ASSESSMENT OF KNOWLEDGE REGARDING EARLY DETECTION OF OVARIAN CANCER WITH TUMOR MARKER AS FIRST – LINE TEST AMONG NURSING STUDENT

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Abstract: The primary objective of this study was to evaluate the knowledge of ovarian cancer symptoms and, in particular, the usefulness and limitations of the tumor marker CA-125 among nursing students. This study, using a descriptive research design, assessed 100 final-year nursing students' knowledge about ovarian cancer and the tumor marker CA-125 using a structured questionnaire on a knowledge assessment scale with positive sampling. In general knowledge of ovarian cancer, 45% of students were found at the "Mild Knowledge" level. Whereas, regarding the CA-125 marker, 67% of students were in the "Mild Knowledge" category and only 6% reached the "High Knowledge" level. Most students consider it a definitive screening test and are unaware of "False Positive" results that can occur in benign conditions (periods/endometriosis). A major misconception among most students was that the CA-125 is a definitive screening tool, while they were completely unaware of its 'false positive' symptoms—such as increased menstruation, endometriosis, and PID. This suggests that updating the current nursing curriculum to modern diagnostic standards is essential. This implies that a revision in the current nursing curriculum towards the contemporary diagnostic standards is necessary. Specialized training in future should be on the basis of sophisticated markers like the HE4 and ROMA Index and symptom-based triage to facilitate the proper counseling of patients and effective intervention within the clinical environment.

Keywords: Ovarian cancer 1; Tumor Marker 2; Nursing 3; PID 4; Symptoms 5;

INTRODUCTION

In women, ovarian cancer is usually diagnosed when the cancer is already advanced and is already metastatic thus resulting to a high mortality rate. There is growing interest in developing effective screening techniques to improve diagnosis and survival, as the initial symptoms are often very mild, making the disease difficult to diagnose. Recent studies have looked at CA-125 as a potential tool for early detection.

Medical experts suggest that, given its limited use and number of uses, CA-125 may not be suitable as a primary screening method for high-risk individuals. Healthcare providers currently don't have complete information about the effectiveness of this screening test. When women come to nurses with pelvic problems, they are often the first ones to recommend a pelvic exam because nursing is the profession that comes into contact with the most patients and is often the first to provide primary care and treatment. If prospective physicians choose to adopt tumor markers as a comprehensive 'primary' screening tool rather than as an additional diagnostic tool, they may risk anxiety related to false-positive results, unnecessary aggressive treatment, and delays in appropriate treatment.

In academic and health services, the clinical significance of the CA-125 tumor marker is often misunderstood. Although this biomarker is very useful for monitoring recurrence in diagnosed individuals, its misuse or misinterpretation as a primary screening test for early detection in low-risk individuals poses a serious clinical concern.

Nursing students still lack significant understanding of the limitations of tumor markers in clinical use for disease detection. This lack of knowledge is particularly concerning because if students do not understand why CA-125 is not a primary screening tool, and if they do not understand the reasons behind it, they may inadvertently propagate misconceptions. This can result in inaccurate laboratory results and negative patient outcomes. The primary objective of this study was to determine whether nursing students are aware of the use of tumor markers, a currently unproven primary screening method, and to assess their knowledge level regarding their indicators and whether using them is effective in the early detection of ovarian cancer.

This misunderstanding leads to two primary clinical risks:

False assurance: If one cannot focus on the problem by looking at any common indicators, thus being unable to investigate the patient's symptoms, preventive treatment may be delayed.

Unnecessary anxiety: The consequences of misinterpreting an increase in markers due to other underlying diseases (such as endometriosis) as a conclusive diagnosis of cancer.

Related Work

Research on awareness of ovarian cancer consistently shows that there is a global lack of awareness of this disease, early detection of its symptoms, and appropriate use of diagnostic techniques. Traditionally, research has focused on public awareness, but some recent research has shifted its focus to students and healthcare workers because their clinical literacy directly impacts patient life, morbidity, and survival rates.

Historical Context and Biomarker Evolution

The early research was largely concerned with the utility of CA-125 as an independent marker. In as much as it has been termed as a valuable indicator over the past 30 years, its limitations have also been highlighted severally including its weak sensitivity of about 50-60 percent in early stages. A study by Funston et al. reveals that patients with early-stage cancer but whose levels are in the range of the average might encounter undesirable delays when testing with CA-125 test.

Nursing and Education Knowledge Gaps.

The lack of communication between nursing employees is apparent. Even though nurses are usually the initial people that a doctor may discuss with regarding treatment, a 2024 study found that less than half of nursing aides could recognize the warning symptoms of advanced ovarian cancer. Also, cross-sectional studies carried out on college nursing students indicate that on the one hand, the meaning of the term ovarian cancer is known to most people; on the other hand, the level of knowledge about the limitation of screening and risk factors remains rather low (less than 20% in certain regions). The most important results of the recent studies concerning the meaning of ovarian cancer and the effectiveness of educational programs are compared in the given table.

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Table 1: Comparison of Recent Studies on Ovarian Cancer Knowledge and Education

Author(s) & Year	Population	Focus Area	Key Findings

Ali et al. [2023]	General Women	Symptom/Risk Awareness	77% were unable to recall any symptoms of ovarian cancer, and 60% were unaware of the risk factors for this disease.
Yavas et al. [2024]	University Graduates	Awareness Levels	Occasional sudden pelvic pain is a common problem, but there is a lot of lack of awareness about how it gradually becomes severe.
Onakoya et al. [2024]	Nursing Students	Knowledge & Attitude	57.4% of nursing students had very low levels of knowledge regarding ovarian cancer
Zhao et al. [2021]	Clinical Patients/Nurses	Educational Pathways	The nursing profession has played an important role in improving health literacy and self-care abilities.
PJMHS Study [2022]	Oncology Nurses	Intervention Efficacy	Quasi-experimental pre/post tests showed a "clear improvement" from a low level of knowledge to a high level of knowledge after the targeted program..

Key Contribution

This research paper is a critical analysis of their experience and understanding of what is called clinical literacy in the nursing students as applied to the application of tumor markers in clinical oncology. Despite the shortcomings of CA-125, which have been reported in the medical community, the paper provides a unique review of the current way the nursing profession is increasingly comprehending and acting on.

The primary additions to the current body of knowledge of the given work are the following:

1. **Determining false beliefs of screening over surveillance.**

   One of the greatest outputs of the research is the empirical data about the existence of a unique educational gap. According to researcher findings, it is observed that a high percentage of the nursing students have wrongly categorized CA-125 as a primary screening agent on the affected populations with no particular purpose. This deficiency in the correct knowledge points to the desperate necessity of changing the curriculum with the emphasis not on the values of the marker but on the context of the marker, its usefulness, when, and why.

2. **Modern biomarkers (HE4 and ROMA) comparison and analysis.**

   Although all studies carried out so far have centered nearly owing to the attention of CA-125, the current paper presents a deep evaluation of CA-125 awareness among nursing students in terms of the awareness of the HE4 (human epididymis protein 4) marker and the ROMA (ovarian cancer risk algorithm) score. This research offers a foundation of the redesign of

nursing competency domains in because of its ability to determine the knowledge of these essential diagnostic tools.

3. Correlation of clinical experience and accuracy of diagnosis

This study offers a basic investigation into the mechanism of the so-called experiential learning. Proposed study's findings suggest that standard nursing teaching methods fall short of capturing the nuances and vast knowledge of the study and fail to account for the nuances of changes in menstruation or endometriosis. However, the experience gained through clinical rotations, which are often experienced, significantly improves a nursing student's ability to provide patient counseling for all diseases based on evidence.

4. A framework for symptom-based triage of ovarian cancer

This paper presents a model of ovarian cancer symptoms that should be used for nursing education. This model suggests that in ovarian cancer cases, where biomarkers often fail to detect in the early stages, index symptoms (persistent abdominal bloating, pelvic pain, and frequent urination) should be prioritized as the primary basis for screening, rather than waiting for high blood test results to evaluate nursing staff knowledge.

Method, Experiments and Results

Research Design

The researcher used descriptive research design to conduct this research so that the correct knowledge can be given without any manipulation.

Target Population: Students in their final year of the Bachelor of Science in Nursing (BSN) program who have completed their clinical posting and all of their clinical rotations related to oncology and gynecology.

Sample size and Research instrument

In this study, a group of 100 final year nursing students was assessed on their knowledge of ovarian cancer and Marker CA 125 using a knowledge assessment tool consisting of structured questions.

Section A: In this, the researcher has taken demographic data (age, year of study, clinical experience) to get the basic information of the participants.

Section B: In this study, the researchers analyzed participants' knowledge about cancer symptoms (bloating, pelvic pain, etc.).

Section C: This section asked questions to assess participants' knowledge of tumor markers CA-125.

Sampling Technique: The researcher has used purposive sampling techniques in this research so that only those students can become a part of this study who have read all the information about cancer as told to them in the class so that it becomes easy for them to understand this topic.

Result

Knowledge scores

Table 1.1. Frequency and percentage distribution of knowledge regarding ovarian cancer

Knowledge scale	Frequency (n=100)	Percentage

High knowledge	17	17.0%
Moderate knowledge	38	38.0%
Mild knowledge	45	45.0%

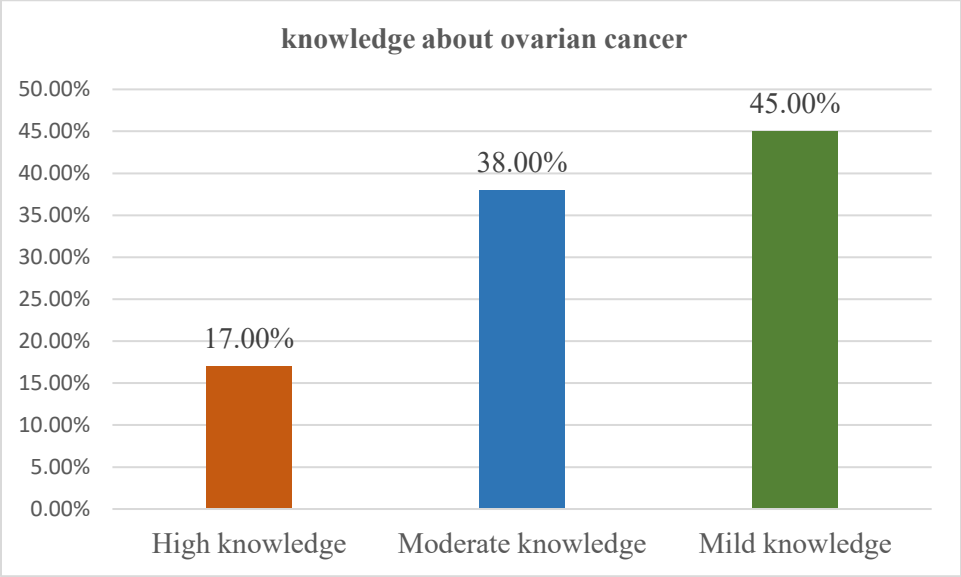

Figure 1.1. Bar diagram representation distribution of the subject according to the knowledge regarding ovarian cancer among nursing students bar diagram indicate that majority of 45 (45%) of student have mild knowledge, 38(38%) student have moderate knowledge, 17(17%) of students have high knowledge about ovarian cancer.

Table 1.2. Frequency and percentage distribution of knowledge regarding tumor marker CA-125.

Knowledge score	Frequency (n=100)	Percentage
High knowledge	6	6.0%
Moderate knowledge	27	27.0%
Mild knowledge	67	67.0%

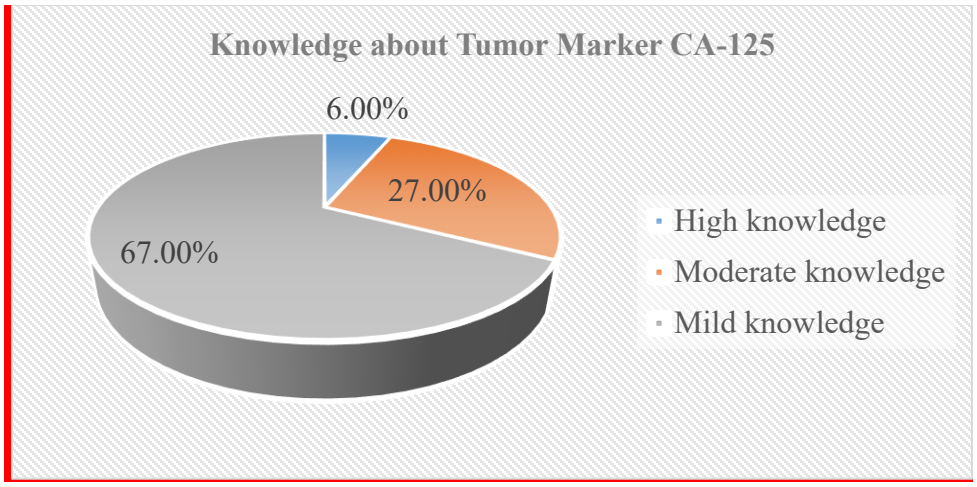

Figure 1.2. Pie diagram representation knowledge regarding Tumor marker CA-125 among nursing students pie diagram depicted that majority of 67(67%) of student have mild knowledge, 27(27%) student have moderate knowledge and 6(6%) students have high knowledge regarding tumor marker CA-125.

Discussion

Mild Knowledge (45%): The largest group (45%) falls into the category of "mild knowledge." This means that approximately half of the students have only superficial knowledge about ovarian cancer. These students may have the misconception that the CA-125 test is the first step in cancer screening for every woman, which is not correct according to clinical guidelines.

Moderate Knowledge (38%): These students recognize the symptoms of ovarian cancer, but their knowledge is somewhat weak when it comes to the "specificity" (ability to correctly identify) of tumor markers.

High Knowledge (17%): Only 17% of students reported "High Knowledge." These are the students who understand that CA-125 is only a "diagnostic aid" and that it can also increase minor things like endometriosis or infection.

Mild knowledge is the largest group (67%) is in the "Mild Knowledge" category. This indicates that most nursing students are confused about the correct use of CA-125. These students may have a general belief that elevated CA-125 levels always mean "cancer." If a nurse does not know that CA-125 can also be elevated in menstruation (periods) or endometriosis, she may give the patient wrong counseling, which can cause unnecessary fear and anxiety in the patient.

27% of students fell into the moderate knowledge category. They knew what 125 was associated with ovarian cancer, but they did not understand its clinical context. It is important to teach in nursing education that CA-125 is not suitable for "first-line screening" (examination of healthy women), but rather it is used more for "treatment monitoring" (how effective the treatment is).

High knowledge only 6% of students were found to have complete and accurate knowledge of CA-125. This is a matter of concern because CA-125 plays an important role in ovarian cancer screening. Only 6% of these students knew that CA-125 is a "non-specific" marker, meaning it can increase in other inflammations or infections in the body besides cancer.

The result of Table 1.2 is that 94% of students (67% + 27%) did not fully understand the correct clinical use of CA-125. Ovarian cancer is called a "silent killer," so if frontline nurses do not

have a correct understanding of the marker, it will be difficult to detect cancer in its early stages and provide proper patient counseling.

A nurse who doesn't understand the markers correctly can unnecessarily scare a patient by seeing an elevated CA-125 during normal menstruation. Ovarian cancer is called a "silent killer." If the nurse relies only on lab reports instead of the "Symptom Index" (bloating, pelvic pain), it will be difficult to detect cancer in its early stages. The result of the discussion is that nursing curricula should include more "case studies" on the use of tumor markers. Students must be taught that CA-125 should always be evaluated in conjunction with transvaginal ultrasound (TVUS) and patient symptoms.

Both tables conclude that nursing students still lack knowledge. In fact, it is timely to address the lack of specificity for CA-125 screening in the context of diagnostic standards given in 2026. Consensus from major global health and oncological organizations has highlighted that these bodies provide "gold standard" cancer screening guidelines that nursing students are expected to follow to reduce the risk of cancer and its symptoms.

Conclusion

Knowledge assessment of nursing students for early detection of ovarian cancer indicates a significant gap in their knowledge. Key findings of the study indicate that approximately 67% of students fell into the "Mild Knowledge" category, while only 6% reached the "High Knowledge" level. Most students consider the CA-125 a definitive screening test, while they have little understanding of its limitations and the potential for "false positive" reports in benign conditions (such as periods or endometriosis). This paper has reached the conclusion that there is a high necessity to pay more attention to such contemporary diagnostic methods as the HE4 and ROMA Index and symptom-based triage in nursing programs.

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