# Effect of Teaching Program on Nurse's Performance and Patient Outcomes for Myasthenia Gravis

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## Abstract

**Background:** The most prevalent condition affecting the neuromuscular junction (NMJ) and fatigability of skeletal muscles is myasthenia gravis. **Aim of the Study:** To assess the Effect of Teaching program on nurse's performance and patient outcomes for Myasthenie gravis. **Research design:** Quasi experimental research design was utilized in this study. **Setting:** The study was carried out at the neurological inpatient ward, intermediate unit, intensive care unit at Assiut University Hospital. **Sample:** This study was a purposive sample of thirty nurses who provided pre-and post-implementation care to patients with Myasthenia Gravis. A convenient sample of 40 patients with a diagnosis of Myasthenie gravis was divided into tow patient groups (20 in each): control and study. **Tools:** Tool **I** pre/post nurses knowledge assessment questionnaire, tool **II** pre/post nurses practice observational check list, tool **III** fatigue severity scale (FSS), tool **IV** MG Activities of Daily Living scale. **Results:** The majority of nurses showed a significant improvement in their mean scores after the teaching program (p= 0.001). However, before the program, their knowledge regarding fatigue in Myasthenie gravis (MG) patient was insufficient, and their understanding of managing fatigue was similarly inadequate. This was linked to their ability to assist patients with Myasthenia Gravies in performing activities of daily living (ADL).**Conclusion:** The Teaching program significantly improves nurses' knowledge and skills of nurses about patients with myasthenia gravis. **Recommendation:** An in-service training program for nurses caring for patients with Myasthenie gravis (MG) is essential to ensure they maintain up- to -date knowledge and skills in managing chronic neuromuscular disorder.

*Keywords: Myasthenia gravis &Teaching program.*

## Introduction

Myasthenia gravis (MG) is an autoimmun upe disorder that impairs neuromuscular transmission and is characterized by localized or generalized weakness and skeletal muscle fatigability. The attacks are both antibody-driven and linked to cellular immunological processes **(Vitturi et al., 2020).** MG effects certain muscle groups and is characterized by muscular weakness and fatigability. Among the most valuable muscle groups are the axial, respiratory, facial, leg, ocular, and bulb. **(Shelly, 2020).** Myasthenia crisis (MC) is a complication of MG that causes worsening muscle weakness and respiratory failure, necessitating intubation and mechanical ventilation. Myasthenia crises affect 15-20% of myasthenia patients at some point in their lives **(Meel et al., 2020).**

Activities of Daily Living (ADL) are routine tasks that people perform on a daily basis, like eating, walking, and brushing their teeth. However, patients with myasthenia gravis disease experience fatigue and muscle weakness that impairs their ability to perform these tasks, lowering their functional level, degree of dependency, and physical activity **(Chakraborty, 2018).** Myasthenia gravis-related muscle weakness is a challenge for the neurology nurse treating a patient.

Care for poor breathing patterns, difficulty clearing the airway, poor communication, changed nutrition, deficiencies in self-care, and impaired vision are some of the nursing interventions for an acute myasthenia patient that are discussed **(Malik & Almadani, 2019).**

A nurse's assessment of the degree of functional impairment and the need for assistance with ambulation (getting up, walking) and self-service activities (self-care, bathing, changing a bed, etc.) helps patients' physical condition and level of independence in daily activities. **(Serrano, 2020)**

The modern educational program is aimed to assess patient status, identify potential complications, treat and prevent those complications, and learn the specific care needed for this patient, particularly during treatment and in relation to mechanical ventilation, it is imperative that nurses gain more knowledge and experience with Myasthenia gravis syndrome.

### Significance of the study

The majority of myasthenia gravis patients experience generalized weakness during the first two years of the disease's development, including weakness in their

limb muscles. Speaking, chewing, and swallowing all need the use of the bulgar muscles **(Salci, 2018)**. Over 700,000 persons worldwide are affected by the 100–200 cases of MG that occur globally per million populations. According to **AL-Zwaini & AL-Mayahi (2019),** life-threatening MG crises affect 15-20% of patients, mainly within the first two years following diagnosis.

Respiratory muscles can also be affected in up to 40% of patients, resulting in a myasthenic crisis (Respiratory failure) in which patients must be ventilated artificially (**Sinha & Singh, 2022**).

This research aims to improve nursing care and competencies for patients with myasthenia gravis, a condition that requires specialized care to enhance prognosis and prevent complications.150 patients with MGS were diagnosed in the neurological critical care, intermediate care, and emergency unit statistics at Assuit University Hospital in 2021.

### Aim of the study

To assess the Effect of Teaching program on nurse's performance and patient outcomes for Myasthenie gravis.

### Research Hypotheses

The following research hypotheses were developed in order to achieve the study's aim.

**First hypothesis:** A teaching program improve the post-mean knowledge scores of nurses compared to their pre-mean scores.

**Hypothesis 2:** A teaching program improve the post-mean practice scores of nurses compared to their pre-mean scores.

**Hypothesis 3:** Patients with myasthenia gravis who participate in an educational program have a reduction in their mean fatigue score compared to their pre-exposure period.

**Hypothesis 4:** Patients with myasthenia gravis who participate in an educational program have a considerable improvement in their dependency level in daily living activities compared to their pre-exposure period.

**Hypothesis 5:** A positive relationship will exist between the knowledge and practice scores obtained by nurse's post implementing teaching program.

## Patients & Methods

**Study design:** A quasi-experimental research design was utilized in this study. The current study used a single group pre test and post test educational intervention design. This design helped to investigate the effectiveness of a nursing intervention in achieving the desired outcome in a natural setting **(Andrade., 2021)**

**Study variable**

**Independent variable:** the nursing teaching program regarding Myasthenia gravis

**Dependent variable:** The level of knowledge and practices of nurses about myasthenia gravis and patients outcomes

**Setting:** This study was conducted at Assuit University Hospital's neurological inpatient ward, intermediate unit, and intensive care units.

**Sample:** The sample consists of two groups: a purposive sample composed of thirty nurses who provided pre- and post-implementation care to patients with Myasthenie gravis. Aconvenient sample of 40 people with a diagnosis of Myasthenie gravis was divided into tow patient groups (20 in each): control and study.

**Tools:**

Based on relevant literature, the researcher created four tool that were used to gather data:

**Tool (1): Pre/post nurses' knowledge assessment questionnaire**

After the researcher reviewing recent text the researcher formulated this tool. It developed to evaluate nurses' knowledge who caring patients with myasthenia gravis, translated into Arabic and consisting of seventeen multiple-choice questions.and consist of two parts.

**Part I: Demographic characteristics** of nurses such as (age, Qualification, years of experience, Training courses regarding the MG, sex)

**Part II: nurses knowledge assessment questionnair**
- One question and one point were dedicated to assesing basic knowledge about the definition of Myasthenie gravis syndrome.
- The two questions and two degree were used to evaluate basic understanding of the causes of MGS.
- one question and one point covered knowledge of the symptoms and signs of MGS.
- One question and one degree assessed knowledge of MGS complications.
- The eight questions and eight degrees were included to measure knowledge of the treatment of MGS.
- One question and one point evaluated basic understanding of patient care in relation to MGS therapy.
- Three questions and three points focused on general knowledge about caring for patients with Myasthenia Gravies patients during MGS.

**The knowledge score was categorized as following:**
- **Poor:** For those who had a score < 50.0%
- **Average:** For those who had a scor 50.0% to 70.0%
- **Good:** For those who had a score > 70.0%

**Tool (2) pre/post nurses practice observational check list**

This tool was an observational check list that covered all phases of the nursing care process for patients with myasthenia gravis. The check list included the following tasks.

- Orpharyngeal airway insertion, which includes ten steps and is calculated at twenty degrees
- The intubated patient's care, which entails sixteen calculated degrees and eight steps.
- Five steps and a calculated 10 degrees are involved in the care of an extubated patient.
- Tracheostomy patient care, involving eight steps and eighteen degrees computed
- Arterial blood gas patient, comprising twenty degrees and ten steps
- Measurements of central venues consist of eight steps and sixteen computed degrees.
- Enteral feeding patient care, involving thirteen steps and twenty-six degrees of calculation
- Oxygen treatment, which involves fourteen calculated degrees and seven steps
- The patient's hygienic care, which consists of thirty-two degrees computed and sixteen steps
- Oral care for the patient, which includes 21 phases and 42 calculated degrees Patient skin care regimen consisting of ten steps and twenty degrees calculated
- Bowel care for the patient, comprising nine steps and a computed nineteen degrees
- Physiotherapy care, comprising twenty degrees and ten steps

**Scoring system for nurses practices.** The overall score for all the steps was determined by scoring each one as follows: correctly (2), not done (0), and incorrectly done (1).

The total score of the nurse's practices was classified into three categories:
- **Poor:** For those who had a score<60.0%
- **Average:** For those who had a scor 60.0% to 75.0%
- **Good :** for those who had a score>75.0%

**Tool for patients:** Consist of two tools to assess patient with diagnostic from Myasthenie gravis was recruited,any age and both genders.

**Tool (3) fatigue severity scale (FSS)**
The objective of this questionnaire is to assess the severity of symptoms. In patient with Myasthenia Gravies (MG).It is simple to understand and can be completed in approximately 5-8 minutes. the questionnaire is used to evaluate the level of fatigue and consists of nine items. The patient is asked to their level of agreement with each statement on a scale from 1 to 7.A score of 4 or higher   generrly indicates significant fatigue.

**System of scoring:** A total score between 1 and 63. Higher scores correspond to extreme fatigue. 28 is a moderately fatigued score. Moderate fatigue is indicated by a score range of 28–40. Severe fatigue is indicated by a score range of 41–63.

**Tool 4: MG Activities of Daily Living Scale**
This assessment tool adapted from **(Wolfe et al., 1999)** provides a rapid evaluation of symptom in

Myasthenie gravis syndrome (MGS).The Myasthenie gravis Activities of Daily Living (MG-ADL) scale can be completed in approximately 10 minutes and doesn't require specialized equipment or expertise. It assesses four key domains of patient functioning:
- **Ocular function** (2 items).
- **oropharyngeal function** (3 items).
- **Respiratory function** (1item).
- **Limb/extremity** (2 items).

**System of scores:** Higher total scores indicate severe disability, with scores ranging from 0 to 24. A score of less than eight denotes a minor impairment. Moderate impairment is indicated by scores between 9 and 16. Severe disability is indicated by scores between 17 and 24**.**

**Construction of teaching programs**
Based on prior performance evaluations of nurses, accessible resources, and a review of pertinent literature, the researcher created the instructional curriculum.

**Overall goal of the teaching program**
- Increasing critical care Nurses' understanding of myasthenia gravis is the main goal of the curriculum that was created.
- Particular program goal. At the end of the program, nurses were able to:

**1) Understanding performance**
- Recognize the structure of nerve cells
- Describe the nerve cells' physiology.
- Explain what Myasthenie gravis is.
- A list of Myasthenia Gravis causes
- Determine the Myasthenia Gravis pathogenesis
- Identify the symptoms and indicators of myasthenia gravis.
- Enumerate the Myasthenia Gravis complications
- Be aware of how to treat Myasthenie gravis.
- Be aware that patients with myasthenia gravis require specific nursing care.

**2) Professional practice**
- Suctioning and inserting the oropharyngeal airway
- Providing care for patients with tracheostomies and endotracheal tubes. Providing care for patients on mechanical ventilation; and providing hygienic care for patients

**3) Cognitive skills**
- Examine the results of the lab experiment.
- Transferable and general skills
- Effectively communicate while working in a team

**Method**
**The study was carried out in four distinct phases:** assessment, preparatory phase, implementation phase, and evaluation phases.

**Assessment phase**
During this phase, the researcher collected baseline data using prepared study instruments (Tools **I**, **II**, **III**, and **IV**) and an interview questionnaire.

**Preparatory phase:** The study began with gaining consent from Assuit University Hospital's neurological department director and nursing faculty, followed by a thorough evaluation of relevant literatur.

**Tool content validity:** Five specialists in the fields of neurological medicine and critical care nursing at Assiut University evaluated the content validity of the instruments, and any necessary modifications were made.

**Reliability**: Was calculated using Cronbach's alpha for every tool, tool **I**(0.895), tool **II**(0.896), tool **III**(0.802), tool **IV**(0.0845)and the result was an acceptable .

**The pilot research:** A pilot study was conducted on three nurses and six patients with Myasthenia gravis who fulfilled the pre-established selection criteria. The purpose of the study was to assess the applicability of the tools, and based on the findings and expert comments, the required modifications were made

**Ethical considerations**
- The faculty of nursing's ethics committee authorized the research idea.
- The research subjects are not at risk while it is being applied.
- The investigation will adhere to standard ethical guidelines for clinical research.
- After outlining the nature and goals of the study, the participant's informed consent was obtained.
- The patient received assurances that no request for research data would be denied without additional authorization.
- Anonymity and confidentiality were guaranteed.
- The patient was free to withdraw from the research at any moment without giving a reason or to decline to participate altogether.

**Implementation phase**
- All nurses were interviewed during a one-hour break in a separate shift or just before the shift bagen.
- Knowledge was tested twice, as manner described below.
- The initial assessment at the beginning of the study served as a baseline for later comparison with the posttest and a pretest.
- Following the implementation of the education program, a second questionnaire was completed to determine how it affected nurses' understanding.

The nurses' practices were observed by the researcher twice, both before and after implementation of the program by using an observational check list tool.

**Introductory meeting**
During this half-hour session, the researcher introduced herself to the participants and went over the goals, content, and techniques for program evaluation.

**The first session** covered the definition of Myasthenie gravis as well as the anatomy and psychology of nerve cells. It lasted for thirty minutes.

**Session II:** Included The signs and symptoms, pathogenesis, and etiology of Myasthenie gravis. For thirty minutes

**Session III:** Included therapy options for Myasthenie gravis, with an hourly duration.

**Session IV:** Included problems of treatment and nursing care during receiving treatment. For length one hour

**Session IIV:** Included nursing care for patients with myasthenia gravis and disease complications. For a period of one hour

Group conversation was encouraged with constant feedback to guarantee knowledge and achievement of the specific purpose of the program.

The researcher and nurses maintained an open line of communication to address any queries and validate the knowledge and associations discovered.

The researcher outlined and emphasized the key themes from the previous session.

The patient sheet for Myasthenie gravis, which included FSS, was used to assess tiredness levels it consists of nine items for which the patient must score between 1 and 7, with 1 indicating significant disagreement and 7 indicating strong agreement. A score of 4 or higher is usually indicates extreme weariness.

MG-ADL is an eight-item, patient-reported questionnaire that assess how well a patient can perform daily activities that are affected by Myasthenie Gravies (MG).The activities evaluated include: Speaking, chewing, swallowing, breathing, self-care tasks like brushing teeth or combing the chair, basic bodily tasks like getting out of a chair, and symptoms connected to double vision and eyelid dropping are among these items. A total score can range from 0 to 24, since each component is rated from 0 to 3.

**Evaluation phase:**
Immediately following the program's implementation, an evaluation was conducted using post-test study instruments to determine the program's impact on nurses' performance and patient outcomes.

**Statistical designs:**
The gathered information was examined. Tallied, coded, categorized, examined, and ready for computer entry. SPSS Version 23 was used to perform descriptive statistics such as mean, standard deviation, number, and percentage. The t-test is used to detect a significant difference for the numerical variable. A statistically significant difference was defined as one where the P-value was less than 0.05 (P>0.05). The non-parametric variable's significant difference is ascertained using the chi-square test. Moreover, Pearson correlation

## Results

**Table (1): Frequency distribution of study sample regarding Demographic data**

| | | Frequency | Percent |
|---|---|---|---|
| Age (Mean &SD) | | 26.90± 4.51 | |
| Qualification | Nursing Diploma | 4 | 6.7 |
| | Nursing Technical Institute | 21 | 35.0 |
| | Bachelor of Nursing | 5 | 8.3 |
| Years of experience | less than one year | 9 | 15.0 |
| | 1<3 year | 7 | 11.7 |
| | 3<5 year | 2 | 3.3 |
| | 5-10 year | 12 | 20.0 |
| Training courses | yes | 1 | 1.7 |
| Sex | Male | 12 | 40.0 |
| | Female | 18 | 60.0 |

*Frequencies (Number, percentage & Mean &SD)*

**Table (2): Comparison between total mean knowledge and practices scores before and after implementation of teaching program**

| Test | | Pre | Post | P value |
|---|---|---|---|---|
| **Total knowledge score (Mean &SD)** | | 11.36±4.17 | 20.33±.92 | 0.001* |
| **total knowledge score categories** | Good (>70%) | 5 (16.6%) | 30(100%) | 0.001* |
| | fair (50-70) | 11(36.7%) | 0 | |
| | Poor (<50%) | 14(46.7) | 0 | |
| **total practice score (Mean &SD)** | | 216.63±31.18 | 272.83±4.70 | 0.001* |
| **total practice score category** | Good (>75%) | 19(63.3%) | 30(100%) | 0.001* |
| | fair (60-75) | 9(30%) | 0 | |
| | poor (<60) | 2(6.7) | 0 | |

*Paired sample T-Test and chi-square test, statistically significant difference (< 0.05*)*

**Table (3): Distribution of fatigue severity Level (FSS) related to study and control group (n=40)**

| Fatigue severity scale categories | Max Score | Control (n=20) | | Study (n=20) | | X2/T | P. value |
|---|---|---|---|---|---|---|---|
| | | No | % | No | % | | |
| Mild Fatigue | <28 | 0 | 0.0 | 9 | 45.0 | | |
| Moderate Fatigue | 28-40 | 0 | 0.0 | 11 | 55.0 | 40.0 | <0.001** |
| Severe Fatigue | 41-63 | 20 | 100.0 | 0 | 0.0 | | |
| **Mean±SD(range)** | **63** | 57.65±3.76(47-63) | | 28.4±1.82(25-31) | | 31.32 | <0.001** |

*chi-square test & independent sample T-Test, statistically significant difference (< 0.05*).*

**Table (4): Percentage MG Activities of daily living scale Level related to Study and Control group (n=40)**

| MG Activities of daily living scale | Max Score | Control | | study | | X2/T | P. value |
|---|---|---|---|---|---|---|---|
| | | No | % | No | % | | |
| Mild disability | ≤8 | 1 | 5.0 | 14 | 70.0 | | |
| Moderate disability | 9-16 | 11 | 55.0 | 6 | 30.0 | 20.74 | <0.001** |
| Severe disability | 17-24 | 8 | 40.0 | 0 | 0.0 | | |
| **Mean± SD(range)** | **24** | 15.5±5.42(8-24) | | 7.45±3.28(0-16) | | 5.68 | <0.001** |

*chi-square test & independent sample T-Test, statistically significant difference (< 0.05*).*

**Table (5): Correlation Co- efficient between fatigue severity scale and MG Activities of daily living scale for Study and Control group (n=40)**

| MG Activities of daily living scale | Fatigue severity scale | |
|---|---|---|
| | R | P |
| **Control** | 0,430 | 0.059 |
| **Study** | 0,644.** | 0.001** |

*Pearson correlation test, statistically significant difference (< 0.05*)*
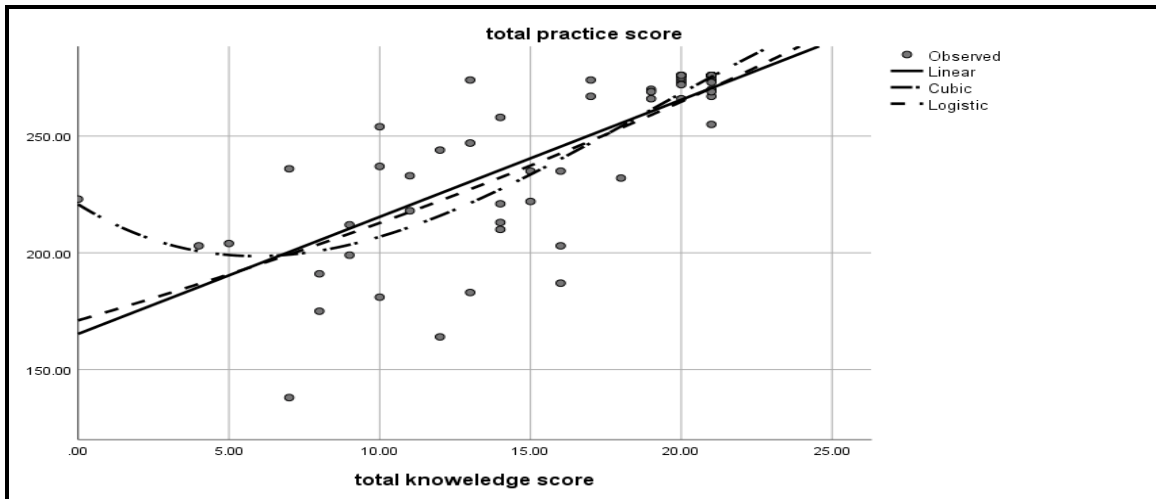
**Figure (1): Shows a positive correlation were found between them with total scores of nurses' knowledge and practices after the nursing educational program**
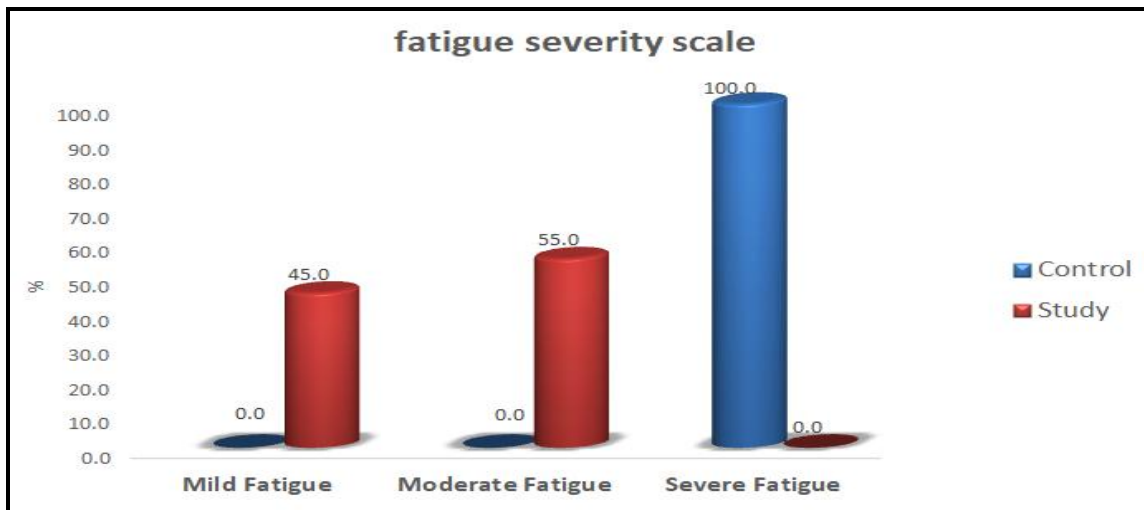


**Figure (2): Distribution of fatigue severity Level (FSS) related to Study and Control group (n=40)**
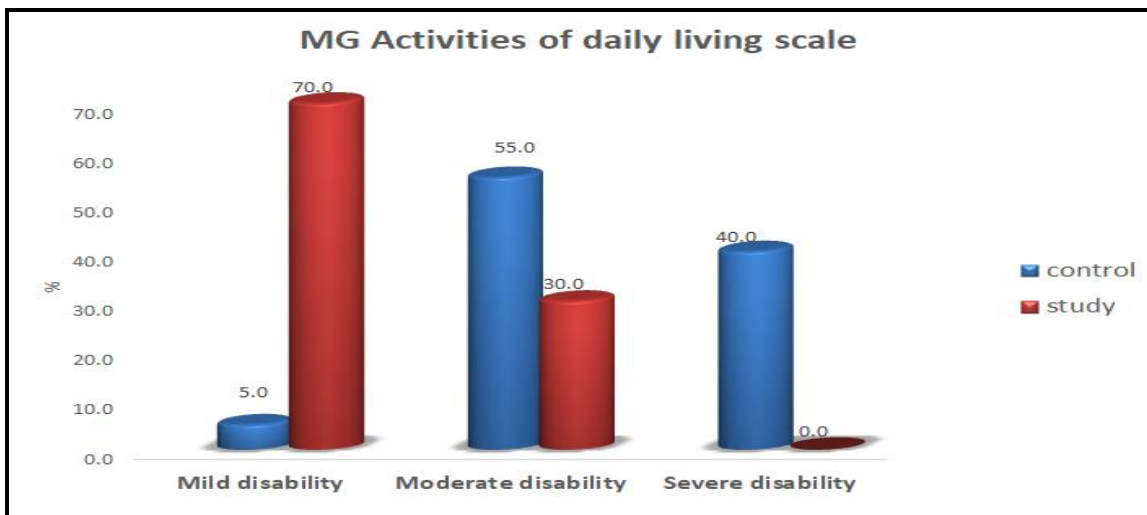


**Figure (3): Percentage MG Activities of daily living scale level related to study and control group (n=40)**
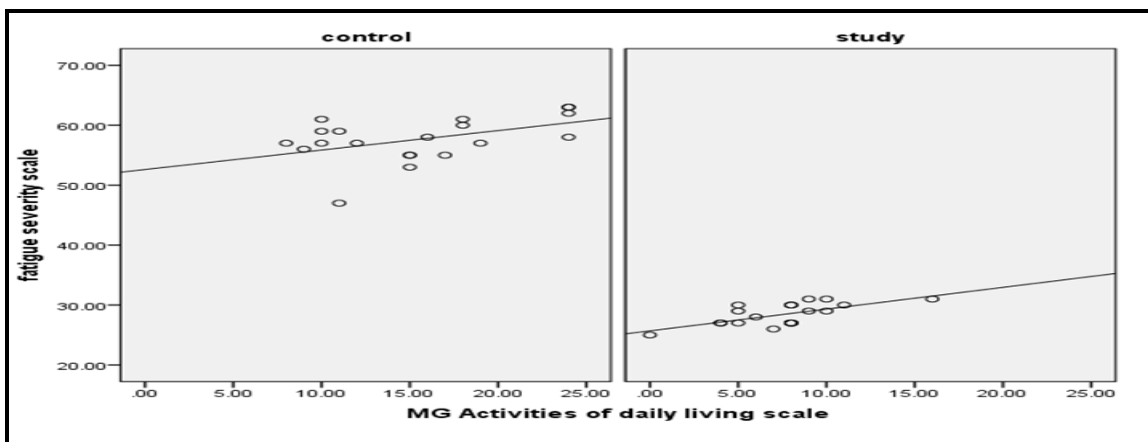
**Figure (4): Scatterplot illustrating a Positive correlation: hypothetical data for the relationship between patient's fatigue severity scale and MG Activities of daily living scale for Study group(R=0.644\*\*) But there is No Statistically Significant correlation in control group (R= 0.430)**

**Table (1):** The study reveals that 67% of nurses have a three-year nursing diploma, 35% have a technical institute degree, and 8.3% have a bachelor's degree. Women make up the 60.0%,with 15.0% having less than a year's work experience and 1.7% having prior MGS training.

**Table (2):** The study reveals that before the implementation of a teaching program, 46.7% of nurses had inadequate knowledge of Myasthenia gravis, but after the program, 100% of the nurses had satisfactory knowledge, with 6.7% having bad practice. However, following program implementation, 100% of the analyzed nurses had good practice.

**Table (3):** Demonstrates that the control group patient's total mean FSS was 57.65±3.76(47-63), but the study patients' overall mean was 28.4±1.82(25-31), with a statistically significant difference when p<0,001.

**Table (4):** Reveals that the study patients' overall mean (MG-ADL) was 7.45±3.28(0-16) with a statistically significant difference where p < 0,001, whereas the control group patients's total mean was 15.5±5.42(8-24).

**Table (5):** The results indicate a positive connection (r = 0.644\*\*) between the MG Activities of Daily Living scale and the patients fatigue severity scale. However, the control group shows no statistically significant correlation (R = 0.430).

**Figure (1):** Shows that there was a statistically significant difference with a p value of (0.044\*) between the total scores of nurses' knowledge and practices before and after the training program. The results indicate a large positive correlation.

**Figure (2):** Shows that, of the patients in the study, 45.0% had mild fatigue, and 55.0% had moderate fatigue, while 100% of the control group patients did not have severe fatigue.

**Figure (3)** shows that 30.0% of the study patients had substantial disabilities, 70.0% had mild disabilities, and 40.0% of the control group patients had no disabilities at all.

**Figure (4):** Shows that, The results indicate a positive correlation (R = 0.644\*\*) between the patients' tiredness severity scale and the MG Activities of Daily Living scale for the study group. However, the control group's correlation (R = 0.430) is not statistically significant.

**Discussion**

Myasthenia gravis is an autoimmune condition that effects neuromuscular transmission and is typified by localized or generalized weakness and skeletal muscle fatigability **(Kim et al., 2024).** The education program for nursing staff is a crucial component of these programs, which are urgently created to help staff nurses acquire and improve the knowledge and abilities required to deliver high-quality care to patients with myasthenia gravis **(Mahmoud et al., 2018). The following key discoveries and results will be covered in this discussion.**

The Current study's findings on the demographic characteristics of the nurses under inquiry revealed that the majority of the nurses were female, the majority of the nurses' under study had a technical institute diploma, and the nurses' average age was 26.90 ± 4.51.Furthermore, nearly two thirds of the nurses had less than five years of experience, making up the majority. These results are in line with past research conducted by **Aldawood et al.** in Saudi Arabia **(2023).** It revealed that the bulk of nurses were under-30 year old women with advanced degrees who had been in the workforce for more than five years. The finding that nurses with baccalaureate degrees perform at a higher level than those with only a secondary school education did not corroborate this

**(Mohsen et al., 2016).** Furthermore, this is not consistent with the findings of **Ponikowski et al. (2016),** who stated that the administrators chose older nurses to do the majority of the duties in the intensive care unit.

According to the findings, the majority of the nurses in the of current study knew very little about Myasthenia gravis before the implementation of the teaching program. This could due to the fact that the bulk of them had no previous medical training. Furthermore, the study found that the lack of pre-employment orientation programs in service Myasthenia gravis training programs or courses may contribute to this lack of awareness. Another explanation for their ignorance is that nurses in neurological critical care, intermediate care, and emergency departments do not engage in self-directed learning. It may also be more difficult for them to read and keep up with the latest information due to their increasing workload. A study by **Mabrouk, Harfoush Hatab, & El-Saied (2022)** in Egypt adds credence to this argument by confirming that post-operative delirium training for nurses is frequently overlooked in hospitals.

Study results revealed that after the program, participants' knowledge levels varied greatly based on age, sex, education level, and gender. This relationship between the study's nurses' characteristics and their ability to acquire knowledge was examined.Most of the nurses were probably young when this happened. Similar findings were made in studies carried out in Egypt by **Mabrouk et al. (2022)** and another in **Zhou et al. (2023)** regarding the statistically significant relationship between nurses' post-program knowledge and their educational level. Highly educated women also have better comprehension, focus, and memory than others. Although there may have been variations in participant characteristics, a Saudi Arabian study by **Aldawood et al. (2023)** found no statistically significant difference between knowledge and nurses' age, sex, and educational background.

**The National Institute for Clinical Excellence (2021),** reported that while nurses with less years of experience in a particular clinical specialty may need a moderate amount of instruction to acquire through training programs, nurses with many years of experience may need a minimum of additional instructions before they are ready to take patient assignments.

Regarding nurses' understanding of patients with Myasthenia gravis, data gathered before the implementation of the teaching program (pre-test) revealed an inadequate level of nurses' knowledge regarding patients with Myasthenia gravis, which is indicative of a lack of scientific preparation.

Following the application of the teaching program, the mean knowledge scores improved significantly, indicating that nurses' level of knowledge regarding the care provided to patients with Myasthenia gravis had improved. These results are consistent with those reported by **Docherty (2022).** These studies also showed that when nurses took part in educational sessions, their general understanding of delirium significantly improved.

The current study's findings regarding nurses' practices regarding Myasthenia gravis revealed that most of them did not provide adequate care for patients with the disease prior to the teaching program. This could be due to the fact that nurses in the institute do not actively engage in hands-on practice for direct patient care; instead, they typically manage patients in accordance with doctor orders. A study conducted in India by **Grover et al.** in **2022** also found that most of the nurses studied had poor POD practices.

The current study found that prior to the teaching program, nurses' performance on all performance items was poor. However, following the treaning, their performance improved.This improvement could be linked to the fact that the bulk of the nurses were young, with fewer than 10 years of experience, and a desire to learn. This is consistent with the findings of similar studies conducted in **Korea by Jeong & Chang** in **2022** and **Jordan** by **Alhalaiqa et al. in 2023.**

The current study found that nurses' practice scores improved significantly after the teaching program was implemented. This was reinforced by the discovery of significant variations between the pre- and post-test results, indicating that abilities might be quickly enhanced if linked to relevant scientific information. This was consistent with the findings of **Murnngi et al. (2023).**

According to the current study, there were statistically significant variations in the overall score for nurses' practice level between the pre- and post-test categories, showing that nurses had appropriate practice following the educational program as opposed to prior to it. This was consistent with the findings of **Koo et al. (2016),** who showed that attending continuing nursing education sessions improved the practice of nurses.

The present study's results regarding the overall mean score of knowledge and practice revealed that this score improved after the teaching program was implemented compared to before. It also revealed that the majority of nurses had satisfactory mean scores for knowledge and practice after the teaching program was implemented. These nurses were exposed to training in order to care for this particular

patient group in accordance with **(Elshenawie et al., 2020).**

The current study showed that there was a highly statistically significant difference in knowledge and practice after giving the educational program, with regard to the relationship between the total nurses' knowledge score and their practice. This study confirmed **Elasragand Colleges' (2021).** Finding that there was a strong positive association between nurses' practice and knowledge. The statement made by **Blanton et al. (2018)** that the practice and knowledge of healthcare practitioners were almost at different levels did not support this

Finally, it can be concluded that the teaching program for nurses dealing with Myasthenia gravis patients met it's goals by improving nurses's knowledge and practice of Myasthenia gravis patient care. **Huges (2018)** added to this by stating that professional nurses should be clinically aware about all aspects of the condition, advocates for patient safety, and play an important role in the prevention and minimization of Myasthenia gravis consequences.

Nursing staff education programs are essential for assisting staff nurses in gaining and enhancing the skills required to provide the best care possible for their patients, according to **Slater et al. (2020).** The results of the current study, which showed that nurses' knowledge and practice increased after the nursing education program was implemented, confirmed this.

The study's findings revealed a substantial correlation between exhaustion and one's ability complete routine duties. Is a marker for certain neuromuscular illnesses that have a significant influence on the patient's social and family life, employment status, and quality of life. Even when the active MG symptoms have been handled and the patient is in stable state with few manifestations, fatigue remains a typical complaint among MG patients. In MG, tiredness can be mental or physical. From a neurological standpoint, physical tiredness relates to muscle fatigue, whereas mental fatigue is the incapacity to begin tasks that need self-motivation. Fatigue effects both the body and the mind. This was consistent with the findings of **Permanasari et al. (2022).** Fatigue can be quite troubling, hindering and impairing the patient's capacity to carry out everyday activities in their social, professional, and personal situations. Weariness can be very upsetting. **Et al., Iyer (2024)**

Regarding the patients' tiredness scale, the current study revealed that, with a statistically significant difference, the majority of the analyzed patients had severe exhaustion prior to the program, while more than half had moderate fatigue and fewer than half had mild fatigue. This result was consistent with a study by **Ruiter et al. (2021)** titled "Prevalence and associated factors of fatigue in autoimmune myasthenia gravis," which discovered that, as a result of the severity of their disease, the majority of the patients had severe fatigue prior to receiving treatment, but only a minority of the patients had severe fatigue following treatment with a statistically significant difference. Patients' fatigue scores improved as a result of the nurse education and intervention program's beneficial effects, as well as their conscientious involvement in the home and physiotherapy center exercise training program.

Regarding the Activities of Daily Living (MG-ADL) scale used to measure patient activities, the results of the current study showed a statistically significant improvement in the MG-ADL of the patients investigated at follow-up and post-program compared to pre-program. These results were consistent with those of **Hamed & Ibrahim (2021),** who reported that following one month and three months of adopting the management strategy, compared to the pre-management approach, the majority of the investigated patients showed improvements in their activities of daily living.

The current study found a significant difference in the relationship between the MG-ADL pre- and post-program and the overall patient MG fatigue scale. This study was similar to that of **McPherson et al. (2020),** who found correlation coefficients and high confidence intervals for examining the relationships between patients' fatigue scores and the MG-ADL in their study, "Correlation of Quantitative Myasthenia Gravis and Myasthenia Gravis Activities of Daily Living Scales."

**Conclusion**

After applying the nursing teaching program a significant improvement in nurses' knowledge and practice was found post -procedure compared with that pre -procedure.

A positive connection between nurses' knowledge and practice regarding Myasthenia gravis patients after applying the nursing teaching program compared with pre applying the procedure.

**Recommendations**

- **Establish specialized Training programs:**Assuit University Hospital should develop dedicated training programs for nurses in neurological intensive care, intermediate care, and emergency units. These programs should be focus on enhancing nurses' skills in managing patients with neurological disorders, including Myasthenia Gravies.
- **Ensure Access To Educational Resources :** The hospital should provide adequate educational facilities, up-to-date materials, and learning resources to support nurses in their professional

development. This well help improve both the quality of care and patient outcomes.

▪ **Encourage Continuous Professional Development:** Nurses should be encouraged to stay informed about the latest advancements by regularly reviewing up-to-date literature, attending specific meetings, and participating in relevant workshops.continuous learning well help nurses maintain and improve their knowledge and practices.

## References

▪ **Abdullah, S., Darweesh, A., & Mohammed, N. (2020):** Assessment of Nurses' Knowledge and Practices Regarding Care of Patients with Delirium at AL-Thawra Hospital, Yemen. Assiut Scientific Nursing Journal, 8(22), 86-98. Doi: https://dx.doi.org/10.21608/asnj.2020.38564.1029.

▪ **Aldawood, Z., Alameri, R., Elghoneimy,Y., Al Swyan, A., Almulla, H., Hammad, S., Al Saleh, N., & Alameri, S. (2023):** Impact of Educational Program on Critical Care Nurses' Knowledge of ICU Delirium: A Quasi-Experimental Study. Medical Archives, Vol. (77), No. (1), 56. Doi: https://doi.org/10.5455/medarh.2023.77.56-63.

**Andersen, H. (2019):** Eculizumab improves fatigue in refractory generalized myasthenia gravis, Quality of Life Research 28:22472254

▪ **Andrade, C. (2021):** The limitations of Quasi-Experimental studies, and methods for data analysis when a Quasi-Experimental research design is unavoidable. Indian Journal of Psychological Medicine, 43(5), 451–452. https://doi.org/10.1177/02537176211034707

▪ **Permanasari, A., Tinduh, D., Wardhani, I., Subadi, I., Sugianto, P., & Prawitri, Y. (2022):** Correlation between fatigue and ability to perform activities of daily living in myasthenia gravis patients. Open Access Macedonian Journal of Medical Sciences, Vol. (10), Pp. 205-209.

▪ **Chakraborty, P. (2018):** Activities of Daily Living among the Oldest Old People: A Rural Urban Study. J Adv Res Humani Social Sci; Vol. (5), No. (1): 14

**Docherty, F. (2022):** Education of Nurses Regarding Postoperative Delirium. Doi: https://doi.org/10.17615/88k4-8p31

▪ **Elshenawie, HA., El Sayed, H., & Dabou, E.(2020):** Impact of Educational Program Regarding Safety Measures Guidelines on Nurses' Knowledge, Attitude, and Practice toward COVID-19 Patients. Egyptian Journal of Health Care, EJHC Vol. (11), No. (3)

▪ **Elasrag, GA., Elsabagh, NE., & Abdelmonem, AF., (2021):** Impact Educational Intervention on Nurses' Knowledge, Practice, and Attitude Rela Prevention Measures of COVID-19 Indian Journal of Forensic Medicine & Toxicology, July-September, Vol. (15), No. (3) 2939

▪ **Grover, S., Mehra, A., Sharma, N., Sahoo, S., & Dua, D. (2022):** Knowledge and attitude of nurses toward delirium. Annals of Indian Psychiatry, Vol.(6), No. (1), Pp. 73-81. Doi: https://doi.org/10.4103/aip.aip_134

▪ **Jeong, A., Min, J-H., Kang, YK., Kim, J., Choi, M., & Seok, J. (2018):** Factors associated with the quality of life of people with Myasthenia Gravis. PloS ONE 13(11): e0206754. https://doi.org/10.1371/journal.pone. 020675

▪ **Hamed, S., & Ibrahim, R. (2021):** Effect of Self-Care Management Strategy on Self-Efficacy for Patients with Myasthenia Gravis. Egyptian Journal of Health Care EJH, Vol. (12), No. 1.

▪ **Iyer, K., Tenchov, R., Sasso, J., Ralhan, K., Jotshi, J., Polshakov, D., & Zhou, Q. (2024):** Rare diseases, spotlighting amyotrophic lateral sclerosis, Huntington's disease, and myasthenia gravis: insights from landscape analysis of current research

▪ **Koo, E., McNamara, S., & Lansing, B., (2016):** Making infection prevention education interactive can enhance knowledge and improve outcomes: Results from the Targeted Infection Prevention (TIP) Study. American journal of infection control, Vol. 44, No. 11), 1241-1246

▪ **Kim, S., Lee, E., Kim, H., Kim, H., & Sohn, E. (2024):** Impact of the COVID-19 pandemic on the incidence and severity of myasthenia gravis in Korea: using the National Health Insurance Service database. Frontiers in Neurology, 15. https://doi.org/10.3389/fneur.2024.137437

▪ **Krupp, L., Alvarez, L., LaRocca, N., & Scheinberg, L. (1988):** Fatigue in multiple sclerosis. Arch Neurol. Vol. 45, Pp. 435–437.

▪ **Mabrouk, S., Harfoush, M., Hatab, S., & El-Saied, N. (2022):** The Effect of the Training Program on Nursing Staff Knowledge Regarding Delirium in the Elderly. Journal of Positive School Psychology, Vol. (6), No. (7), Pp. 5094-5104. Doi: https://journalppw.com/index.php/jpsp/article/view/12489

▪ **Malik, Y., & Almadani, A. (2019):** Role of Myasthenia Gravis Auto-Antibodies as Predictor of Myasthenic Crisis and Clinical Parameters. J Neurol Neurosci Vol. (10), No. (1), 281

▪ **Meel, R., Barrett, C., Bril, V. Tannemaat, M., & Verschuuren, J. (2020):** Myasthenia Gravis Impairment Index: Sensitivity for Change in Generalized Muscle Weakness; Journal of Neuromuscular Diseases 7 (2020) 297300. DOI 10.3233/JND200484.

▪ **Mahmoud, A., Alseed, H., Abdallah, H., Awad, A., & Elhussein, G. (2016):** Assessment of knowledge and practice of nurses regarding oxygen

therapy in Elmak Nimir University Hospital. European Journal of Pharmaceutical and Medical Research, Vol. (3), No. (4), Pp. 30-35.

▪ **Mohsen, M., Safaan, N., & Okby, O. (2016):** Nurses' Perceptions and Barriers for Adoption of Evidence-Based Practice in Primary Care: Bridging the Gap. American Journal of Nursing Research, Vol. (4), No. (2), Pp. 25-33

▪ **McPherson, T., Aban, I., & Duda, P. (2020):** Correlation of Quantitative Myasthenia Gravis and Myasthenia Gravis Activities of Daily Living Scales in the MGTX study. Muscle & Nerve, Vol. 62, Pp. 261–265. https://doi. Org/10.1002/mus.26910.

▪ **Ruiter, AM., Verschuuren, JJ., & Tannemaat, MR.** Fatigue in patients with myasthenia gravis. A systematic review of the literature. Neuromuscul Disord. **2021**;30(8):631-9. https://doi.org/10.1016/j.nmd.2020.06.010 PMid:32718868

▪ **Ruiter, A.,Jan, J., Verschuuren, M., & Martijn, R., & Tannemaat, J. (2021):** Prevalence and associated factors of fatigue in autoimmune myasthenia gravis, Neuromuscular Disorders, 8966 (21).

▪ **Slater, P., Edwards, R., & Badat, A. (2018):** Evaluation of a staff well-being program in a pediatric oncology, hematology, and palliative care services group. Journal of healthcare leadership, Vol. (10), No. (67).

▪ **Shelly, S. (2020):** Improving accuracy of myasthenia gravis autoantibody testing by reflex algorithm. Journal of Neurologic Medicine; December 01, 2020; Vol. (95), No. (22).

▪ **Salci, Y. (2018):** Functional Exercise Capacity Evaluated by Timed Walk Test Myasthenia Gravis. Muscle & Nerve; DOI: 10.1002/mus.26345

▪ **Serrano, M. (2020):** Myasthenia Gravis Nursing Management. Journal of Neuroscience Nursing: Vol. (18), Issue 2, Pp. 74-80

▪ **Vitturi, B., Pellegrinelli, A., & Valerio, B. (2020):** Medication adherence in patients with myasthenia gravis in Brazil: a cross-sectional study," Acta Neurologica Belgica, Vol. 120, Pp. 83–89.

▪ **Wolfe, G., Herbelin, L., Foster, B., Bryan, W., & Barohn, R. (1999):** Myasthenia gravis activities of daily living profile. Neurology; Vol. 52, Pp. 1487–1489

▪ **Zhou, C., Wang, L., & Zhou, Y. (2023):** Knowledge, attitude, and practice regarding postoperative delirium among cardiac surgery nurses: A cross-sectional multi-center study. Journal of clinical nursing, Vol. 32, No. 15-16, Pp. 5046–5055. Doi: https://doi.org/10.1111/jocn.16751