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Role of ENHERTU in Management of Breast Cancer

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Abstract

Being a lady is the most significant hazard factor for creating breast cancer. Men too can get it however in uncommon and rare conditions. Several risk factorscan in danger the lives of breast cancer patients. Over the years the treatment of breast cancer was dependent upon chemotherapy, radiation, hormone therapy, and surgery which of course is still being done as a way of reducing the effects and controlling its spread to other parts of the body. As this disease is incurable several drugs have been developed over time to reduce the effects and spread of it. In this article, we are focused on a newly developed drug known as ENHERTU to be used in treating breast cancer. Few methods are used in the detectionof breast cancer to determine its treatment. As a result, a total number of 234 patients weretreated with the newly developed drug under the clinical trials to study the workings and effectiveness of the drug. In conclusion, the results of the drug proved to be positive to treat breast cancer before its approval by the Food and Drug Administration.

Keywords: Breast Cancer, ENHERTU, HER2 protein, Hormone therapy.

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Introduction

Cancer is one of the most dreaded diseases of the twentieth century, and it is still spreading and becoming more common in the twenty-first. The situation is so dire that one out of every four people will develop cancer during their lifetime. Every year, more than 11 lakh new cases of cancer are reported in India, compared to more than 14 million worldwide. Cancer is a generic term that refers to a group of diseases characterized by abnormal cell growth that may invade or spread to other parts of the body.[1-4] The ENHERTU drug, which is used to treat breast cancer, has been addressed in this study. One of the most common cancers in women is breast cancer. Breast cancer can strike men as well. Breast cancer in men, on the other hand, is uncommon, accounting for less than 1% of all breast cancers. Breast cancer starts in the cells of the breast. Safe cells in the breast move and grow out of control, resulting in a tumor, which is a mass of sheets of cells. Breast cancer spreads when it infiltrates surrounding organs or other body parts, or when breast cancer cells migrate across the bloodstream to other body parts. ENHERTU is a medication that was developed to prevent or slow the spread of breast cancer cells. A drug used to treat adults who have HER2-positive breast cancer that has spread to other parts of the body and can't be removed by surgery. It's given to patients who have recently received at least two anti- HER2 drugs for metastatic disease. 2nd It's also being used to treat a variety of cancers. ENHERTU contains trastuzumab, a monoclonal antibody that binds to the HER2 protein present on certain cancer cells. It also includes deruxtecan, an anticancer drug that may aid in the destruction of malignant growth cells. ENHERTU is a drug that works as an immunizer. Fam-trastuzumab deruxtecan is another name for this drug.[5-10]

Testing Methods

There are several approaches for determining whether breast cancer is HER2-positive. One or more of the following tests were used to determine whether cancer reacted after being treated with anti-HER2 therapy.

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Immunohistochemistry (IHC)

This IHC test aims to use color to recolor the HER2 proteins. A score of 0-3 + indicates the amount of HER2 proteins on the outside of the cells in a bosom malignant growth tissue examination. If the score falls between 0 and 1, the patient is said to be HER2 negative. If the score is 2 or higher, this is referred to as the fringe. If the score is 3 or higher, it indicates that the patient has HER2 positivity. In the future, if the results are ambiguous, a FISH test on a sample of disease tissue should be possible to determine if the cancer is HER2-positive.[11-15]

Fluorescence *in situ* Hybridization (FISH)

HER2 proteins are given specific names using this technique. Synthetic compounds have been added to these special names for them to change tone and gleam in obscurity until they append HER2 proteins. This is one of the most popular precise tests performed, but it is costly and needs some expenditure to receive results. As a result, the IHC test is often used to determine if a disease is HER2 positive. This test can result in a (+) or (-) score, while other wellness habitats refer to a negative test as having no result.[16-18]

Results

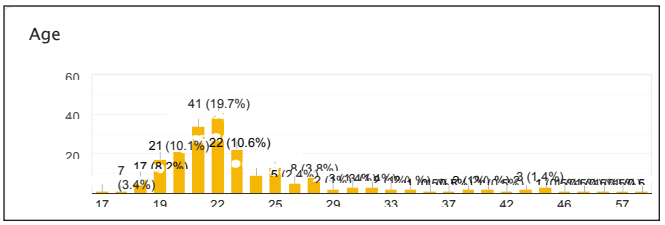
Results are depicted in graphs and pie charts as per the question numbers mentioned in the survey. (Names of participants are not disclosed).

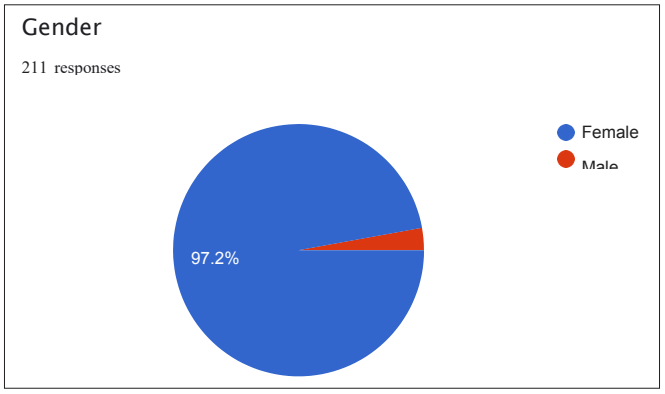
Questionnaire

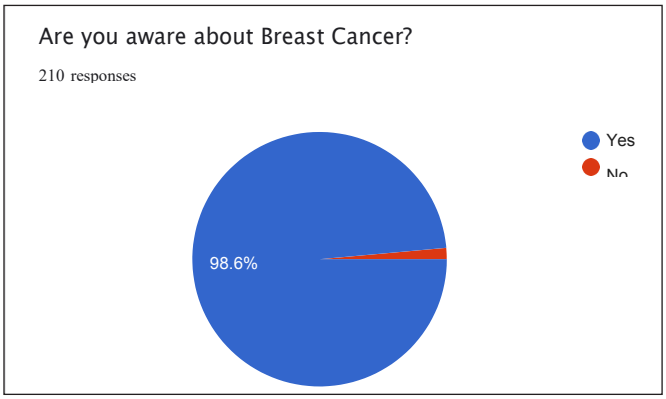
Survey on ENHERTU drug

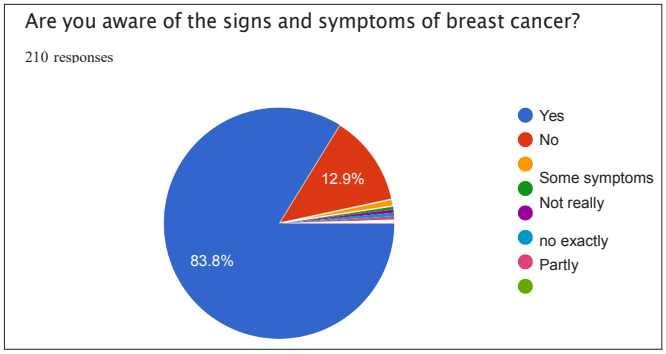
This is an educational survey on "The Role of ENHERTU in the Management of Breast Cancer": Questionnaire-based survey

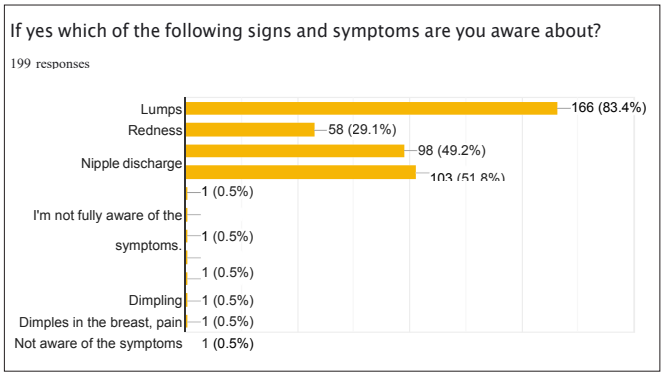
1. Name (Not disclosed)
2. Age
3. Gender
   a. Female b. Male
4. Are you aware about Breast Cancer?
   a. Yes b. No
5. Are you aware of the signs and symptoms of breast cancer?
   a. Yes b. No c. Other
6. If yes which of the following signs and symptoms are you aware about?
   a. Lumps b. Redness C. Nipple discharge D. Swelling E. Other
7. What are the causes of breast cancer?
   a. Family history b. Alcohol intake c. Gene mutation
   d. Prolonged use of oral contraceptives e. Other
8. Which of the following falls under the physiological effects of breast cancer?
   a. Unintentional weight loss b. Breast pain
   c. Changes in breast colour d. Significant swelling
9. Which of the following anticancer drugs can be given in breast cancer?
   a. Letrozole b. Tamoxifen c. Busulfan d. Paracetamol
10. Have you heard about ENHERTU?
    a. Yes b. No
11. Which of the following is the route of administration for ENHERTU?
    a. Oral route b. Intravenous route
    c. Ocular route d. Nasal route e.Unaware of it
12. At present ENHERTU falls under which phase of clinical trial?
    a. 1st b. 2nd c. 3rd d. 4th
13. Is there any permanent treatment for breast cancer?
    a. Yes b. No
14. Which of the following treatment is available for breast cancer?
    a. Mastectomy b. Breast reduction surgery c.Lumpectomy d.Anticancer drugs e.Other:
15. ENHERTU falls under which of the following categories?
    a. Chemotherapy b. Immunotherapy c. Unaware of it
16. Are you aware of the side effects of the drug?
    a. Yes b. No c. Not Aware
17. Are you aware about any of the following side effects of ENHERTU?
    a. Hairloss b. Vomiting c. Constipation d. Fatigue e. other
18. Who are the manufactures of ENHERTU?
    a. Johnson & johnson b. Pfizer c. Daiichi Sankyo & Astra Zeneca d. Roche
19. Do you think ENHERTU is more beneficial than the breast cancer drugs (anticancer drugs)?
    a. Yes b. No

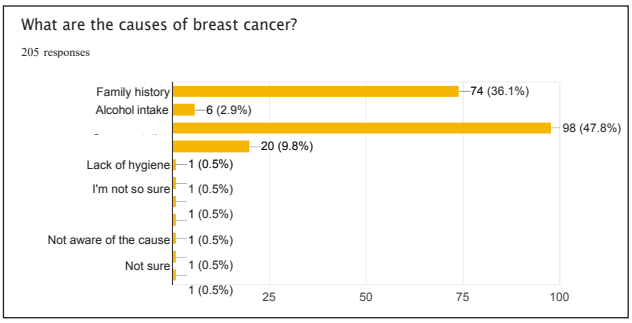

Age
60
40
20
41 (19.7%)
21 (10.1%)
22 (10.6%)
17 (8.2%)
7 (3.4%)
8 (3.8%)
3 (1.4%)
17
19
22
25
29
33
37
42
46
57

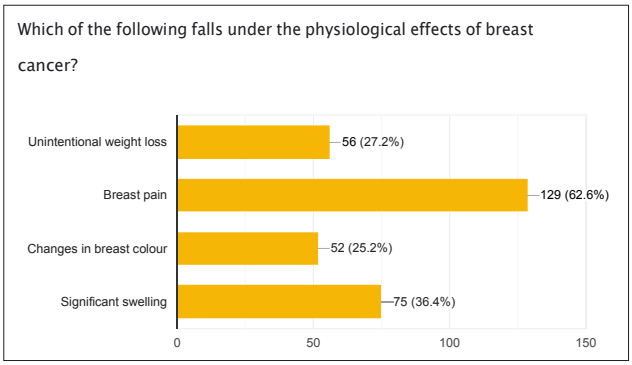

Gender
211 responses
Female
Male
97.2%

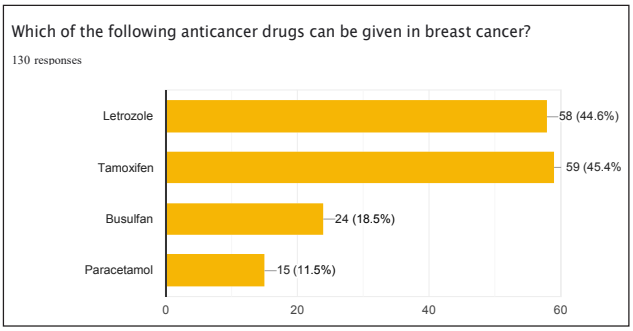

Are you aware about Breast Cancer?
210 responses
Yes
No
98.6%

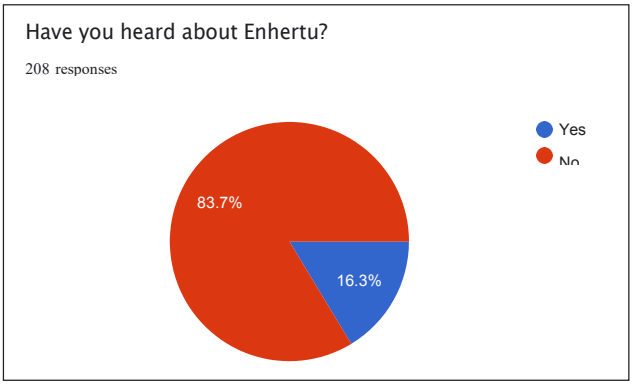

Are you aware of the signs and symptoms of breast cancer?
210 responses
Yes
No
Some symptoms
Not really
no exactly
Partly
12.9%
83.8%

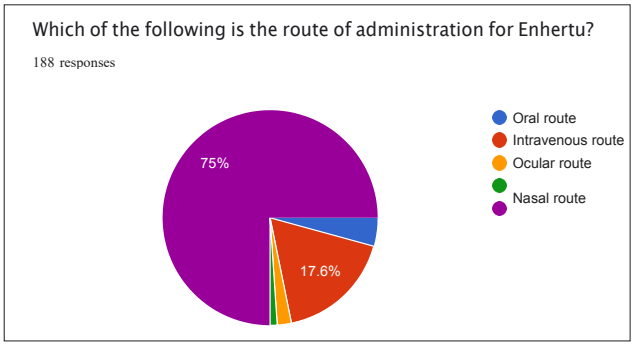

If yes which of the following signs and symptoms are you aware about?
199 responses
Lumps
166 (83.4%)
Redness
58 (29.1%)
Nipple discharge
98 (49.2%)
1 (0.5%)
I'm not fully aware of the
symptoms.
1 (0.5%)
1 (0.5%)
Dimpling
1 (0.5%)
Dimples in the breast, pain
1 (0.5%)
Not aware of the symptoms
1 (0.5%)

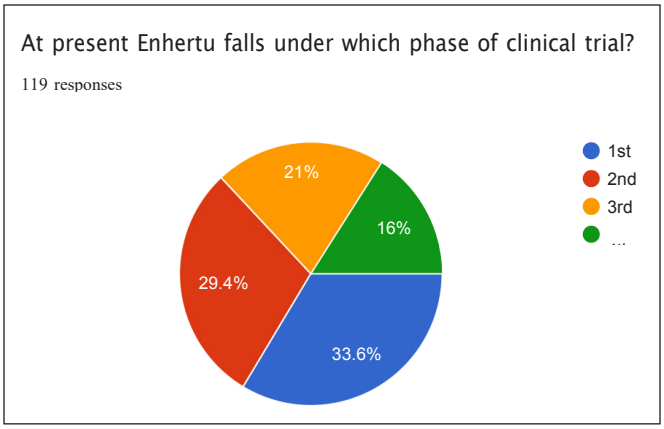

What are the causes of breast cancer?
205 responses
Family history
74 (36.1%)
Alcohol intake
6 (2.9%)
98 (47.8%)
20 (9.8%)
Lack of hygiene
1 (0.5%)
I'm not so sure
1 (0.5%)
1 (0.5%)
Not aware of the cause
1 (0.5%)
Not sure
1 (0.5%)
1 (0.5%)
25
50
75
100

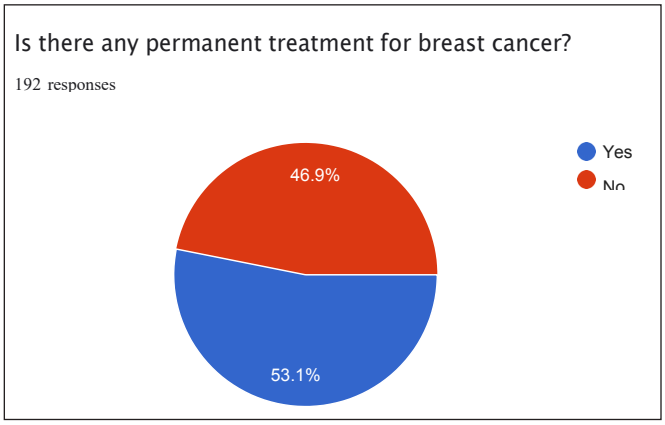

Which of the following falls under the physiological effects of breast cancer?
Unintentional weight loss
56 (27.2%)
Breast pain
129 (62.6%)
Changes in breast colour
52 (25.2%)
Significant swelling
75 (36.4%)
0
50
100
150

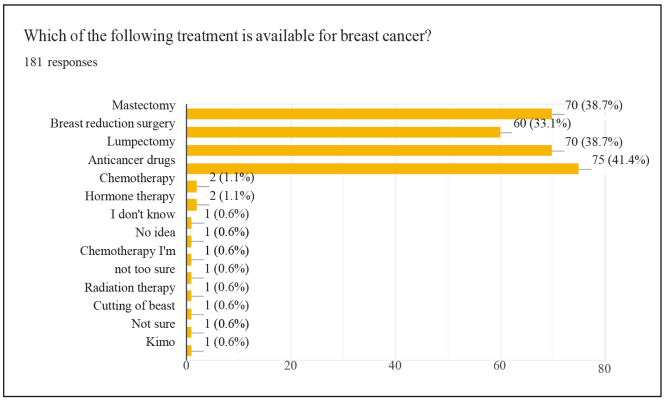

Which of the following anticancer drugs can be given in breast cancer?
130 responses
Letrozole
58 (44.6%)
Tamoxifen
59 (45.4%
Busulfan
24 (18.5%)
Paracetamol
15 (11.5%)
0
20
40
60

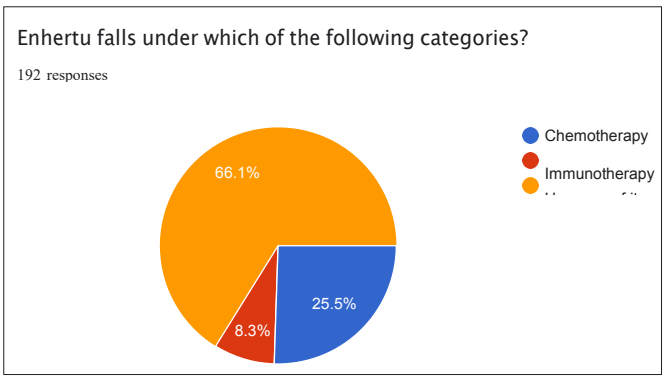

Have you heard about Enhertu?
208 responses
Yes
No
83.7%
16.3%

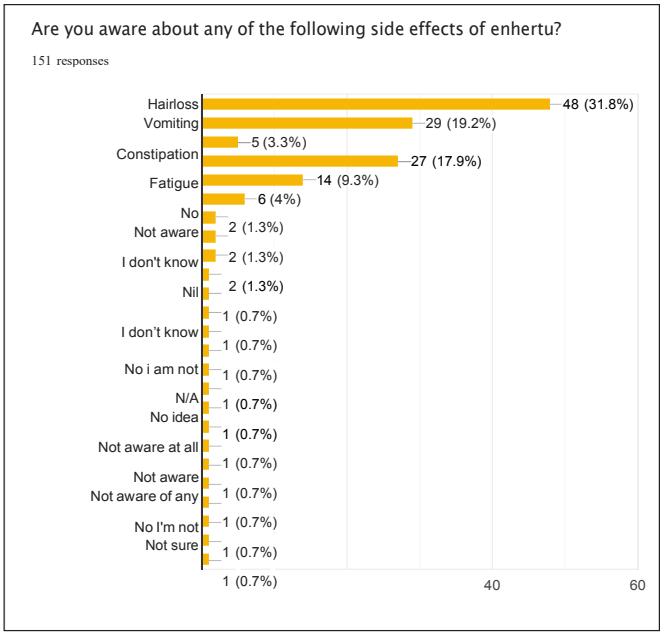

Which of the following is the route of administration for Enhertu?
188 responses
Oral route
Intravenous route
Ocular route
Nasal route
75%
17.6%

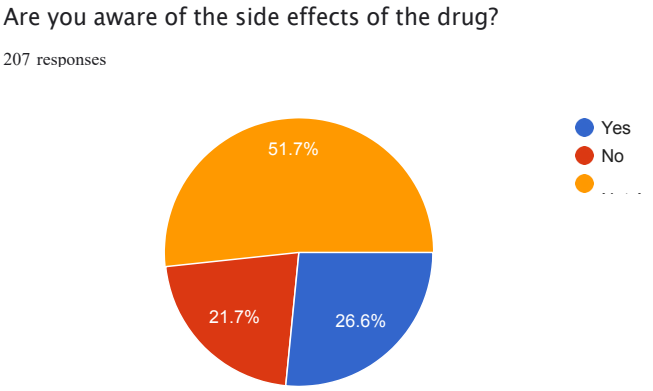

At present Enhertu falls under which phase of clinical trial?
119 responses
21%
16%
29.4%
33.6%
1st
2nd
3rd
...

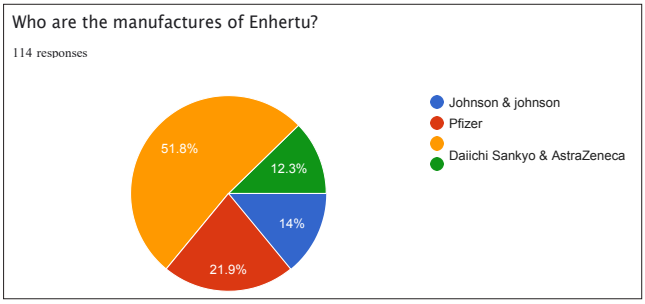

Is there any permanent treatment for breast cancer?
192 responses
46.9%
53.1%
Yes
No

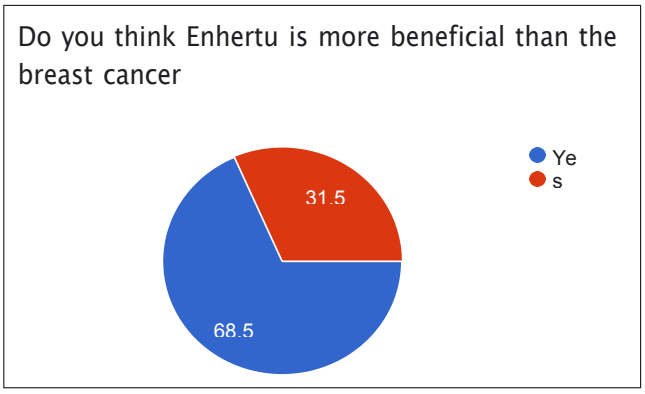

Which of the following treatment is available for breast cancer?
181 responses
Mastectomy 70 (38.7%)
Breast reduction surgery 60 (33.1%)
Lumpectomy 70 (38.7%)
Anticancer drugs 75 (41.4%)
Chemotherapy 2 (1.1%)
Hormone therapy 2 (1.1%)
I don't know 1 (0.6%)
No idea 1 (0.6%)
Chemotherapy I'm 1 (0.6%)
not too sure 1 (0.6%)
Radiation therapy 1 (0.6%)
Cutting of beast 1 (0.6%)
Not sure 1 (0.6%)
Kimo 1 (0.6%)
0 20 40 60 80


Enhertu falls under which of the following categories?
192 responses
66.1%
25.5%
8.3%
Chemotherapy
Immunotherapy


Are you aware about any of the following side effects of enhertu?
151 responses
Hairloss 48 (31.8%)
Vomiting 29 (19.2%)
Constipation 5 (3.3%)
Fatigue 27 (17.9%)
No 14 (9.3%)
Not aware 6 (4%)
I don't know 2 (1.3%)
Nil 2 (1.3%)
I don't know 2 (1.3%)
No i am not 1 (0.7%)
N/A 1 (0.7%)
No idea 1 (0.7%)
Not aware at all 1 (0.7%)
Not aware 1 (0.7%)
Not aware of any 1 (0.7%)
No I'm not 1 (0.7%)
Not sure 1 (0.7%)
1 (0.7%)
40
60


Are you aware of the side effects of the drug?
207 responses
51.7%
21.7%
26.6%
Yes
No


Who are the manufactures of Enhertu?
114 responses
51.8%
12.3%
14%
21.9%
Johnson & johnson
Pfizer
Daiichi Sankyo & AstraZeneca


Do you think Enhertu is more beneficial than the breast cancer
31.5
68.5
Ye
s

Discussion

The results were based on the information and the date collected from the200 people that give their responses. The questionnaire was sent to about300 people of which 216 responded and the others did not respond. This was an educative study that examined people aware of the drug.

After analyzing the study, it was found that the majority of the females approximately 98.6% are aware of breast cancer as well as its symptoms, although about 83.7% of the females have no idea of the newly developed drug ENHERTU. The result is purely based on the responses given by the participants indicating that the females are not aware of the newlydeveloped drug for the treatment of breast cancer.[19-21]

Outcomes

ENHERTU is a medicine that has been approved by the FDA. The drug was approved by the FDA based on the findings of two drug trials that were performed (Trial 1 NCT03248492 and Trial 2 NCT02564900).[22-26] The drug was tested on a total of 234 patients with HER2-positive metastatic breast cancer, with the findings showing that60 percent of the patients had their tumours shrink, while 56 percent had a partial response, meaning their tumours shrank by 30 percent, indicating that the majority of the patients' tumours shrank and stopped increasing. As a result, the medication was approved for use in the treatment of metastatic breast cancer.

Conclusion

ENHERTU is a new drug used to treat breast cancer. The FDA approved this medicineafter a series of drug clinical trials, and the acceptance depends at medicine trials' findings. Females were tested before the medication was approved, and the results were observed. Finally, the drug has been proven to be safe for use in the treatmentof breast cancer and, because it is effective, it can be made available to people in other parts of the world. People are still unfamiliar with the drug; according to a poll, the majority of people have never heard of it. As a result,the drug's safety in the treatment of breast cancer has been established.

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