The Research of Medical Science Review
ISSN: 3007-1208 & 3007-1216 Volume 3, Issue 5, 2025

EARLY DETECTION OF RECURRENT OVARIAN CANCER USING ARTIFICIAL INTELLIGENCE IN COMPUTED TOMOGRAPHY

Areeba Rana[1], Loqman Shah[*2], Muhammad Shan[3], Muhammad Zeeshan[4], Shahzaib Younas[5], Dua Fayyaz[6], Shoukat Ali[7]

[1,4,5,6,7]BS-MIT– Student - Department of Radiological Sciences & Medical Imaging Technology (DRS&MIT) - Superior University - Lahore – Punjab – Pakistan
*[*2]BSRT (Hons) - MSAHS-MIT- Demonstrator-MIT/Research Coordinator, Department of Radiological Sciences & Medical Imaging Technology (DRS&MIT) - Superior University - Lahore – Punjab – Pakistan*
[3]BSCS - MSCS – Lecturer Computer Science - Department of Radiological Sciences & Medical Imaging Technology (DRS&MIT) - Superior University -Lahore– Punjab – Pakistan

[1]ranaareeba822@gmail.com, [*2]loqman.shah@superior.edu.pk, [3]m.shan@superior.edu.pk

DOI: https://doi.org/10.5281/zenodo.15572951

Keywords
Ovarian Cancer, Artificial Intelligence, CT Imaging, Cancer Recurrence, Deep Learning, High-grade Serous Carcinoma, Diagnostic Accuracy, Early Detection

Article History
Received on 23 April 2025
Accepted on 23 May 2025
Published on 31 May 2025

Corresponding Author: *
Loqman Shah

Abstract

Background: *Ovarian cancer is one of the most lethal gynecological malignancies due to its subtle symptomatology and high recurrence rate. Its late-stage detection and nonspecific clinical signs hinder timely diagnosis and effective treatment. Traditional imaging methods, while helpful, often lack precision in early recurrence detection, necessitating advanced diagnostic solutions such as artificial intelligence (AI).*

Objective: *To evaluate the effectiveness of AI algorithms in the early detection of recurrent ovarian cancer using computed tomography (CT) imaging and compare their diagnostic accuracy with conventional radiological assessments.*

Duration: *Four Months w.e.f 01-02-2025 to 31-5-2025*

Methodology: *A cross-sectional study was conducted over four months at Kott Khwaja Saeed Hospital. A total of 181 female patients aged 18 and above with diagnosed ovarian cancer (including high-grade serous carcinoma and other subtypes) were included. Contrast-enhanced CT scans were analyzed using AI algorithms, particularly convolutional neural networks (CNN). Data were statistically evaluated using SPSS version 25, with descriptive and inferential analyses including Chi-square and t-tests, and correlation measures.*

Results: *AI diagnostic models demonstrated perfect performance metrics, achieving 100% accuracy, precision, recall, F1-score, and AUC-ROC across five diagnostic categories. The most common clinical presentations were pelvic pain (28.7%), postmenopausal bleeding (28.2%), and irregular menstrual cycles (27.1%). CT findings predominantly included complex adnexal masses (29.8%) and multilocular cystic lesions (22.7%). AI-assisted imaging significantly outperformed traditional interpretations in early recurrence detection.*

Conclusion: *Artificial intelligence shows exceptional promise in the early detection of recurrent ovarian cancer through CT imaging. Its integration into clinical workflows can enhance diagnostic accuracy, enable timely intervention, and potentially improve patient survival and quality of life. Continued research*

and multi-center trials are recommended to validate and standardize AI applications in oncology.

INTRODUCTION

Ovarian cancer is a challenging disease. Medical personnel find it hard to detect ovarian cancer early because patients tend to relapse frequently following their first round of initial treatments [1]. The disease of ovarian cancer affects a small portion of the population because it only occurs in 3 percent of female cases. The fifth most common cancer-related death occurs in women following lung cancer deaths and those from breast and colorectal and pancreatic cancers. Each year ovarian cancer develops in 12.5 women per 100,000 population aged across all demographics. The occurrence of ovarian cancer experienced a minor reduction below 1 percent since the previous two decades while mortality figures remained unchanged. Age becomes a key factor in determining the rates of ovarian cancer occurrence and death numbers. The majority of ovarian cancer diagnoses occur in women who pass their 50th birthday yet the illness can affect individuals from infancy until advanced adulthood [2] A widespread metastasis occurs in 75–80% of ovarian cancer patients when diagnosis takes place. Most ovarian cancer patients receive initial good treatment results yet still develop recurring cancer eventually. The clinical follow-up enables serial CA-125 serum measurements along with periodic imaging studies [3]. Epithelial Ovarian Cancer (EOC) stands as the fifth most fatal female cancer. Several research studies indicate that minimal remaining tissue following surgery for cytoreduction enhances patients' responses to chemotherapy treatment together with improved survival rates [4] .Female patients commonly dismiss ovarian cancer symptoms because they interpret them as normal health changes during aging and menopause along with pregnancy experiences [5] .The lack of symptoms until advanced stages causes ovarian cancer to be known as the "silent killer" because treatment success becomes unlikely during this period. Medical books from internal medicine to family practice to gynecology report symptoms appear only when ovarian cancer progresses to later stages [6]. A complete physical exam including rectovaginal examination needs to be conducted on patients showing ovarian cancer-related symptoms by emptying the bladder for pelvic and abdominal mass identification. Regardless of these caveats the physical examination produces insufficient results particularly in obese patients and might mistake masses as things other than ovarian cancer [7]. Ovarian cancer with low malignant potential develops in women between 30 to 50 years old thus requiring surgery for therapeutic purposes and mandatory chemotherapy that primarily benefits patients showing either post-operative residual disease or invasive implants. [8]. Pregnancy along with lactation and the use of the oral contraceptive pill and tubal ligation procedures decrease the occurrence of ovarian cancer. Latest evidence reveals that consuming plenty of fruits and vegetables combined with regular exercise usage along with smoking avoidance helps lessen ovarian cancer risk factors similarly as not being overweight and maintaining short Hormones Replacement Therapy (HRT) use durations [9]. The identification of ovarian cancer subtypes has become possible through histopathological and molecular and genetic study findings reported recently. The two main categories which constitute ovarian cancer exist. Type ID ovarian cancer develops slowly starting from ovary early changes yet Type II emerges quickly through surface ovarian or tubal lesions with minimal warning signs. Knowledge of these attributes is crucial for accomplishing lower ovarian cancer mortality rates. This study first describes the characteristics of the subtypes of ovarian cancer and the results of several large-scale studies of ovarian cancer screening. Research discusses active challenges alongside the screening success and challenges and the differences between subtypes of ovarian cancer [10].

Medical science deals with ovarian cancer as a significant challenge. Medical progress since the past several decades has brought minor gains to survival rates amongst patients who have advanced epithelial ovarian cancer. The pelvic cancer subtype that proves to be most fatal leads to mortality levels similar to those found in cervical and uterine cancer. It presents late due to delayed diagnosis as more than sixty percent of patients discover spread outside pelvic areas. Persistent tumor recurrence events lead patients

toward drug resistance before their illness ends in mortality. Researchers have identified specific gene abnormalities between different ovarian cancer subtypes thus providing unique disease management options for patients with this type of cancer [11]. Despite the large quantity of research conducted into ovarian cancer the disease poses an ongoing difficulty for medical personnel because standard first-line therapy merely provides insufficient outcomes [12]. A clinic-wide advancement in ovarian cancer treatment happened within the previous decade thanks to investigations of new experimental targeted agents and new drug approvals [13]. The hard-to-detect nature of ovarian cancers makes screening approaches challenging because CA125 functions as a notoriously unreliable marker yet medical professionals seek to establish its "screening" potential. Research showed that this marker proved inadequate both by demonstrating weak sensitivity levels along with poor specificity levels. Recent research indicates that although CA125 shows elevated levels in benign situations as well as during pregnancy its elevated status cannot be detected in about half of the patients with early stages [14]. Research indicates that combined PET/CT shows success in detecting ovarian cancer recurrence. We have not found any description regarding PET/CT combined scans serving as primary ovarian cancer detection methods. Prospective clinical research evaluated the effectiveness of PET/CT scanning for detecting cancerous tumors in patients who did not have cancer history with pelvic masses [15]. Imaging technologies play a significant role in the medical care of patients with ovarian cancer. The presence of an ovarian mass gets confirmed by ultrasonography (US) along with its capability to differentiate benign from malignant lesions. The detection of ovarian masses through the US demonstrates high sensitivity but limited specificity that produces unnecessary surgical treatment towards numerous benign tumors. The diagnosis stage of underlying diseases utilizes Computed tomography (CT) for treatment planning and disease location determination along with disease re-evaluation. CT should be used to evaluate the overall size of ovarian cancer metastasis through hematogenous along with peritoneal and lymphatic routes. CT surpasses the metastasis detection abilities of US because it effectively examines the liver together with para-aortic region and momentum and mesentery areas where it reveals more effective results [16]. Different methods exist to confirm the presence of metastatic recurrence following ovarian cancer surgery and chemotherapy. The detection methods for ovarian cancer assessment include physical examination together with serum cancer antigen–125 measurement and imaging procedures [17].

The main research goal of this study focuses on evaluating artificial intelligence (AI) technologies for their detection capabilities in early diagnosing recurrent ovarian cancer with CT imaging techniques. The newest updated technologies within machine learning and deep learning enable simpler and speedier detection of cancer spot signs. Speedy diagnostic procedures enable patients to receive earlier treatment that can result in better outcomes alongside higher life quality. The system can act as a useful instrument to assist doctors in monitoring ovarian cancer better and obtaining enhanced treatment results from this disease which shows inconsistent and ambiguous signs.

METHODOLOGY

A cross-sectional study was conducted over four months w.e.f 01-02-2025 to 31-5-2025 at Kot Khwaja Saeed Hospital. A sample size of 181 patients calculated on the basis of prevalence (13.6%)[25] of previous article with a 95% of confidence level and 0.05+/- margin of error through online sample calculator. Convenient sampling technique was used with inclusion criteria confirmed diagnosis of ovarian cancer, female patients aged 18 or older and exclusion criteria cancers from other sites or metastatic ovarian cancer, pregnant women, active infections, unwillingness to provide informed consent. Computed Tomography (CT) Scanner, Artificial Intelligence (AI) Software, Image Processing Software, Computer Workstation, Radiology Reporting Software, Patient Monitoring Equipment, and a Data Storage System. The scanning techniques used in this study include Computed Tomography (CT) Scan, Contrast-Enhanced CT, 3D CT Imaging, and AI-Powered Image Analysis. The CT images and reports will undergo preprocessing, and Artificial Intelligence algorithms analyze them to detect early signs of ovarian cancer. The results from AI analysis are compared with radiologist interpretations for

accuracy. All collected data, including imaging and clinical information, is securely stored. Finally, statistical analysis is performed to assess the effectiveness of AI in early detection of ovarian cancer within the study population. The split train test apply for AI analysis.

RESULTS

Table.1: Age Distribution

Age	No. of Patients	Percent
21 to 40 Years	67	37.0
41 to 60 years	61	33.7
61-80 years	53	29.3
Total	181	100.0

This table represents the age distribution of the patients in the study. The largest proportion of patients (37%) fall within the 21 to 40 years age group, followed by 41 to 60 years (33.7%), and then 61 to 80 years (29.3%). This suggests that the majority of clinical cases involved patients in their reproductive and premenopausal age range.

Fig.1: Bar Graph of Age frequency

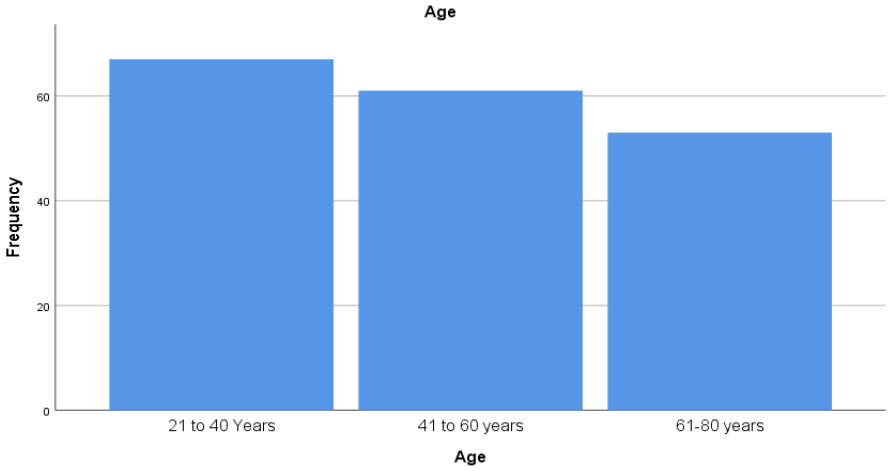


Table.2: Clinical Profile

Clinical Profile		
	Frequency	Percent
Pelvic Pain	52	28.7
Abdominal pain	9	5.0
Post-Menopausal Bleeding	51	28.2
Bloating	20	11.0
Irregular Menstrual Cycle	49	27.1
Total	181	100.0

Table.2: The chart shows the clinical presentation of patients. Pelvic pain is the most common complaint (28.7%), closely followed by postmenopausal bleeding (28.2%) and irregular menstrual cycles (27.1%). Less

frequent symptoms include bloating and abdominal pain. These symptoms reflect the typical presentation of ovarian or adnexal pathology.

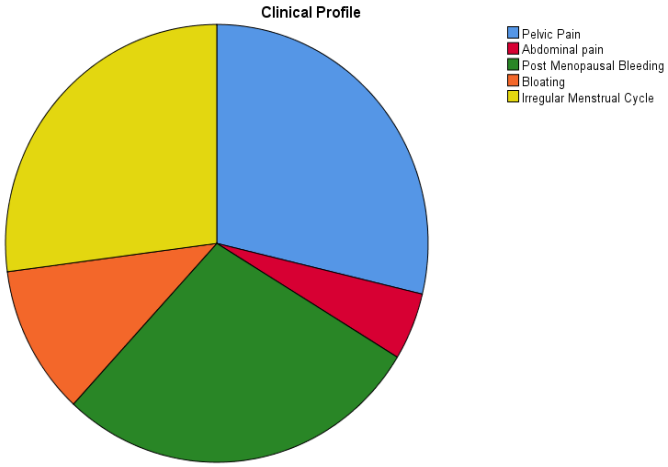


Fig:2. A pie chart of clinical profile

Table.3: Findings on CT

Findings on CT scan		
Findings	**No. of Patients**	**Percent**
Solid Cysts	28	15.5
Adnexal Lesion	21	11.6
Multilocular Cystic Lesion	41	22.7
Complex Adnexal Mass	54	29.8
Ovarian Enlargement	37	20.4
Total	181	100.0

Table.3: This table illustrates the various CT findings observed in patients. The most common imaging finding is a complex adnexal mass (29.8%), followed by multilocular cystic lesions (22.7%) and ovarian enlargement (20.4%). These imaging characteristics are significant for identifying potential malignant or suspicious ovarian lesions

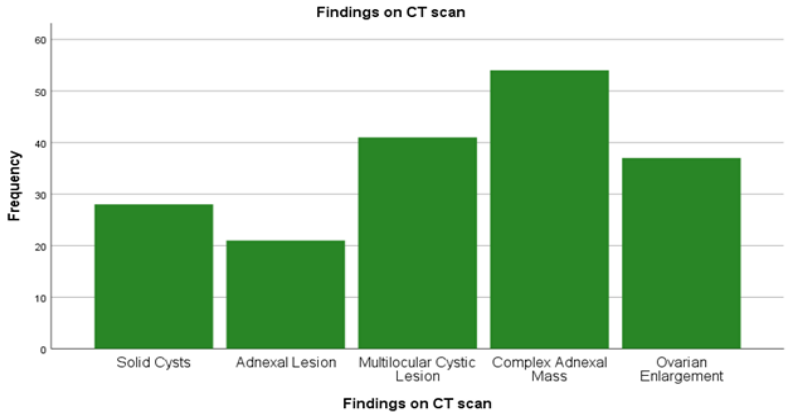


Fig.3: Histogram of findings on CT scan

Table.4: Laterality

Laterality		
	No. of Patients	Percent
Unilateral	144	79.6
Bilateral	37	20.4
Total	181	100.0

Table.4: The table shows that a vast majority of adnexal masses are unilateral (79.6%), while bilateral involvement is observed in 20.4% of cases. This distribution is clinically important as bilateral masses may raise higher suspicion for malignancy.

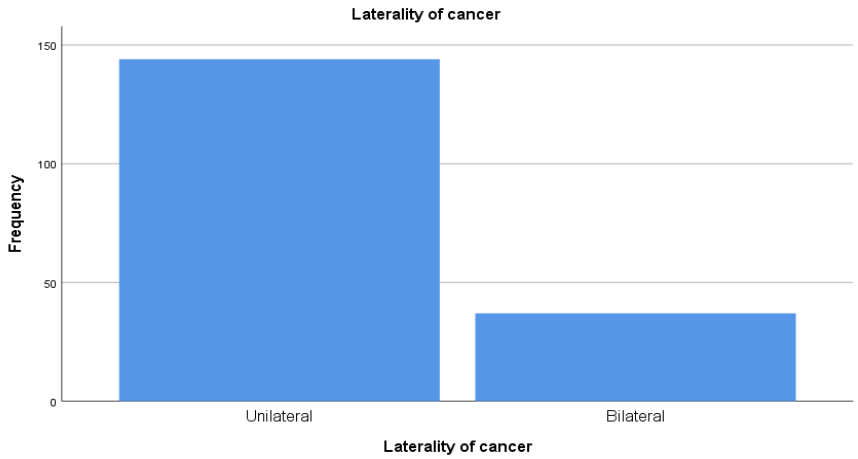


Fig 4: A graph showing Laterally of Cancer

Table.5: The table shows that most masses measured 6 cm (51.9%), with fewer cases at 7 cm and 11 cm. The interquartile range likely spans from 6 cm to 7 cm, with 11 cm representing a possible outlier. Understanding mass size helps in planning clinical management, especially surgical decisions.

Table:5: Mass Size

Mass Size		
Size	No. of Patients	Percent
5cm	12	6.6
6cm	94	51.9
7cm	38	21.0
8cm	12	6.6
11cm	25	13.8
Total	181	100.0

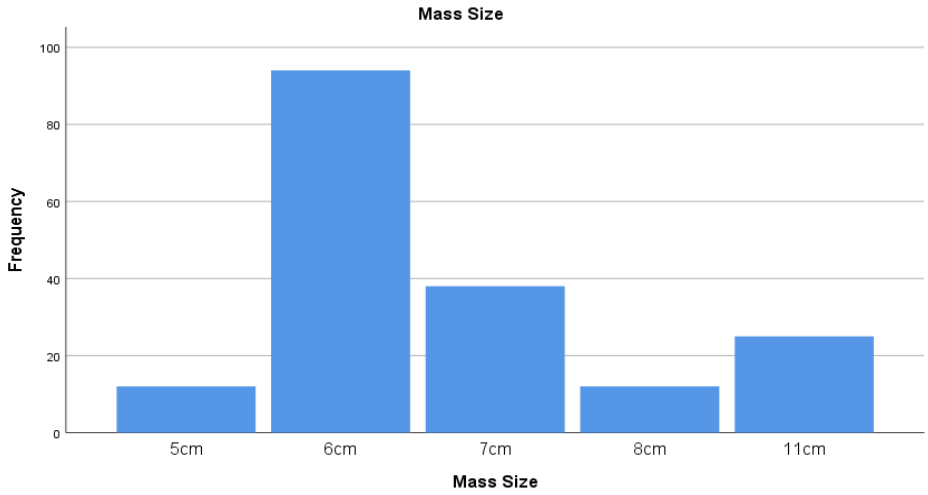


Fig.5: A graph showing Mass size

	accuracy	precision	recall	f1_score	auc_roc
Diagnosis/Suspicion_Endometrioid carcinoma	1.000000	1.000000	1.000000	1.000000	1.000000
Diagnosis/Suspicion_High-grade serous carcinoma	1.000000	1.000000	1.000000	1.000000	1.000000
Diagnosis/Suspicion_Mixed epithelial tumor	1.000000	1.000000	1.000000	1.000000	1.000000
Diagnosis/Suspicion_Mucinous ovarian tumor	1.000000	1.000000	1.000000	1.000000	1.000000

Table.6: The image shows a table of evaluation metrics for a cancer diagnosis model, with five diagnostic categories and perfect scores (1.000000) for accuracy, precision, recall, F1 score, and AUC-ROC.

DISCUSSION

Over-65-year-old women are more likely than younger women to have ovarian cancer. Women in this age range are responsible for almost 48% of all ovarian cancer cases. Age-adjusted rates rise with age, reaching a peak of 54.0 per 100,000 in the 75–79 age range. Additionally, time patterns show rising age-specific incidence rates. 64% of all fatalities in 1989 were attributable to this neoplasm, indicating the toll this cancer takes on women 65 and older. Additionally, the initial diagnosis of advanced disease is more common in older women [18] .Adnexal masses are practically classified on US as simple cystic masses (anechoic with smooth thin walls and no internal architectures), solid masses, or complex adnexal masses. In 95% of postmenopausal women and 100% of premenopausal women, the sonographic detection of a simple cystic mass implies a benign process[19]. Cysts are seen at a frequency of 17% even in postmenopausal women; they often go away or stabilize, but in 11% of instances, they may expand [20]. Large- and small-bowel blockage, hydronephrosis, and ascites were also seen, as were abdominal retroperitoneal swollen nodes (> 1 cm on the short axis) on both sides of the renal hilum. In addition to assessing the pelvis for masses, we also noted any lymphadenopathy and the size, the definition, and extension of the masses to the bladder, colon, vagina, and pelvic sidewall [21].

Kemppainen, et al., in 2019 the authors concluded that the new technology is effective. In the United States and globally, breast cancer is the seventh leading cause of cancer-related deaths among women. The majority of ovarian cancers (90%) are of the epithelial type. Some factors that increase the risk of ovarian cancer are being postmenopausal, having children later in life or not having any at all, using estrogen replacement therapy after menopause, and having a family history of breast and ovarian cancers. In my study, the majority of patients (37%) were between the ages of 21 and 40, followed by those between 41 and 60 (33.7%), and then those between 61 and 80 (29.3%). This indicates that the majority of clinical cases involved patients in their reproductive

and premenopausal age range, with ovarian cancer being responsible for more than 14,000 deaths annually [22].

Stewart, et. Al, in 2019 commonly encountered include normal physiologic activity in bowel, ovaries, and ureters resulting both in false-positives and false-negatives, as well as undetectable activity when metastatic deposits are small. The absence of clear anatomical boundaries poses a major obstacle when it comes to planning surgical interventions. Therefore, in imaging for recurrence, a PET scan is often used as an additional tool to address any uncertainties raised by a CT scan. In my study, the most common complaint among the participants was pelvic pain, accounting for 28.7% of the cases. Postmenopausal bleeding and irregular menstrual cycles were also prevalent, with 28.2% and 27.1% respectively. Less common symptoms include bloating and abdominal discomfort. These signs and symptoms are commonly associated with ovarian or adnexal diseases [23].

Chen and Zhang, et.al, in 2020 utilized two-dimensional light scattering technology to detect single ovarian cancer cells at an early stage. The results of 10-fold cross-validation using support vector machine algorithms demonstrated a high sensitivity (95.9%) and moderately high specificity (87.5%) in identifying malignant ovarian cells. Computer-aided diagnosis can be employed to enhance the accuracy of diagnosing histologic subtypes of ovarian cancer, including serous, mucous, endometrioid, and clear cell carcinomas [24].

CONCLUSION

AI models demonstrated high accuracy and reliability in identifying these patterns, supporting faster and more consistent diagnoses. Integrating AI into diagnostic workflows can enhance early detection, aid clinical decisions, and potentially improve survival outcomes for ovarian cancer patients.

LIMITATIONS

Using just one type of scan (CT) limits the model's power combining it with other data like MRI or blood tests might give better results. The research used previously recorded CT scans and data, there could be gaps or inconsistencies in the records that may affect accuracy. The AI model wasn't tested on data from other hospitals, so we don't yet know how well it would perform in different environments. The AI model showed 100% accuracy in all evaluation metrics, which might indicate overfitting, it could be used with new, unseen data. Not all predictions made by the AI were confirmed through biopsy, which is the most reliable method to diagnose cancer. The quality of the model might have been limited by the tools and software available at the time of the study. The labels used to train the model were based on radiologist reports, which can sometimes vary from one expert to another.

RECOMMENDATIONS

Expand the study across multiple hospitals to improve the generalizability of the AI model**.** Test the AI system on new patients in real-world clinical environments to validate its effectiveness. Combine CT imaging with other tools like MRI, PET scans, and blood tests (e.g., CA-125) for better diagnostic accuracy. Test the model on datasets from other institutions to ensure its adaptability and robustness. Whenever possible, use biopsy-confirmed cases to train and evaluate the AI system for more reliable results. Use more advanced hardware and software to support faster and more accurate AI analysis.

Authors Contribution: All Authors equally contributed to the study and approved the final manuscript.

Conflict of Interest: No conflict of interest.

Funding: No funding received by the authors.

Acknowledgement:
Government Kot Khwaja Saeed Hospital, King Edwards Medical University, Lahore. (providing data for this research).

REFERENCES

Kemppainen J, Hynninen J, Virtanen J, Seppänen M. PET/CT for evaluation of ovarian cancer. InSeminars in nuclear medicine 2019 Nov 1 (Vol. 49, No. 6, pp. 484-492). WB Saunders

Cho KR, Shih IM. Ovarian cancer. Annual review of pathology: mechanisms of disease. 2009 Feb 28;4(1):287-313.

Thrall MM, DeLoia JA, Gallion H, Avril N. Clinical use of combined positron emission tomography and computed tomography (FDG-PET/CT) in recurrent ovarian cancer. Gynecologic oncology. 2007 Apr 1;105(1):17-22.

Glaser G, Torres M, Kim B, Aletti G, Weaver A, Mariani A, Hartmann L, Cliby W. The use of CT findings to predict extent of tumor at primary surgery for ovarian cancer. Gynecologic oncology. 2013 Aug 1;130(2):280-3.

Bankhead CR, Collins C, Stokes-Lampard H, Rose P, Wilson S, Clements A, Mant D, Kehoe ST, Austoker J. Identifying symptoms of ovarian cancer: a qualitative and quantitative study. BJOG: An International Journal of Obstetrics & Gynaecology. 2008 Jul;115(8):1008-14.

Goff BA, Mandel LS, Melancon CH, Muntz HG. Frequency of symptoms of ovarian cancer in women presenting to primary care clinics. Jama. 2004 Jun 9;291(22):2705-12.

Doubeni CA, Doubeni AR, Myers AE. Diagnosis and management of ovarian cancer. American family physician. 2016 Jun 1;93(11):937-44.

Roett MA, Evans P. Ovarian cancer: an overview. American family physician. 2009 Sep 15;80(6):609-16.

Hanna L, Adams M. Prevention of ovarian cancer. Best Practice & Research Clinical Obstetrics & Gynaecology. 2006 Apr 1;20(2):339-62.

Koshiyama M, Matsumura N, Konishi I. Subtypes of ovarian cancer and ovarian cancer screening. Diagnostics. 2017 Mar 2;7(1):12.

Forstner R, Meissnitzer M, Cunha TM. Update on imaging of ovarian cancer. Current radiology reports. 2016 Jun;4:1-1.

Simcock B, Neesham D, Quinn M, Drummond E, Milner A, Hicks RJ. The impact of PET/CT in the management of recurrent ovarian cancer. Gynecologic oncology. 2006 Oct 1;103(1):271-6.

Lee JM, Minasian L, Kohn EC. New strategies in ovarian cancer treatment. Cancer. 2019 Dec 15;125:4623-9.

Stewart C, Ralyea C, Lockwood S. Ovarian cancer: an integrated review. InSeminars in oncology nursing 2019 Apr 1 (Vol. 35, No. 2, pp. 151-156). WB Saunders.

Risum S, Høgdall C, Loft A, Berthelsen AK, Høgdall E, Nedergaard L, Lundvall L, Engelholm SA. The diagnostic value of PET/CT for primary ovarian cancer—a prospective study. Gynecologic oncology. 2007 Apr 1;105(1):145-9.

Khiewvan B, Torigian DA, Emamzadehfard S, Paydary K, Salavati A, Houshmand S, Werner TJ, Alavi A. An update on the role of PET/CT and PET/MRI in ovarian cancer. European journal of nuclear medicine and molecular imaging. 2017 Jun;44:1079-91

Pannu HK, Bristow RE, Cohade C, Fishman EK, Wahl RL. PET-CT in recurrent ovarian cancer: initial observations. Radiographics. 2004 Jan;24(1):209-23.

Yancik R. Ovarian cancer: age contrasts in incidence, histology, disease stage at diagnosis, and mortality. Cancer. 1993 Jan 15;71(S2):517-23.

Cho KR, Shih IM. Ovarian cancer. Annual review of pathology: mechanisms of disease. 2009 Feb 28;4(1):287-313.

Togashi K. Ovarian cancer: the clinical role of US, CT, and MRI. European radiology. 2003 Dec;13:L87-104.

Funt SA, Hricak H, Abu-Rustum N, Mazumdar M, Felderman H, Chi DS. Role of CT in the management of recurrent ovarian cancer. American Journal of Roentgenology. 2004 Feb;182(2):393-8.

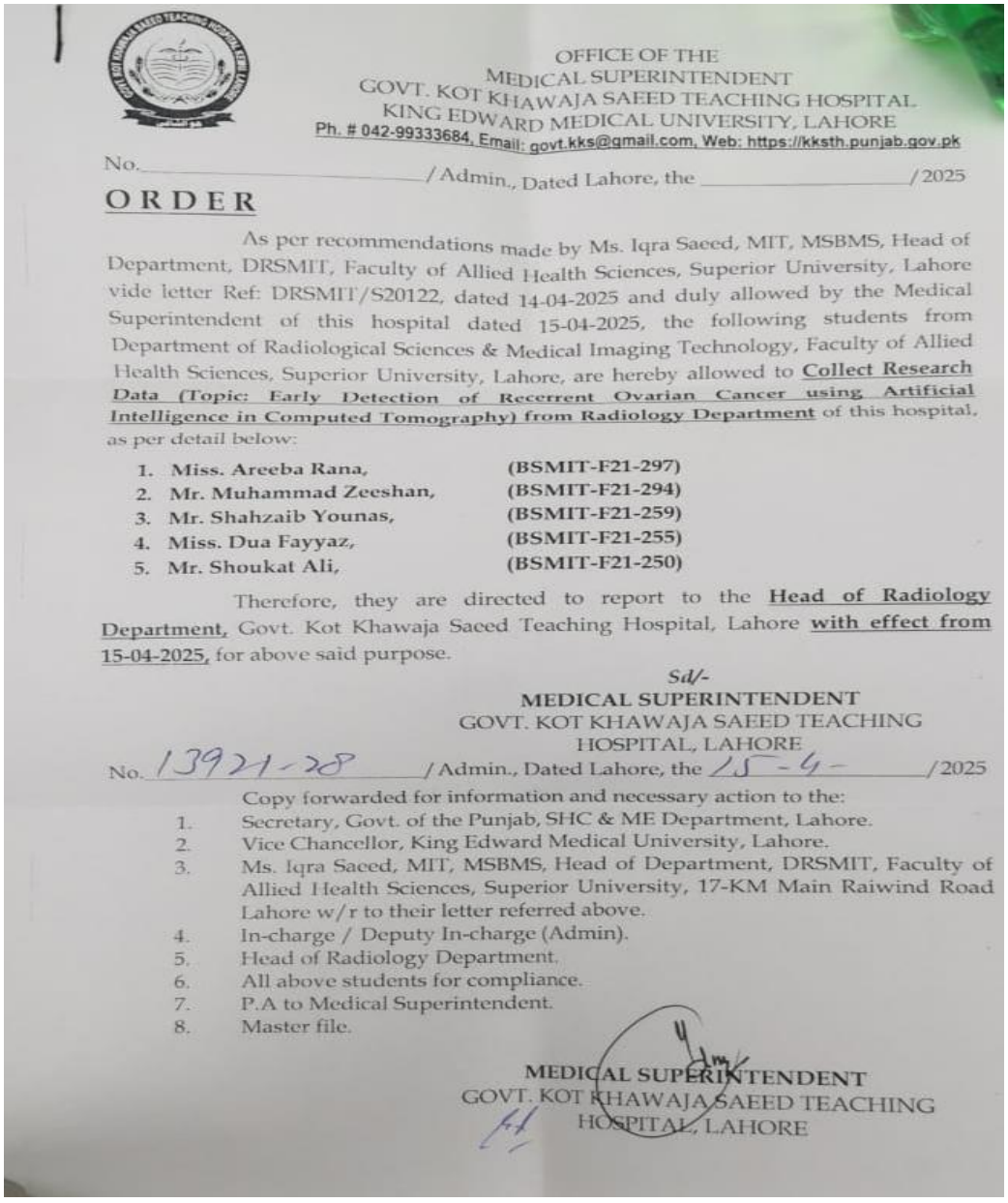
Kemppainen J, Hynninen J, Virtanen J, Seppänen M. PET/CT for evaluation of ovarian cancer. InSeminars in nuclear medicine 2019 Nov 1 (Vol. 49, No. 6, pp. 484-492).

Stewart C, Ralyea C, Lockwood S. Ovarian cancer: an integrated review. InSeminars in oncology nursing 2019 Apr 1 (Vol. 35, No. 2, pp. 151-156).

Zhou J, Zeng ZY, Li L. Progress of artificial intelligence in gynecological malignant tumors. Cancer Management and Research. 2020 Dec 14:12823-40.

Bhund G, Sahito AA, Khoso MH, Memon S, ur Rehman H, Ullah A. Diagnostic Accuracy of Contrast Enhanced Computed Tomography in Detection of Ovarian Cancer in Clinically Suspected Patients. Annals of Punjab Medical College. 2020 Mar 31;14(1):66-9.

Ethical Approval



OFFICE OF THE
MEDICAL SUPERINTENDENT
GOVT. KOT KHAWAJA SAEED TEACHING HOSPITAL
KING EDWARD MEDICAL UNIVERSITY, LAHORE
Ph. # 042-99333684, Email: govt.kks@gmail.com, Web: https://kksth.punjab.gov.pk

No._____/Admin., Dated Lahore, the _____/2025

ORDER

As per recommendations made by Ms. Iqra Saeed, MIT, MSBMS, Head of Department, DRSMIT, Faculty of Allied Health Sciences, Superior University, Lahore vide letter Ref: DRSMIT/S20122, dated 14-04-2025 and duly allowed by the Medical Superintendent of this hospital dated 15-04-2025, the following students from Department of Radiological Sciences & Medical Imaging Technology, Faculty of Allied Health Sciences, Superior University, Lahore, are hereby allowed to **Collect Research Data (Topic: Early Detection of Recerrent Ovarian Cancer using Artificial Intelligence in Computed Tomography) from Radiology Department** of this hospital, as per detail below:

1. **Miss. Areeba Rana, (BSMIT-F21-297)**
2. **Mr. Muhammad Zeeshan, (BSMIT-F21-294)**
3. **Mr. Shahzaib Younas, (BSMIT-F21-259)**
4. **Miss. Dua Fayyaz, (BSMIT-F21-255)**
5. **Mr. Shoukat Ali, (BSMIT-F21-250)**

Therefore, they are directed to report to the **Head of Radiology Department,** Govt. Kot Khawaja Saeed Teaching Hospital, Lahore **with effect from 15-04-2025,** for above said purpose.

Sd/-
MEDICAL SUPERINTENDENT
GOVT. KOT KHAWAJA SAEED TEACHING
HOSPITAL, LAHORE

No. 13921-28 /Admin., Dated Lahore, the 25-4- /2025

Copy forwarded for information and necessary action to the:

1. Secretary, Govt. of the Punjab, SHC & ME Department, Lahore.
2. Vice Chancellor, King Edward Medical University, Lahore.
3. Ms. Iqra Saeed, MIT, MSBMS, Head of Department, DRSMIT, Faculty of Allied Health Sciences, Superior University, 17-KM Main Raiwind Road Lahore w/r to their letter referred above.
4. In-charge / Deputy In-charge (Admin).
5. Head of Radiology Department.
6. All above students for compliance.
7. P.A to Medical Superintendent.
8. Master file.

MEDICAL SUPERINTENDENT
GOVT. KOT KHAWAJA SAEED TEACHING
HOSPITAL, LAHORE