

AIM OF THE WORK

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This work aimed to:

1. Evaluate the prevalence of night eating syndrome in patients with depression.
2. Study the relationship between night eating syndrome and antidepressant drugs.

SUBJECTS

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After approval of Ethical Committee of Faculty of Medicine and written informed consent from patients, the present study was carried out among psychiatric outpatients in Alexandria Main University Hospitals over the period from February 2013 to July 2013.

Patients were divided into two equal groups (200 patients each). These two groups were:

Group A: Naïve patients (patients diagnosed as having depression according to DSM “IV” TR criteria⁽⁸³⁾ and did not receive antidepressants yet).

Group B: Patients diagnosed as having depression according to DSM “IV” TR criteria and received antidepressant therapy for at least 2 months.

Inclusion criteria

1. Patients diagnosed as having depression according to DSM “IV” TR criteria.
2. Patients aged from 18 – 60 years.
3. Both sexes were included.
4. Patient's acceptance by informed consent.

Exclusion criteria

1. Presence of organic illness contributes to either obesity or depression eg. Thyroid dysfunction.
2. Refusal of participation (none consenting).
3. Depression with psychotic features.
4. Patients receiving more than one antidepressant.
5. Other axis I or II disorders according to DSM “IV” TR.
6. Presence of sleep related eating disorder.

METHODS

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This study was carried out using a cross-sectional approach and the entire studied sample were subjected to the following tools and techniques after the intake of the consent:

1. Pre-designed structured interview.
2. Clinical psychiatric assessment and diagnosis based on DSM-IV TR.
3. Anthropometric measurements for the subjects.
4. Diagnosis of NES cases based on the proposed diagnostic criteria for NES and Night Eating Questionnaire.

I. Pre-designed structured interview

It was used to collect the following data:

- Socio-demographic data as age, sex, residence, educational level, marital status, occupation and socioeconomic status.
- Medical history.
- Psychiatric history.
- Drug history including the type of antidepressant in use, the onset of increase in weight and its relation to the onset of antidepressant intake.

II. Clinical psychiatric assessment and diagnosis based on DSM-IV TR⁽⁸⁰⁾

DSM-IV TR was used for diagnosis of major depressive disorder and exclusion of other axis I disorders.

III. Anthropometric measurements for the subjects

The participants were subjected to some anthropometric measurements using the following:⁽¹⁶⁰⁾

- A. Weight: weight was measured using an electric scale. Patients were weighed wearing only light clothes and without shoes. Weight was recorded in kilograms.
- B. Standing height: measurement was done while the patient standing without shoes, with the feet together, heels on the ground and against the wall. Height was measured using a centimetered scale.
- C. The body mass index (BMI) was calculated using the following formula: $BMI = \text{weight (in kilograms)} / \text{height}^2 \text{ (in meters)}$.

Weight status was classified according to the WHO Consultation Report on Obesity.⁽¹⁶¹⁾

According to this classification:

1. $BMI < 18.5 \text{ kg/m}^2$ is classified as underweight.
2. $BMI 18.5\text{-}24.9 \text{ kg/m}^2$ is considered as normal weight.
3. $BMI 25\text{-}29.9 \text{ kg/m}^2$ is considered as overweight.

4. BMI 30-34.9 kg/m² is considered as obesity grade I.
5. BMI 35-39.9 kg/m² is considered as obesity grade II.
6. BMI \geq 40 kg/m² is considered as obesity grade III.

IV. Diagnosis of NES cases based on the proposed diagnostic criteria for NES⁽⁵²⁾ and Night eating questionnaire⁽⁵⁶⁾

NES cases were diagnosed based on the proposed diagnostic criteria for NES and analyzed by a standardized, validated Arabic version of NEQ.

The NEQ is a measure of NES symptom severity, with scores ranging from 0 to 52 (Allison et al., 2008). Its reliability and validity have been established, and it has a positive predictive value of 62% using a cutoff score of 25 in a psychiatric population.⁽⁵⁶⁾ It was composed of several parts:

1. Morning anorexia (questions 1-2)

Patients were asked about how hungry they were in the morning and about the time of their first meal.

2. Evening hyperphagia (questions 3-5)

This group of questions include the presence of craving and degree of control to eat snacks after supper but before bedtime and the percentage of eating after suppertime from the daily intake.

3. Mood and sleep habits (questions 6-9)

This group of questions inquired about the presence of a currently blue or low mood, the time of low mood during the day, troubles to get to sleep and frequency of getting up in the middle of the night.

4. Nocturnal ingestion (questions 10-14)

Patients were inquired about the presence of craving to eat after waking up at night, the need to eat in order to get back to sleep, frequency of snacking, awareness of their eating in the middle of night and finally the degree of controlling their night time eating.

NEQ Scoring directions

Items are scored on 0-4 Likert scale, with the exception of item 7 where it includes the option "check here if your mood does not change during the day", which is scored as zero.

Items 1, 4 and 14 are reverse-scored so that the higher values reflect the greater symptomatology.

Questions 1-9, which focus on variables occurring before sleep onset, are answered by all participants. Stop criteria were built into the remaining items.

Questions 10-12 are answered by participants who wake up in the middle of the night and score >0 on question 9.

Similarly, questions 13 and 14 are answered by participants who eat upon awakening and score >0 on question 12.

All items except the awareness of nocturnal ingestion (question 13) are summed to obtain a global score.

The total score provides a range from 0-52 points.

The cutoff point score used in this study was 25.⁽²⁸⁾

Statistical analysis ⁽¹⁶²⁾

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0.⁽¹⁶³⁾ Qualitative data were described using number and percent. Quantitative data were described using range (minimum and maximum) mean, standard deviation and median.

Comparison between different groups regarding categorical variables was tested using Chi-square test. When more than 20% of the cells have expected count less than 5, correction for chi-square was conducted using Fisher's exact test or Monte Carlo correction.

The distributions of quantitative variables were tested for normality using Kolmogorov-Smirnov test, Shapiro-Wilk test and D'Agostino test, also Histogram and QQ plot were used for vision test. If it reveals normal data distribution, parametric tests was applied. If the data were abnormally distributed, non-parametric tests were used.

For normally distributed data, comparison between the two studied groups was done using independent t-test.

While For abnormally distributed data, comparison between two studied groups were done using Mann Whitney test while Kruskal Wallis test was used to compare between different groups and pair wise comparison was assessed using Mann-Whitney test.

Correlations between two quantitative variables were assessed using Spearman coefficient. Significance of the obtained results was judged at the 5% level.

RESULTS

RESULTS

The results of patients of group A [N=200]; depressed patients and not receiving antidepressants and those of group B [N=200]; depressed patients and receiving antidepressants for at least two months orally, are presented as follows:

a. The first section: comparison between the two groups

1. Patient's demographic data.
2. Body mass index.
3. Patient's type of depression.
4. Prevalence of NES.

b. The second section: association between NES and some data among group A

1. Association between NES socio-demographic characteristics.
2. Relation between NES and BMI.
3. Relation between NES and type of depression.
4. Correlation between NEQ scores and BMI.
5. Relation between NEQ scores and type of depression.

c. The third section: association between NES and some data among group B

1. Association between NES and socio-demographic characteristics.
2. Relation between NES and BMI.
3. Relation between NES and type of depression.
4. Relation between NES and type of antidepressant used.
5. Correlation between NEQ scores and BMI.
6. Relation between NEQ scores and type of depression.
7. Relation between NEQ scores and type of antidepressant.

d. The fourth section: comparison between NES positive cases in both groups

1. According to socio-demographic characteristics.
2. According to BMI.
3. According to type of depression.
4. According to NEQ scores.

The first section: comparison between the two groups

1. Patient's demographic data

a. Group A

- The age of patients ranged between 20-58 years with a mean of 39.58 ± 9.61 years.
- They were comprised of 56 males (28%) and 144 females (72%).

b. Group B

- The age of patients ranged between 22-56 years with a mean of 37.37 ± 7.86 years.
- They were comprised of 58 males (29%) and 142 females (71%).

Comparison between the two groups

There was no statistically significant difference between the two groups as regard gender ($p = 0.825$).

There was statistically significant difference between the two groups as regard age ($p=0.012$). Subjects of group A were with higher age than group B.

Table (3): Differences between the two studied groups, regarding their age and sex.

	Group A (n = 200)		Group B (n = 200)		Test of sig.	p
	No.	%	No.	%		
Sex						
Male	56	28.0	58	29.0	$\chi^2 = 0.049$	0.825
Female	144	72.0	142	71.0		
Age (years)						
Min. – Max.	20.0 – 58.0		22.0 – 56.0		$t = 2.517^*$	0.012*
Mean \pm SD	39.58 ± 9.61		37.37 ± 7.86			
Median	40.50		38.0			

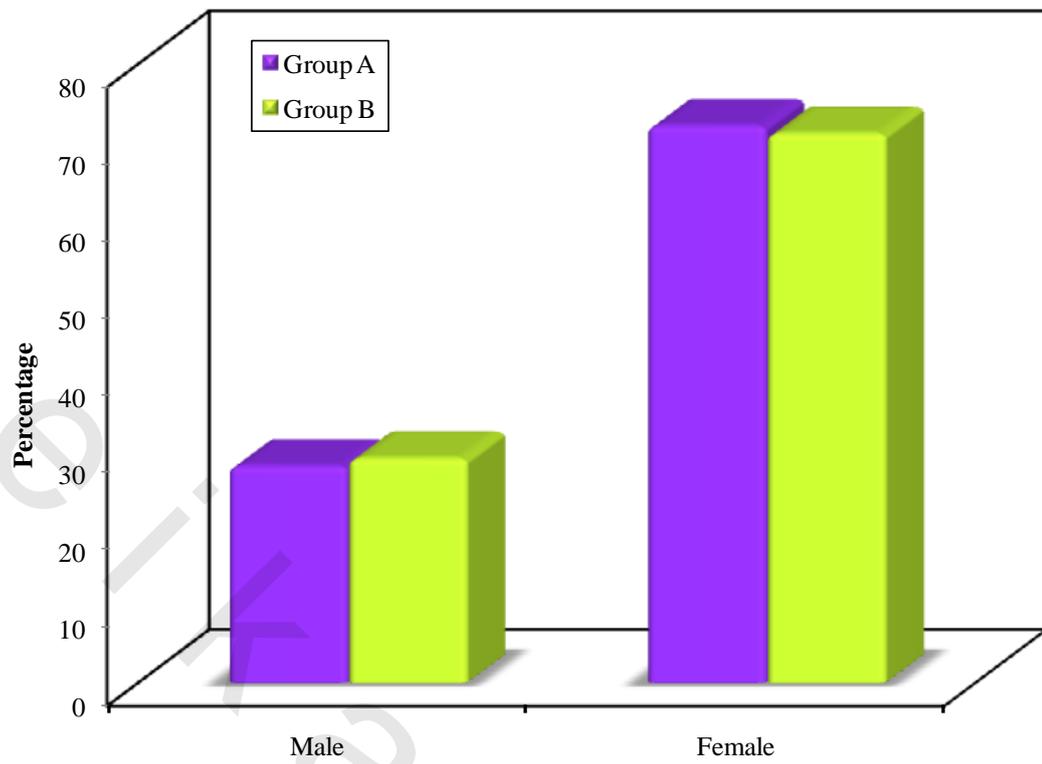


Figure (1): Differences between the two studied groups, regarding their sex.

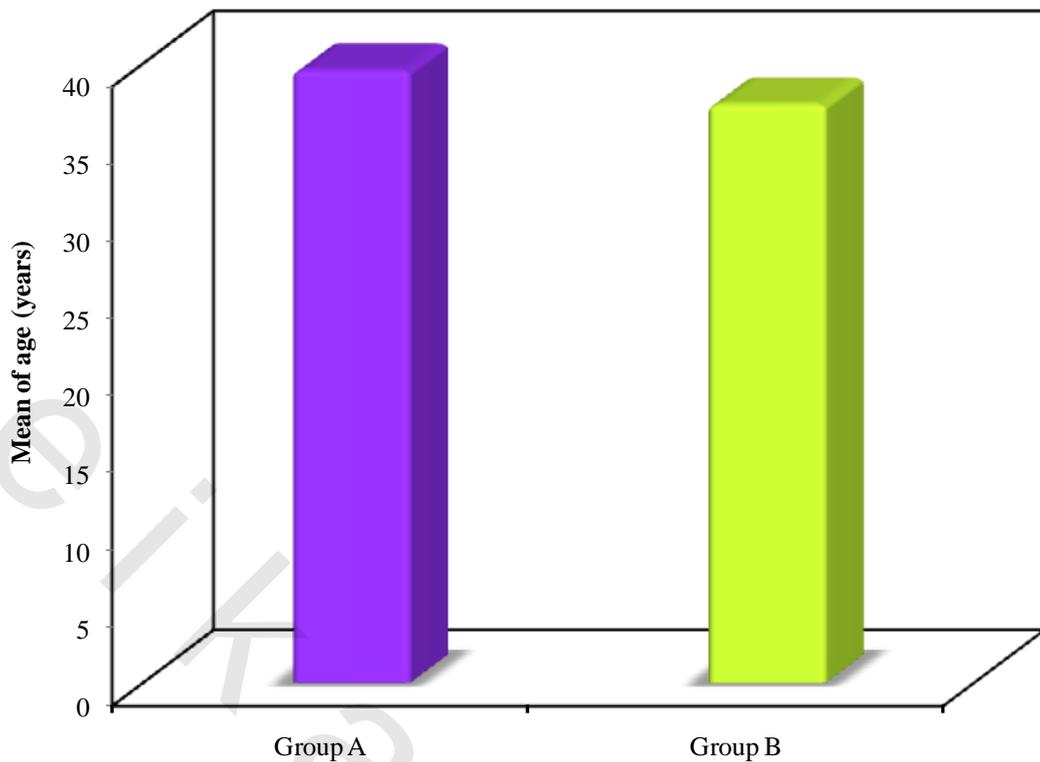


Figure (2): Differences between the two studied groups, regarding their age.

2. Body mass index

a. Group A

- Their body mass index ranged between 22.8-42.6 with mean of 30.55 ± 4.87 and the majority of cases (n=73) were obese grade I (36.5%) followed by 28.5% were overweight.
- There was statistical difference between overweight and obese (83%) and the normal weight subjects (17%) in group A subjects, where $p < 0.001$.

b. Group B

- Their body mass index ranged between 21.6-42.6 with mean of 27.27 ± 4.38 the majority of cases (n=86) were normal weight (43%) followed by 37% were overweight.
- There was statistical difference between overweight and obese (57%) and the normal weight subjects of group B (43%), where $p = 0.048$.

Comparison between the two groups

- There was statistically significant difference between the two groups as regard BMI ($p < 0.001$). Also, the difference between overweight and obese subjects between both groups was statistically significant (83% and 57% respectively).

Table (4): Differences between the two studied groups regarding their body mass index.

	Group A (n = 200)		Group B (n = 200)		Test of sig	P
	No.	%	No.	%		
BMI (kg/m²)						
Under weight (<18.8)	0	0.0	0	0.0	$\chi^2=57.492^*$	<0.001*
Normal (18.5 - <25)	34	17.0	86	43.0		
Over weight(25 - <30)	57	28.5	74	37.0		
Obese (I) (30 - <35)	73	36.5	24	12.0		
Obsess (II) (35 - <40)	24	12.0	12	6.0		
Obese (III) (≥ 40)	12	6.0	4	2.0		
Min. – Max.	22.80 - 42.60		21.60 - 42.60		t = 7.092*	<0.001*
Mean \pm SD	30.55 \pm 4.87		27.27 \pm 4.38			
Median	30.10		26.20			

Table (5): Differences between the two studied groups regarding their body mass index (Normal, overweight and obese).

	Group A (n = 200)		Group B (n = 200)		χ^2	P
	No.	%	No.	%		
BMI (kg/m²)						
Normal (18.5 - <25)	34	17.0	86	43.0	32.190*	<0.001*
Over weight and obese	166	83.0	114	57.0	32.190*	<0.001*
$\chi^2(p)$	87.120* (<0.001*)		3.920* (0.048*)			

p: p value Chi square (2x1 contingency table)

*: Statistically significant at $p \leq 0.05$

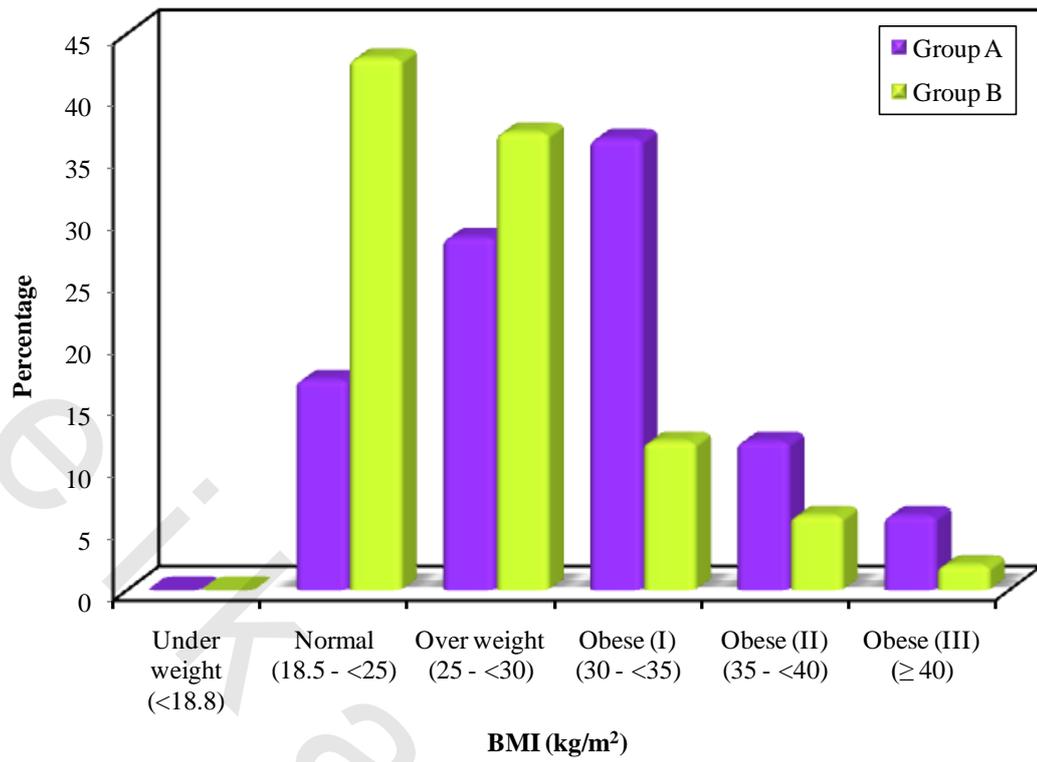


Figure (3): Differences between the two studied groups regarding their BMI classification.

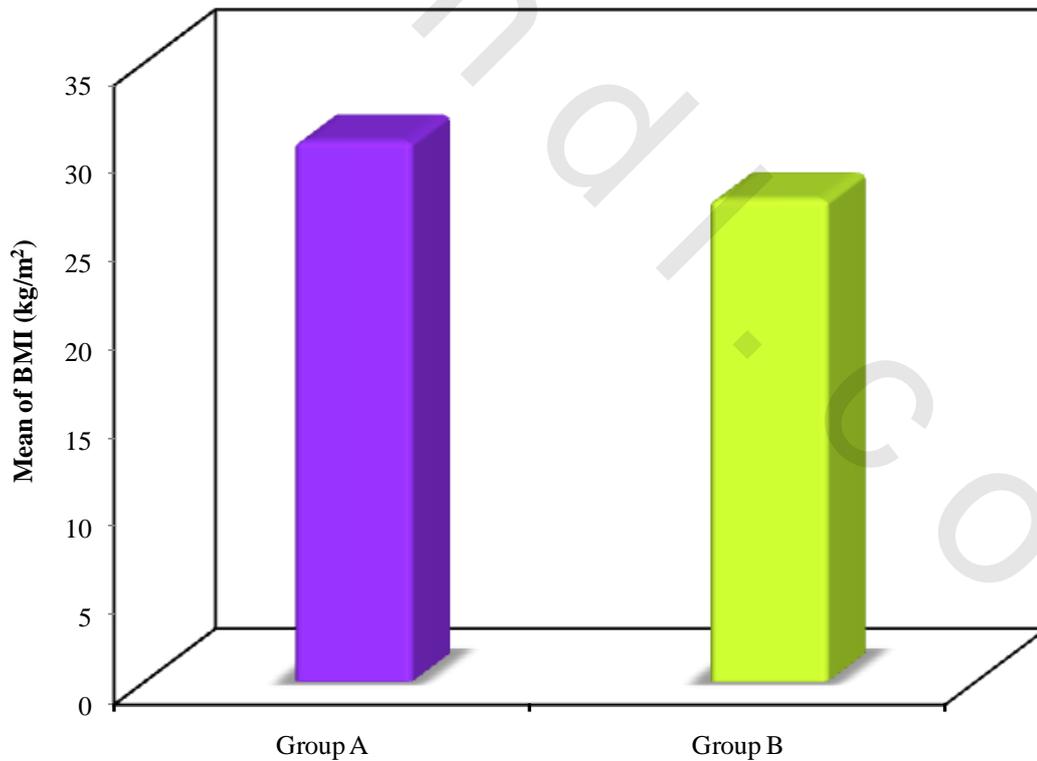


Figure (4): Differences between the two studied groups regarding their mean BMI.

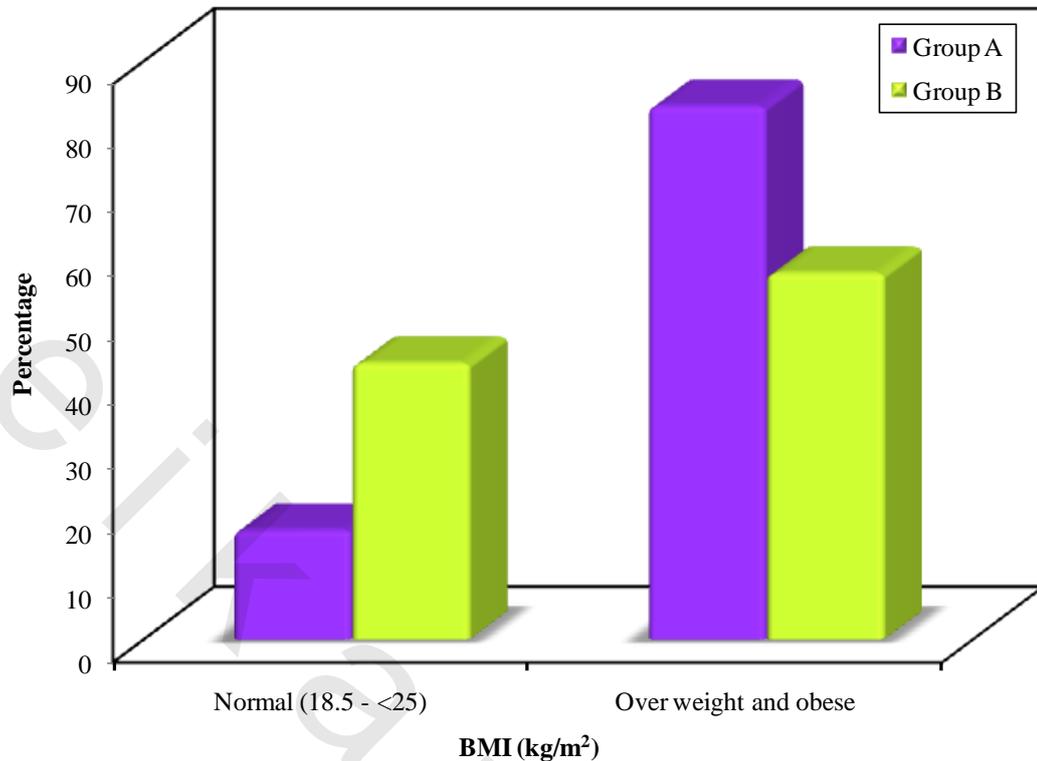


Figure (5): Differences between the two studied groups regarding their body mass index (Normal, overweight and obese).

3. Patient's type of depression

a. Group A

Most patients (n=93) have major depressive disorder without specific specifiers (46.5%) followed by major depressive disorder with specific specifiers as 61 patients with atypical depression (30.5%), 31 patients with chronic depression (15.5%) and the minority of 15 patients with seasonal affective disorder (7.5%).

b. Group B

Most patients (n=144) have major depressive disorder without specific specifiers (72%) followed by major depressive disorder with specific specifiers as 44 patients with atypical depression (22%) and equal number (6) of patients with chronic depression and seasonal affective disorder (3%) for each one.

Comparison between the two groups

There was statistically significant difference between the two groups as regard type of depression ($p < 0.001$). This was found among all types of depression except MDD with atypical features.

Table (6): Differences between the two studied groups, regarding their type of depression.

	Group A (n = 200)		Group B (n = 200)		χ^2	P
	No.	%	No.	%		
Type of depression						
Major depressive disorder without specific specifiers	93	46.5	144	72.0	26.932*	<0.001*
Major depressive disorder with specific specifiers						
a) Atypical depression	61	30.5	44	22.0	3.732	0.053
b) Seasonal affective disorder	15	7.5	6	3.0	4.071*	0.044*
c) Chronic depression	31	15.5	6	3.0	18.614*	<0.001*
$\chi^2(p)$	34.476* (<0.001*)					

*: Statistically significant at $p \leq 0.05$

χ^2 : Chi square test

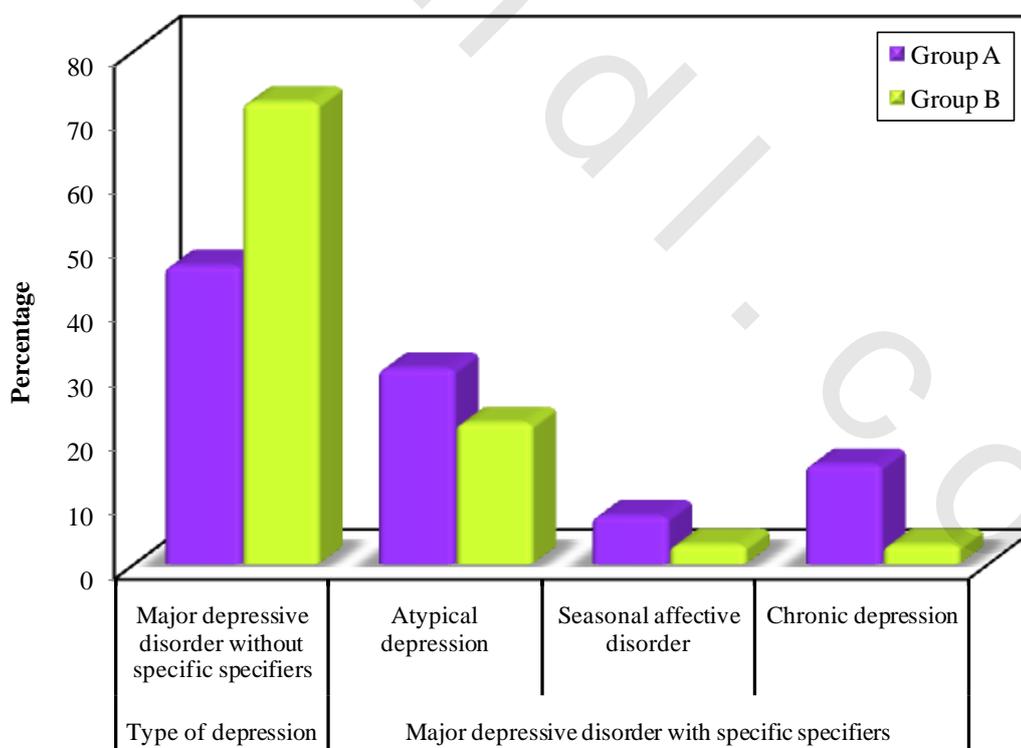


Figure (6): Differences between the two studied groups, regarding their type of depression.

4. Prevalence of night eating syndrome in both studied groups

a. Group A

147 patients were not fulfilling the criteria for NES according to the proposed diagnostic criteria of NES and scoring < 25 on NEQ (73.5%). While, 53 patients fulfilled the proposed diagnostic criteria of NES and scored ≥ 25 on NEQ (26.5%).

b. Group B

Only 18 from 200 patients fulfilled the criteria for NES according to the proposed diagnostic criteria and scored ≥ 25 on NEQ (9%).

Comparison between the two groups

There was statistically significant difference between the two groups as regard to the number of cases fulfilling the criteria for NES according to the proposed diagnostic criteria of NES and NEQ scores ($p < 0.001$).

Table (7): Differences between the two studied groups, regarding diagnosis of NES according to the proposed diagnostic criteria for NES.

	Group A (n = 200)		Group B (n = 200)		χ^2	P
	No.	%	No.	%		
Proposed diagnostic criteria of NES						
Without	147	73.5	182	91.0	20.977*	<0.001*
With	53	26.5	18	9.0		

Table (8): Differences between the two studied groups, regarding diagnosis of NES according to the NEQ scores.

	Group A (n = 200)		Group B (n = 200)		χ^2	P
	No.	%	No.	%		
NEQ score						
Without NES (score <25)	147	73.5	182	91.0	20.977*	<0.001*
With NES (score ≥ 25)	53	26.5	18	9.0		

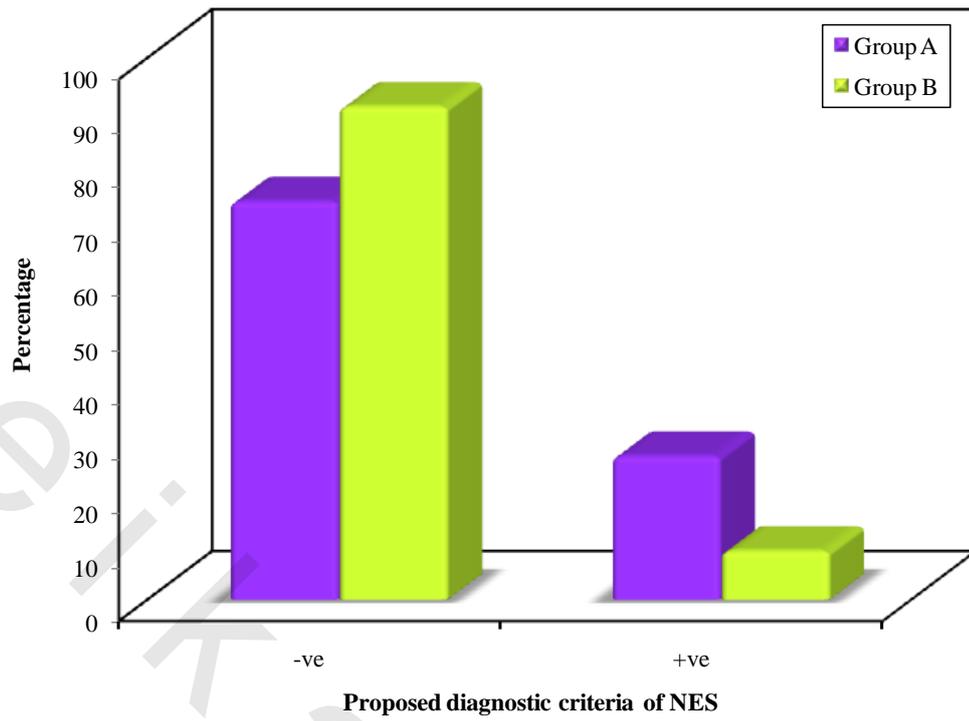


Figure (7): Differences between the two studied groups, regarding diagnosis of NES.

The second section: association between NES and some data among group A

1. Association between night eating syndrome and socio-demographic characteristics

Table 9 represents the distribution of the studied sample of group A according to the presence of NES, gender and sex.

Concerning the age, the table reveals a significant difference between the mean age group of Non NES and NES groups (40.44 ± 9.77 years and 37.19 ± 8.82 years, $p=0.034$). The age was higher among NES negative cases.

Concerning the gender, the table reveals that among 53 positive cases out of 200, 32.1% were males compared to 67.9% females.

The table reveals no significant difference between Non NES and NES groups concerning gender.

Table (9): Distribution of group A studied sample according to the presence of NES and socio-demographic characteristics.

Group A	NES diagnosis				Test of sig.	P
	Without NES (n = 147)		With NES (n = 53)			
	No.	%	No.	%		
Sex						
Male	39	26.5	17	32.1	$\chi^2 = 0.594$	0.441
Female	108	73.5	36	67.9		
Age (years)						
Min. – Max.	22.0 – 58.0		20.0 – 54.0		$t = 2.131^*$	0.034*
Mean \pm SD	40.44 ± 9.77		37.19 ± 8.82			
Median	42.0		39.0			

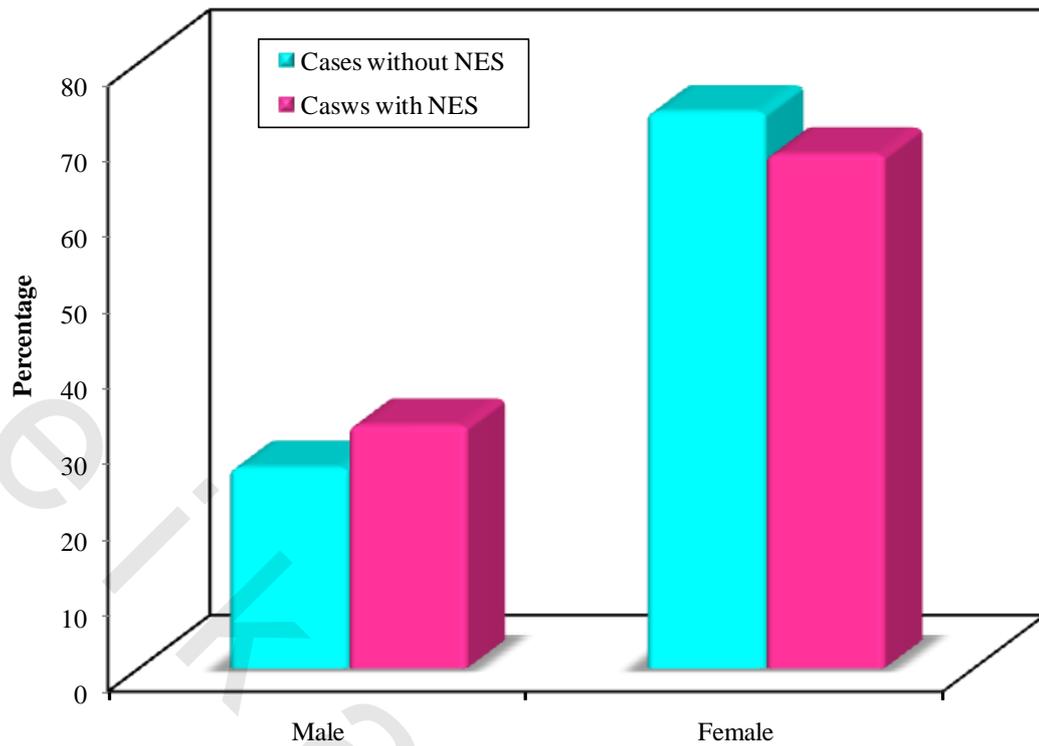


Figure (8): Distribution of the studied sample according to the presence of NES and sex among group A.

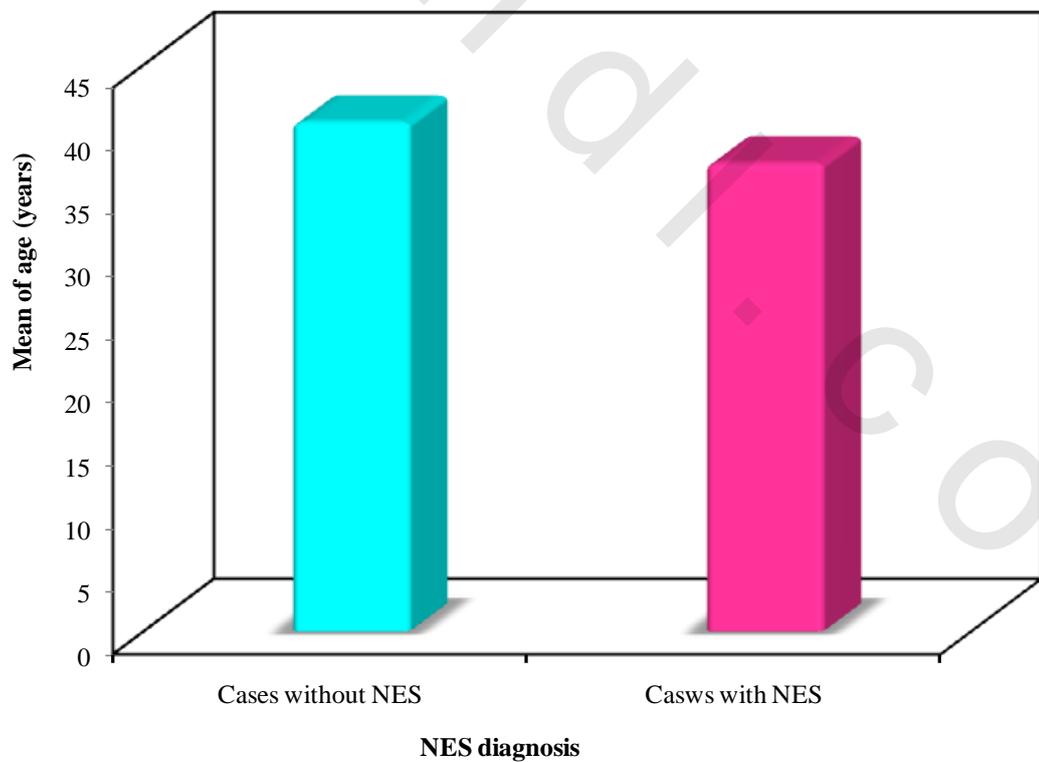


Figure (9): Distribution of the studied sample according to the presence of NES and age among group A.

2. Relation between night eating syndrome and body mass index (BMI)

Table 10 shows the distribution of the studied sample of group A according to the presence of NES and the body mass index (BMI).

Concerning the BMI, the table reveals that 41.5% of the cases were obese grade I, 30.2% were obese grade II and 24.5% were overweight compared to only 3.8% of the cases with normal weight.

The difference between the negative and positive cases of NES concerning BMI was found to be statistically significant ($p < 0.001$).

By other means, BMI ranged between 22.8-42.6 with mean of 29.92 ± 5.02 among Non NES subjects while ranged between 23.8-39.7 with mean of 32.3 ± 3.96 among NES subjects. This difference was statistically significant where $p = 0.002$.

Table (10): Distribution of the studied sample according to the presence of NES and body mass index (BMI) among group A.

Group A	NES diagnosis				Test of sig.	P
	Without NES (n = 147)		With NES (n = 53)			
	No.	%	No.	%		
BMI (kg/m²)						
Under weight (<18.8)	0	0.0	0	0.0	$\chi^2 = 32.521^*$	<0.001*
Normal (18.5 - <25)	32	21.8	2	3.8		
Over weight (25 - <30)	44	29.9	13	24.5		
Obese (I) (30 - <35)	51	34.7	22	41.5		
Obese (II) (35 - <40)	8	5.4	16	30.2		
Obese (III) (≥ 40)	12	8.2	0	0.0		
Min. – Max.	22.80 - 42.60		23.80 - 39.70		$t = 3.108^*$	0.002*
Mean \pm SD	29.92 ± 5.02		32.30 ± 3.96			
Median	29.90		32.0			

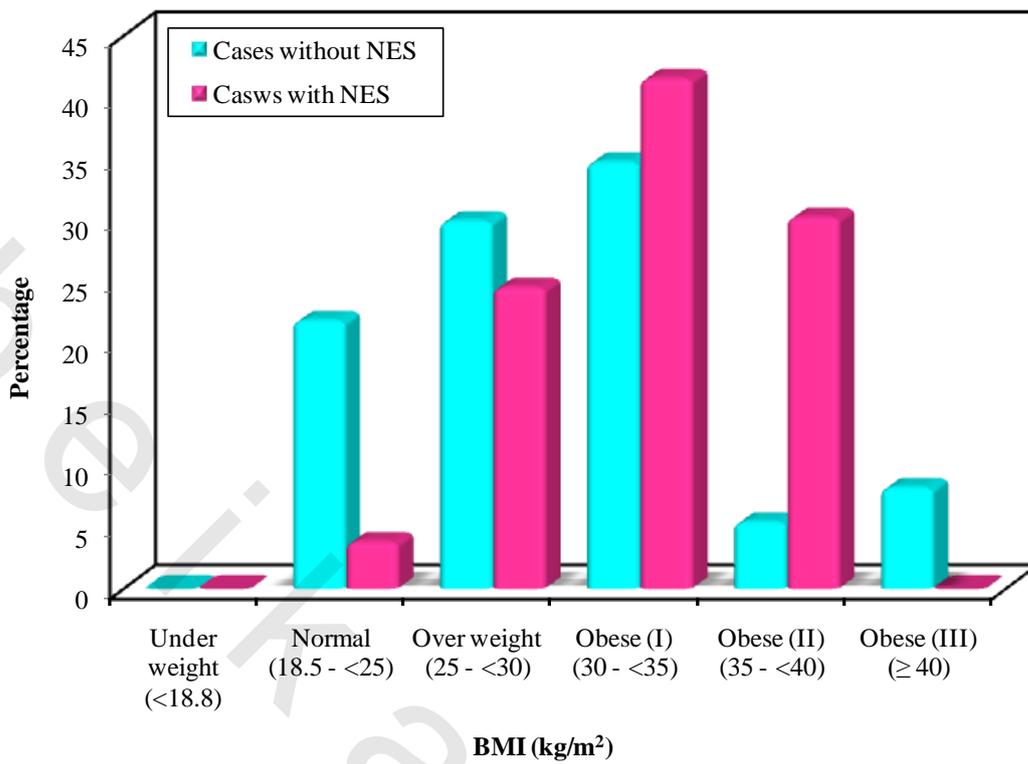


Figure (10): Distribution of the studied sample according to the presence of NES and BMI classification among A.

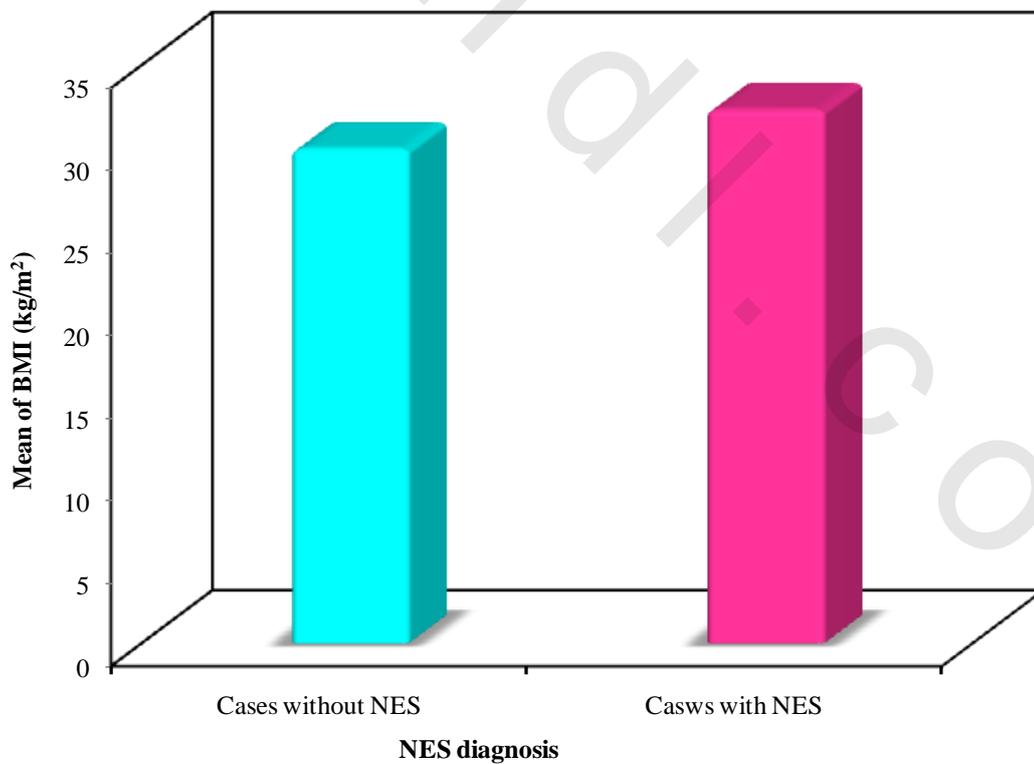


Figure (11): Distribution of the studied sample according to the presence of NES and mean BMI among group A.

3. Relation between night eating syndrome and type of depression

Table 11 shows the distribution of the studied sample among group A according to the presence of NES and the type of depression.

Concerning the type of depression the table reveals that among the non NES subjects, the majority of cases are diagnosed as major depressive disorder without specific specifiers 50.3% followed by major depressive disorder with specific specifiers as 25.9% with atypical features, 16.3% are chronic depression and only 7.5% of cases were seasonal affective subtype.

On the other hand, NES subjects were mostly with atypical features of depression 43.4% followed by 35.8% of cases were major depressive disorder without specific specifiers, 13.2% were chronic depression and only 7.5% were seasonal affective subtype.

As a whole, there was no statistical difference between the cases with and without NES concerning type of depression ($p=0.115$).

However, there was statistical difference between cases with and without NES among atypical subtype of depression ($p=0.017$) as there was 43.4% of the cases with NES compared to 25.9% of the cases without the syndrome.

Table (11): Distribution of the studied sample according to the presence of NES and type of depression among group A.

Group A	Proposed diagnostic criteria of NES				χ^2	P
	Cases without NES (n = 147)		Cases with NES (n = 53)			
	No.	%	No.	%		
Type of depression						
Major depressive disorder without specific specifiers	74	50.3	19	35.8	3.288	0.070
Major depressive disorder with specific specifiers						
a) Atypical depression	38	25.9	23	43.4	5.658*	0.017*
b) Seasonal affective disorder	11	7.5	4	7.5	0.0	1.000
c) Chronic depression	24	16.3	7	13.2	0.289	0.591
$\chi^2(p)$	5.936 (0.115)					

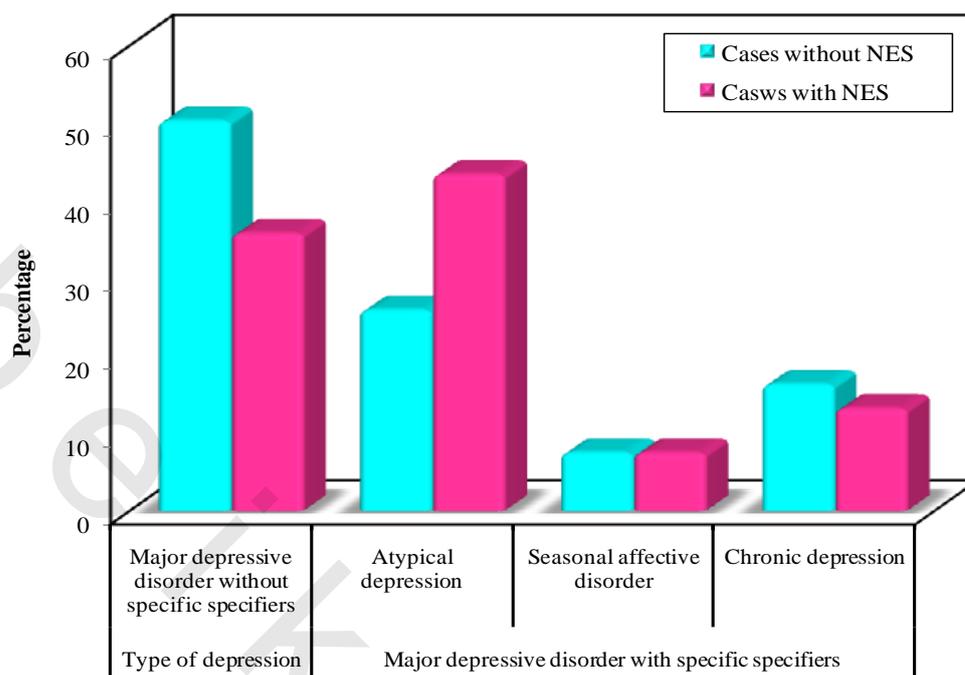


Figure (12): Distribution of the studied sample according to the presence of NES and type of depression among group A.

4. Correlation between night eating questionnaire (NEQ) score and BMI

Table 12 shows the correlation between NEQ scores and BMI among group A.

The table reveals that there is a statistically significant relation between NEQ score and BMI as noted from $p < 0.001$.

Also, it is shown that there is positive correlation between NEQ score and BMI. In other words, the scores were increasing as well as the BMI increases ($r_s = 0.333$).

Table (12): Correlation between NEQ score and BMI among group A.

Group A	NEQ score	
	r_s	P
BMI (kg/m^2)	0.333*	<0.001*

r_s : Spearman coefficient

*: Statistically significant at $p \leq 0.05$

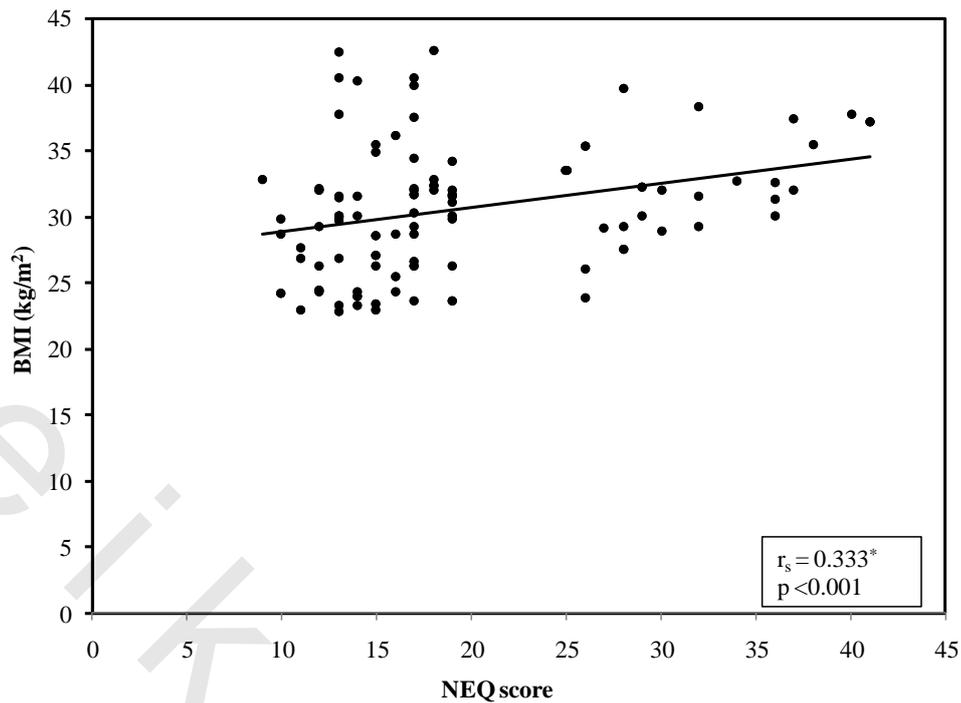


Figure (13): Correlation between NEQ score and BMI among group A.

5. Relation between night eating questionnaire (NEQ) score and type of depression

Table 13 shows the distribution of the studied sample among group A according to the type of depression and its relation to NEQ score.

Concerning the NEQ score the table shows that the highest scores were with depressed patients with atypical features with range between 10-41, mean of 22.74 ± 9.83 and median of 18.

NEQ score was with mean of 18.24 ± 7.01 and median 17 among major depressive disorder without specific specifiers, mean of 17.07 ± 6.64 and median 14 in seasonal affective subtype and mean of 17.16 ± 6.28 and median 17 among chronic subtype of major depressive disorder.

There was statistical difference between different types of depression ($p=0.005$). This statistical difference was between atypical depression with other types of depression.

Table (13): Distribution of the studied ample according to the type of depression and its relation to NEQ scores among group A.

Group A	N	NEQ score			KW χ^2	P
		Min. – Max.	Mean \pm SD	Median		
Type of depression						
Major depressive disorder without specific specifiers	93	9.0 – 38.0	18.24 \pm 7.01	17.0	12.969*	0.005*
Major depressive disorder with specific specifiers						
a)Atypical depression	61	10.0 – 41.0	22.74 \pm 9.83	18.0		
b)Seasonal affective disorder	15	11.0 – 29.0	17.07 \pm 6.64	14.0		
c)Chronic depression	31	10.0 – 32.0	17.16 \pm 6.28	17.0		
Sig.bet.Grps		p ₁ = 0.006* , p ₂ = 0.291 , p ₃ = 0.407, p ₄ = 0.009* , p ₅ = 0.006* , p ₆ = 0.841				

KW: Kruskal Wallis test

Sig. bet. grps was done using Mann Whitney

p₁: p value for comparing between Major depressive disorder and Atypical depression

p₂: p value for comparing between Major depressive disorder and Seasonal affective disorder

p₃: p value for comparing between Major depressive disorder and Chronic depression

p₄: p value for comparing between Atypical depression and Seasonal affective disorder

p₅: p value for comparing between Atypical depression and Chronic depression

p₆: p value for comparing between Seasonal affective disorder and Chronic depression

*: Statistically significant at p \leq 0.05

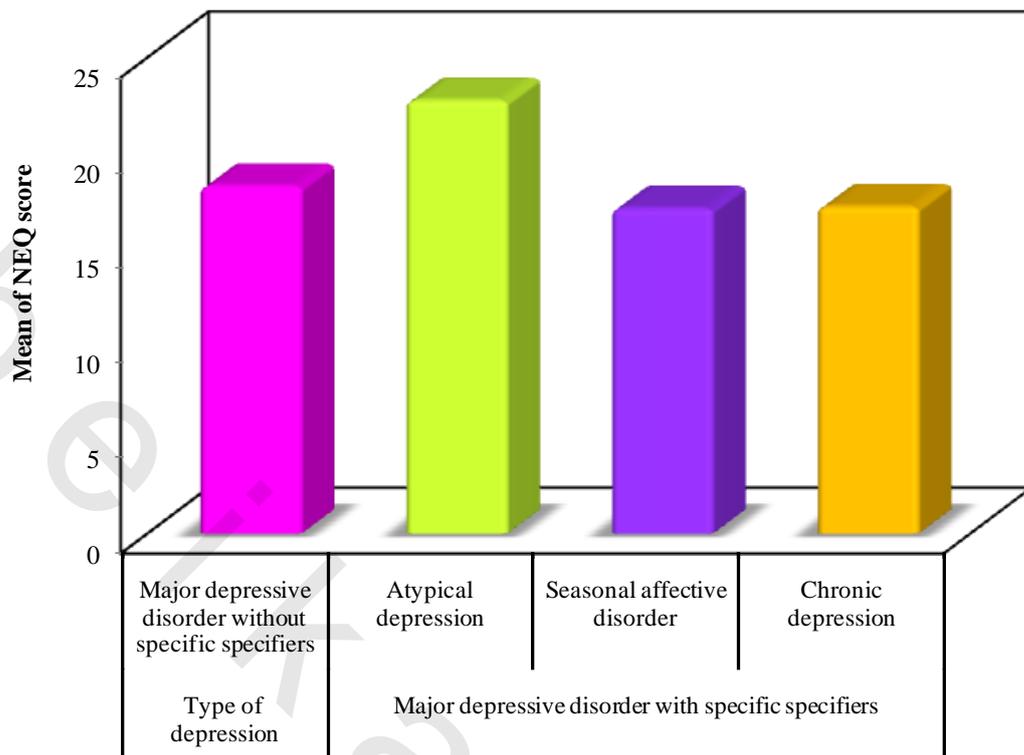


Figure (14): Distribution of the studied sample according to the type of depression and its relation to NEQ score among group A.

The third section: association between NES and some data among group B

1. Association between night eating syndrome and socio-demographic characteristics

Table 14 represents the distribution of the group B studied sample according to the presence of NES and the gender and sex.

The table reveals a significant difference between the mean age group of Non NES and NES cases (37.71 ± 7.86 years and 33.89 ± 7.17 years, $p=0.049$ respectively). Cases without NES were with higher age than those with NES.

Concerning the sex, the table reveals that among 18 positive cases out of 200, 22.2% were males compared to 77.8% females.

The table reveals no significant difference between Non NES and NES cases in group B concerning gender.

Table (14): Distribution of the studied sample according to the presence of NES and socio-demographic characteristics among group B.

Group B	NES diagnosis				Test of sig.	p
	Cases without NES (n = 182)		Cases with NES (n = 18)			
	No.	%	No.	%		
Sex						
Male	54	29.7	4	22.2	$\chi^2 = 0.441$	0.506
Female	128	70.3	14	77.8		
Age (years)						
Min. – Max.	22.0 – 56.0		22.0 – 44.0		$t = 1.985^*$	0.049*
Mean \pm SD	37.71 ± 7.86		33.89 ± 7.17			
Median	39.0		35.0			

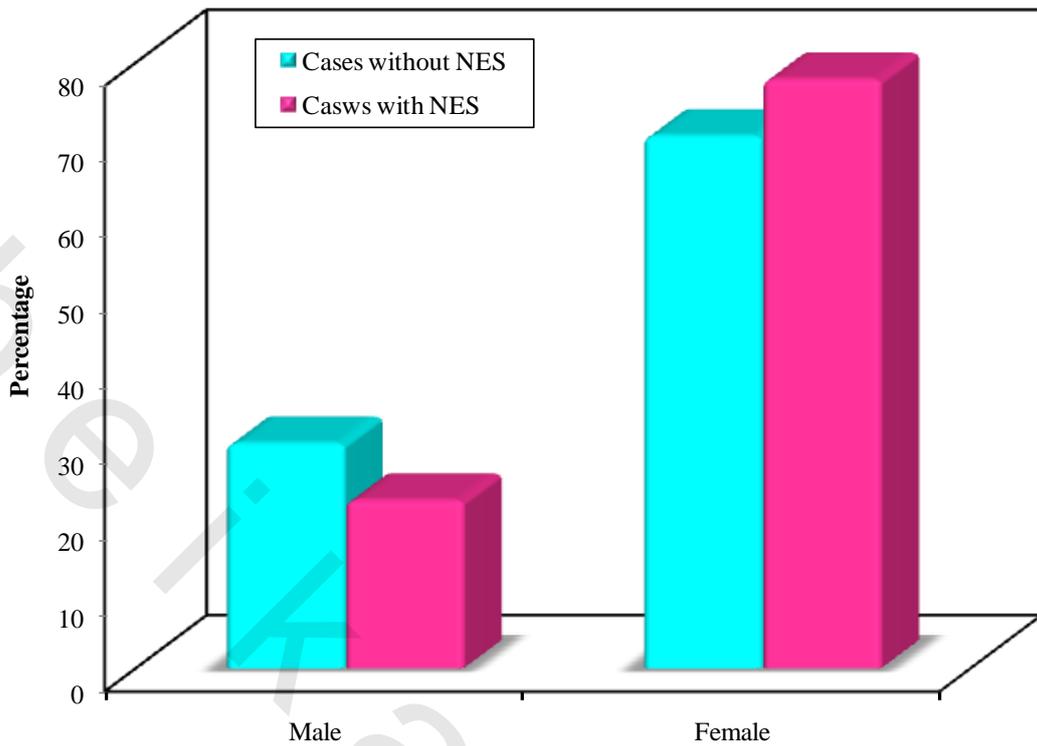


Figure (15): Distribution of the studied sample according to the presence of NES and sex among group B.

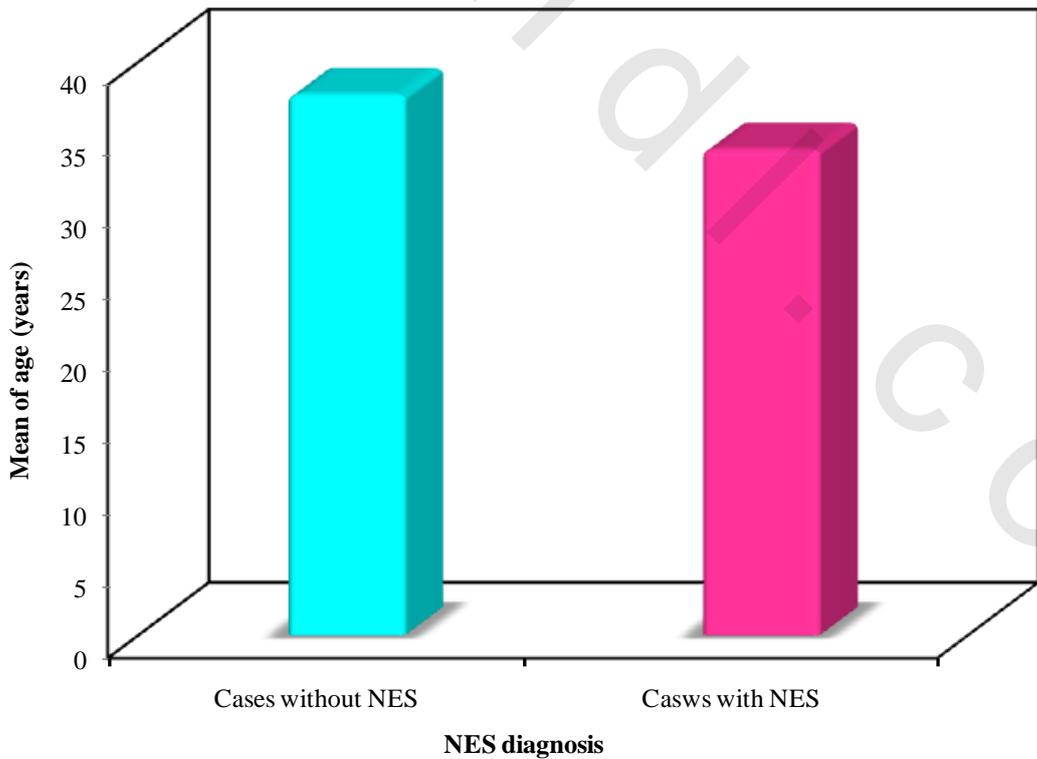


Figure (16): Distribution of the studied sample according to the presence of NES and age among group B.

2. Relation between night eating syndrome and body mass index (BMI)

Table 15 shows the distribution of group B studied sample according to the presence of NES and the body mass index (BMI).

Concerning the BMI the table reveals that 55.6% of the positive cases were overweight, 33.3% were obese grade II and 11.1% were obese grade I.

On the other hand, Non NES cases, 47.3% were with normal weight, 35.2% were overweight, 12.1% obese grade I and only 5.5% were obese grade I and II.

The difference between the cases with and without NES concerning BMI was found to be statistically significant ($p < 0.001$).

By other means, BMI ranged between 21.6-42.6 with mean of 26.93 ± 4.26 among Non NES subjects while ranged between 25.5-37.2 with mean of 30.71 ± 4.23 among NES subjects. This difference was statistically significant where $p < 0.001$.

Table (15): Distribution of the studied sample according to the presence of NES and body mass index (BMI) among group B.

Group B	NES diagnosis				Test of sig.	P
	Cases without NES (n = 182)		Cases with NES (n = 18)			
	No.	%	No.	%		
BMI (kg/m²)						
Under weight (<18.8)	0	0.0	0	0.0	$\chi^2 = 29.021^*$	^{MC} $p < 0.001^*$
Normal (18.5 - <25)	86	47.3	0	0.0		
Over weight (25 - <30)	64	35.2	10	55.6		
Obese (I) (30 - <35)	22	12.1	2	11.1		
Obese (II) (35 - <40)	6	3.3	6	33.3		
Obese (III) (≥ 40)	4	2.2	0	0.0		
Min. -Max.	21.60 - 42.60		25.50 - 37.20		t = 3.596	<0.001*
Mean \pm SD	26.93 \pm 4.26		30.71 \pm 4.23			
Median	25.50		29.80			

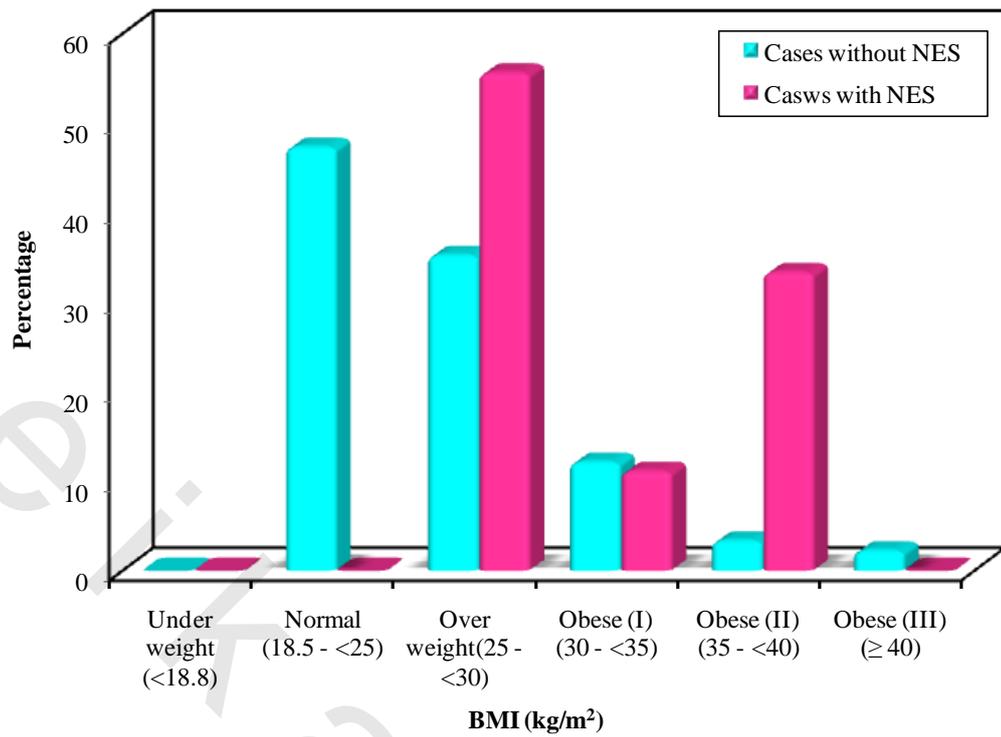


Figure (17): Distribution of the studied sample according to the presence of NES and BMI classification among group B.

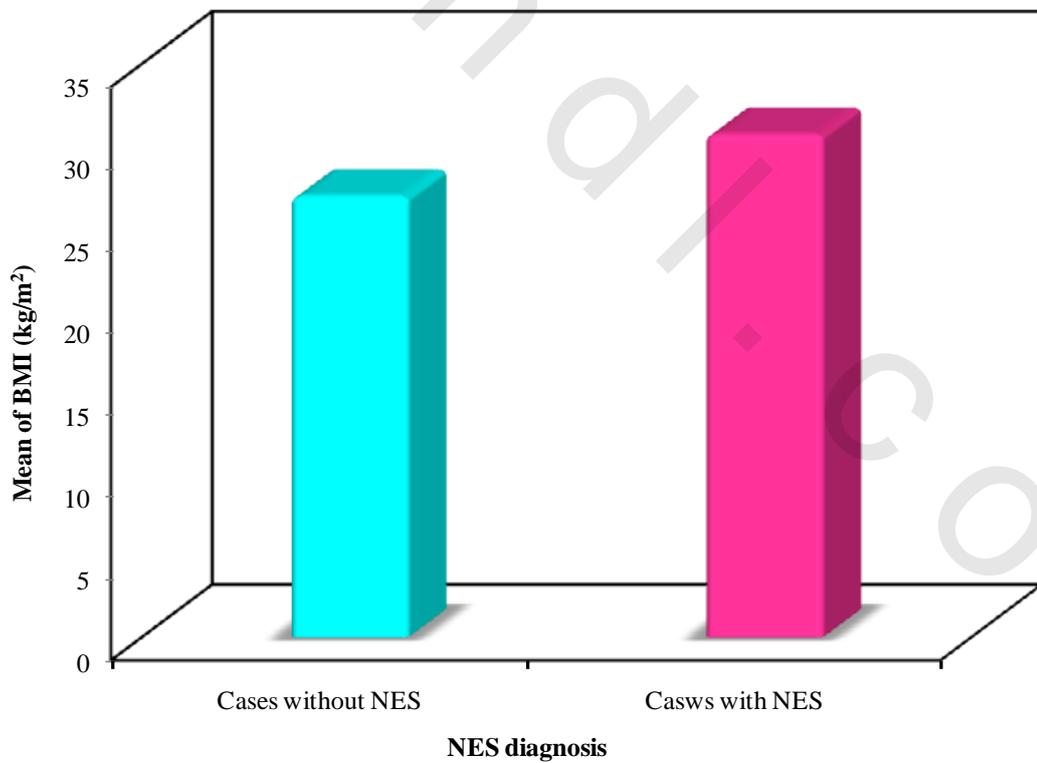


Figure (18): Distribution of the studied sample according to the presence of NES and mean BMI among group B.

3. Relation between night eating syndrome and type of depression

Table 16 shows the distribution of group B studied sample according to the presence of NES and the type of depression.

Concerning the type of depression the table reveals that among the Non NES subjects, the majority of cases are diagnosed as major depressive disorder without specific specifiers 74.7% followed by major depressive disorder with specific specifiers as 18.7% with atypical features and 3.3% for chronic depression as well as seasonal affective disorder.

On the other hand, NES subjects were mostly with atypical features of depression 55.6% followed by 44.4% of cases were major depressive disorder without specific specifiers.

There was statistical difference between the two groups (cases with and without NES) concerning type of depression ($p=0.010$).

This difference was obvious in two types: MDD without specific specifiers ($p=0.006$) and MDD with atypical features ($p=0.001$).

Table (16): Distribution of the studied sample according to the presence of NES and type of depression among group B.

Group B	NES diagnosis				χ^2	MC p
	Cases without NES (n = 182)		Cases with NES (n = 18)			
	No.	%	No.	%		
Type of depression						
Major depressive disorder without specific specifier	136	74.7	8	44.4	7.450*	0.006*
Major depressive disorder with specific specifiers						
a) Atypical depression	34	18.7	10	55.6	12.979*	0.001*
b) Seasonal affective disorder	6	3.3	0	0.0	0.612	1.000
c) Chronic depression	6	3.3	0	0.0	0.612	1.000
χ^2 (MC p)	10.150* (0.010*)					

χ^2 : Chi square test

MC: Monte Carlo test

*: Statistically significant at $p \leq 0.05$

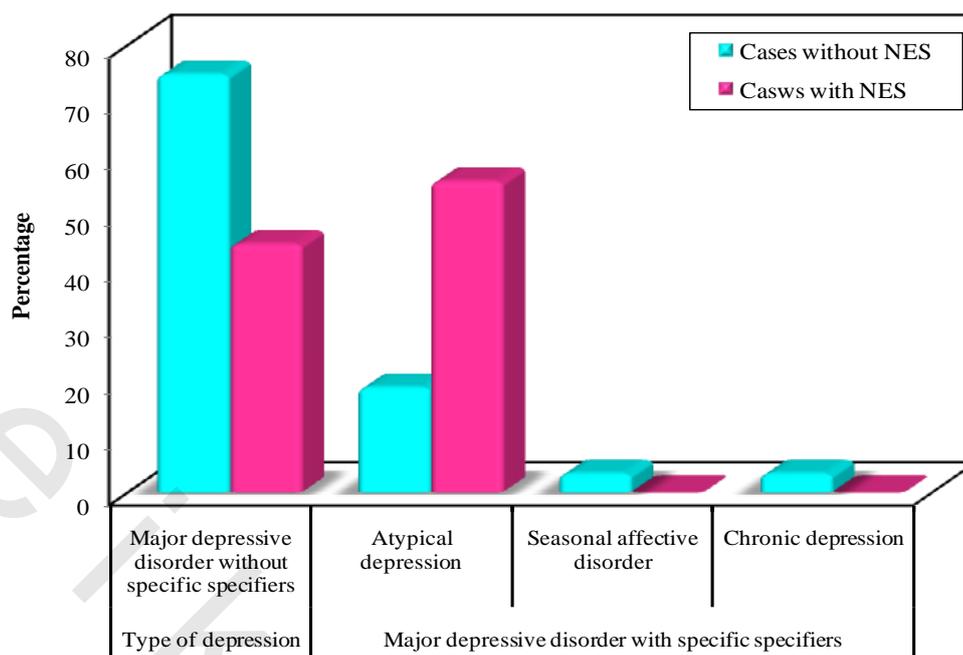


Figure (19): Distribution of the studied sample according to the presence of NES and type of depression among group B.

4. Distribution of group B studied sample according to the type of antidepressants

Table 17 shows the distribution of the group B studied sample according to the type of antidepressant received.

The table illustrates that most cases were using SSRIs (34% were on sertraline, 25% on citalopram, 14% on paroxetine and 5% on fluoxetine).

Some cases were using other antidepressants as mirtazapine (9%), Venlafaxine (5%) and bupropion (2%).

Few patients were on tricyclics as clomipramine and amitriptyline HCL (2% for each), while only 1% on trazodone and another one which is fluvoxamine.

Table (17): Distribution of the studied sample according to the type of antidepressants used in group B.

	No.	%
Type of antidepressant		
Citalopram	50	25.0
Sertraline	68	34.0
Fluoxetine	10	5.0
Paroxetine	28	14.0
Clomipramine	4	2.0
Amitriptyline HCL	4	2.0
Trazodone	2	1.0
Mirtazapine	18	9.0
Venlafaxine	10	5.0
Bupropion	4	2.0
Fluvoxamine	2	1.0

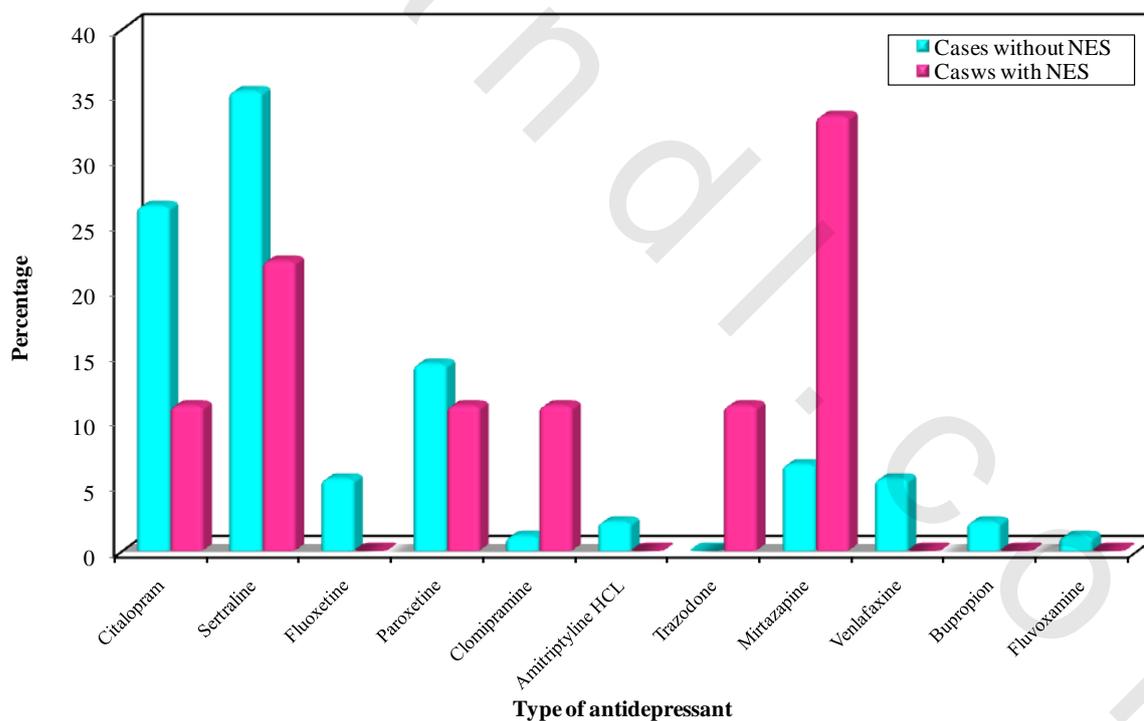


Figure (20): Distribution of the studied sample according to the type of antidepressants used in group B.

5. Relation between night eating syndrome and type of antidepressant

Table 18 shows the distribution of group B studied sample according to the presence of NES and the type of antidepressant received.

The table reveals that the majority of Non NES cases were on sertraline (n=64) and this constitute 35.2% of cases. However among NES cases, most cases (n=6) were on mirtazapine (33.3%) compared to 12 Non NES cases (6.6%).

There was statistical difference between the two groups concerning type of antidepressant received. This was found with mirtazapine (p=0.002), trazodone (p=0.008) and clomipramine (p=0.041).

Table (18): Distribution of the studied sample according to the presence of NES and type of antidepressant received among group B.

Group B	NES diagnosis				χ^2	P
	Cases without NES (n = 182)		Cases with NES (n = 18)			
	No.	%	No.	%		
Type of antidepressant						
Citalopram	48	26.4	2	11.1	2.035	^{FE} p = 0.252
Sertraline	64	35.2	4	22.2	1.223	0.269
Fluoxetine	10	5.5	0	0.0	1.041	^{FE} p = 0.604
Paroxetine	26	14.3	2	11.1	0.137	^{FE} p = 1.000
Clomipramine	2	1.1	2	11.1	8.378*	^{FE} p = 0.041*
Amitriptyline HCL	4	2.2	0	0.0	0.404	^{FE} p = 1.000
Trazodone	0	0.0	2	11.1	20.426*	^{FE} p = 0.008*
Mirtazapine	12	6.6	6	33.3	14.300*	^{FE} p = 0.002*
Venlafaxine	10	5.5	0	0.0	1.041	^{FE} p = 0.604
Bupropion	4	2.2	0	0.0	0.404	^{FE} p = 1.000
Fluvoxamine	2	1.1	0	0.0	0.200	^{FE} p = 1.000
χ^2 (^{MC} p)	27.256* (<0.001*)					

χ^2 : Chi square test

FE: Fisher Exact test

MC: Monte Carlo test

*: Statistically significant at p ≤ 0.05.

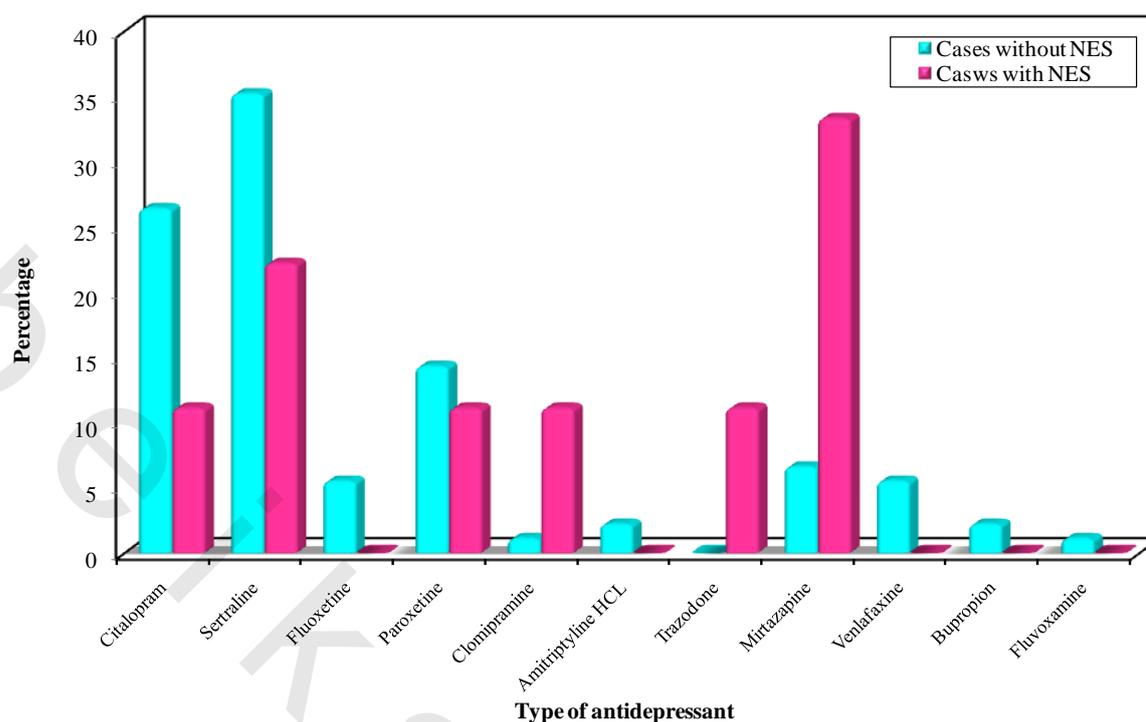


Figure (21): Distribution of the studied sample according to the presence of NES and type of antidepressant received among group B.

6. Correlation between night eating questionnaire (NEQ) score and BMI

Table 19 shows the correlation between NEQ score and BMI in group B.

The table reveals that there is a statistically significant relation between NEQ score and BMI as noted from $p=0.036$.

Also, it shows that there is positive correlation between NEQ score and BMI. In other words, the scores were increasing as well as the BMI increases ($r_s=0.148$).

Table (19): Correlation between NEQ score with BMI among group B.

Group B	NEQ score	
	r_s	P
BMI (kg/m^2)	0.148*	0.036*

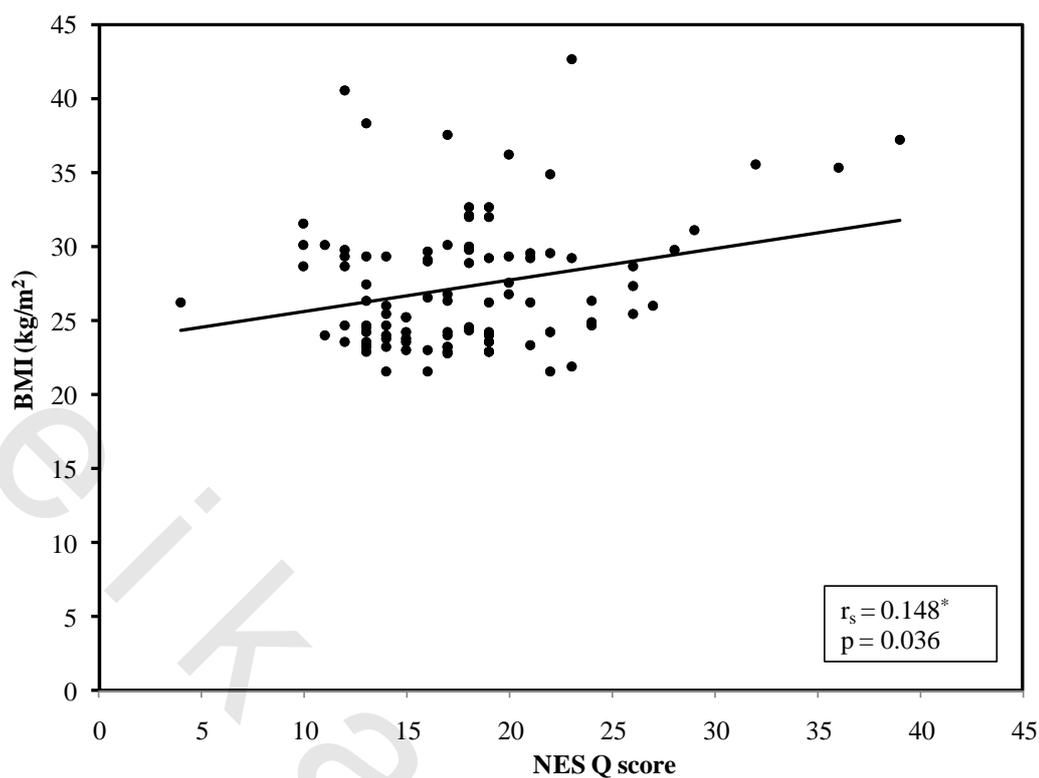


Figure (22): Correlation between NEQ score with BMI among group B.

7. Relation between night eating questionnaire (NEQ) score and type of depression

Table 20 shows the distribution of group B studied sample according to the type of depression and its relation to NEQ score.

Concerning the NEQ score the table shows that the highest scores were among seasonal affective disordered subtype of major depression with mean of 19.33 ± 4.5 and median of 20 followed by atypical subtype of depression with mean of 18.77 ± 5.7 and median of 18.5.

However, there was no statistical difference between different types of depression.

Table (20): Distribution of the studied sample according to the type of depression and its relation to NEQ score among group B.

Group B	N	NEQ score			KW χ^2	P
		Min. – Max.	Mean \pm SD	Median		
Type of depression						
Major depressive disorder without specific specifiers	144	4.0 – 39.0	17.42 \pm 5.51	17.0	3.428	0.330
Major depressive disorder with specific specifiers						
a) Atypical depression	44	10.0 – 29.0	18.77 \pm 5.70	18.50		
b) Seasonal affective disorder	6	14.0 – 24.0	19.33 \pm 4.50	20.0		
c) Chronic depression	6	15.0 – 19.0	17.0 \pm 1.79	17.0		
Sig. bet. Grps		p ₁ = 0.162 , p ₂ = 0.172 , p ₃ = 0.874, p ₄ = 0.694 p ₅ = 0.570 , p ₆ = 0.394				

KW: Kruskal Wallis test.

Sig. bet. grps was done using Mann Whitney.

p₁: p value for comparing between Major depressive disorder and Atypical depression.

p₂: p value for comparing between Major depressive disorder and Seasonal affective disorder.

p₃: p value for comparing between Major depressive disorder and Chronic depression.

p₄: p value for comparing between Atypical depression and Seasonal affective disorder.

p₅: p value for comparing between Atypical depression and Chronic depression.

p₆: p value for comparing between Seasonal affective disorder and Chronic depression.

*: Statistically significant at $p \leq 0.05$.

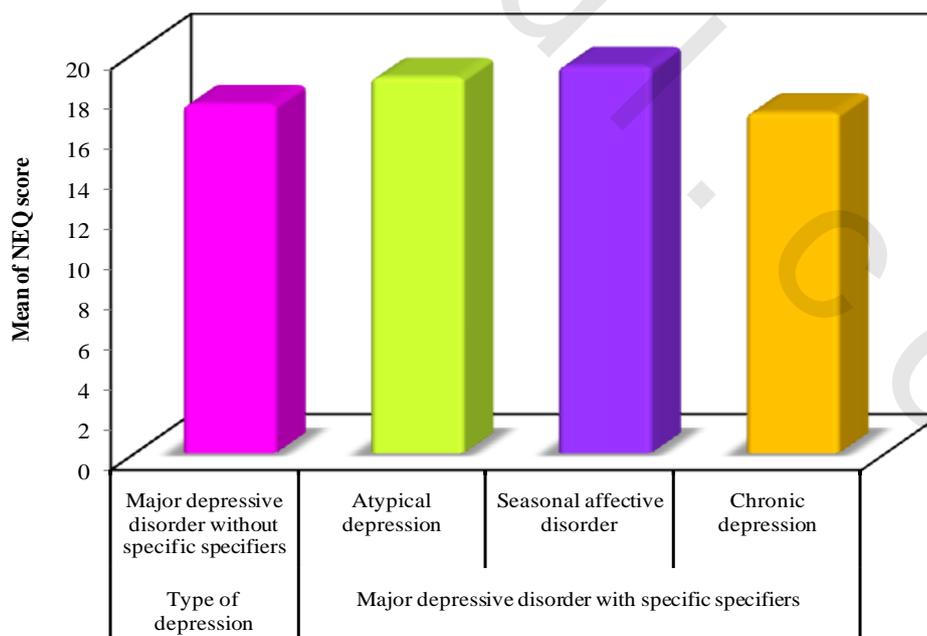


Figure (23): Distribution of the studied sample according to the type of depression and its relation to NEQ score among group B.

8. Relation between night eating questionnaire (NEQ) score and type of antidepressant used

Table 21 shows the distribution of group B studied sample according to the type of antidepressant used and its relation to NEQ score.

Concerning the NEQ score the table shows that the highest scores were with depressed patients on trazodone with median 27 followed by mirtazapine with range between 10-39, mean of 23.78 ± 9.70 and median of 23. The difference between scores among different types of antidepressants was statistically significant ($p=0.014$).

While among cases with NES (table 23), NEQ score was highest with mirtazapine with range 32-39, mean 35.67 ± 3.14 and median of 36. The difference between scores among different types of antidepressants was statistically significant ($p=0.015$).

By applying Mann Whitney test, Mirtazapine was showing statistical difference with other types of antidepressants. Also, there was statistical significance between clomipramine and trazodone.

Table (21): Distribution of the studied sample according to the type of antidepressant and its relation to NEQ score among group B.

Group B		N	NEQ score		
			Min. – Max.	Mean \pm SD	Median
Type of antidepressant					
	Citalopram	50	11.0 – 28.0	16.92 ± 4.08	16.0
	Sertraline	68	10.0 – 29.0	18.03 ± 4.24	17.0
	Fluoxetine	10	10.0 – 19.0	15.60 ± 4.03	18.0
	Paroxetine	28	4.0 – 26.0	16.14 ± 5.50	16.0
	Clomipramine	4	13.0 – 26.0	19.50 ± 7.51	19.50
	Amitriptyline HCL	4	13.0 – 14.0	13.50 ± 0.58	13.50
	Trazodone	2	27.0 – 27.0	27.0 ± 0.0	27.0
	Mirtazapine	18	10.0 – 39.0	23.78 ± 9.70	23.0
	Venlafaxine	10	13.0 – 19.0	16.80 ± 2.35	17.0
	Bupropion	4	14.0 – 17.0	15.50 ± 1.73	15.50
	Fluvoxamine	2	14.0 – 14.0	14.0 ± 0.0	14.0
			$\chi^2_{KW}(p)$ 22.307* (0.014*)		

Table (22): Distribution of NES positive cases according to the type of antidepressant and its relation to NEQ score among group B.

NES cases in Group B		NEQ score		
		Min. – Max.	Mean ± SD	Median
Type of antidepressant	N			
Citalopram	2	28.0 - 28.0	28.0 ± 0.0	28.0
Sertraline	4	26.0 - 29.0	27.50 ± 1.73	27.50
Paroxetine	2	26.0 - 26.0	26.0 ± 0.0	26.0
Clomipramine	2	26.0 - 26.0	26.0 ± 0.0	26.0
Trazodone	2	27.0 – 27.0	27.0 ± 0.0	27.0
Mirtazapine	6	32.0 – 39.0	35.67 ± 3.14	36.0
KW $\chi^2(p)$		14.069* (0.015*)		
Sig.bet.Grps		$p_1 = 1.000$, $p_2 = 0.083$, $p_3 = 0.083$, $p_4 = 0.083$, $p_5 = 0.040^*$, $p_6 = 0.264$, $p_7 = 0.264$, $p_8 = 1.000$ $p_9 = 0.009^*$, $p_{10} = 1.000$, $p_{11} = 0.083$, $p_{12} = 0.040^*$ $p_{13} = 0.083^*$, $p_{14} = 0.040^*$, $p_{15} = 0.040^*$		

KW: Kruskal Wallis test

Sig. bet. grps was done using Mann Whitney test

p_1 : p value for comparing between Citalopram and Sertraline

p_2 : p value for comparing between Citalopram and Paroxetine

p_3 : p value for comparing between Citalopram and Clomipramine

p_4 : p value for comparing between Citalopram and Trazodone

p_5 : p value for comparing between Citalopram and Mirtazapine

p_6 : p value for comparing between Sertraline and Paroxetine

p_7 : p value for comparing between Sertraline and Clomipramine

p_8 : p value for comparing between Sertraline and Trazodone

p_9 : p value for comparing between Sertraline and Mirtazapine

p_{10} : p value for comparing between Paroxetine and Clomipramine

p_{11} : p value for comparing between Paroxetine and Trazodone

p_{12} : p value for comparing between Paroxetine and Mirtazapine

p_{13} : p value for comparing between Clomipramine and Trazodone

p_{14} : p value for comparing between Clomipramine and Mirtazapine

p_{15} : p value for comparing between Trazodone and Mirtazapine

*: Statistically significant at $p \leq 0.05$

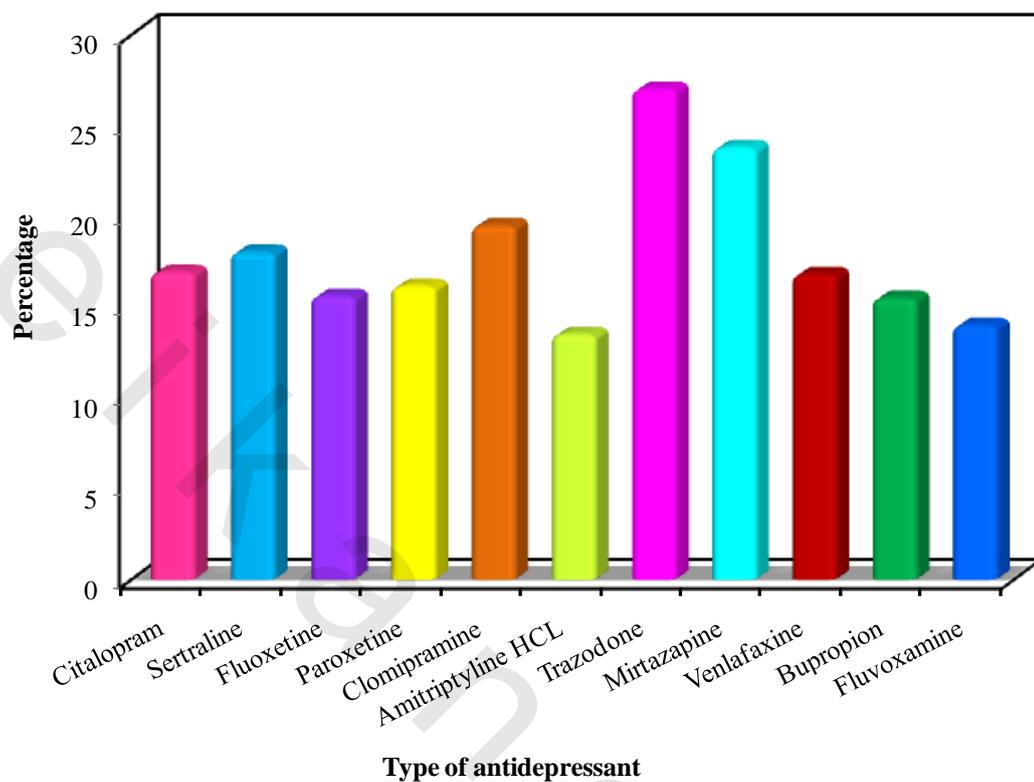


Figure (24): Distribution of the studied sample according to the type of antidepressant and its relation to NEQ score among group B.

The fourth section: comparison between NES cases in both groups

1. Comparison between NES cases in both groups according to socio-demographic characteristics

Table 23 represents comparison between NES cases in both groups according to socio-demographic characteristics.

The table reveals no significant difference between NES cases of both groups concerning age and gender. As the mean age of group A NES was 37.19 ± 8.82 years and 33.89 ± 7.17 years among group B.

Concerning the sex, in both groups females were the target. as in group A females constitute 67.9% compared to 32.1% males. The same finding was in group B as females were 77.8% compared to 22.2% males.

Table (23): Comparison between NES cases in both groups according to socio-demographic characteristics.

	NES cases in Group A (n = 53)		NES cases in Group B (n = 18)		Test of sig.	p
	No.	%	No.	%		
Sex						
Male	17	32.1	4	22.2	$\chi^2 = 0.626$	0.429
Female	36	67.9	14	77.8		
Age (years)						
Min. – Max.	20.0 – 54.0		22.0 – 44.0		t = 1.433	0.156
Mean \pm SD	37.19 ± 8.82		33.89 ± 7.17			
Median	39.0		35.0			

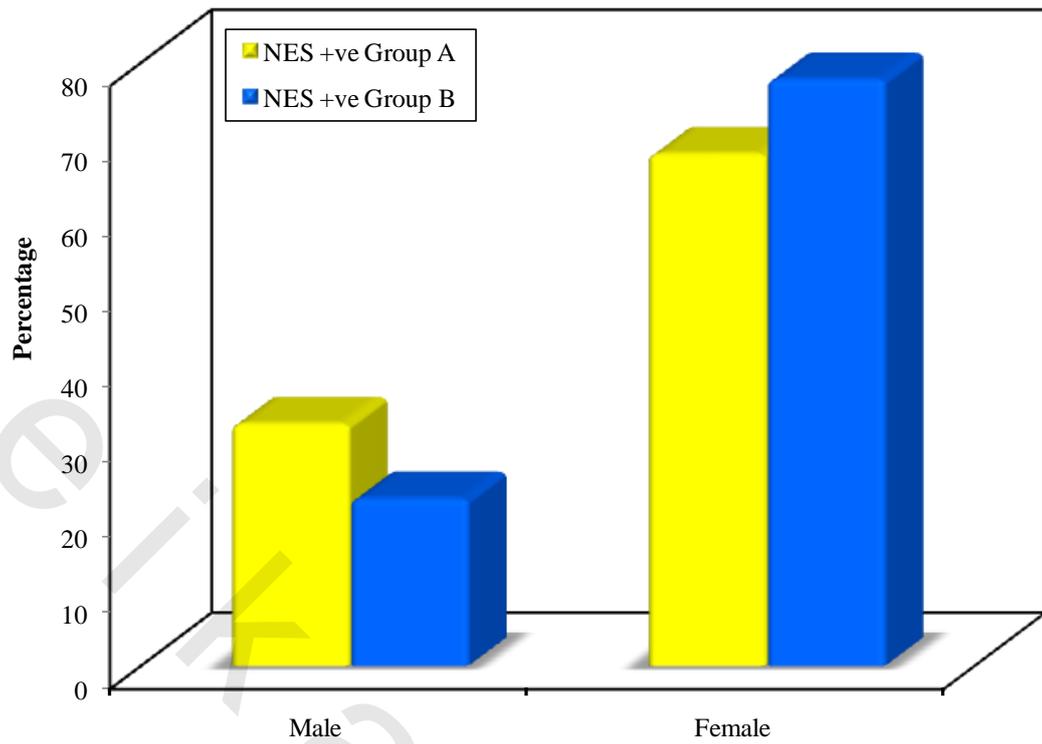


Figure (25): Comparison between NES cases in both groups according to Sex.

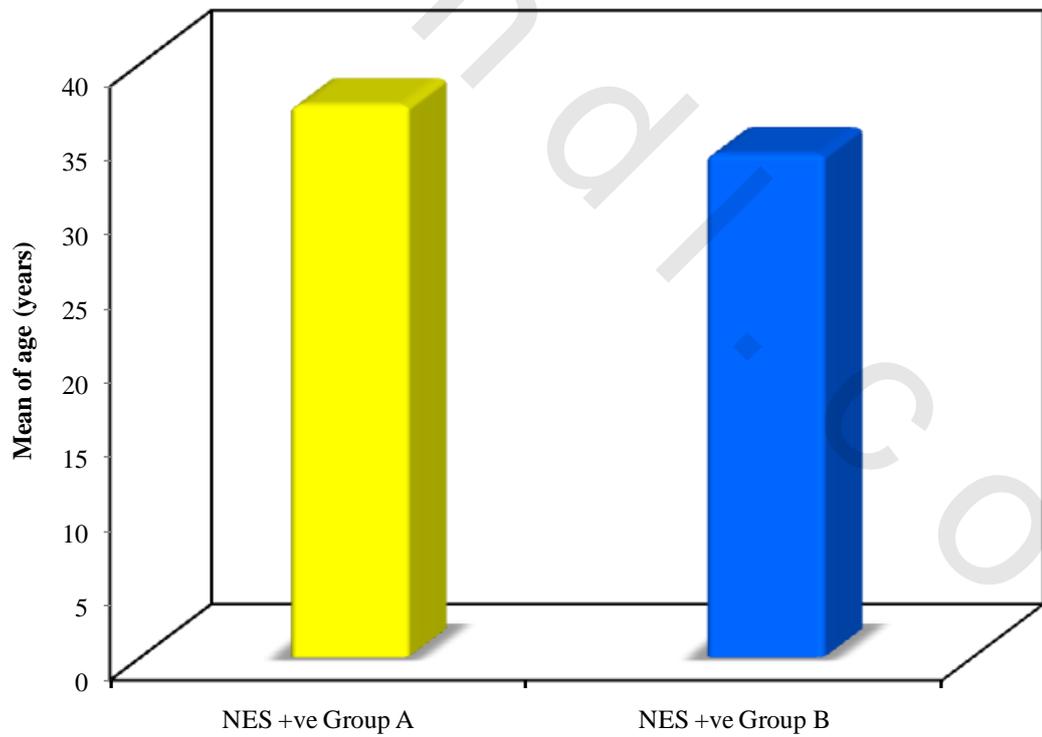


Figure (26): Comparison between NES cases in both groups according to Age.

2. Comparison between NES cases in both groups according to body mass index

Table 24 represents comparison between NES cases in both groups according to BMI.

The table reveals significant difference between NES cases of both groups concerning BMI ($p=0.031$).

Most cases not receiving antidepressants were obese grade I (41.5%), while depressed patients on treatment were mostly overweight (55.6%).

Table (24): Comparison between NES cases in both groups according to body mass index (BMI).

	NES cases in Group A (n = 53)		NES cases in Group B (n = 18)		χ^2	P
	No.	%	No.	%		
BMI						
18.5 - <25 Normal weight	2	3.8	0	0.0	0.699	1.000
25 - <30 Over weight	13	24.5	10	55.6	5.906*	0.015*
30 - <35 Obese GI	22	41.5	2	11.1	5.549*	0.018*
35 - <40 Obese GII	16	30.2	6	33.3	0.062	0.803
χ^2 (^{MC} p)	8.015*(0.031*)					

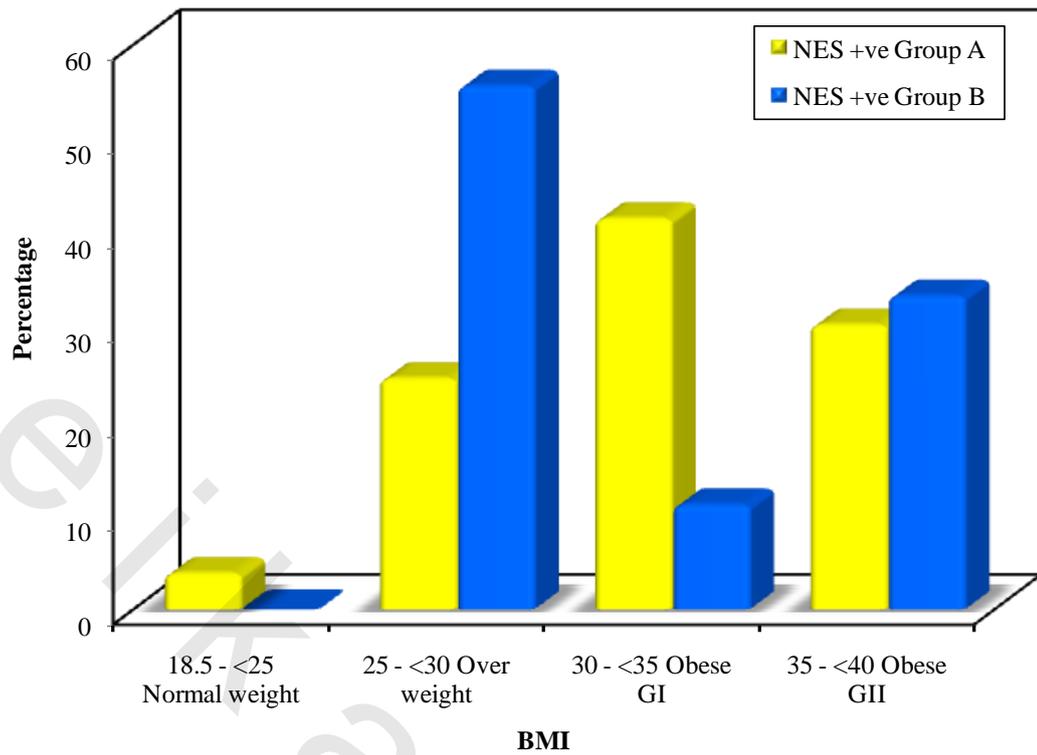


Figure (27): Comparison between NES cases in both groups according to body mass index classification.

3. Comparison between NES cases in both groups according to the type of depression

Table 25 represents comparison between NES cases in both groups according to type of depression.

The table reveals no significant difference between NES cases of both groups concerning type of depression as in both groups the majority of NES cases were depression with atypical features (43.4% and 55.6% respectively).

Table (25): Comparison between NES cases in both groups according to type of depression.

	NES cases in Group A (n = 53)		NES cases in Group B (n = 18)		χ^2	^{MC}p
	No.	%	No.	%		
Type of depression						
Major depressive disorder without specific specifier	19	35.8	8	44.4	0.421	0.516
Major depressive disorder with specific specifiers						
a) Atypical depression	23	43.4	10	55.6	0.799	0.372
b) Seasonal affective disorder	4	7.5	0	0.0	1.440	0.230
c) Chronic depression	7	13.2	0	0.0	2.637	0.179
$\chi^2(^{MC}p)$	3.656 (0.286)					

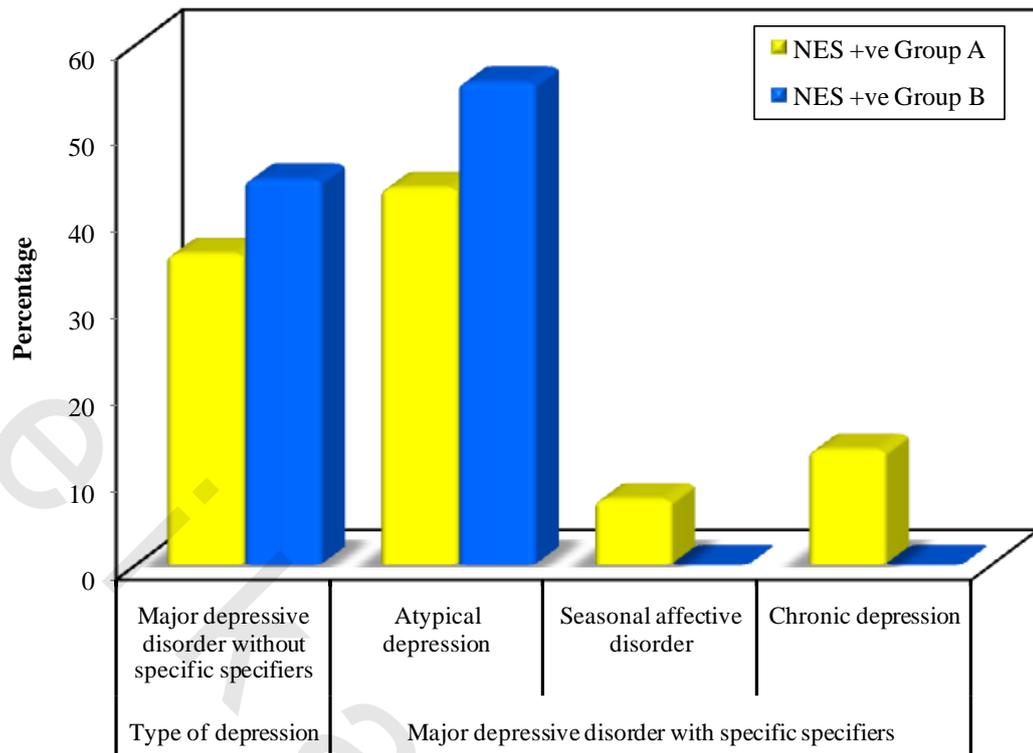


Figure (28): Comparison between NES cases in both groups according to type of depression.

4. Comparison between NES cases in both groups according to the NEQ scores

Table 26 represents comparison between NES cases in both groups according to NEQ scores.

The table reveals no significant difference between NES cases of both groups concerning NEQ scores as in group A NEQ score was with mean of 31.60 ± 4.92 and median of 30. While in group B, NEQ score was with mean of 29.89 ± 4.64 and median of 28. And $p = 0.159$.

Table (26): Comparison between NES cases in both groups according to the NEQ scores.

	NES cases in Group A (n = 53)	NES cases in Group B (n = 18)	Z	P
NEQ score				
Min. – Max.	25.0 – 41.0	26.0 – 39.0		
Mean ± SD	31.60 ± 4.92	29.89 ± 4.64	1.410	0.159
Median	30.0	28.0		

Z: Z for Mann Whitney test

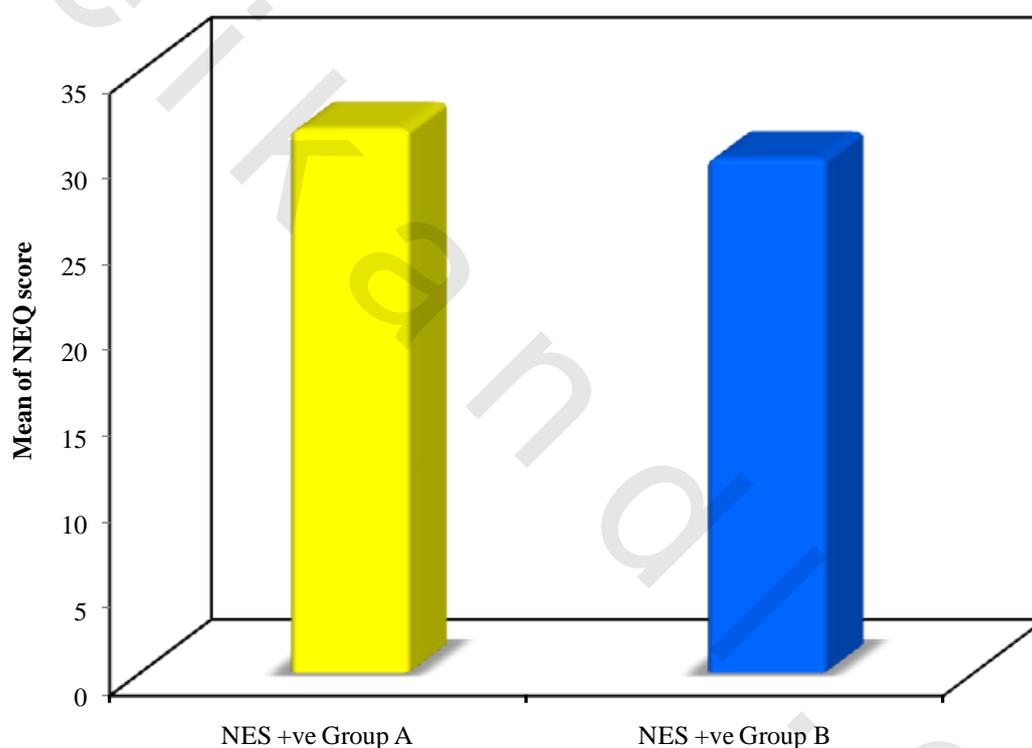


Figure (29): Difference between the NES positive cases in both groups regarding NEQ scores.