Knowledge of ovarian cancer in Ibadan: Community-based assessment of women aged 15 years and above

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ABSTRACT

Background: Noncommunicable diseases are increasing in proportion in developing countries. Ovarian cancer has the highest case fatality rate among gynecological cancers but forms only 3%. Its etiology is unknown, and no cost-effective screening program exists due to the absence of well-defined precursor lesions. Early symptoms are vague but can be used to detect Stages I and II diseases. Documented knowledge or awareness of ovarian cancer varies between 4.4% and 15%. However, this is the first community-based survey in Africa to determine knowledge of ovarian cancer by females.

Materials and Methods: The questionnaire was semi-structured and interviewer administered. Females aged 15 years and above were selected through a four-stage process involving urban/semi-urban settings, local government areas, wards, and units. We randomly selected 424 participants, equally distributed between urban and semi-urban areas. Bivariate and linear regression analyses were done.

Results: Most (83.5%) of the respondents were <40 years, married (56.1%), had secondary education (52.4%), Yoruba (92.5%), and Christian (56.1%). With good knowledge score taken as having at least 70% of required information, about 2.8% of respondents had good knowledge of ovarian cancer. Only level of education and occupation significantly affected knowledge of ovarian cancer.

Conclusion: There is very poor knowledge about ovarian cancer, its risk factors, symptoms, treatment, and prognosis among females in Ibadan, strongly affected by education and occupation.

Keywords: Community based, females, Ibadan, knowledge, ovarian cancer

Introduction

The concept of “epidemiological transition” had increased the proportions formed by noncommunicable diseases (NCDs) in the developing countries due to increasing life expectancy, lifestyle changes, and globalization.1,2 Cancer remains a serious burden worldwide and is one of the leading causes of global morbidity and mortality. In 2013, there were 14.9 million incident cancer cases, 8.2 million
deaths, and 196.3 million disability-adjusted life years.[2,3] Cancer has moved from being the third leading cause of death globally in 1990 to the second leading cause behind cardiovascular diseases in 2013.

Ovarian cancer is the leading cause of death among all gynecological cancers despite accounting for only 3% of cancer cases in women.[4] Globally, ovarian cancer has the highest case fatality rate among gynecological malignancies chiefly due to nonunavailability of effective screening methods, coupled with its vague nonspecific warning symptoms leading to late hospital presentation.[5,6] Ovarian cancer is more common from the fifth decade of life upward and has neither known cost-effective screening regimens nor well-defined precursor lesions in existence although strong family history has recently paved ways for genetic testing and counseling.[7]

The risk factors of NCDs if identified early can assist in reducing burden of diseases.[8] Awareness concerning breast and cervical cancers, though not yet adequate, is much higher than that of ovarian cancer as lots of studies have been done regarding awareness and knowledge of breast cancer among women, some on cervical cancer, but very few on ovarian cancer.[5,9-11] Abraham et al., about three decades ago, had suggested that young women had poor knowledge of the ovaries and its functions.[14]

Ovarian cancer accounts for about 3% of cancers in women and is the most lethal gynecologic cause of cancer deaths among them.[14-6,15] The survival rate is very poor in developing countries such as Nigeria due to inadequate access to health facilities and late presentation. The only study found in Nigeria concerning the awareness of ovarian cancer symptoms and health-seeking responses was hospital based and was conducted among female health workers in various states of Nigeria. It reported a low awareness rate of 4.4%.[16] From extensive literature search, there was no community-based study on knowledge of ovarian cancer in researches from Africa. We, therefore, embarked on a community-based assessment of our women to bridge this gap and also to draw the attention of the scientific community to the depth of deficiencies of information on awareness of ovarian cancer in spite of high case-fatality figures. Our main aim was to assess the knowledge of ovarian cancer, its possible symptoms, treatment, and prognosis among females aged 15 years and above in Ibadan metropolis.

Materials and Methods

Study area
This study was conducted in Ibadan metropolis, the capital of Oyo State of Nigeria. Ibadan is located in the south-west part of Nigeria with a land size of over 500 km², a population of over 3 million people and 11 local government areas (LGAs) out of which 5 are centrally located while the remainders are peripheral. The five centrally located LGAs (Ibadan North, Ibadan North-East, Ibadan North-West, Ibadan South-East, and Ibadan South-West) are referred to as urban, while the six peripheral LGAs (Akinyele, Egbeda, Ido, Lagelu, Oluyole, and Ona Ara) are described as semi-urban. Each of these LGAs is divided into wards.

The Yorubas constitute the bulk of the native inhabitants while the main economic activities engaged in by the Ibadan populace include agriculture, trade, public service employment, factory work, and service sector/tertiary production.

Study design
A cross-sectional survey was conducted among females aged 15 years and above to assess their knowledge of ovarian cancer using an interviewer-administered, semi-structured questionnaire. Nonconsenting females in the study population were excluded from the study. The minimum sample size was estimated using the statistical method of Leslie Kish (1965) for a cross-sectional study yielding a total of 430 including for attrition. The questionnaire consisted of five sections: sociodemographic characteristics of respondents, their knowledge about ovaries and their functions, knowledge of ovarian cancer, knowledge of symptoms of ovarian cancer, and knowledge of treatment options and prognosis.

Sampling technique
A multistage sampling technique was employed for this study. In the first stage, the 11 LGAs were divided into rural and urban areas followed by selection of 2 LGAs each by simple random sampling using balloting method from each of the urban and semi-urban areas. Subsequently, in the third stage, two wards each were selected from the selected LGAs by simple random sampling using balloting method following which eight neighborhood communities were selected. These were Oje, Sango, Eleta, Ilupeju, Olodo, Olode, Akuro, and Oke-Igbaro.

Data collection and procedure
The researchers were divided into eight groups consisting of a minimum of three members with at least one member
being versatile in the local language. The questionnaire was prepared in English language and translated into Yoruba language by professional translators.

**Knowledge scoring**
The responses were recoded and scored as 0 and 1 point for wrong and right responses, respectively. These scores were added together and converted to percentages of the total obtainable points. Scores of at least 70% were adjudged as demonstrating good knowledge and those below 50% have poor knowledge. Those who scored between 50% and 69% have fair knowledge.

**Data management**
The data were entered into the computer and thorough data cleaning was done to check for errors and omissions at the end of data collection. The data were analyzed using the Statistical Package for the Social Sciences version 21.0 (IBM Inc, Armonk, New York, USA). Frequencies, means, and correlations were generated. Chi-square test was utilized to explore associations between independent and dependent variables, and level of significance was set at 5%. Findings are presented in forms of texts and tables as appropriate. The independent variables were the sociodemographic characteristics while the dependent variables were their assessed aspects of knowledge of the ovaries and ovarian cancer.

**Ethical considerations**
Approval was obtained from the Ministry of Health, Oyo State of Nigeria, while informed written consent was obtained from the respondents. Anonymity and confidentiality of information were ensured.

**Results**
This community-based survey was conducted among 424 females aged at least 15 years in the urban and semi-urban areas of Ibadan metropolis. The mean age of the respondents was 29.8 years and majority of them, i.e., 191 (45.1%) were in the age group of 15–24 years with 87 (20.5%) being above 40 years. Most of the respondents were married (238 [56.1%]), Yoruba (392 [92.4%]), semi-skilled occupation (134 [31.6%]), and Christians (238 [56.1%]) as shown in Table 1. The major sources of information are presented in Table 1, and when having good knowledge was determined as having scores of at least 70% of required information, only 2.8% of respondents had good knowledge of ovarian cancer [Table 2]. Moreover, it was only their level of education and occupation that significantly affected their knowledge of ovarian cancer [Table 3].

| Variable | Frequency (n=424) (%) |
|----------|----------------------|
| Age (years) | |
| 15-24 | 191 (45.1) |
| 25-39 | 146 (34.4) |
| 40-64 | 84 (19.8) |
| ≥65 | 3 (0.7) |
| Marital status | |
| Single | 176 (41.5) |
| Married | 238 (56.1) |
| Co-habiting | 3 (0.7) |
| Widowed | 5 (1.2) |
| Separated | 2 (0.5) |
| Tribe | |
| Yoruba | 392 (92.4) |
| Igbo | 14 (3.3) |
| Hausa | 2 (0.5) |
| Others | 16 (3.8) |
| Level of education | |
| None | 22 (5.2) |
| Primary | 38 (9.0) |
| Secondary | 222 (52.3) |
| Tertiary | 142 (33.5) |
| Occupation | |
| None | 47 (11.1) |
| Unskilled | 103 (24.3) |
| Semi-skilled | 134 (31.6) |
| Skilled | 76 (17.9) |
| Professional | 64 (15.1) |
| Religion | |
| Christianity | 238 (56.1) |
| Islam | 185 (43.7) |
| Chrislam | 1 (0.2) |

| Variable | Frequency (n=128) (%) |
|----------|----------------------|
| Source of information | |
| Radio, television, or newspapers | 52 (40.6) |
| Health workers | 35 (27.3) |
| Family and friends | 19 (14.8) |
| Books | 9 (7.0) |
| Social media | 6 (4.7) |
| Others | 7 (5.5) |

On the functions of the ovaries, most of the respondents, i.e., 294 (69.3%) agreed that the ovaries are responsible for the production of eggs while less than half, i.e., 190 (44.8%) believed that they were responsible for the feminine shape and sexuality. Marital status, level of education, occupation, and level of development of the participants’ location influence their knowledge of symptoms of ovarian cancer but not age [Table 4]. On the knowledge of treatment options and prognosis among those who were aware of ovarian cancer, the respondents demonstrated poor knowledge level which is significantly associated with their level of education ($\chi^2 = 15.262$, Table 4).
Comparing the knowledge scores of ovarian cancer with various demographic variables, women who were living in urban areas or who were unmarried or had higher level of education or have occupation as skilled professionals were more likely to have at least a fair knowledge of ovarian cancer. Significant statistical associations as seen with their knowledge of ovarian cancer were found for their knowledge of the symptoms of ovarian cancer. However, there was no significant difference among age groups concerning their knowledge of ovarian cancer and its symptoms.

Discussion

This was a study conducted primarily among women within the Ibadan metropolis to assess their knowledge of the ovaries, ovarian cancer, its risk factors, symptomatology, treatment options, and prognosis. Four local governments, of which 2 are described as urban and the other 2 semi-urban, were used for this study. Results from the different local governments revealed that the urban areas had an overall significantly higher knowledge scores than the semi-urban areas. This may be explained by different factors which include higher levels of education, higher occupation skill-levels, and proximity to tertiary health centers.

In spite of the leading role of cancers as cause of death from NCDs, only about half of the respondents duly understood what cancer was and only one-sixth had above 50% of the knowledge score on what ovarian cancer is. This, in comparison with studies on other gynecological cancers, is abysmal; a number of studies on breast cancer awareness in different parts of Nigeria (urban and rural) revealed awareness levels ranging between 58% and 98%.[10,11,13,17] A study by Ahmed et al. on cervical cancer among market women in Zaria revealed that 43.7% of the respondents had >50% knowledge.[12] The greater knowledge and awareness levels of these other gynecological malignancies may be explained by the cancer awareness programs which were restricted to these two because of their high prevalence rates in spite of easier access for screening and early diagnosis.

Table 2: Knowledge scores concerning the ovaries and their functions and ovarian cancer - its symptoms, treatment options, and prognosis

| Overall level of knowledge (%) | Good | Fair | Poor |
|-------------------------------|------|------|------|
| Knowledge about ovaries and their functions | 23 | 18 | 59 |
| Knowledge about ovarian cancer | 3 | 12 | 85 |
| Knowledge about symptoms of ovarian cancer | 21 | 17 | 62 |
| Knowledge about treatment options and prognosis | 27 | 33 | 40 |
| Composite score | 6 | 26 | 68 |

Table 3: Relationship between sociodemographic variables and knowledge about ovarian cancer

| Variable | Poor knowledge (%) | Fair knowledge (%) | Good knowledge (%) | Total | χ² | P |
|----------|-------------------|--------------------|-------------------|-------|----|---|
| Age (years) | | | | | | |
| <40 | 284 (84.3) | 45 (13.3) | 8 (2.4) | 337 | 2.195 | 0.334 |
| ≥40 | 75 (86.2) | 8 (9.2) | 4 (4.6) | 87 | | |
| Marital status | | | | | | |
| Married | 208 (87.4) | 24 (10.1) | 6 (2.5) | 237 | 3.192 | 0.203 |
| Not married | 151 (81.2) | 29 (15.6) | 6 (3.2) | 186 | | |
| Level of education | | | | | | |
| No formal education | 22 (100) | 0 | 0 | 22 | 18.145 | 0.006 |
| Primary | 34 (89.5) | 4 (10.5) | 0 | 38 | | |
| Secondary | 195 (87.8) | 24 (10.8) | 3 (1.4) | 222 | | |
| Tertiary | 108 (76.1) | 25 (17.6) | 9 (6.3) | 142 | | |
| Occupation | | | | | | |
| None | 45 (95.7) | 2 (4.3) | 0 (0) | 47 | 20.114 | 0.010 |
| Unskilled | 91 (88.3) | 11 (10.7) | 1 (1.0) | 103 | | |
| Semi-skilled | 114 (85.1) | 19 (14.2) | 1 (0.7) | 134 | | |
| Skilled | 58 (76.3) | 13 (17.1) | 5 (6.6) | 76 | | |
| Professional | 52 (79.7) | 8 (12.5) | 5 (7.8) | 64 | | |
| Level of development | | | | | | |
| Urban | 178 (84.0) | 29 (13.7) | 5 (2.4) | 212 | 0.830 | 0.660 |
| Semi-urban | 181 (85.4) | 24 (11.3) | 7 (3.3) | 212 | | |
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Table 4: Relationship between sociodemographic variables and knowledge about symptoms of ovarian cancer

| Variable                  | Poor knowledge (%) | Fair knowledge (%) | Good knowledge (%) | Total | \( \chi^2 \) | \( P \) |
|---------------------------|--------------------|--------------------|--------------------|-------|------------|-------|
| Age (years)               |                    |                    |                    |       |            |       |
| < 40                      | 203 (60.2)         | 58 (17.2)          | 76 (22.6)          | 337   | 2.808      | 0.246 |
| \( \geq 40 \)             | 60 (69.0)          | 14 (16.1)          | 13 (14.9)          | 87    |            |       |
| Marital status            |                    |                    |                    |       |            |       |
| Married                   | 161 (67.6)         | 32 (13.4)          | 45 (18.9)          | 237   | 7.877      | 0.019 |
| Not married               | 102 (54.8)         | 40 (21.5)          | 44 (23.7)          | 186   |            |       |
| Level of education        |                    |                    |                    |       |            |       |
| No formal education       | 18 (81.8)          | 1 (4.5)            | 3 (13.6)           | 22    | 12.970     | 0.044 |
| Primary                   | 29 (76.3)          | 4 (10.5)           | 5 (13.2)           | 38    |            |       |
| Secondary                 | 140 (63.1)         | 34 (15.3)          | 48 (21.6)          | 222   |            |       |
| Tertiary                  | 76 (53.5)          | 33 (23.2)          | 33 (23.2)          | 142   |            |       |
| Occupation                |                    |                    |                    |       |            |       |
| None                      | 23 (48.9)          | 9 (19.1)           | 15 (31.9)          | 47    | 20.563     | 0.008 |
| Unskilled                 | 77 (74.8)          | 14 (13.6)          | 12 (11.7)          | 103   |            |       |
| Semi-skilled              | 90 (67.2)          | 20 (14.9)          | 24 (17.9)          | 134   |            |       |
| Skilled                   | 43 (56.6)          | 14 (18.4)          | 19 (25)            | 76    |            |       |
| Professional              | 30 (46.9)          | 15 (23.4)          | 19 (29.7)          | 64    |            |       |

Table 5: Relationship between sociodemographic variables and knowledge about treatment and prognosis of ovarian cancer

| Variable                  | Poor knowledge (%) | Fair knowledge (%) | Good knowledge (%) | Total | \( \chi^2 \) | \( P \) |
|---------------------------|--------------------|--------------------|--------------------|-------|------------|-------|
| Age (years)               |                    |                    |                    |       |            |       |
| < 40                      | 129 (38.3)         | 115 (34.1)         | 93 (27.6)          | 337   | 1.258      | 0.533 |
| \( \geq 40 \)             | 39 (44.8)          | 26 (29.9)          | 22 (25.3)          | 87    |            |       |
| Marital status            |                    |                    |                    |       |            |       |
| Married                   | 103 (43.3)         | 73 (30.7)          | 62 (26.1)          | 237   | 3.147      | 0.207 |
| Not married               | 65 (34.9)          | 68 (36.6)          | 53 (28.5)          | 186   |            |       |
| Level of education        |                    |                    |                    |       |            |       |
| No formal education       | 15 (68.2)          | 7 (31.8)           | 0 (0.0)            | 22    | 15.262     | 0.018 |
| Primary                   | 18 (47.4)          | 13 (34.2)          | 7 (18.4)           | 38    |            |       |
| Secondary                 | 87 (39.2)          | 74 (33.3)          | 61 (27.5)          | 222   |            |       |
| Tertiary                  | 48 (33.8)          | 47 (33.1)          | 47 (33.1)          | 142   |            |       |
| Occupation                |                    |                    |                    |       |            |       |
| None                      | 17 (36.2)          | 16 (34.0)          | 14 (29.8)          | 47    | 15.031     | 0.059 |
| Unskilled                 | 48 (46.3)          | 30 (29.1)          | 25 (24.3)          | 103   |            |       |
| Semi-skilled              | 64 (47.8)          | 37 (27.6)          | 33 (24.6)          | 134   |            |       |
| Skilled                   | 23 (30.3)          | 31 (40.8)          | 22 (28.9)          | 76    |            |       |
| Professional              | 16 (25.0)          | 27 (42.2)          | 21 (32.8)          | 64    |            |       |
| Level of development      |                    |                    |                    |       |            |       |
| Urban                     | 64 (30.2)          | 79 (37.3)          | 69 (32.5)          | 212   | 16.173     | <0.001|
| Semi-urban                | 104 (49.1)         | 62 (29.2)          | 46 (21.7)          | 212   |            |       |

about half properly identified the anatomical location. Unfortunately, more than half of the women wrongly assumed the ovaries to be the same as the womb, the tubes, or the cervix. These findings indicated a lack of understanding and major misconceptions about the female reproductive organs. Ovarian cancer has the highest case fatality rate among gynecological cancers worldwide due to the absence of effective screening methods and nonspecific early warning symptoms leading to late presentations. A recent estimate indicated that 65% of the 240,476 cases of ovarian cancer worldwide in 2009 occurred in developing countries.\[^{13}\]

In our study, there was a strong association between the respondents' highest level of education and their knowledge of ovaries and their functions with none of the respondents who had only primary school education having good knowledge about the subject.
The respondents who had good knowledge of the subject were more likely to be younger than 40 years and also more likely to have had tertiary education. Unsurprisingly, the highest level of good knowledge of the ovaries was found among those who were professionals, skilled or semi-skilled in their occupation. The poor knowledge of the ovaries may likely stem from the fact that they are hidden in location and received little or no attention in basic biology courses.

There is a poor knowledge of the symptoms of ovarian cancer among the respondents as only one-fifth of them had a good knowledge of symptoms of ovarian cancer. This is similar to a Malaysian study which reported poor knowledge of symptoms with the most common being pelvic and/or abdominal swelling, bloating and/or feeling of fullness, and the lowest being unexplained changes in bowel habits. In a hospital-based study conducted by Adeyemi et al. in 2014 among 457 female health workers in Osun and Oyo States of Nigeria, it showed that less than half, i.e., 46.2% were able to recall at least one warning symptom of ovarian cancer while only 4.4% were able to recall >3 warning symptoms. In an online survey among women above 40 years in Texas by Lockwood-Rayermann et al. and involving over 1200 participants, only 15% of the respondents were familiar with ovarian cancer symptoms and more than two-thirds incorrectly believed that the Papanicolaou smear test could diagnose the disease. In the study done by Okobia et al., 82.5% of the respondents were aware that early diagnosis of cancer (specifically breast cancer) improves the outcome of treatment, but less than half of the respondents were aware that breast cancer is curable when detected early.

Although participants in this study showed a poor knowledge about risk factors for ovarian cancer, it is important to note that more people are becoming aware that personal or family histories of breast, ovarian, or colon cancer are among the risk factors to be watched out for. In general, ovarian cancer is detected at an advanced stage, with a 5-year survival rate of 46% for all the stages and 31% for advanced stages. Published literature on the knowledge of the treatment and prognosis of ovarian cancer is lacking although sources of information such as media houses and health-care providers have been documented.

Conclusion

Overall, this study has demonstrated that most respondents have poor knowledge about ovaries, ovarian cancer risk factors, treatment methods, and prognosis. The educational level, occupational skill level, and the type of area of respondents were the most consistent in determining how much they know with age having no significant impact in the population studied. There is still no effective screening tool for ovarian cancer, compared with those of other gynecological cancers while the cost of screening is prohibitive for a developing nation. Therefore, awareness of the early symptoms of the disease appears to be the most viable option presently of early disease prevention. We, therefore, recommend increased, targeted health awareness programs on ovarian cancer and other health issues.

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Conflicts of interest
There are no conflicts of interest.

References

1. Maiyaki MB, Garbati MA. The burden of non-communicable diseases in Nigeria; in the context of globalization. Ann Afr Med 2014;13:1-10.
2. Global Burden of Disease Cancer Collaboration, Fitzmaurice C, Dicker D, Pain A, Hamavid H, Moradi-Lakeh M, et al. The global burden of cancer 2013. JAMA Oncol 2015;1:505-27.
3. GBD 2013 Mortality and Causes of Death Collaborators. Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990-2013: A systematic analysis for the Global Burden of Disease Study 2013. Lancet 2015;385:117-71.
4. Al-Naggar RA, Osman MT, Bobryshev YV, Kadir SY. Ovarian cancer: Knowledge of risk factors and symptoms among working Malaysian women. Middle East J Sci Res 2013;14:549-53.
5. Odukogbe AA, Adebamowo CA, Ola B, Olayemi O, Oladokun A, Adewole IF, et al. Ovarian cancer in Ibadan: Characteristics and management. J Obstet Gynaecol 2004;24:294-7.
6. Rabiu KA, Akinola OL, Adegummi AA, Fabamwo AO, Adedeji MO, Popoola AO. Delays in presentation and management of ovarian cancer in Lagos, Nigeria. J Obstet Gynaecol 2013;33:305-8.
7. Gajjar K, Ogden G, Mujahid MI, Razvi K. Symptoms and risk factors of ovarian cancer: A survey in primary care. ISRN Obstet Gynecol 2012;2012:754197.
8. Baldwin W, Amato L. Global Burden of Non-communicable Diseases. Population Reference Bureau; 2012. Available from: http://www.prb.org/Publications/Articles/2012/noncommunicable-diseases.aspx. [Last accessed on 2017 Aug 27].
9. Olayide AS, Halimat AJ, Samuel OA, Ganiyu RA, Soliu OA. Levels of awareness and knowledge of breast cancer in Nigeria. A systematic review. Ethiop J Health Sci 2017;27:163-74.
10. Obaji N, Elom H, Agwu U, Nwigwe C, Ezemor U, P, Umeora O, et al. Awareness and practice of breast self-examination among market women in Abakaliki, South East Nigeria. Ann Med Health Sci Res 2013;3:7-12.
11. Agwu UM, Ajaero EP, Ezenwelu CN, Agbo CJ, Ejikeme BN. Knowledge, attitude and practice of breast self-examination among nurses in Ebonyi State University teaching hospital Abakaliki. Ebonyi Med J 2008;6:44-7.
12. Ahmed SA, Sabitu K, Idris SH, Ahmed R. Knowledge, attitude and practice of cervical cancer screening among market women in Zaria,
13. Okobia MN, Bunker CH, Okonofua FE, Osime U. Knowledge, attitude and practice of Nigerian women towards breast cancer: A cross-sectional study. World J Surg Oncol 2006;4:11.

14. Abraham S, Fraser I, Gebski V, Knight C, Llewellyn-Jones D, Mira M, et al. Menstruation, menstrual protection and menstrual cycle problems. The knowledge, attitudes and practices of young Australian women. Med J Aust 1985;142:247-51.

15. Iyoke C, Ugwu G, Ezugwu E, Onah N, Ugwu O, Okafor O. Incidence, pattern and management of ovarian cancer at a tertiary medical center in Enugu, South East Nigeria. Ann Med Health Sci Res 2013;3:417-21.

16. Adeyemi AS, Afolabi AF, Adedeji OA. Ovarian cancer symptom awareness and its response among female health workers. Br J Med Med Res 2015;5:978-86.

17. Odusanya OO, Tayo OO. Breast cancer knowledge, attitudes and practice among nurses in Lagos, Nigeria. Acta Oncol 2001;40:844-8.

18. Lockwood-Rayermann S, Donovan HS, Rambo D, Kuo CW. Women’s awareness of ovarian cancer risks and symptoms. Am J Nurs 2009;109:36-45.

19. Goncalves V. Quality of life in ovarian cancer treatment and survivorship. In: Ovarian Cancer – A Clinical and Translational Update. United Kingdom: InTechOpen; 2013. p. 27-44. Available from: https://www.intechopen.com/books/ovarian-cancer-a-clinical-and-translational-update/quality-of-life-in-ovarian-cancer-treatment-and-survivorship. [Last accessed 2018 Jun 29].