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RESEARCH ARTICLE

METABOLOENDOCRINE CROSS SECTIONAL STUDY ON THE RELATION BETWEEN MIGRAINE, HYPOTHYROIDISM AND OBESITY IN NORTHERN AND EASTERN REGION, KINGDOM OF SAUDI ARABIA

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Abstract

Objectives: to determine the relation between Migraine, Hypothyroidism and Obesity in adult to be more aware about the factors which lead to Migraine and how to control them also to collect data for further investigation and suggest methods of control or minimize of its recurrence.

Methods: surveillance cross sectional study, data were collected from 15th of November 2020 till 28th of February 2021. Study population Male and Females / adults /married or not married/with Obesity or Hypothyroidism or both and suffering from Migraine in Northern and Eastern region, Kingdom of Saudi Arabia, using questionnaires, statistical analysis was done by SPSS 22.

Results: 188 responses to the questioner. The study finding showed that the range of participant mostly age between (20-30 y) with (63.3%) and(41-50y) , (31-40 y) as (16.5%) and (14.4%), As for gender and level of Education the study showed that (80.3%) were female and (19.7%) were male while (63.3%) Bachelor degree and (28.7%) high school. Factors that may lead to inducing attacks of migraine ,the results showed that (48.9%) were over weighted (106-120kg) followed by (23.9%) (105-96 kg), for sleeping habits(70.7%) sleeping less than 6 hours /day and (85.1%) using electronic devices on daily bases and (81.4%) were drinking (0.5-1L) water /day . Regarding symptoms accompanied migraine the study found that (51.6 %) of participants suffering from frequent migraine followed by(23.9%) once per day and (75%) showed that duration of attacks takes 10 hours per day followed by(13.3%) of the partisans duration takes 12 hours per day which affect the life routine by(58%) and the severity of the headache (60.6%) as mild to(25.6%) moderate level of pain. Other Hormonal/Metabolic factors that may be related to inducing migraine as hypothyroidism which can lead to gaining weight , the results showed that (9.6%) suffering from hypothyroidism and (92.6%) not diseased but on the other hand (64.4%) don't know that there is a relation between hypothyroidism, gaining weight and migraine and they gain weight lately by (96.3%).For treatment used for migraine attacks the results showed that (62.2%) takes painkillers while (26.1%) depend on home remedy for treatments of migraine , and for the new method of treatment by using BOTOX injection (90.4%) didn't know about this way of treatment.

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Conclusion: migraine can be indicator or a sign of other conditions and sometimes patients did not pay attention to them keep taking painkillers without diagnosing the cause . Spreading the awareness among society about factors can cause migraine and medical conditions that also involved in repeating attacks can help in decreasing and controlling attacks of migraine .Health care providers should help in increasing the awareness of healthy life habits and how to control migraine attacks and new methods of treatments.

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Introduction:-

Migraine is recurrent headache attack; can cause moderate to severe pain that is throbbing or pulsing. Affects 15% of women and 6% of men each year. (Ali et al.2020). The Global Burden of Disease Study showed that migraine is the seventh most common causes disability of life in the world, and affects more in the age under 50. (Anita et al. 2011) Migraine has negative personal, societal, and economic burden and often misdiagnosis. (Elisa et al. 2019). Can be Classified as: migraine without aura, migraine with aura. Aura refer to something occurs before episode of headache and last from 1 min to 1 hour these include: Speaking impairments, feeling off-balance or dizzy, Visual issues – for example blind spots in vision, or seeing zig-zags and flashing lights, Feelings of numbness and tingling More rarely, loss of consciousness. migraine without aura that occurs without any symptom before episode of headache. (Huei-Kai et al. 2018).

Hypothyroidism is endocrine disorder characterized by decrease in thyroid hormone.(Zsolt hepp et al 2018) .Hypothyroidism common in all population with increase prevalence in women between 40-50 years in menopausal period. (Marise et al. 2017) hypothyroidism is classified into primary which disorder occurs in thyroid gland, and central that disorder occurs in pituitary or hypothalamic. Primary hypothyroidism accounts for over 95% of cases of hypothyroidism, whereas central hypothyroidism is relatively rare. (Laís et al. 2018) obesity more affected in primary hypothyroidism.

Obesity is also a chronic disorder which is very frequent both in adult and in pediatric population. (Nuaman and Sadik . 2019) World Health Organization (WHO) classifies obesity by body mass index (BMI).(Togha et al. 2019) If the BMI is less than 18.5, it falls within the underweight range. If the BMI is 18.5 to <25, it falls within the normal. (Verrotti et al .2013) If BMI is 25.0 to <30, it falls within the overweight range. If the BMI is 30.0 or higher, it falls within the obese range. (Bond et al ,2013)

Obesity and hypothyroidism are clinical condition that related together. Now, the relation become more relevant which result from rise the prevalence of obesity over wide. Patient generally lock to obesity as secondary to hypothyroidism. Novel view indicates that changes in thyroid-stimulating hormone (TSH) could be secondary to obesity. (Debmalya and Moutusi. 2016) thyroid hormone and body composition are closely related. Thyroid hormones regulate basal metabolism, food intake and fat oxidation, thermogenesis and play an important role in lipid and glucose metabolism. The aim of this research is to assess the association between obesity, hypothyroidism, and risk of migraine with recommendation of control or minimize of its recurrence.(Peterlin et al 2010).

Material and Methods:-

Study Design:

Surveillance cross sectional study.

Study population:

Male and Females / adults /married or not married/with Obesity or Hypothyroidism or both and suffering from Migraine.

Sample collection and strategies:

Data collection was by using standardizing Questionnaires distribution

Soft and hard copies of questionnaires distributed to groups of adult's males and females in Northern and Eastern region of KSA and on social media.

Study sampling:
A total of 188 participated in this study.

Statistical Analysis
Data analysis was performed using statistical Package for social Sciences SPSS (version 22) program at significance of > 0.05 and Microsoft Excel-2016 software.

Ethical Consent
Informed Consent was addressed during this study.

Results:-

the study finding shows that the range of participant mostly age between (20-30 y) with (63.3%) and(41-50y) , (31-40 y) as (16.5%) and (14.4%), As for gender and level of Education the study showed that (80.3%) were female and (19.7%) were male while (63.3%) Bachelor degree and (28.7%) high school as showed in (Table 1).

Table 1:- Age of responder.

1-Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-30	119	63.3	63.3	63.3
	31-40	27	14.4	14.4	77.7
	41-50	31	16.5	16.5	94.1
	51-60	10	5.3	5.3	99.5
	61-70	1	.5	.5	100.0
	Total	188	100.0	100.0	

2-Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	151	80.3	80.3	80.3
	Male	37	19.7	19.7	100.0
	Total	188	100.0	100.0	

3-Level of Education					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor Degree	120	63.8	63.8	63.8
	High School	54	28.7	28.7	92.6
	Higher Education	4	2.1	2.1	94.7
	Middle School	10	5.3	5.3	100.0
	Total	188	100.0	100.0	

Regarding factors that may lead to inducing attacks of migraine ,the results showed that (48.9%) were over weighted (106-120kg) followed by (23.9%) (105-96 kg), for sleeping habits(70.7%) sleeping less than 6 hours /day and (85.1%) using electronic devices on daily bases and (81.4%) were drinking (0.5-1L) water /day .Over weight ,sleeping deprive and using electronic devices and poor water intake /day helps in inducing migraine attacks.

Table 2:- Factors that may help in inducing migraine attacks.

1-Weight (kg)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	106 to 120	92	48.9	48.9	48.9
	96 to 105	45	23.9	23.9	72.8

	76 to 85	30	16.0	16.0	88.8
	86 to 95	9	4.8	4.8	93.6
	65 to 75	6	3.2	3.2	96.8
	Less than 65	6	3.2	3.2	100.0
	Total	188	100.0	100.0	

2-Sleeping habits					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	More than 6 hours per night	55	29.3	29.3	29.3
	less than 6 hours per night	133	70.7	70.7	100.0
	Total	188	100.0	100.0	

3-Lifestyle habits					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Eating and watching TV	17	9.0	9.0	9.0
	Playing video games	5	2.7	2.7	11.7
	Using electronic device on a daily basis	160	85.1	85.1	96.8
	Watching TV on bed	6	3.2	3.2	100.0
	Total	188	100.0	100.0	

4-Drinking Water (L/day)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0.5 to 1	153	81.4	81.4	81.4
	1.5 to 2	33	17.6	17.6	98.9
	More than 2.5	2	1.1	1.1	100.0
	Total	188	100.0	100.0	

Regarding symptoms accompanied migraine the study found that (51.6 %) of participants suffering from frequent migraine followed by(23.9%) once per day and (75%) showed that duration of attacks takes 10 hours per day followed by(13.3%) of the partisans duration takes 12 hours per day which affect the life routine by(58%) and the severity of the headache (60.6%) as mild to(25.6%) moderate level of pain .(Table 3)

Table 3:- Symptoms accompanied migraine.

1- Frequency of headache					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Continuously	16	8.5	8.5	8.5
	Frequent	97	51.6	51.6	60.1
	Once a day	45	23.9	23.9	84
	Once a week	29	15.4	15.4	99.4
	Rare	1	.6	.6	100.0
	Total	188	100.0	100.0	

2-Duration of the attack (Hours)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	.5	.5	.5
	5	7	3.7	3.7	4.3
	10	141	75.0	75.0	79.3
	12	25	13.3	13.3	92.6
	All day	14	7.4	7.4	100.0

	Total	188	100.0	100.0	

3-Dose Migraine affect your life routine ?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	79	42.0	42.0	42.0
	Yes	109	58.0	58.0	100.0
	Total	188	100.0	100.0	

4-Severity of pain					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mild	114	60.6	60.6	60.6
	Moderate	48	25.6	25.6	86.2
	Severe	26	13.8	13.8	100.0
	Total	188	100.0	100.0	

Other Hormonal/Metabolic factors that may be related to inducing migraine as hypothyroidism which can lead to

2-Do you think there is a relation between hypothyroidism, gaining weight and migraine?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I do not know	121	64.4	64.4	64.4
	No relation	18	9.6	9.6	74
	Yes, there is relation	49	26	26	100.0
	Total	188	100.0	100.0	

gaining weight , the results showed that (9.6%) suffering from hypothyroidism and (92.6%) not diseased but on the other hand (64.4%) don't know that there is a relation between hypothyroidism, gaining weight and migraine and they gain weight lately by (96.3%).(Table 4).

Table 4:- Other hormonal- Metabolic factors related to migraine.

1-Are you suffering from one the following diseases?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Hypothyroidism	13	6.9	6.9	6.9
	Not diseased	174	92.6	92.6	99.5
	Removed thyroid	1	.5	.5	100.0
	Total	188	100.0	100.0	

3- Have you gained weight lately ?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	7	3.7	3.7	3.7
	Yes	181	96.3	96.3	100.0
	Total	188	100.0	100.0	

For treatment used for migraine attacks the results showed that (62.2%) takes painkillers while (26.1%) depend on home remedy for treatments of migraine , and for the new method of treatment by using BOTOX injection (90.4%) didn't know about this way of treatment.(Table 5).

Table 5:- treatment of migraine attacks.

1-Treatment you take during attacks					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Home remedy	49	26.1	26.1	26.1
	Painkiller	117	62.2	62.2	88.3
	Prescription	22	11.7	11.7	100.0

	Total	188	100.0	100.0	

2-Did you know about treatment of migraine by Botox?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	170	90.4	90.4	90.4
	Yes	18	9.6	9.6	100.0
	Total	188	100.0	100.0	

Discussion:-

Recently , studies showed that there are a relation between migraine and some factors some of this factors related to habits that patients of migraine does without knowing that they can induce migraine attacks, drinking less than 1 liter water per day , sleeping deprive and using electronic devices frequently during the day are some of the major factors, while obesity and hypothyroidism are factors related to disturbance of thyroid hormone which lead to gaining weight bay be without knowing that was the cause of sudden weight gain (Innocenzo et al 2018). As in the presence study results showed that most of the participants were obese also (Pavlovic et al 2017) reported that significantly a relation between obesity and migraine as evaluated in clinical-based studies .furthermore (Robberstad et al 2010) mentioned that migraineurs in obese group were nearly twice compared to those in normal weight. For Hypothyroidism and migraine studies showed that association between them with a socioeconomic demographic characteristics (Moreau et al 1998) who recently study this association in agreement with the results in this study that the endocrine disorder can be one of the important factors that lead to having migraine attacks and with frequently occurring and recurrent . In according with the finding of the present study (Rainero et al 2015) reported that patients with subclinical hypothyroidism have a significantly increased risk of developing migraine .

Several studies showed there is a complex relationship between migraine ,obesity and hypothyroidism as a metaboloendocrine disease factors among other factors which lead to investigate these relations and try to treat the causative factors in order to decrease the migraine attacks which affects the life routing of patients also migraine can be used as a sign of these disorders or diseases . As the present study showed that most of migraine patients takes painkiller to treat the attacks which will lead to side effects without prescriptions. New method of treatments as using BOTOX to control the attacks but not treat the cause can be used to improve the life routine of frequent migraine patients .

Conclusion:-

migraine can be indicator or a sign of other conditions and sometimes patients did not pay attention to them keep taking painkillers without diagnosing the cause . Spreading the awareness among society about factors can cause migraine and medical conditions that also involved in repeating attacks can help in decreasing and controlling attacks of migraine .Health care providers should help in increasing the awareness of how to control migraine attacks and new methods of treatments .

Recommendation:-

more investigations should be done for the relation between migraine and other factors which will help in controlling attacks and help patients to live normal life ,trying new methods of treatments such as Botox will help to manage attacks of migraine till treating the causative factors. Weight loss ,physical activity ,decrease using electronic devices and investigate metabolic and endocrine abnormality in order to diagnose the cause in each case.

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