

## THE ROLE OF HOMOEOPATHIC MEDICINES FOR IMPROVING SLEEP QUALITY IN ELDER ABUSED AND NON-ABUSED GERIATRIC PATIENTS

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### ABSTRACT

**Background:** Ageing in a population is a global phenomenon. Elder people face a number of problems in a society due to absence of assured and sufficient income for their healthcare and other social securities. Sometimes this result in Elder Abuse and this impacts health in various aspects especially sleep quality. 165 geriatric patients approached OPD for reduced sleep quality, out of which 102 patients were elder abused. The study showed significant results in both the groups (Elder Abused and Non Abused Geriatric patients) in lowering the PSQI scores with Homoeopathic Medicines selected on the basis of totality of symptoms using Synthesis 9.1 repertory of RADAR OPUS software. Comparison in between the two groups showed better results in improving sleep quality with Homoeopathic Medicines in Non-Abused Geriatric patients.

**KEYWORDS:** Elder Abuse, Geriatric, PSQI, Homoeopathy.

### INTRODUCTION

"Elder abuse is a single or repeated act, or lack of appropriate action, occurring within any relationship where there is an expectation of trust, which causes harm or distress to an older person." A study estimated that 15.7% people aged 60 years and above were subjected to some form of abuse.<sup>[1]</sup> Elder Abuse has been reportedly experienced by more than one fifth of the elderly with the most common forms experienced being disrespect and neglect.<sup>[2]</sup>

"Sleep quality is defined as one's satisfaction of the sleep experience, integrating aspects of sleep initiation, sleep maintenance, sleep quantity, and refreshment upon awakening".<sup>[3]</sup> It is

the measurement of how well a person is sleeping—in other words, whether the sleep is restful and restorative.<sup>[4]</sup> *Yunus et al* study showed that people with abuse experience poorer sleep quality as compared to those who were not abused.<sup>[5]</sup> A study done on elderly population shows that most elders get beneficial results from Homoeopathic treatment in cases of disturbance in sleep.<sup>[6]</sup>

Aim of this study was to assess the role of homoeopathic medicines in improving sleep quality in elder abused patients as compared to non-abused geriatric patients.

There were following objectives at the start of research.

1. To assess the role of homoeopathic medicines in improving sleep quality in elder abused patients by using PSQI scale.
2. To assess the role of homoeopathic medicines in improving sleep quality in elder abused patients as compared to non-abused geriatric patients by using Pittsburgh Sleep Quality Index (PSQI) scale.

The **Hypothesis** selected for the research was: **Primary Hypothesis**- Homoeopathic medicines significantly improve sleep quality in elder abused patients.

**Secondary Hypothesis**-Null hypothesis.

- Homoeopathic medicines have same effect in improving sleep quality in elder abused and non-abused geriatric patients.

**Alternate Hypothesis**

- Homoeopathic medicines significantly improve sleep quality in elder abused patients as compared to non-abused geriatric patients.
- Homoeopathic medicines significantly improve sleep quality in non-abused geriatric patients as compared to elder abused patients.
- Homoeopathic medicines have different effects in improving sleep quality in elder abused and nonabused geriatric patients.

## MATERIALS AND METHODOLOGY

This was a prospective, interventional, Randomized, double arm, parallel comparative trial conducted in Bikaner OPD of MNHMC & RI for a period of 12 months and a sample of 94 patients (47 in each group) were taken. Patients of both genders, with age more than 60 years, residing in communities, screened positive with H-S/EAST for elder abuse and a PSQI score

more than 6 were included in the study. Patients taking sleeping pills from other modes of treatment were kept under a washout period of 2 weeks and who were not willing to discontinue the treatment, or requiring emergency treatment, or patients with any other Psychiatric conditions- Anxiety, depression, etc. or with clinical symptoms of Prostatitis, uncontrolled Diabetes Mellitus, which hamper the sleep quality due to waking during night hours due to frequency in micturition were excluded from the study and treated in the OPDs. Patients, who did not show any improvement or whose sleep quality was deteriorate more than 40% from the baseline in PSQI scale, were withdrawn from the study.

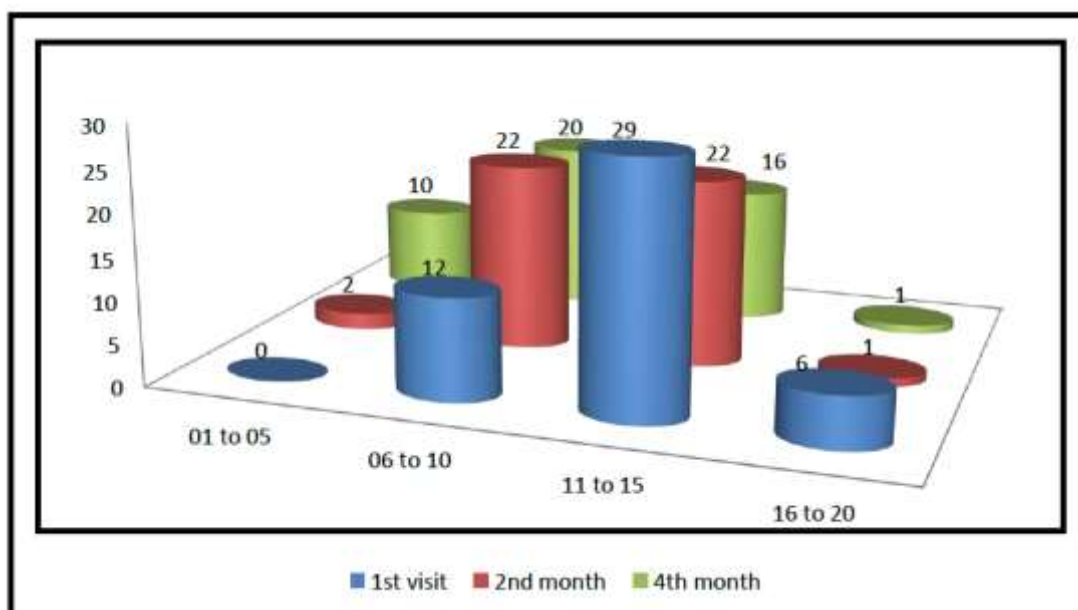
Patients were selected in two groups: Group A (Elder abused), group B(Non abused) geriatric patients with reduced sleep quality. Both the groups were given Homoeopathic medicines selected on the basis of totality of symptoms using Synthesis 9.1 repertory of RADAROPUS software with potency, dose and repetition according to the susceptibility of the patients.

Patients were screened for elders abuse using H-S/EAST questionnaire, ruled out for any anxiety and depression using GAD and GDS scale. The PSQI (Pittsburgh Sleep Quality Index) was assessed<sup>[7]</sup> for each patient every 2<sup>nd</sup> month for 4months.

## OBSERVATIONS AND RESULTS

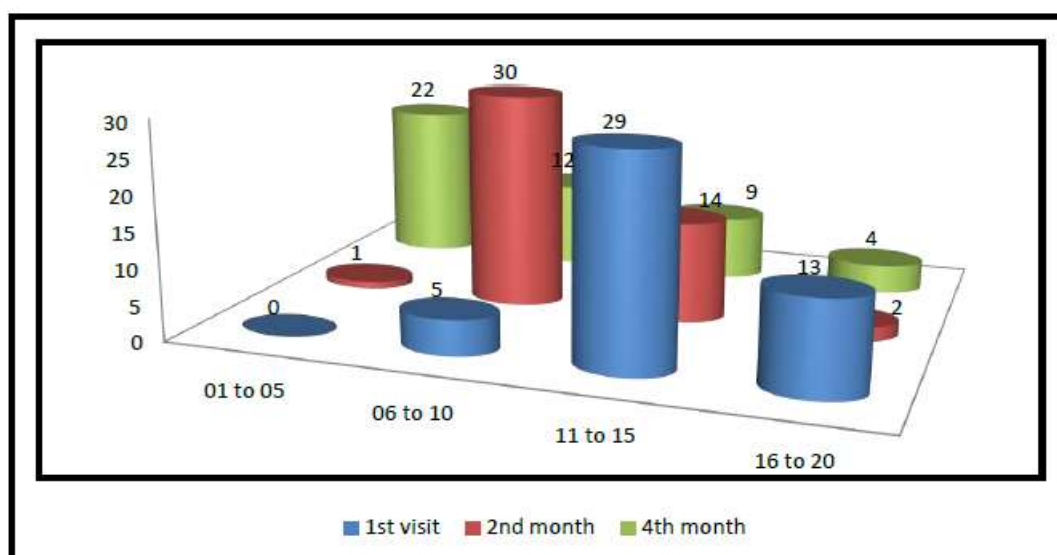
165 geriatric patients approached OPD for reduced sleep quality, out of which 102 patients were elder abused among which only 93 fulfilled the inclusion criteria and 72 agreed to sign the consent form out of which 47 patients were randomly selected using flip coin method and were assigned in group A. 63 patients were non abused and 60 among them fulfilled the inclusion criteria out of which 56 agreed to sign the consent and thus were randomized using flip coin method and 47 patients were selected and assigned in group B.

Baseline socio demographic characteristics results of the research have been shown in *Mehrotra et.al.*<sup>[8]</sup> Following are the observations and results of the study in Group A(Elder abused) and Group B(Non abused) geriatric patients with reduced sleep quality.



**Fig.1: Distribution of Elder abuse cases with reduced sleep quality on the basis of their PSQI scores on 1<sup>st</sup> visit, 2<sup>nd</sup> month & 4<sup>th</sup> month.**

From the above Fig (1), it is evident that the PSQI scores in Elder abuse group were maximum(29 patients) in between 11-15 score at first visit, which reduced to maximum(22 patients) in between 06-10 score on second month assessment.



**Fig. 2: Distribution of Non abuse cases with reduced sleep quality on the basis of their PSQI scores on 1<sup>st</sup> visit, 2<sup>nd</sup> month & 4<sup>th</sup> month.**

From the above Fig (2), it is evident that the PSQI scores in Non abuse group were maximum(29 patients) in between 11-15 score at first visit, which reduced to maximum(22 patients) in between 01-05 score at fourth month assessment.

**Table 1: Medicines prescribed A(Elder Abused)**

Medicine	Number of Patients
Palladium	2
Phosphorus	2
Natrum mur.	7
Stramonium	1
Mercurius sol.	1
Lachesis	3
Staphysagria	2
Ignatia	4
Pulsatilla	3
Aurum met.	4
Carcinosin	1
Lycopodium	3
Bryonia	1
Opium	2
Sulphur	3
Causticum	2
Baryta carb.	2
Nux vomica	3
Platina	1

**Table 2: Medicines prescribed in Group B(Non Abused)**

Medicine	Number of Patients
Nux vomica	3
Calcarea carb.	1
Gelsemium	1
Pulsatilla	4
Plumbum	1
Opium	5
Mercurius solubilis	1
Coffea	3
Sepia	3
Arsenic album	2
Sulphur	2
Silicea	3
Lachesis	2
Causticum	1
Kali carbonicum	2
Bryonia	5
Hyoscyamus	1
Aurum met.	2
Phosphorus	1
Belladonna	1
Thuja	1
Tuberculinum	1
Iodium	1

From the above tables (1 & 2) it is observed that the medicine prescribed maximum times in Elder abuse group was *Natrum muriaticum* and in Non abuse group it was *Opium* and *Bryonia*.

**Table 3: Medicinal Improvement in both the Groups.**

Improvement	Group A	Group B
<b>Marked</b>	<i>Lachesis, Natrum mur.</i>	<i>Nux vom., Pulsatilla, Opium, Hyoscyamus, Silicea, Coffea, Bryonia</i>
<b>Moderate</b>	<i>Staphysagria, Carcinosis, Lycopodium, Baryta carb., Opium, Aurum met., Pulsatilla, Nux vomica</i>	<i>Calcarea, Opium, Coffea, Sepia, Lachesis, Pulsatilla, Causticum, Kali.carb., Silicea, Bryonia, Phosphorus, Thuja</i>
<b>Mild</b>	<i>Palladium, Phosphorus, Natrum mur., Ignatia, Opium, Sulphur, Lycopodium, Nux vomica.</i>	<i>Mercurius sol., Kali.carb., Arsenic album, Pulsatilla</i>

The above table clearly depicts that *Natrum mur* and *Lachesis* showed marked improvement in group A whereas *Nux vom.*, *Pulsatilla*, *Opium*, *Hyoscyamus*, *Silicea*, *Coffea*, *Bryonia* showed marked improvement in Group B. *Opium* & *Pulsatilla* showed moderate improvement in both the groups.

## STATISTICAL ANALYSIS

Mean of the estimates calculated shows 12.53 PSQI score at first visit, followed by 10.91 at 2nd month and 9.26 PSQI score at 4th month.

**Table 13: Pair wise Comparisons (Group A)**

Measure: MEASURE\_1

(I) factor1	(J) factor1	Mean Difference (I- J)	Std. Error	Sig. <sup>b</sup>	95% Confidence Interval for Difference <sup>b</sup>	
					Lower Bound	Upper Bound
1	2	2.340*	.439	<.001	1.457	3.224
	3	3.277*	.576	<.001	2.117	4.436
2	1	-2.340*	.439	<.001	-3.224	-1.457
	3	.936*	.325	.006	.281	1.591
3	1	-3.277*	.576	<.001	-4.436	-2.117
	2	-.936*	.325	.006	-1.591	-.281

Based on estimated marginal means

\*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

The above table shows difference in the means of PSQI scores of geriatric elder abused patients in between 1<sup>st</sup> visit and 2<sup>nd</sup> month, 2<sup>nd</sup> month and 4<sup>th</sup> month and 1<sup>st</sup> visit and 4<sup>th</sup> month; which shows significant ( $<0.05$ ) difference in the means in Group A at 3 different timelines by administering Homoeopathic Medicines on Elder abused geriatric patients suffering from reduced sleep quality.

**Table 14: Multivariate Tests (Group A)**

Value		F	Hypothesis df	Error df	Sig.
Pillai's trace	.422	16.429 <sup>a</sup>	2.000	45.000	<.001
Wilks' lambda	.578	16.429 <sup>a</sup>	2.000	45.000	<.001
Hotelling's trace	.730	16.429 <sup>a</sup>	2.000	45.000	<.001
Roy's largest root	.730	16.429 <sup>a</sup>	2.000	45.000	<.001

Each F tests the multivariate effect of factor1. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

**a. Exact statistic**

The above test “One-way repeated ANOVA” calculated for Group A (Elder Abused Geriatric patients with reduced sleep quality) showed improvement in PSQI scores after the 1<sup>st</sup> visit of the patient at 2<sup>nd</sup> and 4<sup>th</sup> month at  $<0.05$  significance; thus accepting the primary hypothesis that, Homoeopathic medicines significantly improve sleep quality in elder abused patients.

**ONE WAY ANOVA (PSQI) FOR GROUP B(NON- ELDER ABUSED SUBJECTS)**

Mean of the estimates calculated shows 13.64 PSQI score at first visit, followed by 9.94 at 2nd month and 7.98 PSQI score at 4th month.

**Table 18: Pairwise Comparisons (Group B)**

Measure: MEASURE\_1

(I) factor1	(J) factor1	Mean Difference (I-J)	Std. Error	Sig. <sup>b</sup>	95% Confidence Interval for Difference <sup>b</sup>	
					Lower Bound	Upper Bound
1	2	3.702 <sup>*</sup>	.421	<.001	2.854	4.550
	3	5.660 <sup>*</sup>	.695	<.001	4.260	7.059
2	1	-3.702 <sup>*</sup>	.421	<.001	-4.550	-2.854
	3	1.957 <sup>*</sup>	.426	<.001	1.100	2.814
3	1	-5.660 <sup>*</sup>	.695	<.001	-7.059	-4.260
	2	-1.957 <sup>*</sup>	.426	<.001	-2.814	-1.100

Based on estimated marginal means

\*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no



adjustments).

The above table shows difference in the means of PSQI scores of geriatric non abused patients in between 1<sup>st</sup> visit and 2<sup>nd</sup> month, 2<sup>nd</sup> month and 4<sup>th</sup> month and 1<sup>st</sup> visit and 4<sup>th</sup> month; which shows significant ( $<0.05$ ) difference in the means in Group A at 3 different timelines by administering Homoeopathic Medicines on Non abused geriatric patients suffering from reduced sleep quality.

**Table 19: Multivariate Tests (Group B)**

Value		F	Hypothesis df	Error df	Sig.
Pillai's trace	.635	39.101 <sup>a</sup>	2.000	45.000	<.001
Wilks' lambda	.365	39.101 <sup>a</sup>	2.000	45.000	<.001
Hotelling's trace	1.738	39.101 <sup>a</sup>	2.000	45.000	<.001
Roy's largest root	1.738	39.101 <sup>a</sup>	2.000	45.000	<.001

Each F tests the multivariate effect of factor1. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

a. Exact statistic

The above test “One-way repeated ANOVA” calculated for Group B (Non Abused Geriatric patients with reduced sleep quality) showed improvement in PSQI scores after the 1<sup>st</sup> visit of the patient at 2<sup>nd</sup> and 4<sup>th</sup> month at  $<0.05$  significance; thus, Homoeopathic medicines significantly improve sleep quality in non abused geriatric patients.

### INDEPENDENT T-TEST IN BETWEEN TWO GROUPS (FOR 4<sup>TH</sup> MONTH PSQI SCORES)

Independent t-test calculated for 4<sup>th</sup> month PSQI scores in between both the groups.

**Table 21: Independent Samples Test.**

Levene's Test for Equality of Variances				t-test for Equality of Means							
F			Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Side d p	Two-Side d p			Lower	Upper
VAR00002	Equal variances assumed	4.160	.044	1.517	92	.066	.133	1.27660	.84176	-.39522	2.94841
	Equal variances not assumed			1.517	88.731	.066	.133	1.27660	.84176	-.39604	2.94923



Levene's test for equality of variances assumed shows significant (0.04) difference in means of PSQI scores in both the groups with mean=9.26 in group A(Elder abused) as compared to mean= 7.98 in group B(Non Abused) at 4<sup>th</sup> month which shows different results by Homoeopathic medicines on both the groups. Thus rejecting the null Hypothesis that, Homoeopathic medicines have same effect in improving sleep quality in elder abused and non-abused geriatric patients; accepting the second alternative hypothesis that, Homoeopathic medicines significantly improve sleep quality in non-elder abused geriatric patients as compared to elder abused patients.

## DISCUSSION AND CONCLUSION

The above study shows significance of Homoeopathic medicines in improving sleep quality in geriatric patients suffering from elder abuse. Various studies have shown effect of Homoeopathic medicines in geriatric age group with insomnia. There are various literatures showing effect of Homoeopathic medicines in improving sleep quality of geriatric patients and also various researches which state effect of Homoeopathic medicines on different mental problems of the patients. Present study showed significant results in both the groups (Elder Abused and Non Abused Geriatric patients) in lowering the PSQI scores with Homoeopathic Medicines selected on the basis of totality of symptoms using Synthesis 9.1 repertory of RADAR OPUS software. Comparison in between the two groups showed better results in improving sleep quality with Homoeopathic Medicines in Non-Abused Geriatric patients.

Due to the COVID-19 situations prevalent at the time of sample collection, patients were directed to the OPDs and there were multiple drop outs due to lockdown situations. Sleep quality was also hampered with the viral outbreak pandemic. Acute symptoms related to the pandemic hindered in the treatment of sleeplessness protocol as those acute symptoms were given priority during treatment. Elder abused geriatric patients generally suffer from some psychological disorders like depression. Thus, finding patients with elders abuse and no depression was difficult.

A larger sample size, double blind trial and research in an Institutional setup like old age homes is suggested for a better generalization. Similar researches with Randomized Controlled Trial are suggested.

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