



# Body mass index and clinical outcomes in Egyptian women with breast cancer: a multi-institutional study

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## Purpose

The aim of this work was to evaluate the association between body mass index (BMI) and clinical outcomes among Egyptian female breast cancer patients.

## Methods

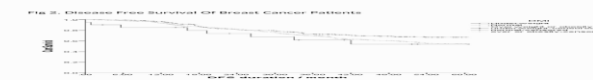
We reviewed the file registry of 629 patients with operable breast cancer regarding age, sex, height, weight, menopausal status, family history of breast cancer, tumor features, TNM arrangement, and treatment during the period from January 2006 to December 2012. In our studies, obesity was defined as a BMI of  $\geq 30$  kg/m<sup>2</sup>. The primary objective was to estimate the effect of body mass index on the clinical outcomes of breast cancer patients including DFS and OAS.

## Results

A total of 629 patients with a mean age of 51.1 years. Stage III and Stage II presented 52% and 46.6% respectively. Overweight and obese patients represent 60.5% of all patient population. there was no association between tumor stage, grade or menopausal status and BMI. Patients with normal BMI showed a median survival of 95.3 months [ CI: 54.6,136.06]. This was significantly higher than overweight and obese patients (p = 0.001). Nearly one-third of patients (29.1%) with normal BMI experienced disease relapse compared to 32.8% for overweight and obese patients, however, this was statistically not significant (0.097).

Table 1. Patient characteristics

|                   | Total<br>N = 629 |      | Underweight<br>N = 21 |     | Normal Weight<br>N = 227 |      | Overweight<br>N = 180 |      | BMI<br>Obese<br>N = 201 |      | P<br>valu<br>e |
|-------------------|------------------|------|-----------------------|-----|--------------------------|------|-----------------------|------|-------------------------|------|----------------|
|                   | N                | %    | N                     | %   | N                        | %    | N                     | %    | N                       | %    |                |
| Age (Years)       |                  |      |                       |     |                          |      |                       |      |                         |      |                |
| Mean (SD)         | 51.1(11.7)       |      | 46.5(13.1)            |     | 50.4(12.9)               |      | 49(10.7)              |      | 52.8(10.9)              |      |                |
| Median            | 50               |      | 45                    |     | 49                       |      | 48.5                  |      | 50                      |      |                |
| Tumor Stage       |                  |      |                       |     |                          |      |                       |      |                         |      |                |
| Stage I           | 8                | 1.4  | 0                     | 0   | 2                        | 25   | 2                     | 25   | 4                       | 50   |                |
| Stage IIA         | 125              | 19.8 | 4                     | 2   | 44                       | 35.2 | 38                    | 30.4 | 39                      | 31.2 | p = 0.732      |
| Stage IIB         | 168              | 26.8 | 8                     | 4   | 66                       | 39.2 | 52                    | 30.9 | 42                      | 25.2 |                |
| Stage IIIA        | 222              | 35.2 | 8                     | 3.6 | 72                       | 32.5 | 63                    | 28.4 | 79                      | 35.5 | p = 0.443      |
| Stage IIIB        | 106              | 16.8 | 1                     | 1   | 43                       | 40.5 | 25                    | 23.5 | 37                      | 35   |                |
| Menopausal Status |                  |      |                       |     |                          |      |                       |      |                         |      |                |
| Premenopausal     | 298              | 47.3 | 12                    | 4   | 120                      | 40.2 | 94                    | 31.6 | 72                      | 24.2 | p = 0.196      |
| Postmenopausal    | 331              | 52.7 | 9                     | 2.7 | 107                      | 32.3 | 86                    | 26   | 129                     | 39   |                |
| Tumor grade       |                  |      |                       |     |                          |      |                       |      |                         |      |                |
| G I               | 6                | 1    | 0                     | 0   | 4                        | 66.7 | 0                     | 0    | 2                       | 33   | p = 0.486      |
| G II              | 555              | 88.1 | 20                    | 3.6 | 197                      | 35.5 | 164                   | 29.5 | 174                     | 31.4 |                |
| G III             | 68               | 10.9 | 1                     | 1.5 | 26                       | 38.3 | 16                    | 23.5 | 25                      | 36.7 |                |
| Hormonal Status   |                  |      |                       |     |                          |      |                       |      |                         |      |                |
| ER                |                  |      |                       |     |                          |      |                       |      |                         |      |                |
| Positive          | 286              | 45.8 | 8                     | 2.8 | 105                      | 36.7 | 80                    | 28   | 93                      | 32.5 | p = 0.941      |



## Conclusion

According to the results of this retrospective study, increased BMI may be associated with less favorable prognosis of breast cancer patients.