Factors Affecting Self-Efficacy for Patients Undergoing Plasmapheresis

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Abstract: Plasmapheresis is one of new modalities used for diseases that result through autoimmune disorders. Plasmapheresis is powerful for emergent management in critically sick patient also it is fast and safe. Plasmapheresis is used in critically ill patients to remove destructive antibodies, toxins, medications and clotting factors from the circulation. Self-efficacy is a significant concept in positive psychology and relates to the person's perception of their ability to reach a goal. This study aimed to determine the factors affecting self-efficacy for patients undergoing plasmapheresis. Descriptive design was utilized in this study. The study was carried out in Neurology department at Recovery Building at Mansoura University Hospital. Convenient sample, which include all patients who attend to the previous mentioned hospital for three days per week from 9 am to 11am for who are willing to participate in the study through six months. Two tools were used in data collection; Tool I a structured Interview Questionnaire, Tool II Chronic Disease Self-Efficacy Scales. The current study revealed that patients treated with plasmapheresis had low self-efficacy scores with mean 51.37±33.58. This study concluded that, patients undergoing plasmapheresis had low self-efficacy which might be due to these factors that affect the average self-efficacy such as age, disease type, diagnosis duration, chronic diseases, previous hospital admission and family history had a significant effect on patients' self-efficacy who were under plasmapheresis procedure. This study recommended that; Standardized teaching guidelines should be applied at neurology department for patients undergoing plasmapheresis procedure in order to help in improving their self-efficacy.

Key words: Patient · Plasmapheresis · Self-efficacy

INTRODUCTION

The management of autoimmune neurologic diseases has remarkably been improved in the last three decades, as a result of a better understanding of physiopathology. Many conditions are due to a loss of immunological tolerance of self-antigens, induced by T or B Cells. The clinical presentation and autoimmune phenotype differ depending on the target cell and the affected organ but generally, all of them have an altered immune response, as they share the same physiopathological basis [1]. More than eighty different autoimmune diseases, ranging from common to very rare, these diseases can be located to a single organ, tissue, or systemic, which can affect many organs and tissues in the body. Autoimmune disease causes are unknown, but in many cases it can appear as inherited tendency [2].

Plasmapheresis can also called therapeutic Plasma Exchange (TPE), it is considered as a treatment of choice for immunological, neurological, hematological and kidney diseases. TPE is used now as a therapeutic modality in a wide range of conditions. Generally plasmapheresis is an extracorporeal blood purification method, which can remove high-molecular weight plasma proteins from a blood volume passing through a membrane plasma separation (MPS) or plasma filter. Additionally TBE can remove antibodies, immune complexes and toxins that are circulating in the blood. The patient venous blood is

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drained into the extracorporeal circuit and separated the plasma from the cellular component, which is retained. Then the patient plasma is discarded and replaced with fresh frozen plasma [3].

Plasmapheresis is a high complex therapeutic apheresis procedure, often available only in reference centers. This availability permits the medical team to present the patient to the treatment that has been proven effective for morbidities of major impact from the clinical point of view, which is reflecting directly on the patient's quality of life. Myasthenia gravis, chronic demyelinating inflammatory polyradiculoneuropathy, Guillain-Barre syndrome and multiple sclerosis are the main representatives as plasmapheresis is considered the first line of treatment, while there are still several other neurological morbid conditions in which the patient can get enough benefits, even when it is not considered first line of therapy [4].

Self-efficacy refers to the belief of an individual in their own ability to effectively cope with challenging situations. It involves the belief that one can successfully exert control over challenging conditions. Bandura [5] stated that self-efficacy is a psychological construct which defines "the belief in one's own abilities to organize and perform the course of action required for achieving goal". Highly self-efficacy can affect motivation to make efforts and complete a task in both positive and negative ways. It means, people with high self-efficacy are more likely to persist longer in those efforts than those with low self-efficacy [6].

Significance of the Study: The National Institutes of Health (NIH) mentioned that up to 23.5 million Americans suffer from autoimmune disease and that the prevalence is rising. While the American Autoimmune Related Diseases Association (AARDA) reported that 50 million Americans complain from autoimmune disease [7]. On the other hand, at Egypt the Statistical Department at Mansoura University Hospital in the year of 2016, estimated that 250 patients are suffering from neurological autoimmune disease, those patients underwent for plasmapheresis procedure. Therefore, numerous studies have observed plasmapheresis epidemiology, clinical profile and its outcome, but there are very few studies have explored prognostic factors and their impact on outcome parameters [8]. So this study was conducted to determine the factors affecting self-efficacy for patients undergoing plasmapheresis.

Aim of the Study: To determine factors affecting self-efficacy for patients undergoing plasmapheresis.

Research Questions:
Q(1): Can Plasmapheresis procedure affect patients' self-efficacy?
Q(2): Are there factors affecting self-efficacy for patients undergoing plasmapheresis?

MATERIAL AND METHODS

Research Design: Descriptive research design was used in this study.

Setting: This study was carried out in the Neurological Department, at Recovery Building at Mansoura University Hospital.

Subjects: A convenient sample consists of 100 patients who attend to the previous mentioned sitting, collected through six month and had neurological autoimmune diseases which needed and planed for plasmapheresis session as treatment.

Tools of Data Collection: Two tools were used to collect data in the present study;

Tool I: An structured Interview questionnaire. This tool was designed and used by the researchers after extensive review of literature. It included two parts:

Part One: Demographic data consisting of (patient's age, sex, level of education, occupation, marital status, residence and monthly income). It is composed of (10) questions including; age, gender, educational level, residence, marital status, occupation, income and medical insurance.

Part Two: Patient's medical history which consists of past medical history, present medical history and family history. Past medical history composed of (5) questions. Present medical history and family history of the patients composed of (6) questions.

Tool II: Chronic Disease Self-Efficacy Scales (CDSES) [9]: It was modified by the researcher and translated into Arabic language, it was consisted of 9-items of visual analogues scale. It measures the Exercise Regularly Scale

which is composed of (3 items); Manage Symptoms Scale composed of (4 items) and Social/Recreational Activities Scale composed of (2 items).

For Scoring System: A 10-point Likert- scale of 1-10 (1 = not at all confident) to (10 = totally confident), For each subject; an exercise score was calculated by averaging the responses to exercise-related items and multiplying by 10 and Manage Symptoms by averaging the responses to symptoms-related items and multiplying by 10 and Social/Recreational Activities by averaging the responses to social activity items (range: 10–100). Mean scores was calculated and used for the comparison between variables of study considering that higher score indicated higher self-efficacy.

Scoring system of total self-efficacy score was (90) can be classified as:

<45 (<50%) = Low self-efficacy

45-62 (50-<70%) = Moderate self-efficacy

63-90 (> 70%) = High self-efficacy

Validity and Reliability:
- Tool I was designed by the researchers and revised by five experts in the field of medical-surgical nursing in the Faculty of Nursing of Mansoura University and Aswan University (for content validity).
- Tool II, [9], conducted two new studies and reviewed eight independent studies to investigate the psychometric properties of the scale. Cronbach's alpha was a minimum of 0.88 across all studies, minimal floor and ceiling effects were observed, the measure was sensitive to change and moderate and significant correlations provide convergent validity evidence when measured against selected health indicators.

Pilot Study: A pilot study was conducted to assess the applicability of the instruments, the feasibility of the study and to estimate the time needed for data collection. It was conducted on (10 patients) 10 % of the total participants. All patients participated in the pilot study were excluded from the study sample. Based on the results of the pilot study and expert's opinion, modifications and omissions of some details were done and then set the final fieldwork schedule.

Fieldwork: This study was carried out through three consecutive phases: interviewing & assessment phase, implementing phase and evaluation phase. The data collection period was done for 6 months from the start from January 2016 to the end of June 2016.

The Interviewing and Assessment Phase: During this phase, the researcher explained the purpose of the study and tools components. The time needed for completing the questionnaire was ranged from 20 - 25 minutes for each patient.

The Implementation Phase:
- In this phase, patients were recruited in the study were interviewed from 9:00 am to 11 am to interview patients for three days per week, each patient was interviewed according to their attendance to department.
- Each patient was interviewed individually for 20 - 25 minutes using interviewing questionnaire data sheet to collect required data about general basic characteristic & Chronic Disease Self-Efficacy Scales scoring system using tool I and tool II.

The Evaluation Phase: This phase was emphasized on estimating and determining factors affecting self-efficacy for patients undergoing plasmapheresis through a comparison between questionnaire items in both tool I and II.

Ethical Considerations:
- An official approval was obtained from administrative authorities to carry out the study after explanation of the purpose of the study.
- Approaches to ensure the ethics were considered in the study regarding confidentiality and informed consent. Confidentiality was achieved by the use of closed sheets with the names of the participants replaced by numbers. All participants were informed that the information they provided during the study would be kept confidential and used only for statistical purpose.
- Written informed consent was taken from all patients before being enrolled in the study after explaining the purpose of the study.
- The patients were informed that their participation in the study was voluntary and they could withdraw from the study whenever they decide.
- The findings would be presented as group data with no personal participant's information remained.

Statistical Analysis: SPSS version 21 was used to analyze the collected data. Descriptive statistics were used for the analysis of nominal data (demographic and clinical characteristics). To explore correlation between variables, the statistical significance and associations were assessed using the Kruskal Wallis test, chi square (X^2) and Mann-Whitney test, Z. Significance level was identified at P <0.05.

Limitation of the Study: There weren't enough researches found on self-efficacy covering all points and variables of our research.

RESULTS

Table (1) illustrates that, the age of one hundred patients suffering from different types of neurological problems and exposed to process of plasmapheresis, ranges from 17 to 65 years with mean age 32.25±13.98 years. Most of them were males 80.0%, married (48.0%), with secondary education 46.0%. On the other hand 49.0% of the patients were working and 64.0% of them lived in rural area. While their monthly outcome was not enough among 88.0% and only 44.0% of them were covered by health insurance.

Table (2) reveals that 42.0% of patients were diagnosed as GB syndrome; 34.0% were MG' 10.0% were transverse myelitis and 14.0% were CIPD. Duration of diseases varied from few months up to 5 years and chronic disease as; DM & hypertension were present in 35.0% of patients. Previous hospital admission was reported in 46.0% of patients and only 3.0% reported that they had a positive family history of these neurological diseases.

Table (3) shows the average scores of different items of self-efficacy scale in studied patients. Total Manage symptoms score ranges from 4.0-40.0 with mean 21.28±13.67 and median 20.0%, while percent scores of these values were: Min-Max (10.0-100.0), mean percent was 53.20±34.17 and percent median was 50.0. Furthermore, Total Exercise Regularly Score ranges from 3.0-30.0 with mean 13.54±10.58 and median 9.5%, while percent scores of these values were: Min-Max (10.0-100.0), mean percent was 45.13±35.26 and percent median was 31.67%. In addition, Total Social/ Recreational Activities Score ranges from 2.0-20.0 with mean 11.41±7.08 and median 10.0%, while percent scores of these values were: Min-Max (10.0-100.0), mean percent was 57.05±35.40 and percent median was 50.0. Total self-Efficacy score ranges from 9.0-90.0 with mean 46.23±30.22 and median

Table 1: Demographic Characteristics of the studied patients (100)

Characteristics	No	%
Age (years):		
- < 20	11	11.0
- 20-	46	46.0
- 40-	37	37.0
- ≥60	6	6.0
Min-Max = 17.0-65 years, Mean±SD = 32.25±13.98, Median =30.50		
Sex:		
- Males	80	80.0
- Females	20	20.0
Marital Status:		
- Single	36	36.0
- Married	48	48.0
- Divorced	2	2.0
- Widow	14	14.0
Education:		
- Basic & less	24	24.0
- Secondary	46	46.0
- University	30	30.0
Occupation:		
- Employed	49	49.0
- Not employed	51	51.0
Residence:		
- Rural	64	64.0
- Urban	36	36.0
Monthly Income:		
- Enough	12	12.0
- Not enough	88	88.0
Insurance:		
- Yes	44	44.0
- No	56	56.0

40.0%, while percent scores of these values were: Min-Max (10.0-100.0), mean percent was 51.37±33.58 and percent median was 44.44%.

Figure (1) shows that 55% of the study subjects had low total self-efficacy scores while 36% of them had high self-efficacy scores.

Table (4) demonstrates that the average self-efficacy score is significantly higher among patients aged 20-40 years (p<0.001), employed patients (p=0.032) and those covered female patients, married, university educated, lived in rural areas and having enough income but the difference was statistically not significant (P>0.05).

Table 5 shows that the average self-efficacy score was significantly higher among patients suffering from MG followed by then CIPD, GB and lastly transverse myelitis (p<0.001). Also, Average self-efficacy score was significantly higher among patients diagnosed since one or 2-3 years than newly diagnosed or those with longer duration (p= 0.009). In addition, patients suffering from chronic diseases as; DM or hypertension had a significant lower average self-efficacy score (p= 0.020).

Table 2: Patients' medical history (100)

Patients' medical history	No	%
Diagnosis:		
- GB	42	42.0
- MG	34	34.0
- Transverse myelitis	10	10.0
- CIDP	14	14.0
Duration of disease		
- Less than one year	14	14.0
- One year	37	37.0
- 2-3 years	36	36.0
- 4-5 years	13	13.0
Chronic diseases:		
- Yes	35	35.0
- No	65	65.0
Type of chronic diseases		
- DM	25	25.0
- HTN	14	14.0
- Viral hepatitis	1	1.0
- Epilepsy	1	1.0
Hospital admission:		
- Yes	46	46.0
- No	54	54.0
Family history:		
- Yes	3	3.0
- No	97	97.0

GB	Guillain-Barré syndrome	MG	Myasthenia gravis
DM	Diabetes Mellitus	HTN	Hypertension
CIPD	Chronic inflammatory demyelinating polyneuropathy		

Table 3: Average scores of Self-Efficacy scale items:

|	Items	Min -Max	Mean±SD	Median
Manage symptoms scale				
1.	How confident are you that you can reduce your physical discomfort or pain?	1.0-10.0	5.21±3.49	5.0
2.	How confident are you that you can keep the fatigue caused by your disease from interfering with the things you want to do?	1.0-10.0	5.39±3.37	5.0
3.	How confident are you that you can keep the physical discomfort or pain of your disease from interfering with the things you want to do?	1.0-10.0	5.30±3.50	5.0
4.	How confident are you that you can keep any other symptoms or health problems you have from interfering with the things you want to do?	1.0-10.0	5.38±3.60	5.0
Total Manage symptoms score		4.0-40.0	21.28±13.67	20.0
Total Manage symptoms percent score		10.0-100.	53.20±34.17	50.0
Exercise Regularly Scale				
1.	How confident are you that you can do gentle exercises for muscle strength & flexibility 3-4 times/week (range of motion, using weights, etc.)?	1.0-10.0	4.50±3.47	3.5
2.	How confident are you that you can do aerobic exercise such as walking, swimming, or bicycling 3-4 times each week?	1.0-10.0	4.57±3.56	3.0
3.	How confident are you that you can exercise without making symptom worse?	1.0-10.0	4.47±3.60	3.0
Total Exercise Regularly Score		3.0-30.0	13.54±10.58	9.5
Total Exercise Regularly Percent Score		10.0-100.	45.13±35.26	31.67
Social/ Recreational Activities Scale				
1.	How confident are you that you can continue to do your hobbies and recreation?	1.0-10.0	5.58±3.65	5.0
2.	How confident are you that you can continue to do the things you like to do with friends & family (such as social visits & recreations)?	1.0-10.0	5.58±3.46	5.5
Total Social/ Recreational Activities Score		2.0-20.0	11.41±7.08	10.0
Total Social/ Recreational Activities percent Score		10.0-100.	57.05±35.40	50.0
Total Self Efficacy Score		9.0-90.0	46.23±30.22	40.0
Total Self Efficacy Percent Score		10.0-100.	51.37±33.58	44.44
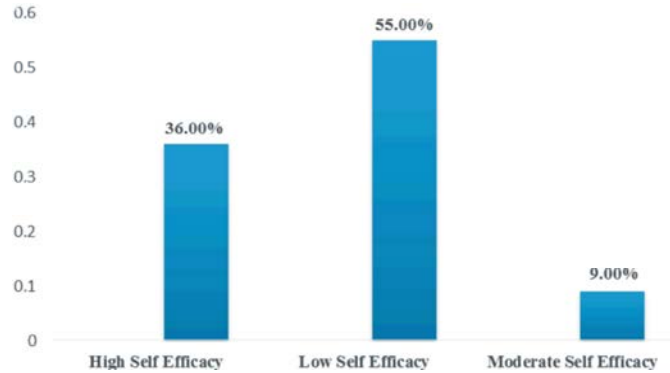
Fig. 1: Total self-efficacy for patients under plasmapheresis procedure

Table 4: Relationships between self-efficacy average score among patients practicing plasmapheresis and their Characteristics (100)

| Characteristics	No	Min -Max	Mean±SD	Median	Significance test
Age (years):					
- < 20	11	10-100	32.22±35.09	13.3	Kruskal Wallis test
- 20-	46	10-100	67.61±33.39	76.67	χ^2= 19.680,
- 40-	37	10-100	41.35±26.13	38.89	P <0.001*
- ≥60	6	17.78-33.33	23.70±05.74	24.44	
Sex:					
- Males	80	10-100	50.57±34.04	44.44	Mann-Whitney test,
- Females	20	17.78-100.0	54.56±32.33	43.33	Z=0.729, P 0.466
Marital Status:					
- Single	36	10-100	52.25±36.07	44.44	Kruskal Wallis test
- Married	48	10-100	56.71±33.30	76.67	χ^2= 6.259, P 0.100
- Divorced	2	37.78-44.44	41.11±04.71	41.11	
- Widow	14	10.-70.	32.22±23.56	24.44	
Education:					
- Basic & less	24	10-100	42.73±33.96	28.89	Kruskal Wallis test
- Secondary	46	10-100	47.87±32.56	44.44	χ^2= 5.244, P 0.073
- University	30	10.100	63.63±32.47	70.56	
Occupation:					
- Employed	49	10-100	59.09±32.78	61.11	Mann-Whitney test,
- Not employed	51	10-100	43.94±32.97	33.33	Z=2.150, P 0.032*
Residence:					
- Rural	64	10-100	51.77±35.96	43.33	Mann-Whitney test,
- Urban	36	10-100	50.65±29.35	44.44	Z=0.083, P 0.934
Monthly Income:					
- Enough	12	27.78-100	64.07±30.56	67.78	Mann-Whitney test,
- Not enough	88	10-100	49.63±33.76	44.44	Z=1.293, P 0.196
Insurance:					
- Yes	44	10-100	62.83±32.39	70.56	Mann-Whitney test,
- No	56	10-100	42.36±31.97	33.33	Z=2.952, P 0.003*

*P ≤ 0.050 (significant)

Table 5: Relationship between self-efficacy average score among patients practicing plasmapheresis and their medical history (100)

Patients' medical history	No	Min -Max	Mean±SD	Median	Significance test
Diagnosis:					
- GB	42	10-100	42.01±29.74	38.89	Kruskal Wallis test
- MG	34	10-100	72.12±31.42	80.00	χ^2= 19.299,
- Transverse myelitis	10	10-72.2	28.33±23.53	17.78	P <0.001*
- CIPD	14	10-100	45.48±32.64	41.67	

Table 5: Continued

Patients' medical history	No	Min -Max	Mean±SD	Median	Significance test
Duration of disease					
- Less than one year	14	10-100	27.62±27.29	17.78	Kruskal Wallis test
- One year	37	10-100	59.52±34.67	61.11	χ^2= 11.624,
- 2-3 years	36	10-100	55.80±33.31	46.11	P 0.009*
- 4-5 years	13	10-72.2	41.42±25.04	41.11	
Chronic diseases:					
- Yes	35	10-100	40.76±30.58	27.78	Mann-Whitney test,
- No	65	10-100	57.08±33.96	50.00	Z=2.3233, P 0.020*
Hospital admission:					
- Yes	46	10-100	48.98±32.51	44.44	Mann-Whitney test,
- No	54	10-100	53.40±34.64	50.00	Z=0.773, P 0.439
Family history:					
- Yes	3	32.2-43.3	35.93±06.41	32.22	Mann-Whitney test,
- No	97	10-100	51.84±33.97	45.56	Z=0.601, P 0.577
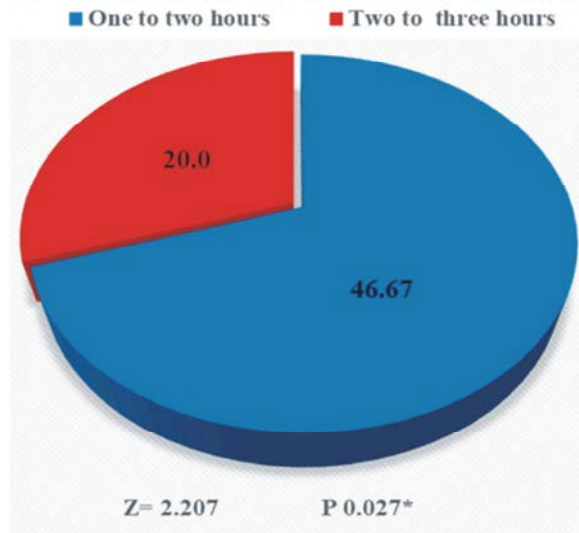
*P ≤ 0.050 (significant)

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Fig. 2: Self-efficacy average (Median) score among patients practicing plasmapheresis in relation to duration of plasmapheresis session

Patients had no previous hospital admission, no family history had a higher average self-efficacy score, but the difference was not significant (p>0.05).

Figure 2 shows a significant higher average self-efficacy score among patients exposed to short session (1-2 hours) than those exposed to longer session (2-3 hours) (P0.027).

DISCUSSION

Plasmapheresis procedure was introduced first into human medical care for the treatment of hyper viscosity syndrome. Currently, it's been well established to manage a variety of acute neurological, hematological and other autoimmune disorders, together with myasthenia crisis, Guillain–Barre ´syndrome, sickle-cell disease or Good pasture syndrome and is also under debate for alternative conditions, like acute deafness or degeneration, where the evidence for efficacy is less clear [10]. Therefore, this study was designed to evaluate factors that can affect self-efficacy for patients undergoing plasmapheresis.

Beginning with the demographic characteristics, the current study showed that near to half of the study sample was married with moderate education and in age group (20-39) years with mean 32.25 years, while more than three quarter of the participants were males. This result comes in the agreement with Gafoor et al. [11] in India who found that, less than three quarter of their participants were males and near to half of them were in age group (20-40) years with mean 42.3 years.

On the other hand the same study showed that near to half of the patients had Gillian-Barre and more than one third of them had myasthenia gravis as the most common neurological diagnosis in addition to more than one third of those patients were diagnosed in a period of one year and from two to three years. This might be due to the co-occurrence for both MG and GBS could involve certain common proteins, as the two diseases can present somewhat similarly. This in accordance with, Gafoor et al. [11], in India who illustrated in their study that, the vast majority of their participants whom involved in the plasmapheresis procedure were due to Gillian-Barre syndrome. On the other hand, Kikuchi et al. [12], in Japan who proved in their study that the mean duration of the chronic neurological disease as; multiple sclerosis (MS) disease was 10.4 years, which came in the opposite with the result of the current study.

Concerning mean scores of Self-Efficacy Scale, the current study showed that, highest score per domain was for "Manage symptoms scale" while the least score per domain was for "Social/Recreational Activities scale" with average mean of total self-efficacy score (Mean±SD) 51.37±33.58. This might be due to, those patients were exposed three times per week for plasmapheresis procedure and each session can lasts from 2 to 3 hours, this might lead to some complications as tiredness, bleeding, allergic reactions and infection after the procedure, which had a negative impact that can hinder social activities as social visits and recreations. This result is supported by, Gruber-Baldini *et al.* [13], in Maryland, who found that the chronic neurologic participants reported greater self-efficacy for managing conditions on all domains. Similarly, Amtmann *et al.* [14], in Washington found on their study that the persons with MS had a significant association between self-efficacy and physical and social functioning. Additionally, Schmitt *et al.* [15], in New Jersey, found in their results, self-efficacy had a significant association with physical, cognitive and social functioning for patients with neurologic impairment.

AS regard to total self-efficacy score the present study found that more than half of the study sample had low self-efficacy for whom under plasmapheresis procedure. Because self-efficacy means beliefs of a person holds regarding their power to affect situations, it strongly influences both the power a person actually had to face challenges competently and the choices a person is most likely to make and unfortunately patients with chronic disease who were under plasmapheresis procedure could be affected physically and psychologically. This could explain why those patients had low self-efficacy score.

These results are consistent with, Omar *et al.* [16], in Egypt, who found that the majority of the study subjects with chronic obstructive pulmonary disease had low total self-efficacy scores. Also, Sarkar *et al.* [17], in California found that self-efficacy was lower among patients with chronic heart disease.

According to factors that could affect self-efficacy for patients receiving plasmapheresis, Gruber-Baldini *et al.* [13], in Maryland, found in their study that Self-efficacy measures differed by most demographic characteristics, as in younger age was significantly associated with better Self-efficacy for Managing Daily Activities, but worse Self-efficacy for Managing Emotions and Managing Social Interactions. Also Females scored higher on Managing Medications and Treatments, but did not differ for other measures. In addition to, Married participants scored higher on all the Self-efficacy domains, except for Managing Symptoms and those who were employed and had higher incomes had higher scores on all Self-efficacy domains. While those with more chronic conditions scored lower on all Self-efficacy domains. This finding was coincide with the study done by Rutten *et al.* [18], in US who found that primary care patients with multi-morbidity studies, experience lower self-efficacy, as their confidence to manage their diseases was lower.

These results come within the agreement with our result which demonstrated that the average self-efficacy score was significantly higher among younger and employed patients especially for those had insurance. While patients suffering from co-morbid diseases as; diabetes mellitus and hypertension had a significant lower average self-efficacy score. This could be because younger age was tolerate and adapted with this procedure than the oldest, particularly if those patients were employed and had insurance that could cover their financial cost of plasmapheresis sessions and other requirements.

Raggi *et al.* [19], in Italy, found in their study that was done on patients with Myasthenia Gravis that men reported better self-efficacy than women and those living with a partner reported higher social support levels. This incompatible with the our finding which found that, there was high average self-efficacy score among female married, patients but there was statistically not significant. This might be the known about females, their physical intolerance compared to men, but the actual was her internal endurance of facing the challenges was much stronger than men, especially if they had socially support as the presence of partner.

In addition, Raggi *et al.* [19] illustrated in their study that there were no differences found between early-onset and late-onset patients or between patients with different MG staging which were opposite our findings that found that the average self-efficacy score was significantly higher among patients diagnosed since one or from 2 to 3 years than freshly diagnosed. This might be due to, over time patients could adapt more than before and identify the solution that could help them in their crisis. This result is in accordance with, Lev *et al.* [20], in New York who found that their patients with newly diagnosed cancer, regardless of their prognosis, exhibit low self-efficacy with high levels of psychological distress and adjustment problems.

According to length of plasmapheresis session, the current study showed that a significant higher average self-efficacy score among patients exposed to short session (1-2 hours) than those exposed to longer session (2-3 hours). This might be due to, during the plasmapheresis session the patient feels that he was restricted and isolated from closed people to him, so the shorter session time, was the better for them to improve their psychosocial status which is reflected on their self-efficacy positively.

CONCLUSIONS

This study concluded that there was low self-efficacy among patients undergoing plasmapheresis at mean 51.37±33.58 and median was 44.44%. In addition, this study mirrored the factors which affect patients' self-efficacy who undergoing plasmapheresis procedure showed through the average of self-efficacy score was significantly higher among patients aged 20-40 years (P<0.001), employed patients (P0.032) and those covered female patients, married, university educated, lived in rural areas and having enough income but the difference was statistically not significant (P>0.05). Another factor, was the disease type, which showed that the average self-efficacy score was significantly higher among patients suffering from MG followed by then CIPD, GB and lastly transverse myelitis (p<0.001). Also, Average self-efficacy score was significantly higher among patients diagnosed since one or 2-3 years than newly diagnosed (p=0.009). Additionally, patients suffering from chronic diseases as; Diabetes mellitus or Hypertension had a significant lower average self-efficacy score (p=0.020). Finally patients had no previous hospital admission and who have not family history had a higher average self-efficacy score, but the difference was not significant (p>0.05).

Recommendations: Based on the results of the study, the following recommendations are suggested:

- Replicate this study of large probability sampling and different hospitals in different geographical locations in order to determine factors that can affect patients' self-efficacy.
- Standardized teaching guidelines should be applied at neurology department for patients undergoing plasmapheresis procedure in order to help in improving their self-efficacy.
- Further studies are needed in order to develop more accurate and realistic strategies for improving self-efficacy for patients under plasmapheresis procedure.

REFERENCES

1. Quintero, O.L., M.J. Amador-Patarroyo, G. Montoya-Ortiz, A. Rojas-Villarraga and J.M. Anaya, 2012. Autoimmune disease and gender: plausible mechanisms for the female predominance of autoimmunity. J. Autoimmunity, 38(2-3): J109-J119.
2. Lehmann, H.C. and H.P Hartung, 2011. Plasma exchange and intravenous immunoglobulins: mechanism of action in immune-mediated neuropathies. J. Neuroimmunology, 231(1-2): 61-69.
3. Meštrović T., 2014. Plasmapheresis. News Medical. Available at http://www.news-medical.net/ health/ Plasmapheresis.aspx accessed on 3/8/2016
4. De Oliveira, F.T.M., N.C. De Luca and C.P. Tilbery, 2016. Plasmapheresis therapy for immune-mediated diseases in neurology: literature review. Global Vaccines Immunol., 1: 29-32.
5. B Bandura, A., 1977. Self-efficacy: toward a unifying theory of behavioral change. Psychological Review, 84(2): 191.
6. Newman, D.A., D.L. Joseph and C. MacCann, 2010. Emotional intelligence and job performance: The importance of emotion regulation and emotional labor context. Industrial and Organizational Psychology, 3(2): 159-164.
7. Johnson, D.B., R.J. Sullivan, P.A. Ott, M.S. Carlino, N.I. Khushalani, F. Ye and T. Mudigonda, 2016. Ipilimumab therapy in patients with advanced melanoma and preexisting autoimmune disorders. JAMA Oncology, 2(2): 234-240.
8. Amin, B., H. Meghnathi, M.D. Gajjar, T. Patel, J. Vanani, N. Gupta and A. Chauhan, 2017. Impact of electrophysiological and clinical variants and timing of plasmapheresis on outcome of Guillain-Barré syndrome. J Assoc Physicians India, 65(11): 14-15.
9. Lorig, K., A. Stewart, P. Ritter, V. Gonzalez, J. Lynch and D. Laurent, 1996. Outcome measures for health education and other health care interventions. London New Delhi. International Educational and Professional Publisher, pp: 10-89.
10. Yeh, J.H., C.K. Cheng and H.C. Chiu, 2008. A case report of double-filtration plasmapheresis for the treatment of age-related macular degeneration. Therapeutic Apheresis and Dialysis, 12(6): 500-504.
11. Gafoor, V.A., J. Jose, K. Saifudheen and M. Musthafa, 2015. Plasmapheresis in neurological disorders: Experience from a tertiary care hospital in South India. Annals of Indian Academy of Neurology, 18(1): 15.

12. Kikuchi, H., N. Mifune, M. Niino, S. Ohbu, J.I. Kira, T. Kohriyama and M. Maezawa, 2011. Impact and characteristics of quality of life in Japanese patients with multiple sclerosis. Quality of Life Research, 20(1): 119-131.

13. Gruber-Baldini, A., C. Velozo, S. Romero and L. Shulman, 2017. Validation of the PROMIS measures of self-efficacy for managing chronic conditions. Quality of Life Research, 26(7): 1915-1924.

14. Amtmann, D., A.M. Bamer, K.F. Cook, R.L. Askew, V.K. Noonan and J.A. Brockway, 2012. University of Washington self-efficacy scale: A new self-efficacy scale for people with disabilities. Archives of Physical Medicine and Rehabilitation, 93(10): 1757-1765.

15. Schmitt, M.M., Y. Goverover, J. DeLuca and N. Chiaravalloti, 2014. Self-efficacy as a predictor of self-reported physical, cognitive and social functioning in multiple sclerosis. Rehabilitation Psychology, 59(1): 27.

16. Omar, O., B. Galal, M. Mohammed and A. El Sayed, 2014. Assessment of K knowledge, Practice and Self efficacy for patients with chronic obstructive pulmonary disease. Port Said Scientific Journal of Nursing, 2(1): 8, 9-20.

17. Sarkar, U., S. Ali and M. Whooley, 2007. Self-efficacy and health status in patients with coronary heart disease: findings from the heart and soul study. Psychosomatic Medicine, 69(4): 306.

18. Rutten, L.J., B.W. Hesse, J.L. Sauver, P. Wilson, N. Chawla, D.B. Hartigan and N.K Arora, 2016. Health self-efficacy among populations with multiple chronic conditions: the value of patient-centered communication. Advances in Therapy, 33(8): 1440-1451.

19. Raggi, A., M. Leonardi, R. Mantegazza, S. Casale and G. Fioravanti, 2010. Social support and self-efficacy in patients with Myasthenia Gravis: a common pathway towards positive health outcomes. Neurological Sciences, 31(2): 231-235.

20. Lev, E.L., D. Paul and S.V. Owen, 1999. Age, self-efficacy and change in patients' adjustment to cancer. Cancer Practice, 7(4): 170-176.