubly multivariate MANOVA) to statistically compute the results.

A Two Way MANOVA of repeated measures 4 {(experimental 1, experimental 2, experimental 3, and waitlist control groups) x 3 (before, after and follow-up scores of both the dependent variables, insomnia and pain)} was computed. The results are presented below:

Initially the Mauchly's test of sphericity was computed.

Table 11

Test of sphericity

Variable	Within Subjects Effect	Mauchly's W	Chi-Square	df	Sig.
Insomnia	**Group**	0.94	1.20	5	0.94
	Time	0.90	1.93	5	0.85
	Group * Time	0.73	5.72	2	0.06
Pain	**Group**	0.78	4.83	2	0.08
	Time	0.83	2.04	20	0.75
	Group * Time	0.73	5.84	20	0.06

Table 11 indicates, for the interaction effect, the test of sphericity is not significant, $\chi 2 = 5.72$, $p = 0.06$ for insomnia and $\chi 2 = 5.84$, $p = 0.06$ for pain. The rule of thumb indicates that reject the null hypothesis if $p < 0.05$. Hence the sphericity (homogeneity) is met. The main within subjects‘ interaction effects were then computed.

Table 12 ***Multivariate Analysis of Variance for Insomnia and Pain***

Measure	Wilk's Lambda value	F(df)	p	η^2
Groups (4 groups)	0.043	75.08 (6,118)	0.000	0.65
Time (3-time measures)	0.003	344.67 (4,114)	0.000	0.61
Group*Time	0.031	91.83 (12,346)	0.000	0.68

Table 12 shows a significant effect of the interaction between the 4 groups of the independent variable (intervention), the experimental and waitlist control groups shown by an F (6, 118) = 75.08, which is significant at the 0.01 level, and the partial eta square value η^2 is 0.65, showing a strong effect size. There is also, a significant difference between the 3 times measures, that is, before, after and follow-up measures of the dependent variables namely, insomnia and pain; where F (4, 114) = 344.67, which is significant at the 0.01 level, and the partial eta square value η^2 is 0.61, showing a strong effect size.

This findings clearly indicate that the hypotheses 2 and 3 'There is a significant difference between the before, after and follow-up phases in managing body pain through Reiki among women' and ' There is a significant difference between before, after and follow-up phases in managing body pain through Existential Therapy among women' is accepted.

Table 13 ***Means of Poor Sleep Depth and Poor Sleep Quantity for the Experimental Group1, 2, 3 and Waitlist Control Group in the three phases***

Measure	Groups	Time	Mean	Standard Deviation
Poor Sleep Depth	Experimental Group 1(Reiki)	Before Intervention	7.77	3.08
		After Intervention	4.00	1.89
		Follow-up	5.80	2.61
	Experimental Group 2 (Existential Therapy)	Before Intervention	7.93	2.99
		After Intervention	3.83	1.68
		Follow-up	3.87	1.78
	Experimental Group 3 (Reiki and Existential Therapy Intervention)	Before Intervention	7.73	3.22
		After Intervention	3.40	1.85
		Follow-up	3.07	1.70
	Waitlist Control Group (No intervention)	Before Intervention	8.40	3.10
		After Intervention	8.80	2.61
		Follow-up	8.95	2.605
Poor Sleep Quantity	Experimental Group 1 (Reiki Intervention)	Before Intervention	3.07	0.87
		After Intervention	1.33	0.71
		Follow-up	2.10	1.16
	Experimental Group 2 (Existential Therapy Intervention)	Before Intervention	3.10	0.89
		After Intervention	0.97	0.93
		Follow-up	1.67	1.56
	Experimental Group 3 (Reiki and Existential Therapy Intervention)	Before Intervention	2.87	0.68
		After Intervention	0.77	0.68
		Follow-up	0.78	0.63
	Waitlist Control Group (No intervention)	Before Intervention	2.97	0.72
		After Intervention	4.00	1.62
		Follow-up	4.04	1.63

The profile plots for the significant mean difference between all the four groups over the three phases are shown below. The above table clearly indicates that there is a significant difference between the waitlist control group and each of the experimental groups (reiki, existential therapy and combined therapy groups) indicating that all the experimental groups received benefits in sleep depth and sleep quantity, while the waitlist control group did not receive any improvement.

Across the outcomes, the integrated (Reiki+ existential therapy) group achieved the greatest and most sustained reductions in pain and insomnia, followed by exisential therapy and reiki alone, whereas the waitlist group showed no improvement.

Post-hoc paired comparisons were performed to understand the effect of the interventions in the before, after and follow-up intervention phases on poor sleep depth and poor sleep quantity. Hence, the hypothesis "**There is a significant difference between before, after and follow-up phases in managing insomnia through Reiki and Existential Therapy among women"** is accepted.

Figure 28

Profile Plots of Means of the Four Groups over the Three Phases for Poor Sleep Depth

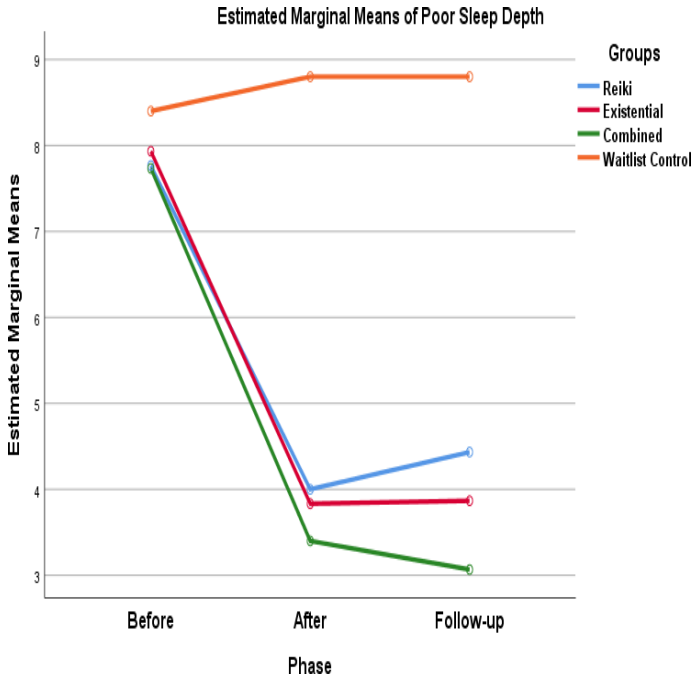
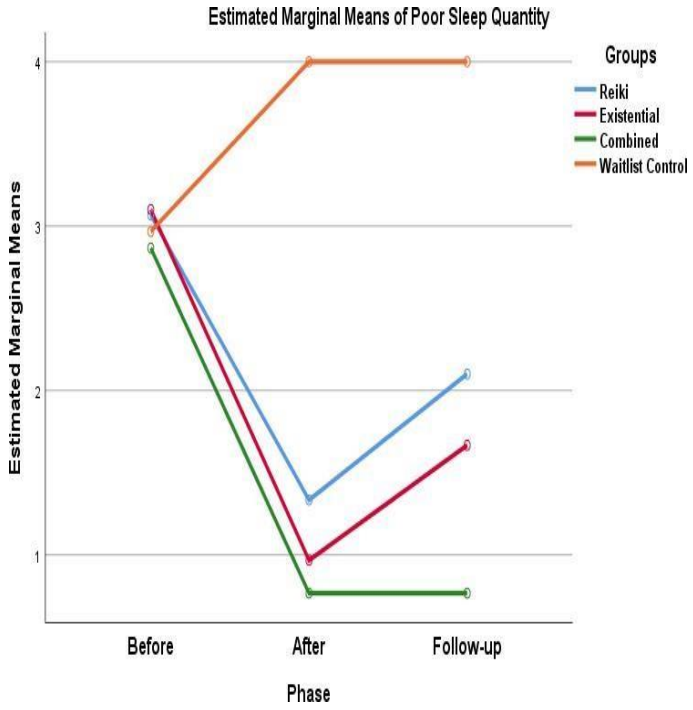


Figure 29

Profile Plots of Means of the Four Groups over the Three Phases for Poor Sleep Quantity



A comparison of means of the different groups on pain and insomnia are presented in the table below

Table 14 ***Pair wise mean comparisons for Before, After and Follow-up Phases for the Experimental Group1, 2, 3 and Waitlist Control Group on Insomnia and Pain***

Groups	(I) Time	(J) Time	Mean Difference		Std. Error	
			Insomnia	Pain	Insomnia	Pain
Experimental Group 1 (Reiki Intervention)	Before	After Intervention	14.48	43.19	0.32	-0.22
		Follow-up	12.10	42.52	0.31	0.32
	After	Before Intervention	-14.48	-43.19	-0.32	0.22
		Follow-up	2.38	0.67	0.01	0.13
	Follow-up	Before Intervention	-12.10	-42.52	-0.31	-0.32
		After Intervention	-2.38	-0.67	-0.01	-0.13
Experimental Group 2 (Existential Therapy Intervention)	Before	After Intervention	14.29	41.43	0.15	0.40
		Follow-up	12.57	40.38	0.08	0.11
	After	Before Intervention	-14.29	-41.43	-0.15	-0.40
		Follow-up	1.71	1.05	0.07	0.11
	Follow-up	Before Intervention	-12.57	-40.38	-0.08	-0.11
		After Intervention	-1.71	-1.05	-0.07	-0.11
Experimental Group 3 (Reiki and Existential Therapy Intervention)	Before	After Intervention	13.36	44.67	-0.36	0.23
		Follow-up	12.72	44.19	0.72	0.09
	After	Before Intervention	-13.36	-44.67	0.36	-0.23
		Follow-up	1.14	0.48	0.18	0.33
	Follow-up	Before Intervention	-12.72	-44.19	-0.72	-0.09
		After Intervention	-1.14	-0.48	-0.18	-0.33
Waitlist Control Group (No intervention)	Before	After Intervention	0.33	0.62	0.08	0.01
		Follow-up	-0.14	1.00	-0.03	0.11
	After	Before Intervention	-0.33	-0.62	-0.08	-0.01
		Follow-up	1.71	0.38	0.03	0.12
	Follow-up	Before Intervention	0.14	-1.00	0.03	-0.11
		After Intervention	-1.71	-0.38	-0.03	-0.12

Post-hoc paired comparisons were performed to understand the effect of the interventions in the before, after and follow-up intervention phases on insomnia and pain. The mean difference in all the three experimental groups clearly shows the effectiveness of the intervention Reiki, Existential therapy and the integrated intervention. All the interventions helped the participants in managing pain and insomnia using all the therapeutic techniques the clients learned in the sessions and also in balancing the energy flow from reiki. Hence, the hypotheses "There is a significant difference between before, after and follow-up phases in managing body pain through Reiki and Existential Therapy among women', 'There is a significant difference between before, after and follow-up phases in managing Insomnia through Reiki among women' and 'There is a significant difference between before, after and follow-up phases in managing insomnia through Existential Therapy among women' are accepted. Mean insomnia score in the integrated group moved from the clinical range to near-normal levels, indicating that many women shifted from severe sleep disturbance to minimal symptoms after intervention.

Discussion

The observed reductions insomnia are consistent with earlier CBT Trials by Tang et al. (2015) who evaluated the effect of non pharmacological sleep treatments on patient reported sleep quality, pain and well-being in people with long term cancer and non cancer (e.g., back pain, arthritis, fibromyalgia) pain conditions. Eleven RCTs involving 1,066 participants (mean age 45–61 years) met the criteria for the meta analysis. Non pharmacological sleep treatments in chronic pain patients were associated with a large improvement in sleep quality, small reduction in pain and moderate improvement in fatigue at post treatment. The effects on sleep quality and fatigue were maintained at follow-up (up to 1 year) when a moderate reduction in was also observed but the extent prior work by demonstrating comparable improvements with an integrated Reiki-existential approach in an Indian midlife sample.

This study findings also support the research done by Padmavathy, Vijayalakshmi and Poovaragavan (2024) who evaluated the effectiveness of Reiki therapy on pain and anxiety among critically ill women in a government medical college and hospital in Thiruvannamalai. The findings supported the effectiveness of Reiki therapy in significantly reducing pain and anxiety among critically ill women. The results shows the effectiveness of reiki in reducing pain.

Limitations of the findings

- Other age groups could have been included
- The study could have included male participants
- Other therapies could have been included
- Results may be influenced by expectancy effects and lack of blinding, as participants knew they were receiving an active intervention and outcomes were based on self-report scales
- Diversified participants could have been included

Conclusions and implications

After analyzing the data and interpretation of the scores obtained through the Psychological Assessments before, after and follow-up phases of the intervention the following conclusion were drawn

- There was a significant positive correlation between pain intensity and insomnia among women
- There was significant difference in the levels of pain and insomnia during before, after and follow-up phases of the Reiki group
- There was a significant difference in the levels of Pain and insomnia in the Before, After and follow-up phases of the Existential therapy intervention.
- Reiki and Existential therapy is more effective in reducing the levels of Pain and insomnia among women.
- Interventions to overcome pain and insomnia can significantly improve the well- being and overall mental health of women.
- The integrated intervention was very helpful in dealing with various dimensions of pain and insomnia.
- Reiki and existential therapy can be incorporated in clinical settings which specializes in pain management.