

## “ Impact On Zumba On Insomnia – Experimental Study Among Nurses, Uae”

Dr. Majella Livingston Alber B.Sc Rn.Rm., M.Sc (N)., Mba(Hm)., Phd(N)<sup>1</sup>,  
Renjitha Abraham B.Sc Rn.Rm<sup>3</sup>, Deepa Murali B.Sc Rn.Rm<sup>2</sup>.

All Are Working At Government Hospital, Dubai, Uae

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### **Abstract**

**Introduction:** Insomnia is a common mental health issue among nurses. A healthy nurses gives optimum healthcare. Ignoring insomnia among nurses can compromise the care conveyance. Researches says that Zumba is a combination of music and exercise in the form of dance, which secrete serotonin, a kind of endorphin, a mood booster which gives positive feelings, consequently shield mental health. Nevertheless, there are a minimum number of studies led to understand how Zumba aids to protect the nurses from insomnia. This study is to learn the result of Zumba on Insomnia among nurses

**Aim:** To evaluate the effect of Zumba on insomnia among nurses at government hospital.

**Methods:** An experimental design was adopted for this study. 70 nurses from government hospital joined in this study. Selected nurses were indiscriminately dispersed to both control and experimental group. group of experiment underwent Zumba for 30 minutes, daily, 3 months. Results were collected via Microsoft office before and after the Zumba intervention from both control and experimental group. The Revised - Impact Event Scale tool was used to collect the information.

**Results:** The mean test score for experimental (12.89) was significantly less than for control group (16.69) ( $t = -8.113$ ,  $df = 68$  at a level of 5% significance).

**Conclusion:** The present study showed that Zumba enabling the nurses to relieve from insomnia

**Key words:** Nurse, Insomnia and Zumba

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### **I. Introduction/ Background:**

Insomnia is a communal problem, in which people may have difficulty in falling asleep and staying asleep. It can occur even with the right space and time (NHS)<sup>1</sup>. It can disturb the daily actions and perhaps makes you sense sleepy throughout the day<sup>2</sup>. ICN reported that nearly 80% nurses who functioned with Covid 19 patients were suffered with mental health distress. Studies revealed that 34 – 40.1% of health workers especially nurses suffered with insomnia symptoms during corona virus pandemic<sup>3</sup>. Nicola Lelapi et.al., (2021) this study assessed the prevalence of insomnia among night shift nurses. The aim of this online survey was to examine the risk factors and prevalence of insomnia among nurses. A total of 2355 replies were included and identified that 65.4% were suffered from insomnia<sup>4</sup>. The scarcity in nursing workforce, growing demand of care, heavy workload, different work shift is the main cause of insomnia among nurses<sup>4</sup>. Insomnia is a chief reason for poor decision-making, attention and thinking ability, which has substantial influence on work performance among nurses and poses risk to safety of the patient. Hence, it is a crucial necessity for physical intervention to help the nurses to manage with this unanticipated mental occurrence.

Evidences says that exercise has optimistic effect on dismissing the sleep deficit. Exercise may readjust your inner body clock. Some individuals develop insomnia due to an irregular internal body clock. Any disturbance in circadian rhythms make them feel tired in the night than “normal.” Some forms of exercise like Zumba boost serotonin, a hormone which improves the brain to metabolize serotonin and normalize sleep<sup>12</sup>. Zumba is a combination of dance and music, enable the brain to secrete serotonin, a type of endorphin, a mood booster<sup>5</sup> which gives optimistic feeling and improve sleep. Consistent partaking of Zumba leads to promote faster sleep onset, improved sleep quality and added curative sleep cycles<sup>6</sup>. Also, Zumba lets people of all ages to advance their total health, relieve anxiety and improve sleep by work out the whole body, kick mood and inflate self-confidence, social and intellectual skills. But, little experiments have done among nurses to know or examine the effect of Zumba in sleep. Thus, the investigator is concerned in leading this experimental study to examine the effect of Zumba on insomnia at government multispecialty hospital.

## **II. Literature Review:**

Chen Tian (2019) et.al., In this network meta-analysis and an umbrella review studied the result of exercise on insomnia. 4 SRs and 10 network meta-analyses with 1034 partakers were used from Cochrane Library, Web of Science PubMed and Embase to explore the connotation between dissimilar types and strength of exercise modalities with sleep disturbances. This study concluded as exercise had optimistic effect on insomnia relief by improving sleep quality. Moderate exercise plays a significant role in increasing the sleep quality of people with insomnia<sup>6</sup>.

Barbara Vendramin MS et.al., conducted a systematic review in Scopus, PEDro, Bandolier, Web of Science and MEDLINE on health benefits of Zumba training. Eleven manuscripts, 586 partakers age range from 18 - 65 years were considered. Results showed that Zumba is a type of bodily activity improve quality of life, increase muscular flexibility and strength<sup>7</sup>.

Majd A Alnawwar et.al (2023) Consistent exercise has numerous health benefits which includes better sleep quality and symptoms of insomnia. This systematic review deliver evidence-based figures on association with exercise and sleep. This systemic review was done in Embase, MEDLINE (Medical Literature Analysis and Retrieval System Online), PubMed, Scopus and Google Scholar. The involved studies engrossed on discovering the consequence of exercise on sleep quality and insomnia. The results of this systematic review say that exercise has effect in sleep quality<sup>8</sup>.

S. Li et al (2021) Workout can have an optimistic result on body operational work and immunity. This systematic study assessed the effect of workout on patients with insomnia. Examined a mixture of manual and electronic data from CNKI, Wanfang, VIP, Web of Science, EBSCO, Cochrane Library, SpringerLink PubMed and Embase databases where recognized randomized controlled trials that assessed the effects of workout on primary insomnia. Total of 1269 patients who got workout treatments and 1203 patients who got drug therapy or no treatment. Study showed that workout treatment had a significant result on the management of primary insomnia especially for elderly people<sup>9</sup>.

D. Riemann et.al.,(2023) Advancement in insomnia demanded this Recommendations of exercise interventions to improve the cognitive-behavioral treatment for insomnia<sup>10</sup>. Harry Freitag et.al., (2019) This study meant to explore the result of Zumba training on sleep in sedentary overweight women. 34 subjects were involved in this experimental design. Study proved that Zumba improved sleep duration<sup>11</sup>. Barene S, Krstrup P. (2022) 40-weeks of experiment study assesses the results on sleep problem amid female employees in the hospital. 107 employees were participated. The study findings discovered that Zumba enhanced sleep outcomes and mental health among female hospital staff<sup>13</sup>.

### **Aim:**

To evaluate the impact of Zumba on insomnia among nurses at government hospital.

### **Objectives:**

1. To assess the variation between before and after the Zumba treatment on insomnia among experimental group.
2. To assess the variation between before and after treatment of Zumba treatment on insomnia among control group.
3. To assess the variance in the effect of Zumba treatment on insomnia among nurses in the experimental and control groups before doing Zumba.
4. To assess the variance in the effect of Zumba treatment on insomnia among nurses in the experimental and control groups after doing Zumba.

## **III. Methodology:**

**Study design:** Experimental design

**Approach:** Quantitative approach

**Study setting:** Government hospital, Dubai

### **Population:**

**Target population** – All nurses working at Government hospital, Dubai

**Accessible population** – All nurses who were willing to participate

### **Sample size calculation:**

Sample size was calculated by Open Epi sample size calculator. With confidential interval 95% , odds ratio of 10 and the power of 80%, the intended sample size for this study was 70 according to Kelsey et.al,<sup>2<sup>nd</sup></sup> edition, Table numbers 12- 15 & Fleiss, formula 3.18, 3.19.

**Sample selection:**

The survey was created in Microsoft office 365 with consent. Survey link was created and it was sent through email to all nurses. The nurses who ever willing to join were answered after the consent. The responses were downloaded. From that the partakers were randomly assigned to the control and experimental groups.

Criteria for Sample selection:

**Inclusion criteria:**

- Full time nurses working in Government hospital
- The nurses enthusiastic to participate

**Exclusion criteria:**

- The nurses who were not willing to join
- The nurses on any type of leave during the study period

**Tool:**

The tool for data collection has 2 portions.

- Portion 1: Demographic data
- Portion -2: Revised - Impact Event Scale

**Intervention:**

Zumba was imparted to the experimental group and made them to continue it for another 3 months, 30 minutes, daily

**Pilot study:**

Pilot study done and understood that it was probable to do Zumba without ill effects

**Data collection:**

- The survey was initiated with consent through Microsoft office. Link was created and emailed to all nurses in the government hospital. The nurses whoever willing to join were responded after the consent. Responses were downloaded and the samples were randomly assigned to the control and experimental groups. The data was collected from march - July 2023. Study samples were reassessed by using revised – impact event scale via micro soft office.

**Data Analysis:**

- Demographic data were analyzed by using Frequency and percentage distribution.
- Mean, mean difference, standard deviation and correlation coefficient were used to analyze all other data.

**Ethical consideration:**

Approval was established from hospital nursing department, institutional review board as well as Dubai scientific research committee former to the data collection and consent was established from all partakers former to the data collection from samples. Maintained confidentiality throughout the study.

**IV. Results:**

**Table 1. The spreading of age groups among Zumba partakers**

| Age Groups | Experimental Group |         | Control Group |         |
|------------|--------------------|---------|---------------|---------|
|            | N                  | %       | N             | %       |
| 21-30      | 7                  | 20.00%  | 5             | 14.30%  |
| 31-40      | 26                 | 74.30%  | 22            | 62.90%  |
| 41-50      | 2                  | 5.70%   | 7             | 20.00%  |
| 51-60      | 0                  | 0.00%   | 1             | 2.90%   |
| Total      | 35                 | 100.00% | 35            | 100.00% |

The table 1 shows, within seventy partakers, the majority nurses from the experimental and control group were from 31 to 40 years. That is 26 (74.30%) from experimental group and 22 (62.90%) were from control group.

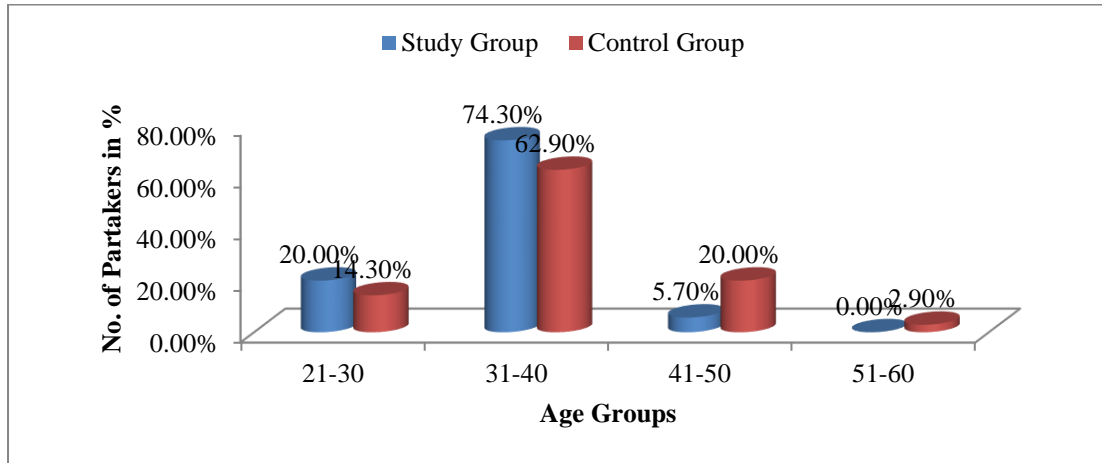


Figure 1. The diagram representing the Zumba participant's age Groups

Table 2. The spreading of gender among Zumba partakers

| Gender | experimental Group |         | Control Group |         |
|--------|--------------------|---------|---------------|---------|
|        | N                  | %       | N             | %       |
| Male   | 2                  | 5.70%   | 9             | 25.70%  |
| Female | 33                 | 94.30%  | 26            | 74.30%  |
| Total  | 35                 | 100.00% | 35            | 100.00% |

The table 2 shows, within 70 partakers, the maximum partakers were females. That is 33(94.3%) from experimental and 26(74.3%) from control group.

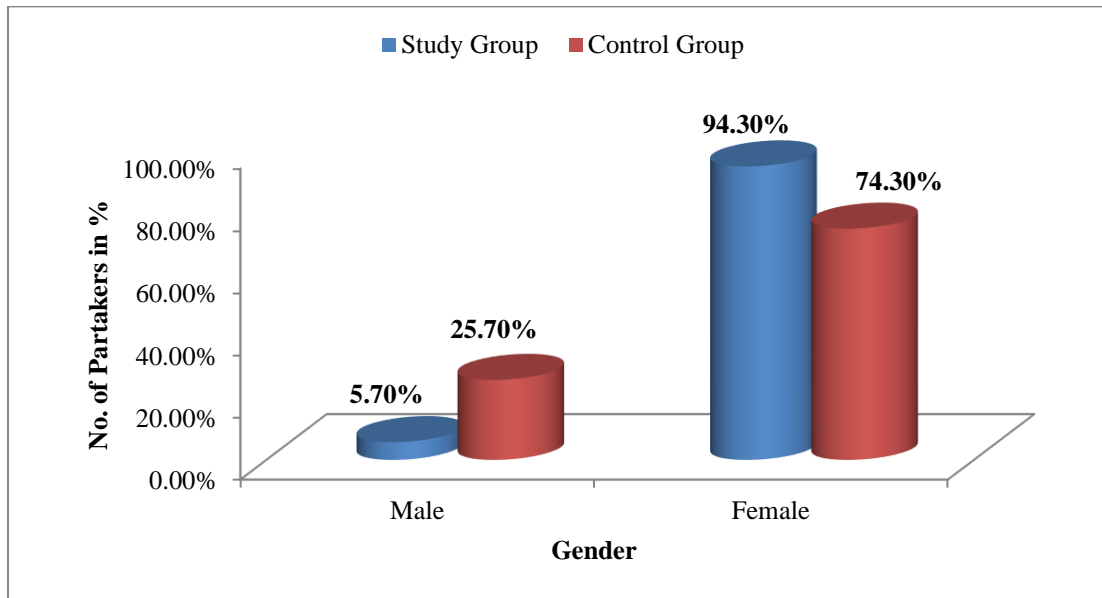


Figure 2. The diagram representation of gender among Zumba partakers

Table 3. The distribution of Zumba partakers based on religions

| Religions | Experimental |         | Control Group |         |
|-----------|--------------|---------|---------------|---------|
|           | N            | %       | N             | %       |
| Muslim    | 2            | 5.70%   | 4             | 11.40%  |
| Christian | 23           | 65.70%  | 24            | 68.60%  |
| Hindus    | 10           | 28.60%  | 7             | 20.00%  |
| Total     | 35           | 100.00% | 35            | 100.00% |

The table 3 shows, within 70 partakers, the maximum were Christians. That is 23 (65.70%) from experimental and 24 (68.6%) from control group.

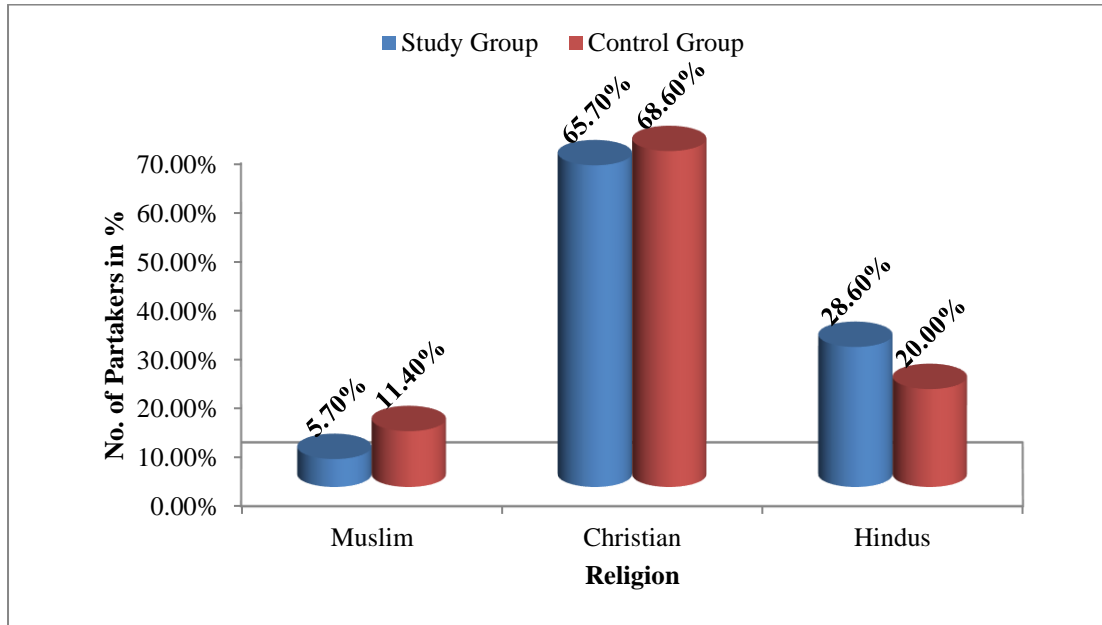


Figure 3. The diagram representation of Zumba partakers in religion wise

**Objective 1:** To assess the variation between before and after the Zumba treatment on insomnia among experimental group.

**Null Hypothesis (H0):** There is no significant variation in Insomnia among nurses in the experimental group before and after Zumba.

**Alternative Hypothesis (H1):** There is significant variation in Insomnia among nurses in the experimental group before and after Zumba.

Table 2. The comparison between Insomnia among nurses in the experimental before and after Zumba.

| Insomnia in the experimental group of Zumba | Mean  | N  | SD    | r     | MD    | t     | df | p      |
|---|-------|----|-------|-------|-------|-------|----|--------|
| Before                                      | 15.74 | 35 | 2.28  | 0.153 | 2.857 | 5.391 | 34 | 0.000* |
| After                                       | 12.89 | 35 | 2.529 |       |       |       |    |        |

\*statistically significant ( $p < 0.05$ )

Since the p-value of the test (0.000) is less than 0.05 and the mean test score significantly increased by 2.857 points ( $t = 5.391$ ,  $df = 34$  at a level of 5% significance) after implementing Zumba. We reject the null hypothesis. Therefore, there is a significant variation in Insomnia among nurses in the experimental before and after Zumba. The correlation between level of Insomnia among nurses in the experimental group before and after Zumba was positively correlation ( $r = 0.153$ ).

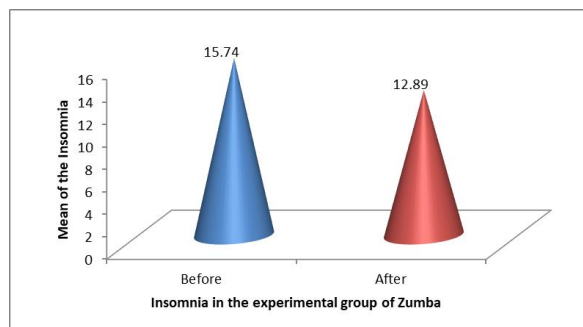


Figure 2. The diagram of the comparison between insomnia among nurses in the experimental before and after Zumba.

**Objective 2:** To assess the variation between before and after treatment of Zumba treatment on insomnia among control group.

**Null Hypothesis (H<sub>0</sub>):** There is no significant variation in Insomnia among nurses in the control group before and after Zumba.

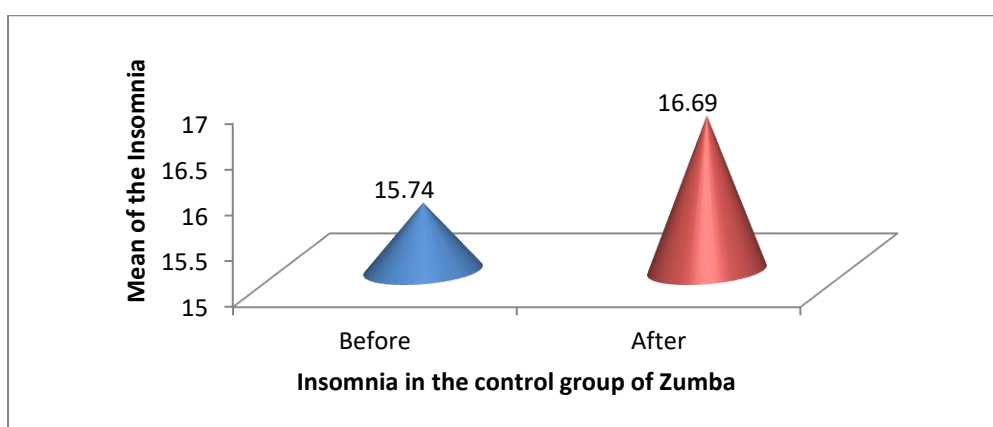
**Alternative Hypothesis (H<sub>1</sub>):** There is significant variation in Insomnia among nurses in the control group before and after Zumba.

**Table 6.** The comparison of Zumba on Insomnia among nurses in the control group before and after Zumba.

| Insomnia in the control group of Zumba | Mean  | N  | SD    | r    | MD    | t      | df | p      |
|--|-------|----|-------|------|-------|--------|----|--------|
| Before                                 | 15.74 | 35 | 2.267 | 0.74 | 0.943 | -2.373 | 34 | 0.023* |
| After                                  | 16.69 | 35 | 1.132 |      |       |        |    |        |

\*statistically significant (p<0.05)

Since the p-value of the test (0.000) is less than 0.05 and the mean test score significantly decreased by -0.943 points (t = -2.373, df = 34 at a level of 5% significance) after implementing Zumba. We reject the null hypothesis. Therefore, there is a significant variance in Insomnia among nurses in the control group before and after Zumba. The correlation between level of Insomnia among nurses in the control group before and after Zumba was positively correlation (r = 0.174).



**Figure 6.** The diagram of the comparison between Insomnia among nurses in the control group before and after Zumba.

**Objective 3:** To assess the variance in the effect of Zumba treatment on insomnia among nurses in the experimental and control groups before doing Zumba.

**Null Hypothesis (H<sub>0</sub>):** There is no significant difference between the study and control groups in Insomnia among nurses in the before Zumba.

**Alternative Hypothesis (H<sub>1</sub>):** There is significant difference between study and control groups in Insomnia among nurses in the before Zumba.

**Table 1.** The comparison between the study and control groups in Insomnia among nurses before Zumba.

| Insomnia before Zumba | N  | Mean  | SD    | MD | t | df | p |
|-----------------------|----|-------|-------|----|---|----|---|
| Experimental          | 35 | 15.74 | 2.28  | 0  | 0 | 68 | 1 |
| Control Group         | 35 | 15.74 | 2.267 |    |   |    |   |

\*statistically significant (p<0.05)

The mean test score for experimental (15.74) was significantly equal than for control group (15.74) (t = 0, df = 68 at a level of 5% significance). With p-value less than 0.05, we accept the null hypothesis and conclude that there is no significant variance between study and control groups in the level of Insomnia among nurses in the before Zumba.

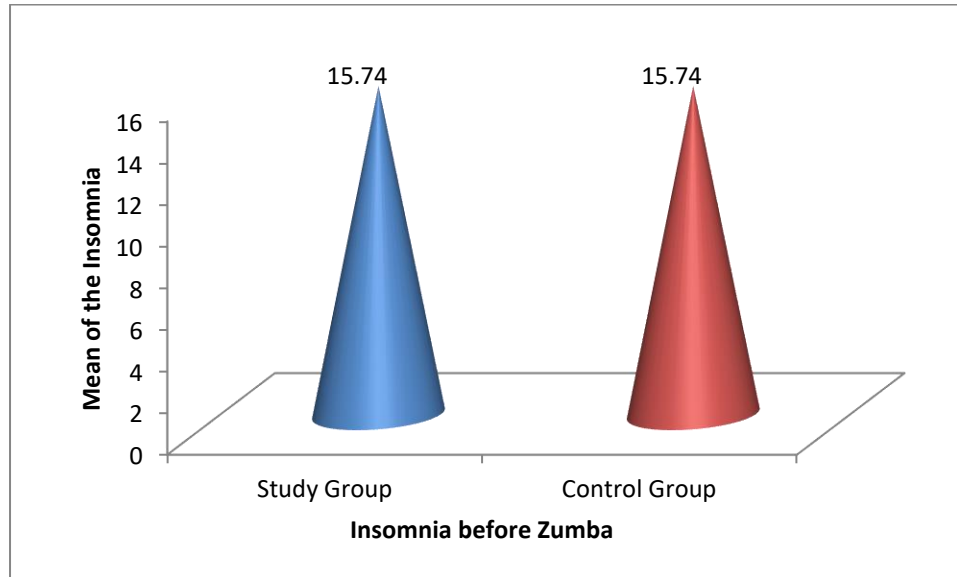


Figure 1. The diagram of the comparison between the study and control groups in Insomnia among nurses before Zumba.

**Objective 4:** To assess the variance in the effect of Zumba treatment on insomnia among nurses in the experimental and control groups after doing Zumba.

**Null Hypothesis (H<sub>0</sub>):** There is no significant difference between the study and control groups in Insomnia among nurses in the after Zumba.

**Alternative Hypothesis (H<sub>1</sub>):** There is significant difference between study and control groups in Insomnia among nurses in the after Zumba.

Table 1. The comparison between the study and control groups in Insomnia among nurses after Zumba.

| Insomnia after Zumba | N  | Mean  | SD    | MD   | t      | df | p      |
|----------------------|----|-------|-------|------|--------|----|--------|
| Experimental         | 35 | 12.89 | 2.529 | -3.8 | -8.113 | 68 | 0.000* |
| Control Group        | 35 | 16.69 | 1.132 |      |        |    |        |

\*statistically significant (p<0.05)

The mean test score for experimental (12.89) was significantly less than for control group (16.69) (t = - 8.113, df = 68 at a level of 5% significance). With p-value less than 0.05, we reject the null hypothesis and conclude that there is a significant variance between study and control groups in Insomnia among nurses in the after Zumba.

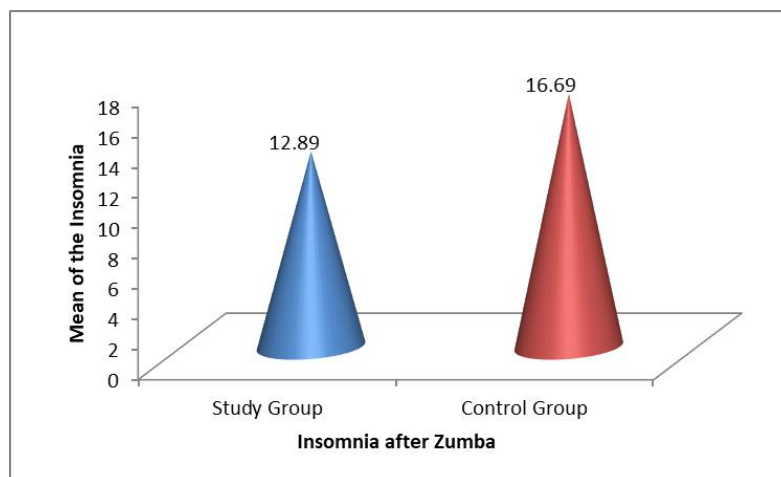


Figure 1. The diagram of the comparison between the study and control groups of Insomnia among nurses after Zumba.

## V. Discussion:

The mean test score for experimental (12.89) was significantly less than for control group (16.69) ( $t = -8.113$ ,  $df = 68$  at a level of 5% significance).

The study findings are consistent with articles by Danielle Pacheco (2023)<sup>12</sup>, Barene S, Krstrup P (2022)<sup>13</sup>, Xiao Tan. et.al.,(2016)<sup>15</sup>. Zumba is a combination of music and dance – a type of twelve weeks exercise reduces insomnia. The dancing movement of exercise demonstrates increased endorphins which is a feel-good hormone. These hormone upsurges the secretion of serotonin, a material in the brain that increases sleep, mood and appetite. Zumba in the present study highlights the structured Zumba program improve the sleep by reducing insomnia, particularly reduce insomnia among nurses in the government hospital.

## VI. Conclusions:

Zumba is a powerful tool in dismissing nurses' insomnia due to its combination of corporal activity, group engagement in an enjoyable and lively atmosphere. Our results indicate that exercise intervention has a significant positive influence on insomnia. So, we recommend that 30 minutes of Zumba exercise, every day for 12 weeks can improve sleeping. Further studies shall focus with large sample to confirm our results and to improve the quality of time spent for the nurses' own health.

## VII. Nursing Implications:

Zumba can be included in the nurse's day to day routine within the health care facility in order to preserve the nurse's health from insomnia or sleep disorders

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