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An Investigative Analysis of the Role of Multidisciplinary Teams in Cancer Management: Assessing Advantages and Obstacles

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الملخص:

الخلفية: تعد اجتماعات الفرق متعدد التخصصات أمراً حيوياً لتحسين نتائج المرضى وخطط العلاج، ومع ذلك لا تزال فعاليتها غير مؤكدة. تظهر الأبحاث الحالية أن خطط العلاج التعاونية في رعاية مرضى السرطان تؤدي إلى نتائج أفضل من تلك التي وضعها الأطباء بمفردهم. إن تأثير هذه الاجتماعات على نتائج إدارة المرضى أمراً مهماً. **الهدف:** تهدف هذه الدراسة إلى تقييم توزيع وخصائص وتشخيص مرضى السرطان. فإنها تسعى إلى تقييم تأثير اجتماعات الفرق متعدد التخصصات على اتخاذ القرارات السريرية المستنيرة وتأثيرها على نتائج المرضى.**الموضوعات والأساليب:** دراسة تحقيقية وصفية قامت بتحليل 150 مريضا بالسرطان يتلقون الرعاية في مركز بنغازي الطبي من يناير إلى يونيو 2022. حيث أجريت التشخيصات من خلال الفحوصات السريرية الشاملة والتحليلات المختبرية والتصوير الطبي والإشعاعي والفحوصات النسيجية. وبعدها حددت خطط العلاج بشكل تعاوني من قبل الفريق متعدد التخصصات في الرعاية الطبية، والاستفادة من خبراتهم للإدارة المثلى للمرضى.**النتائج:** أظهرت الدراسة أن الأفراد الذين تتراوح أعمارهم بين 41-60 عاماً يشكلون النسبة الأكبر من مرضى السرطان (49.3٪). وكانت الإناث تشكل غالبية الحالات (62٪)، وكان معظم هؤلاء من بنغازي (69.3٪). كانت سرطانات الجهاز الهضمي هي الأكثر انتشارا (58.7٪)، تليها أورام الثدي لدى النساء (14.7٪) وأورام البنكرياس (6٪). اتخذت قرارات العلاج، والمصممة وفقاً لاحتياجات المريض الفردية. وجد اختيار العلاج الكيميائي أو العلاج الإشعاعي أو الجمع بينهما لنسبة 47.3 ٪ من الحالات، بينما كان التدخل الجراحي مناسبا لـــ 30.7 ٪ من الحالات. تدعم نتائج هذه الدراسة الفرضية التي تفيد بأن اجتماعات الفرق متعددة التخصصات تسهم في وضع وإرشاد مبادئ توجيهية إدارية فعالة وحديثة. يشكل إهمال المناقشات حول مرضى السرطان مخاطر كبيرة لا يمكن تجاهلها بعد الآن. حيث تقلل هذه الاجتماعات من معدلات المخاطر وتضمن اتخاذ قرارات طبية مستنيرة وشاملة.**الخلاصة:** لوحظ في الدراسة أن العلاج الكيميائي والتدخل الجراحي اخُتير بصورة متكرر كخيارات علاجية. وشددت على أهمية اجتماعات الفرق متعددة التخصصات في توجيه عملية اتخاذ القرارات السريرية. ومع هذا، توصي الدراسة تقديم مزيد من البحث بشأن التوصيف الأمثل لاجتماعات هذه الفرق. فربما إنشاء بروتوكولات أمرا ضروريا لتعزيز نتائج إدارة المرضى وتحسينهما.

الكلمات المفتاحية: العلاج الكيميائي، التدخل الجراحي، العلاج التعاوني، مرضى السرطان، اتخاذ القرارات السريرية.

Abstract

Background: Multidisciplinary team (MDT) meetings are vital for improving patient outcomes and treatment plans, yet their effectiveness remains uncertain. Existing research demonstrates that collaborative treatment plans in cancer care lead to better results than those made by individual practitioners. The impact of MDT meetings on patients' management outcomes is significant. **Aim:** To evaluate the distribution, characteristics, and diagnoses of cancer patients. Additionally, it seeks to assess the influence of MDT meetings on clinical decision-making and the subsequent impact on patient outcomes. **Subjects and methods**: A descriptive investigation analyzed a cohort of 150 cancer patients receiving care at Benghazi Medical Center from January to June 2022. Diagnoses were established through comprehensive clinical evaluations, laboratory assessments, radiographic imaging, and histopathological examinations. Medical interventions were determined collaboratively by a multidisciplinary team of healthcare professionals, leveraging their specialized expertise for optimal patient management. **Results:** The study found that individuals aged 41–60 comprised the largest proportion of cancer patients (49.3%). Females accounted for the majority (62%) of cases, and most participants were from Benghazi (69.3%). Gastrointestinal tract (GIT) cancers were the most prevalent (58.7%), followed by breast tumors in women (14.7%) and pancreatic tumors (6%). Treatment decisions, tailored to individual patient needs, were made collaboratively by the multidisciplinary team. Chemotherapy, radiotherapy, or a combination was chosen for 47.3% of cases, while surgical resection was appropriate for 30.7% of cases. The study's findings support the hypothesis that MDT meetings contribute to effective and up-to-date management guidelines. Neglecting discussions about cancer patients poses significant risks that can no longer be ignored. MDT meetings mitigate these risks and ensure comprehensive medical decisions. **Conclusion:** The study observed that chemotherapy and surgical resection were frequently selected as treatment options. It emphasized the importance of Multidisciplinary Team (MDT) meetings in guiding clinical decision-making. However, further feedback regarding the optimal format of MDT meetings is required. Establishing standardized MDT protocols is imperative for enhancing patient management outcomes.

Keywords: Chemoradiotherapy; Multidisciplinary; Cancer; MDT effectiveness.

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1. INTRODUCTION

Cancer is a leading cause of death and morbidity worldwide [1], with the predicted global cancer burden expected to be between 29 and 37 million new cases per year by 2040, particularly in underdeveloped countries [2]. Risk factors such as smoking, obesity, physical inactivity, and chronic infections, including hepatitis B and C, human papillomavirus, and Helicobacter pylori, are contributing to the increase in cancer incidence in developing countries [3,4].

The MDTs in the pilot sites had a part-time medical lead clinician and a full-time administrative project manager. The Cancer Peer Review system required cancer units to have their MDTs running. Most Oncology MDTs meet weekly, and there are established standards for their operation. The MDT Core Personnel includes Surgeons, Radiologists, Histopathologists, Oncologists, and a Clerk coordinator.

Upon the Cancer Care Team duties, which aim:

- For Cure and improve quality of life (QOL)
- To provide cost-effective care initially by preventive oncology
- To empower and engage the community in patients' care
- To enhance diagnostic capacity and multimodality options
- To appreciate that MDT meeting is a Stage-specific treatment plan
- To arrange accurately and coordinate approach treatment
- To know that palliative care is of paramount importance as curative care

MDT meetings are resource-intensive and require the participation of many senior clinicians and nurses. Therefore, running these meetings efficiently is crucial to minimize costs and ensure optimal patient outcomes. Effective communication between the MDT chairman and the clerk/coordinator is key to achieving a smoothly run meeting. It is recommended that a pre-meeting 'dry run' takes place to ensure that all necessary paperwork and results are available for the meeting. This preparation time can help to prevent delays and ensure the meeting is productive. The WHO world cancer report 2020 revealed that the six most common cancer types worldwide are lung, breast, colorectal, prostate, stomach, and cervical cancer [5]. However, cancer data in Libya is less reliable due to the absence of a comprehensive national or local cancer registry [6].

A well-organized and informative database is crucial for MDT meetings. The clerk/coordinator enters all necessary data beforehand, forming the basis for the paperwork available on the day. Cases are discussed at different stages, such as diagnosis, staging, surgery, and follow-up. Complex cases require more discussion, whereas simple cases require less. At the end of the meeting, a formal follow-up is agreed upon. Cancer registries are valuable for researching cancer causes, assessing needs, and developing prevention programs.

To ensure best practices, the MDT chairman should summarize the agreed-upon treatment plan for each case, which can then be entered into the patient's medical record and used to inform relevant healthcare professionals. Cancer registries are important for researching cancer causes and evaluating prevention and control programs [7]. The purpose of this article is to examine how multidisciplinary team (MDT) meetings can enhance patient outcomes and care strategies. It acknowledges the value of collaborative treatment planning in cancer care and seeks to assess how MDT meetings affect clinical decision-making and the management outcomes of patients. The analysis of the distribution, traits, and cancer patient diagnoses is another key component of the study.

2. SUBJECTS AND METHODS:

This is a record-based descriptive study of 150 cancer patients admitted to Benghazi Medical Center, one of the largest cancer centers in eastern Libya, from January to June 2022. The patients' data were collected from their medical records. The data included demographic information, medical history, tumor characteristics, and treatment outcomes. The study team consisted of a medical oncologist, a radiation oncologist, a surgical oncologist, a pathologist, and a clinical research coordinator. The team met regularly to discuss the patients' cases and to make treatment recommendations.

Statistical analysis: Statistical analysis: The pre-coded data were entered into Microsoft Excel, transferred to SPSS version 24.0, and analyzed using descriptive statistics. The qualitative data were presented as absolute and relative frequencies.

Ethical approval for this study was obtained from the Libyan Research Ethics Committee prior to its initiation. Data collection was conducted using file records from the Medical Registry Department, following approval from the BMC administration and permission to access the data. The study adhered to the ethical principles outlined in the Declaration of Helsinki and the International Conference on Harmonization Guidelines. All recorded data were treated with strict confidentiality.

3. RESULTS

The study included data from 150 patients who were admitted to the Benghazi Medical Center from January 2022 to June 2022. The highest flow in our study was in June when 30 patients were admitted to the hospital (20%); followed by 28 patients in April (18.7%), and the least flow was 22 patients (14.7%) in May. (**Table 1, figure 1**).

Table (1): frequency distribution of the number of patients admitted to the hospital in the duration from January 2022 to June 2022

Months	Study group (n=150)	
	N	%
January	22	14.7
February	24	16.0
March	25	16.7
April	28	18.7
May	21	14.0
June	30	20.0

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Regarding the degree of consanguinity, about (5.3%, n=8) of cases had a positive history of further cancer, (4%, n=6) were associated with either mother or brother or brother and sister. About (12.7%, n=19) of cases were diabetic, (10.7%, n=16) were hypertensive, (12%, n=18) complained of both DM and HTN, (1.3%, n=2) of cases had DM and hypothyroidism or HTN and hypothyroidism, and one case (0.7%) complained of celiac disease. **(Table 2)**.

Regarding age groups, the most common age group was from 41 to 60 years (49.3%, n=74); followed by cases from 61 to 80 years (37.3%, n=56); and the least flow was for the age groups from 1 to 20 years and from 81 to 100 (1.3%, n=2) (Figure 2). Regarding gender, more than half of the cases (62%, n=93) were females, and the other (38%, n=57) were males. **(Figure 3)**.

Table (2): basic patient characteristics of the studied group (n=150)

Items	Categories	Study group (n=150)	
		N	%
Age groups	**1 to 20**	2	1.3%
	21 to 40	16	10.7%
	41 to 60	74	49.3%
	61 to 80	56	37.3%
	81 to 100	2	1.3%
Gender	**Male**	57	38%
	Female	93	62%
Cities	**Ajdabiya**	11	7.3%
	Benghazi	104	69.3%
	Almarj	8	5.3%
	Albayda	16	10.7%
	Sousse, Sabha, Alwahat, Algatron	4	2.7%
	Drana	4	2.7%
	Tobruk	3	2.0%
Smoking	**Yes**	13	8.7%
Family history	**Positive**	32	21.33%
Degree of consanguinity	**Father**	8	5.3%
	Mother	6	4%
	Sister	4	2.7%
	Brother	6	4%
	Brother + Sister	6	4%
	Mother + Sister	2	1.3%
Medical history	**None**	92	61.3%
	DM	19	12.7%
	HTN	16	10.7%
	DM and HTN	18	12%
	DM and hypothyroidism	2	1.3%
	HTN and hypothyroidism	2	1.3%
	Celiac disease	1	0.7%

Most of the cases (69.3%, n=104) were from Benghazi, (10.7%, n=16) were from Albayda, (7.3%, n=11) from Ajdabiya, and the other cases were from Almarj, (Sousse, Sabha, Alwahat, Algatron), Darna and Tobruk (5.3%, n=8), (2.7%, n=4), (2.7%, n=4) and (2%, n=3) respectively **(Figure 4)**. About (8.7%, n=13) of cases were smokers, and (21.3%, n=32) of cases had a positive family history.

The most common malignancies in our study were GIT malignancies (58.7%, n=88); followed by breast tumors in women (14.7%, n=22) pancreatic tumors (6%); (3.3%) hepatic tumors, ovarian and cervical tumors, and other tumors. The least common tumors (1.3%) were neuroblastoma tumors and endocrine tumors. Other conditions represent (8.7%) of cases. **(Table 3, Figure 5)**.

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Table (3): The most common tumors in the study population (n=150)

Diagnosis	Study group (n=150)	
	N	
GIT malignancy	88	58.7
Pancreatic tumors	9	6
Hepatic tumors	5	3.3
Breast tumors	22	14.7
Ovarian and cervical tumor	5	3.3
Neuroblastoma tumor	2	1.3
Endocrinal tumors	2	1.3
Other tumors	5	3.3
Other conditions	13	8.7

The study found various forms of gastrointestinal malignancies, including rectum, colon, sigmoid, and stomach cancers. Rectum cancer was the most common form (20%, n=30), followed by colon (13.3%, n=20), sigmoid (9.3%, n=14), and stomach cancer (6%, n=9). Metastasis was observed in 3 cases of rectum cancer and in 4.7% of colon cancer cases in the liver. One case of sigmoid and stomach cancer showed metastasis to the lung, while one case of sigmoid cancer also had liver metastasis. (**Table 4**).

Table (4): frequency distributions of different forms of GIT malignancies in the study population

GIT malignancies	Diagnosis	N	%
Cancer rectum	Rectum cancer	30	20%
	Rectum cancer + liver and bone metastasis	1	0.7%
	Rectum cancer + liver metastasis	1	0.7%
	Rectum cancer + liver and lung metastasis	1	0.7%
Cancer colon	Colon cancer	20	13.3%
	Colon cancer + liver metastasis	7	4.7%
Cancer sigmoid	Sigmoid cancer	14	9.3%
	Sigmoid cancer + liver metastasis	1	0.7%
	Sigmoid cancer + lung and liver metastasis	2	1.3%
Stomach cancer	Stomach cancer	9	6%
	Stomach + lung metastasis	2	1.3%

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Table 5 of the study's results showed that pancreatic cancer was present in 4% of cases, with 2% of those cases having liver metastasis. Additionally, 13.3% of cases showed breast cancer, 2% had ovarian cancer, and 1.3% had cervix cancer with abdominal metastasis. Endocrine tumors were present in 0.7% of cases, with either thyroid gland cancer or adrenal adenoma being observed. Other tumors, such as abdominal rhabdomyosarcoma, retroperitoneal liposarcoma, and bone cancer with multiple myeloma, were found in a small percentage of cases. Lymphadenopathy was observed in 2% of cases, while diverticular disease, or Crohn's disease, was diagnosed in 1.3% of cases. Splenomegaly, GERD, RV fistula, liver cysts, and ovarian cysts were each present in 0.7% of cases.

Table (5): frequency distributions of different forms of malignancies in the study population

Tumor type	Diagnosis	N	%
Pancreatic cancer	Pancreas cancer	6	4%
	Pancreas cancer + liver metastasis	3	2%
Hepatic tumors	Liver cancer	2	1.3%
	Liver cancer + adrenal metastasis	2	1.3%
	Multiple hepatic hemangioma	1	0.7%
Breast tumors	Fibroadenoma	2	1.3%
	Breast cancer	20	13.3%
Ovarian and cervical tumor	Ovarian cancer	3	2%
	Cervix cancer + abdominal metastasis	2	1.3%
Neuroblastoma Tumor	Neuroblastoma Tumor	2	1.3%
Endocrinal tumors	Thyroid gland cancer	1	0.7%
	Adrenal adenoma	1	0.7%
Other tumors	Abdominal rhabdomyosarcoma	2	1.3%
	Retroperitoneal liposarcoma	2	1.3%
	Bone cancer + multiple myeloma	1	0.7%
Other conditions	Lymphadenopathy	3	2%
	Splenomegaly	1	0.7%
	Diverticular disease	2	1.3%
	GERD	1	0.7%
	Crohn's disease	2	1.3%
	RV Fistula	1	0.7%
	Liver cysts	1	0.7%
	Ovarian cysts	1	0.7%

In the study's results, treatment decisions were made for 47.3% of cases involving chemotherapy, radiotherapy, or combined chemo and radiotherapy. Surgery was required in 30.7% of cases, while 22% needed follow-up. Among those who received chemotherapy or radiotherapy, 22.7% were treated with chemotherapy, 14% with chemo-radiotherapy, and 4% with follow-up chemotherapy or radiotherapy. Palliative chemotherapy was administered in 2.7% of cases. Surgical resection was required in 30.7% of cases, with mastectomy indicated in 8% of cases, sigmoidectomy in 3.3% of cases, and proctectomy or colectomy in 2% of cases. Hysterectomy and scalping-oophorectomy were necessary in 1.3% of cases, while gastrectomy, adrenalectomy, or splenectomy were required in 0.7% of cases. (**Table 6**).

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Table (6): Decision for treatment of different malignancies among cases

Treatment plan	Decision (n=150)	N	%
Chemotherapy or radiotherapy or combined chemo and radiotherapy (n=71, 47.3%)	Chemotherapy	34	22.7%
	Palliative Chemotherapy	4	2.7%
	Follow up Chemotherapy	6	4%
	Radiotherapy	6	4%
	Chemo-radiotherapy	21	14.0%
Surgery (n=46, 30.7%)	Surgical resection	18	12%
	Hysterectomy + Salpingio-oophorectomy	2	1.3%
	Sigmoidectomy	5	3.3%
	Proctectomy	3	2%
	Gastrectomy	1	0.7%
	Mastectomy	12	8%
	Colectomy	3	2%
	Adrenalectomy	1	0.7%
	Splenectomy	1	0.7%
Follow up (n=33, 22%)	Follow-up by CT and MRI	18	12%
	Follow-up by colonoscopy	5	3.3%
	Follow-up by MRI and colonoscopy	4	2.7%
	Follow-up by PET Scan	3	2%
	Follow up by colonoscopy + histopathology	2	1.3%
	Follow-up by inguinal LN biopsy	1	0.7%

In the study's results, follow-up by CT and MRI was recommended for 12% of cases, while follow-up by colonoscopy was decided for 3.3% of cases. For 2.7% of cases, follow-up by MRI and colonoscopy was necessary, while 2% of cases required follow-up by PET scan. Follow-up by colonoscopy and histopathology was needed for 1.3% of cases, and 0.7% of cases underwent inguinal LN biopsy as part of their follow-up. (**Table 6**).

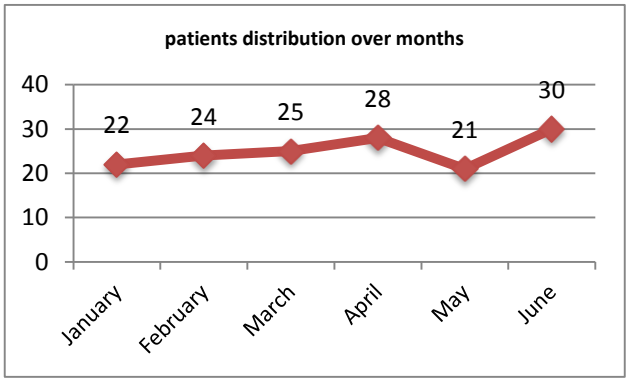


Figure 1: line graph showing the frequency distribution of the number of patients admitted to the hospital in the duration from January 2022 to June 2022

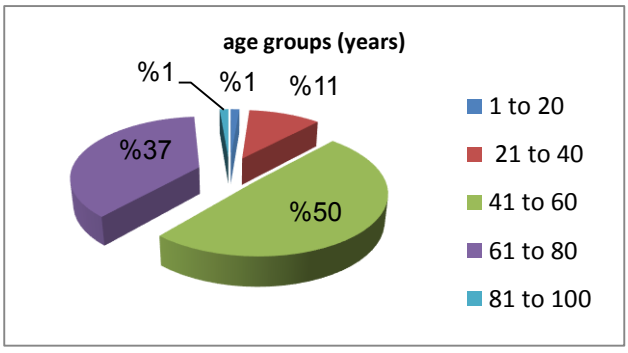


Figure 2: Pie chart illustrating Age group distribution among cases.

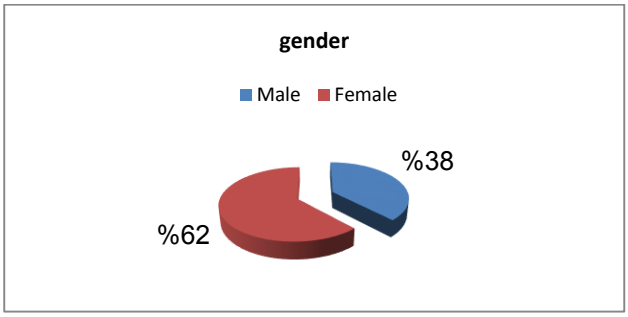


Figure 3: Pie chart illustrating gender distribution among the studied group (n=150)

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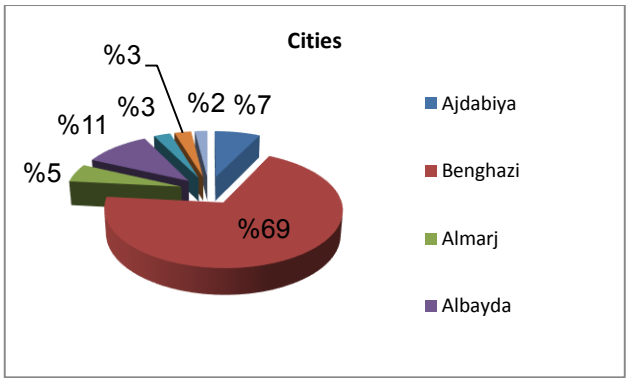


Figure 4: Pie chart illustrating frequency distribution of cases from different cities.

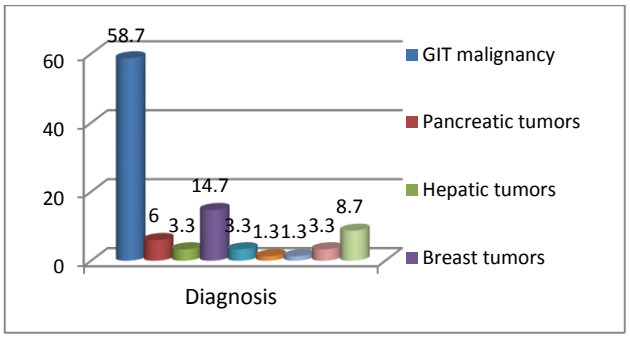


Figure 5: bar chart illustrating the most common tumors in the study population (n=150)

4. DISCUSSION

Numerous research studies have been conducted in both the eastern and western regions of Libya to investigate the incidence of cancer [8-13]. However, in this particular study, we aimed to report the incidence rate of various cancer types, specifically in the southern region of Libya. Our findings can contribute to a better understanding of cancer epidemiology in this region and provide valuable insights for policymakers to develop effective cancer control programs and policies in Libya. Therefore, this study's results can serve as a useful guide for decision-makers in implementing measures to combat cancer in Libya.

According to our research, the age range from 41 to 60 years was the most frequently affected (49.3%), followed by the age range from 61 to 80 years (37.3%), while the age ranges from 1 to 20 years and 81 to 100 years experienced the least flow (1.3% each).

Consistent with previous studies conducted in Libya, Ismail et al. [11] found that cancer incidence rates increased with age. In their study of the Tobruk area in eastern Libya, the majority of cancer cases (70.6%) occurred in those aged 41 years and older.

Similarly, Gusbi et al. [12] reported that elderly individuals (aged 70 years and older) accounted for 17% of cancer cases in southern Libya. They also found a gradual increase in cancer incidence rates with age for both genders, with the highest incidence rate in the 45–49 age group for women and over 75 for men. In addition, the incidence rate for all cancers was higher in elderly males than females. These findings provide important insights into the age-specific trends of cancer incidence in Libya.

Our study confirms that the incidence of cancer increases significantly with age, likely due to the accumulation of cancer-related risks and reduced cellular repair mechanisms with age. However, as the global population continues to age, cancer will remain a significant public health issue, particularly among the elderly [13]. Our findings also reveal that more females (62%) than males (38%) were affected by cancer in our study. This is consistent with previous research by Gusbi et al. [12], who found that overall cancer incidence was higher in females than males (62.3% vs. 37.7%, respectively), with a male-to-female ratio of 0.61–1.0. Similarly, Eljamay et al. [14] reported a significant difference in cancer incidence rates between males and females, with higher rates among females.

Gender is a well-known non-modifiable risk factor in cancer epidemiology [15], with varying incidence rates based on cancer type that may be attributed to behavioral, physiological, hormonal, and reproductive differences [16]. In our study, GIT malignancies were the most common (58.7%), followed by breast tumors in women (14.7%). These findings are consistent with Gusbi et al. [12], who also reported breast cancer as the most common cancer site among females, with a decreasing incidence rate from 146 (45.9%) in 2016 to 73 (23%) cases in 2018. In males, colorectal cancer was the most common, followed by prostate cancer.

Ismail et al. [11] reported that breast and uterine cancers were the most common in women (18.4% and 15.9%, respectively), while colorectal cancers were the most common in men (11.6%), followed by colorectal cancer in both genders. Benyasaad et al. [17] observed changes in cancer incidence in eastern Libya in 2012, with colon cancer being the most common in men (22.3%), followed by lung, prostate, pancreas, and liver cancers. In women, breast cancer remained the most common (41.5%), followed by colon, uterine, ovary, and pancreas cancers.

Bodalal et al. [18] observed that the most common cancers in men were colon cancers (22.3%) and breast cancer (41.5%) in women, consistent with previous studies from Libya [18,19]. El Mistiri et al. [20] present the initial data collected and evaluated by the Benghazi Cancer Registry. Registry staff routinely visited all hospitals and pathological labs in eastern Libya (1.6 million people), and they also collected data from all death registration offices. In Egypt, Ibrahim et al. [21] found that hepatocellular carcinoma (HCC) was the most common malignancy in both genders (23.8%), followed by breast (15.4%), and bladder cancer (6.9%). The high incidence rate of colon cancer in Libya may be due to dietary and lifestyle habits. The availability of endoscopic techniques and better detection could explain the increase in the incidence rate of colorectal carcinoma. Our study found a high frequency of chemotherapy (22.7%), similar to a study from England (34.1%) [22], which may be due to advanced cancer at first presentation.

The study has limitations that should be acknowledged. Important demographic and socioeconomic factors, as well as family medical history and known risk factors for cancer, were not included in the analysis, limiting the comprehensive understanding of the disease. Furthermore, the lack of long-term follow-up compromises the accuracy and reliability of the results, hindering a true assessment of the impact of multidisciplinary team (MDT) meetings on patient outcomes over time. Future research should address these limitations by incorporating a broader range of variables and conducting long-term follow-up studies to enhance the understanding of MDT meetings'

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effectiveness and sustainability in improving patient outcomes and treatment plans.

5. CONCLUSION

In conclusion, the study identified breast cancer as the most common cancer in women and colorectal cancer as the predominant malignancy in men. These findings have important implications for health authorities in the region, providing valuable insights for the development of targeted cancer prevention strategies. The study highlights the urgent need for comprehensive programs in Libya that focus on improving cancer research, data collection, screening, diagnosis, treatment, registration, and overall management across all cancer types. The results of this study serve as a significant resource for further investigation and understanding of cancer in Libya, facilitating future efforts to address the challenges associated with this disease.

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