
The Effect of Lifestyle Modification Program on Reducing Migraine Disability Among Migraineurs Suffers

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Abstract: The migraine is a neurological disorder that represents a seventh health problem leading cause of years of life lost to disability condition. Lifestyle factors include dieting and fasting, exercising and physical activities, stress level and sleeping and resting habits, smoking and medications and drugs, these factors affecting frequency, duration, and severity of migraine, and changing these factors in lifestyle decreases the frequency and severity of the migraine headache. This study was designed to evaluate the effect of lifestyle modification program on reducing migraine disability among migraineurs suffers. Also, the quasi experimental research design was used in this study. This study was carried out in Ismailia, Egypt. 70 migraineurs suffers were selected from attendance neurology outpatient clinic and emergency department complaining of signs and symptoms of migraines over six months and not complaining of any chronic diseases. Migraineurs suffers who signed the informed consent to participate in this study after explaining the aim of the study. Data collection tools were a demographic questionnaire, migraine headache characteristics, their knowledge about migraine, and their lifestyle habits. Migraine Disability Assessment Test scores was measured in two stages, before and three months after implementation of their lifestyle modification. The frequency, and severity of migraine headache was reducing and migraine disability change from sever disability to mild disability after implementation the program. Consequently, the lifestyle improved the frequency and severity of headaches and self-reported disability from headaches. As well as, the health education to the migraineurs suffers about the prevention of recurrent migraines.

Keywords: Migraine Headache, Migraine Disability, Migraine Prevention, Lifestyle Modification

1. Introduction

Migraine is a neurological disorder that represents a seventh health problem leading cause of years of life lost to disability condition [1]. It has prevalence of about 5-8% in men and 11-16% in women in worldwide and it is more prevalent among ages 25-55 years [2], [3].

Migraine is a recurrent, severe, and throbbing headache, and recurrent episodic attacks, which have the potential to headaches with moderate to severe pain, often having a unilateral location and pulsating quality, accompanied by nausea, vomiting, photophobia, or phonophobia [4], [5]. The frequency and severity of headaches can progress over months or years to chronic migraine, in which attacks tend to occur for at least 15days in a month [5], [6].

These attacks are associated with substantial functional impairments, which may include both physical and psychological effects and impact academic, occupational, social, and family lives. These impairments can occur during or between the migraine attacks. Generally, migraineurs report poorer subjective well-being and reduced quality of life during their pain-free periods than do age- and sex-matched healthy controls [5], [7], [8].

Migraine medications have an important role in reduce severity and frequency but are limited in effectiveness while carrying side effects that may include cardiovascular risks and headaches due to medication overuse [4]. This approach of treatment made, indirect cost and reduced productivity of patients with a migraine are considerable and exceeds that of those who are not afflicted with such disease [7]. There are a wide range of preventative medications are now available for

the treatment of migraine headaches, by lifestyle modifications leading to significant improvement in the frequency and severity of migraine headaches [9]

Lifestyle is the controlled behavior and activities of a person and many activities, habits, and practices involve risk factors. Lifestyles play a role in preventing diseases which in turn decreases health-care expenses. Lifestyle factors include dieting and fasting, exercising and physical activities, stress level and sleeping and resting habits, smoking and medications and drugs, this factors affecting frequency, duration, and severity of migraine headache, and changing these factors in lifestyle decreases the frequency and severity of the migraine headache [10].

Several studies have found that individuals who participate in regular aerobic exercise have less frequent headaches, and when headaches occur, the pain is less intense and of shorter duration. Exercise is believed to decrease headache intensity because during exercise, the body releases chemicals called endorphins, which reduce the perception of pain [10], [11], [12].

Diet and eating habits play an important role in reducing the frequency of migraine. It was therefore necessary to recognize the migraineurs, they include skipped meals and fasting, chocolate, yellow cheese, caffeine, and aspartame and sucralose is an artificial sweetener. Sausages or other cured meats and fish, some people develop headaches within minutes to hours [9], [10], [13].

According to evidence based the migraineurs, adhered to several dietary recommendations. We must encourage them to ingest small portion sizes of food multiple times a day as opposed to large meals twice a day. Multiple calorie sources were avoided including fast foods, simple carbohydrates, dairy products, and carbonated beverages such as soda. Dietary focus was the consumption of well-rounded meals from healthy calorie sources such as fish, chicken, vegetables, and fruit. As well as encourage them to consume low glycemic index carbohydrates such as sweet potatoes, beans, and yams [7], [14], [15].

Nurses can play a significant role in reduce migraine disability by identifying migraine suffers and offering them support, empathy and advice. Nurses provide of them with information on migraine in the form of oral advice, leaflets, Engage with them to ensure their commitment to the care management program [16].

Nurses also have key roles at follow-up through manage the migraine suffers appointments, encouraging them to attend follow-up appointments. The nurse should monitor illness progress and treatment outcome, by reviewing headache diaries and impact questionnaires, before medical examination [7], [16].

2. Significant of the Study

In previous rehashes studies illustrate migraine headache causes severe impairment or bed rest in more than half (57%) of affected people, markedly impairs quality of life both during and between attacks, increases absenteeism and

reduces productivity at work, and is associated with increased healthcare costs [7], [8]. Frequent migraine is also a risk factor for progression from episodic migraine to chronic migraine.

Migraineurs suffers need to be aware of their risk lifestyle factors effect on migraine headache and should be aware of the potential complication that helps to initiate assessment to prevent the complications of migraine headache. Education includes change lifestyle, choose eating, and sleep hygiene, exercise, and compliance with a medication regimen. Several teaching sessions will be necessary to prepare the patient to reduce severity and frequency of migraine.

3. Aim of the Study

The aim of this study was to evaluate the effect of lifestyle modification on reducing migraine disability among migraineurs suffers.

Hypothesis:

Migraineurs suffers who participate in a lifestyle modification program will reducing migraine headache disability.

4. Subjects and Methods

4.1. Study Design

A quasi-experimental study design was used in this study with pre/ posttest was used to evaluate the effects of lifestyle modification on reducing migraine disability among migraineurs suffers.

4.2. Setting

The study was conducted at Suez Canal university Hospital in Ismailia, Egypt. At the following departments: emergency department and neurology outpatient clinic for treatment and follow up.

4.3. Subjects

The subjects of the present study consisted of (70), who were admitted for acute migraine attack in emergency department or neurology outpatient clinic for follow up.

4.4. Sampling

A convenience sample of migraineurs suffers who had attended the study settings from December 2015 to June 2016, were eligible to participate in this study when they fulfilled the following criteria: 1) diagnosed with migraine headache, 2) free from any chronic disease.

4.5. Tools for Data Collection

First tool was interview questionnaire was developed by the researchers to assess a) socio-demographic characteristics of the participants (age, sex, educational level, marital status, monthly income, and occupation). b) Migraine headache pattern: these sections include history of migraine headache

and signs and symptoms such as (duration, sites, nausea, and vomiting, photophobia, and interference with activities). C) Migraineurs suffers knowledge about meaning of migraine headache, stages of migraine headache, triggers migraines, warning signs, and complication of migraine headache. d) Lifestyle habits (e.g., number of meals per day, components of meals, duration and form of exercise, and Smoking habits, Sleep and stress control.

Scoring system for migraine knowledge: the migraineurs suffers knowledge was calculated for each item as follow; complete and or correct answer was scored (2 points), incomplete correct answer was scored (1 point), while don't know or wrong answer was scored (zero point). The total score for all questions related to knowledge was 50 points which represent 100%.

Scoring system for lifestyle practice through their habits (100 marks) and it was answer two marks for always, one mark for sometimes, and zero mark for never answer. Total score of lifestyle habits was classified as follows; high score for 65% or more, moderate 55% to less than 65%, and low for less than 55%.

Second tool, Migraine Disability Assessment Test (MIDAS) was measured by researcher according to *Stewart et al., 2001*[17] to assess frequency and disability related to migraine headache, and divided into two part. First part, to measure frequency of migraine headache and includes (2) Questions about the number of days that were complaining of migraine headaches over the past 3 months and severity. Second part, to measure migraine disability score through past three months, which includes five questions such as (how many days miss work or school because of your headaches, how many days reduce productivity at work or school, and how many days do not household work by half or more, how many days reduce productivity in household work by half or more, how many days miss family, social, or non-work activities).

Scoring system for migraine disability test included 5 questions on Likert scale ranging from (1) to (10). Sum all responses and MIDAS total score is categorized into little or no disability (0-5), mild disability (6-10), moderate disability (11-20) and severe disability more than 21.

4.6. Ethical Consideration

The study protocol was approved by the pertinent committee of the Faculty of Nursing Suez Canal University. An agreement for participation of the subjects was taken verbally before inclusion and after the aim of the study explained to them. They also were assured that any information taken from them would be confidential and used for the research purpose only.

4.7. Field Work

The study was conducted during the period from start December 2015 and ended of June 2016. After taking permission from hospital authority to implement a lifestyle modification program among migraineurs suffers. This was

implemented program through four successive phases, namely assessment, planning, implementation, and evaluation.

4.8. Validity

The study tool will be developed by the researcher based on review of relevant and current literature, and then reviewed by five experts from the Faculty of Nursing (Community Health Nursing Department) and Faculty of Medicine (Public Health Department). These experts assessed the tool for clarity, relevance, application, comprehensiveness, and understanding. This constituted the face and content validation of the tool. All recommended modifications in the tool were done.

4.9. Reliability Test

Test-retest reliability was applied by the researcher for testing the internal consistency of the tools. It refers to administration of the same tools to the same subjects under similar conditions on two or more occasions. Scores from repeated testing were compared.

4.10. Pilot Study

A pilot study was done to assess the applicability and clarity and replicated of the interview questionnaire form. It was conducted on seven of migraineurs suffers. These subjects were excluded from the study sample.

5. The Lifestyle Modification Program

The lifestyle modification program was designed as a comprehensive approach based on counseling the subjects about nature of a migraine, the following diet properly; daily walk at least for 30 minutes, and doing progressive muscle relaxation technique at least for 20 minutes in the morning and at night and adequate sleep.

Field of work:

The process of this research was carried out via three phases; assessment, planning and implementation of the program, follows up visits, and outcomes evaluation.

Assessment phase; At the baseline and before the migraineurs suffers assignment, migraine history and characteristics was obtained to ensure suffers eligibility for participation; thereafter the aim and approach of this research were explained to the clients in order to get their informed consent. Assessment migraine disability test was performed by the researcher, and recorded as baseline date researcher established a professional relationship with participants emphasizing the purpose of the study and reassuring that all data collected and results were confidential of the benefiting scientific research only. The pretest questionnaire was designed and implemented to identify lifestyle a habit as self-reported by migraineurs suffers, knowledge about relation between lifestyle and migraine frequency and severity.

Planning and implementing phase: A lifestyle modifications program was provided to the migraineurs

suffers through three educational sessions in small groups ($n=3\sim5$) on two consecutive days at the neurology outpatient clinic with duration of approximately 45~60 minutes for each session. Migraine definition, symptoms, and complications, in addition to the importance of lifestyle modification on reducing migraine disability were discussed during the 1st session, while the 2nd session concerned with the permitted, forbidden food, eating habits, and different forms of physical activity. As well as third session, concerned with healthy sleep pattern, and coping stress. All sessions were presented in a power point presentation by the nurse researcher. The migraineurs suffers was provided with an instructional brochure to be used as a guide for the permitted and forbidden foods and eating habits. They were asked to accurately record their dietary intake daily for the week preceding the assigned clinic visit; using a 24-hour dietary recall. The total duration of this phase of the study was 8-10 weeks. The researcher encouraged the participants to bring their relatives with them to know how to support and help them in their care.

Evaluation phase; of the program was done by comparing the change in migraineurs suffers knowledge and lifestyle practices according to their habits, after three months from implementation of the program and used the same questionnaire was again administered and measure migraine disability test for the migraineurs suffers as (post-test).

6. Results

Table 1. Distribution of socio-demographic characteristics of study sample ($n=70$).

Items	No	%
Age:		
Mean \pm SD	36.76 \pm 11.06	
30 Years or less	24	34.3
31 to 40 Years	20	28.6
Over 40 Years	26	37.1
Gender:		
Male	37	52.9
Female	33	47.1
Marital Status:		
Single	21	30.0
Married	47	67.1

Items	No	%
Divorced	1	1.4
Widow	1	1.4
Education level		
Illiterate	13	18.6
Basic	16	22.9
Medium	11	15.7
High Education	30	42.9
Monthly Income:		
Enough	36	51.4
Not Enough	34	48.6
Occupation:		
housewives	11	15.7
Employee	32	45.7
Other occupation	27	38.6

Table 1 Shows that the mean age of suited sample was 36.79 \pm DS11.06 and 52.9% males. Concerning the level of education, it was found that 42.9% of them high education & 45.7% of them were employee. 51.4 % of the studied sample had enough monthly income.

Table 2. Distribution of migraine Symptoms according to migraine assessment among the Sample ($n=70$).

Items	No	%
Duration of headache attacks continue from 4 hours to 72 hours	50	71.4
Headache pain in unilateral location	67	95.7
Pulsating quality headache	66	94.3
Headache pain is fixed & slow	56	80.0
Headache increased with body effort	50	71.4
Nausea and vomiting during the headaches	49	70.0
Sensitive to certain light or noise during headache	50	71.4
Loss of concentration during headache attack	54	77.1
Feel of stand or sit or sleep during the headache	43	61.4

Number not mutually exclusive

Table 2 reveals that the study sample had pain in unilateral location of head 95.7% and feeling pulsating headache 94.3%. As regards 77.1% complains loss of concentration during headache attack and 70% of them complains from nausea and vomiting during headache. Additionally, 71.4% had symptoms of sensitive to certain light or noise during headache.

Table 3. Distribution of migraine knowledge of the study sample pre and post three months after implementation the program ($n=70$).

Items	Pre		Post		Difference (Post-Pre)		T-test P-Value
	Mean	SD	Mean	SD	Mean	SD	
Meaning of migraine headache	61.4	37.8	73.6	24.4	12.1	46.4	0.031872*
types of migraine headache	27.6	30.1	83.6	14.9	56.0	32.9	0.031872*
Headache with visual aura	31.8	34.3	54.6	26.3	22.9	43.8	0.000000*
stages of migraine headache	22.6	23.1	75.4	25.5	52.9	33.0	0.000043*
Triggers migraines	10.6	14.8	58.6	15.0	48.0	20.7	0.000000*
warning signs for migraine	19.3	28.9	96.8	13.4	77.5	33.6	0.000000*
complication of migraine headache	5.0	15.1	79.3	24.8	74.3	26.6	0.000000*
prevention of migraine headache	27.6	14.8	64.9	21.2	37.3	24.1	0.000000*
Total score of Knowledge	24.9	16.7	70.5	10.2	45.6	19.2	0.000000*

(*) statically significant

Table emphasizes that there were statistically significant differences between pre and post implementation programs

regarding study sample knowledge of the respondents towards knowledge of migraine headache.

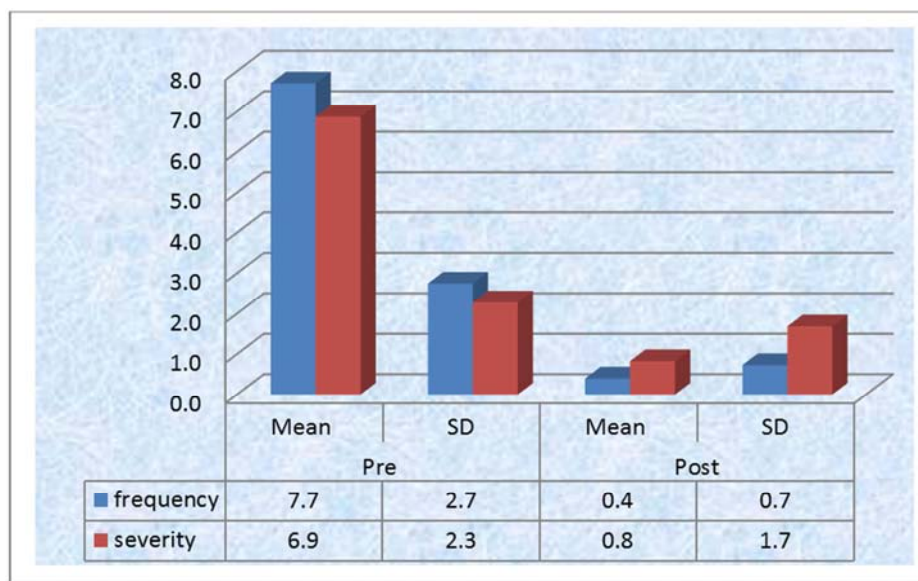
Table 4. Distribution of lifestyle habits of the study sample pre and post implementation the program after three months (n=70).

Items	Pre		Post		Difference (Post-Pre)		T- test p-value
	Mean	SD	Mean	SD	Mean	SD	
Diet and Eating habits	54.4	±25.6	68.2	±19.3	13.8	±32.6	(0.000710)*
Exercise and physical activity	12.1	±15.9	67.4	±19.6	55.3	±24.4	(0.000000)*
Rest and sleeping habits	30.6	±23.6	63.8	±16.0	33.2	±28.6	(0.000000)*
stress	21.6	±7.4	6.9	±0.4	-14.7	±7.4	(0.000000)*
Smoking habits (n=12)	4.6	±1.8	0.1	±0.3	-4.5	±1.9	(0.000000)*

(*) statically significant

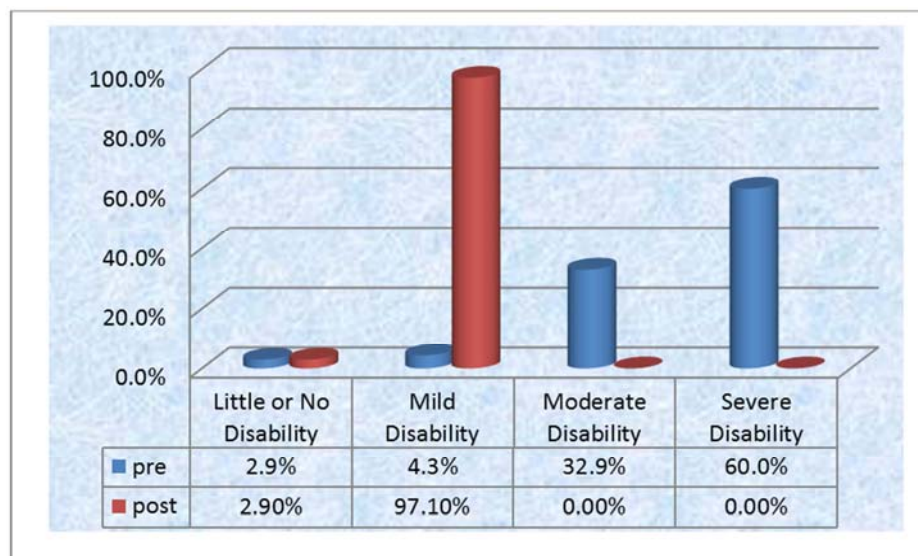
Table 4 reveals improving a general pattern of lifestyle practices related to habits after program implementation and shown in improve diet and eating habits as 45.4 ± 25.6 to 68.2 ± 19.3 . Concerning exercise and physical activity as 12.1 ± 15.9 pre shifted to 67.4 ± 19.6 . Additionally 30.6 ± 23.6

regarding resting and sleeping 30.6 ± 23.6 before shifted to 63.8 ± 16.0 . As regards improving stress reduce after implementation the program from 21.6 ± 1.8 to 6.9 ± 0.4 and smoking habits 4.6 ± 1.8 before shifted to 0.1 ± 0.3

**Figure 1.** Mean score Distribution of migraine frequency and severity among study sample pre-post lifestyle modification program (n=70).

The figure shows that the mean score of frequency and severity regarding migranuers suffer were reducing after

three months from implementation the lifestyle modification program.

**Figure 2.** Distribution of migraine disability of study sample pre and post implementation the lifestyle modification program (n=70).

The figure shows that the migraine disability change from sever disability to mild disability after three months of implementation the lifestyle modification program.

Table 5. Correlation between migraine disability and lifestyle modification among study sample (n=70).

Item		Diet & eating habits	Exercise & Physical activity	Rest & sleep	Stress	Smoking
Migraine disability	Spearman's rho	-.414**	.051	-.328**	.115	-.030
	(P- Value)	.000*	.674	.006*	.345	.803

(*) statistically significant

Table 5 illustrate that there is negative correlation between migraine disability and change of diet and eating habits of intermediate strength ($r=0.414$) but statistically highly significant ($p<0.001$). Also a statistically highly significant negative correlation (<0.01) between migraine disability and

rest and sleep but of lower strength ($r=0.328$). Other correlation between migraine disability and stress or physical activity is both weak positive statistically non-significant while with smoking is very weak negative statistically non-significant relation.

Table 6. Correlation between frequency and severity of migraine and lifestyle modification among study sample (n=70).

Items		Diet & eating habits	Exercise & Physical activity	Rest & sleep	Stress	Smoking
Frequency	Spearman's rho	-.238*	-.086	-.184	-.082	.225
	P- Value	.048	.479	.128	.502	.062
Severity	Spearman's rho	-.388**	-.011	-.366**	-.126	.009
	P- Value	.001	.928	.002	.300	.938

Table 6 illustrate that there is negative correlation between frequency of migraine and change of diet and eating habits of intermediate strength ($r=0.238$) but statistically significant ($p<0.01$). Also a statistically highly significant negative correlation (<0.01) between severity of migraine and change of diet and eating habits. other negative correlation between severity of migraine and rest and sleep activity are ($r= 0.366$) but highly significant (<0.001).

7. Discussion

Migraine headaches affect individuals of all ages and genders, and are a serious cause of disability and the most frequent diagnosis at neurology outpatient clinics [18]. The best recommendation for pepole with migraine disability is to maintain the appropriate healthy lifestyle, especially at the time of intense headache attacks [7]. In this context, improving migraine disability through lifestyle modification among Migraineurs Suffers.

Our sample represented less than half were employees with mean age 36.76 ± 11.06 for both gender. In previous study in Iran and UK [7], showed that the migraine headache is more prevalent among ages 25-55 years i.e. the climax of youth and productivity.

The current study reported that the two thirds of participant had sever migraine disability and another one third had moderate migraine disability. This is consistent with similar studies in Malaysia [5] reported that most migraine suffers have server disability which makes them unable to practice daily activities.

In previous Study in Amazon showed that the majority of subjects with migraine have reduced productivity during attack an impairment of academic and social activity in graduate students [18]. It my point of view, that the reason for the migraine suffers of severe disability features of the sings and symptoms such as loss of concentration, nausea,

vomiting, and increase pain with effort, that make the migraine suffers are unable to daily activities.

The current study, reported that the majority of migraine suffers under study sample complain from during headache attack pulsating headache, loss of concentration, nausea and vomiting. Additionally symptom of sensitive from light or noise. This result is consistent with a study in Egypt [19] who reported that the suffers of migraine having onset of pain as acute, pain headache in unilateral location, continuous pain all the time. A similar study conducted among the American worker population [11] reported migraines are episodic attacks of disabling headache pain often accompanied by nausea, vomiting, and light and sound sensitivity.

I think that the frequent repetition of this the symptoms of the patients who have experience in dealing with the headache frequently use analgesic drugs without knowing the reason or the factors that lead migraine headache. And confirmed [10]in his study on the importance of lifestyle habits, including rest and sleep, diet and stress, and physical activity are important factors in migraine attacks. It is important to emphasize changing habits, such as improper diet, physical activity to reduce migraine attacks.

AS regard to lifestyle habits and practicing the migraine suffers and causing increases its frequency and severity and symptoms that mentioned before of. The current study showed that the vast majority of suffers before the intervention was to have a lifestyle that is unhealthy in both the eating habits, physical activity and rest, sleep and stress and smoking habits. This result is consistent with a study in Iran [10] who reported that there were a significant relation between some dimensions of lifestyle, such as diet eating habits, resting and sleeping habits, and drug usage patterns with migraine headaches. Also Ladson et al, [20] study reported that the lifestyle factors mitigating migraine include regular sleep, meals, and exercise; stress reduction; and overall trigger management. By definition, exposure to a

trigger factor increases the probability of headache onset for a clinically relevant time period, usually minutes to days.

In fact, this pattern is unhealthy from the point of view are considered mostly unhealthy lifestyle due to lack of knowledge about the importance of healthy life style of the migraine sufferers, which may lead to adverse effects on health. Hence the sufferers with migraine were an urgent need to increase their awareness and knowledge with respect to migraine and its complications.

The present study demonstrates that knowledge regarding meaning of migraine, types, signs and symptoms, were low before implementation of the program. After implementation, there was a significant increase in knowledge among migraine sufferers. This finding agrees with the results of other studies in Washington by [21] shown that the educational program resulted in significant improvements in knowledge among migraine sufferers regarding prevention and reduce frequency. This is congruent with research in other chronic disease areas (e.g., diabetes, asthma, cardiovascular disease) where providing patients with education about their disease state has been demonstrated to reduce disease burden and reduce worry and anxiety.

In our study, illustrated that there was improvement lifestyle habits according to their report after implementation the program regarding eating habits, physical activity, rest and sleep, and stress management. And also significant improvements were shown in migraine sufferers in terms of the frequency and severity after change in diet, eating habits rest and sleep. As well as migraine disability improved from severe disability to moderate degree. This finding supported by [6, 11, 15] in studies emphasized on coaching on dietary and lifestyle changes treat and prevent migraine headache.

These habits as reported by migraine sufferers eating spicy and heavy food, drink frequent times of coffee and tea, not practicing any type of exercise, and the most exposed to the stress pressure. These finding may reflect on risky lifestyle and so increased frequency and disability of migraine headache. Migraine sufferers reported that headache related frequency decreased and disability improved during the course of the study.

It is interesting to note the relationship of migraine and lifestyle. The focus was on the current intervention only on education change in lifestyle. The finding of the current study showed that there is statistically significant relationship between eating habits, sleep and rest and frequency of migraine headaches where reducing after the implementation program by three months. In contrast to our result by [15] study in Egypt reported that there was positive association between fasting and severe migraine.

In conformity with the aforementioned results, *Zarandi et al.*, in Iran [7] on evaluation of the nutrition self-care checklist after the intervention showed that majority of the studied participants could manage their headache attacks and reduce the disability caused by a headache through following a proper diet, keeping regular meals especially breakfast, and avoiding headache stimulating food. Another study by *Bunner et al* in

Washington [4] and *Ladson et al.*, in Saint Louis [20]; reported that regular sleep, meals, and exercise; stress reduction can improve migraine severity and frequency.

The total mean score of migraine disability after performing change in lifestyle in migraine sufferers increased significantly as compared with that of the migraine sufferers before program implementation.

As regards the present study shown that there was a statistically significant relation between degree of migraine disability and indicators change of diet and eating habits, rest and sleep while there were no statistically significant differences between the degree of migraine disability and indicator change of stress, smoking and physical activity. But *Köseoglu, E.*, et al., in Turkey [22] showed that aerobic exercise increased plasma beta-endorphin level, hence an increased pain threshold in patients with a migraine and reduced number and severity of headache attacks. Moreover, results of the study conducted in Austria [23] showed that aerobic exercise and relaxation practices reduced stress and anxiety of patients with a migraine and consequently, prevented and controlled headache attacks and improved migraine disability.

8. Conclusion and Recommendation

For this small sample of sufferers, implementation of a multicomponent intervention. The intervention was effective in improving the frequency and severity of headaches and self-reported disability from headaches. Based on the results of the present study, the following recommendations are suggested:

- 1 Health education to the migraine sufferers about the possible ways of prevention of recurrent migraines.
- 2 Replication of the study on a larger probability sample acquired from different geographical areas in Egypt to figure out the main aspects of this problems and generalize the result.

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