

Table (1): Demographic characteristics of studied population:

Variables	NO	(%)
Age		
Mean ± SD)		59.1±13.5
Median (range)		60 (20-88)
Gender		
Females	41	(39.81%)
Males	62	(60.19%)
Smoking status		
Current	25	(24.27%)
Ex-smoker	31	(30.10%)
Non smoker	47	(45.63%)
Smoking index		
Mild	7	(6.80%)
Moderate	5	(4.85%)
Heavy	44	(42.72%)

Table(2): Types of acute respiratory failure and Diagnosis of studied population

Variables	No	(%)
Type of acute respiratory failure		
Acute Hypoxemic	10	(9.71%)
Acute on top of chronic Hypercapnic	93	(90.29%)
Diagnosis and causes of ARF		
ARDS	1	(0.97%)
Bronchial asthma	5	(4.85%)
Bronchiectasis	2	(1.94%)
COPD	48	(46.60%)
COPD with CAP	9	(8.74%)
IPF	5	(4.85%)
IPF with CAP	1	(0.97%)
IPF with PE	1	(0.97%)
Kyphoscoliosis	2	(1.94%)
OHS	7	(6.80%)
OHS with CAP	4	(3.88%)
Overlap syndrome	13	(12.62%)
Overlap syndrome with CAP	2	(1.94%)

Pneumonia	3	(2.91%)
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Table(3): clinical parameters of studied population before and after NIV:

clinical parameters	Before NIV	After 2 hours	After 24-48 hours	P1	P2	P3
Respiratory rate Mean	30.86±7.59	24.69±5.47	23.16±4.92	*<0.0001	*<0.0001	0.23
Heart rate Mean	107.12±17.38	99.99±14.79	99.24±14.41	*0.003	*0.001	1.00
Systolic blood pressure Mean	122.91±17.29	120.10±17.79	115.34±11.41	0.61	*0.002	0.10
Diastolic blood pressure Mean	76.31± 10.19	74.98± 10.42	73.08±7.94	0.25	0.05	1.00
Temperature Mean	37.40± 0.47	37.32±0.24	37.31±0.36	0.36	0.20	1.00

Table (4): Gasometric parameters of studied population before and after NIV use:

Gasometric parameters	Before NIV	After 2 hours	After 24-48 hours	Post weaning	P1	P2	P3	P4	P5	P6
PH Mean	7.51±0.09	7.34±0.08	7.39±0.09	7.39±0.04	*0.0	*<0.0001	*<0.0001	*0.001	*0.00	1
Median	7.3 (7.12-7.53)	7.34 (7.17-7.57)	7.38 (7.17-7.83)	7.38 (7.34-7.51)	2				1	0

PCO2(mmHg)										0
Mean	72±21.63	67.36±18.07	62.87±17.94	56.76±10.1859 (32-79)	0.39	*0.002	*<0.0001	0.45	*0.001	0
Median	72 (25-113)	68 (27-115)	66 (22-115)							17
PO2(mmHg)										
Mean	59.41±20.3457 (21-142)	74.30±14.4573 (46-120)	73.69±14.3171 (37-168)	73.28±10.0470 (54-95)	*<0.0001	*<0.0001	*<0.0001	1.00	1.00	1
Median										00
SaO2(%)										
Mean	82.35±1.3886 (40-99)	92.30±8.9893 (85-99)	92.85±6.6794 (56-100)	93.17±2.2193 (87-97)	1.00	1.00	*<0.0001	1.00	*<0.0001	*
Median										<
										0
										0
										0
										1
HCO3(mEq/L)										
Mean	35.32±8.2236 (18-60)	36.03±8.3936 (17-57)	35.93±8.1037 (18-53)	35.38±9.3436 (20-93)	1.00	1.00	1.00	1.00	1.00	1
Median										0
										0

Table (5): Outcome of studied populations as regard the success and failure of NIV.

OUTCOME	NO.	%
SUCCESS	71	68.93%
FAILURE	32	31.07%
Immediate Failure	4	3.88%
Early Failure	10	9.71%
Late Failure	18	17.48%

Table (6): Comparison between NIV success and NIV failure as regards Duration of mechanical ventilation ,Length of stay in ICU & Hospital , Complications and Death.

Variables	Success N=71	Failure N=32	P-value
Duration of mechanical ventilation			
Mean	5.40±6.33	13.40±10.11	*<0.0001
Median	3 (1-45)	11 (1-50)	
Length of stay in ICU in days			
Mean	7.85±7.32	17.34±17.22	*<0.0001

Median	5 (1-45)	11.5 (1-90)	
Length of stay in Hospital in days			0.09
Mean	13.85±9.86	20.00±17.48	
Median	11 (3-60)	15 (2-90)	
COMPLICATIONS			
No	46 (64.79%)	4 (15.5%)	*<0.00001
Yes	25 (35.21%)	28 (87.50%)	
Death			
No	68 (95.77%)	8 (25.00%)	*<0.0001
Yes	3 (4.23%)	24 (75.00%)	

Table (7): Comparison between the NIVsuccess and NIVfailure as regards gasometric parameters:

ABG	Before NIV	After 2 hours	After 24-48 hours	Post weaning	P1	P2	P3	P4	P5	P6
PH										
Failure	7.33±	7.32±0.10	7.37±0.13		1.00	0.42		0.49		
Success	0.09	7.35±0.07	7.40±0.07	7.39±0.04	*<0.0001	*<0.0001	*<0.0001	*0.0002	*0.0004	1.00
	7.31±									
	0.08									
P value	0.29	0.13	0.14							
PCO2										
Failure	65.09	68.09±19.18	67.31±22.9		1.00	1.00		1.00		
Success	±20.8	67.03±17.36	61.06±15.2	56.76±10.1	*0.02	*<0.0001	*<0.0001	0.20	*0.0002	0.74
	75.11									
	±21.4									
	0									
P value	*0.03	0.78	0.11							
PO2										
Failure	56.59	71.50±15.22	73.89±22.6		*0.006	*0.002		1.00		
Success	±18.4	75.56±14.01	73.61±9.15	73.28±10.0	*<0.0001	*<0.0001	*<0.0001	1.00	1.00	1.00
	60.69									
	±21.1									
	6									
P value	0.35	0.19	0.93							
SO2										
Failure	80.75	91.78±3.69	90.00±11.2		*0.001	*0.007		1.00		
Success	±15.9	93.69±3.21	94.01±2.71	93.17±2.21	1.00	1.00	*<0.0001	1.00	*<0.0001	*<0.0001
	83.07									
	±12.9									
	0									
P value	0.44	0.09	*0.006							
HCO3										
Failure	32.34	35.16±7.83	34.90±7.59		0.42	0.57		1.00		
Success	±7.14	36.42±8.65	36.35±8.32	35.38±9.34	1.00	1.00	1.00	1.00	1.00	1.00

	36.66 ±8.36								0	0
P value	*0.01	0.48	0.42							

Table (8): Comparison between NIV Success and NIV Failure

as regards the blood count and the electrolytes and the serum albumin level.

Variables	Success N=71	Failure N=32	P-value
WBCs	11.09±5.22	12.20±7.32	0.68
HB	13.11±1.97	12.30±2.54	0.09
HT	44.14±7.52	40.50±7.46	*0.02
PLTs	248.86±102.16	260.38±113.83	0.84
NA	139.31±5.66	137.91±6.06	0.26
K	4.75±0.64	4.84±0.80	0.53
Mg	2.34±0.44	2.54±1.75	0.52
Ca	9.07±0.74	8.73±0.71	0.07
Albumin	3.09±0.52	2.77±0.67	*0.01

Table (9): The clinical parameters changes before and after NIV in the study patients as regard the type of acute respiratory failure(Hypoxemic and Hypercapnic).

Clinical parameters	Before NIV	After 2 hours	After 24-48 hours	P1	P2	P3
Respiratory rate						
Hypoxemic	43.60±9.07	30.7±7.60	27.50±7.14	*0.004	*<0.0001	1.00
Hypercapnic	29.49±6.03	24.04±4.82	22.67±21.75	*<0.0001	*<0.0001	0.22
Heart rate						
Hypoxemic	132.4±25.73	112.2±13.38	107.00±13.90	0.07	*0.02	1.00
Hypercapnic	104.41±13.90	98.68±14.39	98.37±14.28	*0.02	*0.01	1.00
Systolic blood pressure						
Hypoxemic	122.0±20.44	119.00±12.87	108.00±6.32	1.00	0.12	0.30
Hypercapnic	123.01±17.05	120.22±18.30	116.17±12.09	0.71	*0.01	0.27
Diastolic blood pressure						
Hypoxemic	77.00±12.52	74.0.00±11.78	68.00±4.21	1.00	0.18	0.60
Hypercapnic	76.24±9.99	73.98±10.34	73.65±8.07	0.32	0.21	1.00
Temperature						
Hypoxemic	37.81±0.91	37.44±0.28	37.68±0.76	0.75	1.00	1.00
Hypercapnic	37..36±0.37	37.31±0.24	37.26±0.25	0.05	0.11	0.93

Table (10): The Gasometric parameters changes before and after NIV in the study patients as regard the type of acute respiratory failure.

gasometric parameters:	Before NIV	After 2 hours	After 24-48 hours	Post weaning	P1	P2	P3	P4	P5	P6
PH										
Hypoxemic	7.44±0.05	7.44±0.06	7.43±0.06	7.40±0.04	1.00	1.00	1.00	1.00	1.00	1.00
Hypercapnic	7.3±0.76	7.34±0.08	7.38±0.09	7.39±0.05	*0.006	*<0.0001	*<0.0001	*<0.0001	*<0.0001	1.00
PCO2										
Hypoxemic	35.2±7.71	37.10±11.55	39.10±10.99	36.17±3.18	1.00	1.00	1.00	1.00	1.00	1.00
Hypercapnic	75.96±18.70	70.61±15.45	65.51±16.58	58.66±8.32	0.13	*<0.0001	*<0.0001	<0.17	*<0.0001	*0.046
PO2										
Hypoxemic	46.30±12.81	78.30±20.15	79.3±13.34	84.17±8.61	*<0.0001	*<0.0001	*<0.0001	1.00	1.00	1.00
Hypercapnic	60.83±20.54	73.87±13.77	73.07±14.34	72.27±9.61	*<0.0001	*<0.0001	*<0.0001	1.00	1.00	1.00
SO2										
Hypoxemic	79.60±15.08	94.00±3.97	95.80±2.39	95.33±0.52	0.93	0.66	*<0.0001	1.00	*<0.0001	*<0.0001
Hypercapnic	82.65±13.80	93.00±3.41	92.5±6.92	92.96±2.20	1.00	1.00	*<0.0001	1.00	*<0.0001	*<0.0001
HCO3										
Hypoxemic	23.50±4.52	24.3±5.93	26.30±6.18	25.00±3.34	1.00	1.00	1.00	1.00	1.00	1.00
Hypercapnic	36.59±7.49	37.29±7.62	37.000±7.59	36.34±9.14	1.00	1.00	1.00	1.00	1.00	1.00