

Quality of Medical Records Documentation Practices at Menoufia Clinical Oncology Department

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ABSTRACT

Background: Cancer registries rely on extracting data from a patient's medical records, so without proper documentation we will have incomplete abstracted data items and missed data values within cancer registries.

Objectives: To assess the quality of the oncology patients' records, compare patients with complete versus incomplete records according to survival time, and analysis of cancer statistics during 2019 at the Clinical Oncology Department at Menoufia University Hospitals.

Methods: A retrospective study was conducted at the Clinical Oncology Department at Menoufia University Hospitals. All the available oncology patient records formed during 2019 (1844) are revised according to the checklist to detect absence and presence of the items of the checklist.

Results: The percentage of oncology patient records exceed 80 % level of completeness was 78.3%- 75.5% of the records had no clear outcomes, the mean survival time was significantly higher among complete (33.35 ± 0.21 months) than incomplete records (31.34 ± 0.79 months) ($P < 0.05$). The most common tumor among the whole population was Breast Cancer followed by GIT Tumors, the most common tumor among male participant patients was GIT Tumors followed by Blood Cancer. While the most common tumor among female participant patients was Breast Cancer followed by Female Genital Tumors.

Conclusion: The survival time was higher among the patient with records exceed the 80 % level of completeness than the patient with lower completeness level, so hospital documentation needs more care.

Keywords: Completeness- Hospital documentation- Oncology- Medical records- Survival.

INTRODUCTION

Medical records are systematic documentations of the patients' socio-demographic data, present history of illness, clinical findings, investigations, diagnosis, treatment, follow-up and prognosis ^[1].

Accurate health care data taken from the medical records are needed for the current and future service provided to a patient at all levels of health care, medico-legal purposes, accurate information about diseases, clinical research, outcomes of health care intervention and statistical information ^[2]. Also for specific medical specialties such as oncology, the data are de facto evidence which hold promise for rapid advances in oncology because it may represent a more accessible and cost-effective way to validate the efficacy of clinical interventions and can support clinical trials ^[3].

All over the world, there are many problems related to registry systems such as data loss, incorrect data, duplicate records, and illegible data ^[4]. The lack of proper data leads to incorrect decisions in clinical practice, treatment errors, unnecessary repeating of investigation, inappropriate referrals and the loss of time and other resources ^[5].

Cancer registry is the process of continuous, systematic collection of data on the rates and characteristics of reported cancers to help to evaluate and control the effect of cancer on the community ^[6]. These cancer registries rely on extracting data from a patient's medical records, so without proper documentation within the medical records, we will

have incomplete abstracted data items and missed data values within cancer registries ^[3].

Egypt did not have cancer incidence rates at the national level until the report of the national cancer registry program in Egypt appeared. Until that time, the published rates were the rates from the cancer registry in Gharbia governorate, but none of these published rates can be considered expressive of Egypt, as they relied on results of one registry in a single delta governorate and therefore could not be relied upon to understand the current situation of cancer in Egypt ^[7].

So, this study is conducted as an evaluation of the quality of Oncology Patient Records Documentation and analysis of cancer statistics in 2019 at Menoufia University Hospitals aiming at the quality improvement of patient records, preparing for the application of the electronic records and a trial of cancer registry in Menoufia University Hospital to provide information for the National Cancer Registry Program of Egypt database of cancer incidence.

PATIENTS AND METHODS

Study setting: The study is conducted at the Clinical Oncology Department at Menoufia University Hospitals.

Sample size: The study includes all patient records formed during 2019 at the department. The number of the formed records is 2128, but the available records at

the clinic and the central archive are 1844 records incorporated in this study.

Study tools: The available patient records are revised according to the checklist designed by the investigator from data form of cancer registry program of Egypt and some added points from the original health record, which is already present to detect absence and presence of the items of checklist.

Items on checklist include six sections:

1. The patient identification section includes name, age, ID number and current address.
2. The patient demographics section includes place of birth, date of birth, age at diagnosis, sex, marital status, and occupation.
3. The medical history section includes clinical data (chief complaint of the patient, present illness history, and physical examination), past history, smoking and family history.
4. The cancer-specific data section includes type of tumor, primary site, laterality, type of reporting source, stage, grade, diagnostic information, date of initial diagnosis, date of initial treatment, provisional diagnosis, and final diagnosis.
5. The hospital-specific data section includes reporting hospital and record number.
6. The follow-up data section which include registration date, date of last contact, vital status, management (medication name, dose, route, frequency of the drug), referral, outcomes, and cause of death.

Each item on the checklist represents 2.5% of the total completeness of the record, then each record was given a percentage of completeness according to the total percentage of the present item from checklist.

Ethical Approval:

An approval from the medical ethics committee at Menoufia Faculty of Medicine was taken as a first step and Formal approval from the manager of the hospital was taken to work in the medical records department also the hospital archive staffs were informed of the study procedures and purpose. The study was conducted out in consistence with the Helsinki Declaration.

Statistical analysis

Data were collected and statistically analyzed using an IBM personal computer with SPSS version 26 and Epi Info 7 programs. The qualitative data are described as numbers (N), percentages (%), Means and standard deviation (SD). Survival analysis was done for the cases of concurrent treatment in 2022, and Log

Rank (Mantel-Cox) test was used to compare survival time and completeness of the records of these cases.

RESULTS

The mean age of the participant patients was 55.52 ± 14.33, Female patients represented 52.8% versus 47.2% male patients, breast cancer cases were the most frequently encountered followed by GIT Cancer cases, Head and Neck Tumors cases represented the lowermost encountered cancer cases, 21% were smoker, 10.2% had a positive family history for cancer and 75.5% of the records had no clear outcomes among the studied group (Table 1).

Table (1): Demographic and tumor type distribution in medical records of the studied patients

		N=1844	%
Age	Mean ±SD (55.52±14.33)		
Sex	Male	870	47.2
	Female	974	52.8
Family history	Positive	187	10.1
	Negative	1657	89.9
Smoking	Smoker	386	20.9
	non-smoker	1458	79.1
Tumor type	Blood cancer	309	16.7
	Brain and CNS tumors	55	3.0
	Breast cancer	475	25.7
	Female genital tumors	137	7.4
	GIT Tumors	364	19.7
	Head and neck tumors	35	1.9
	Male genital tumors	53	2.9
	Metastatic of unknown origin	73	4.0
	Musculoskeletal tumors	45	2.4
	Respiratory system tumors	132	7.1
	Skin tumors	53	2.9
Urinary tract tumors	115	6.2	
Outcome	Concurrent treatment	385	20.8
	loss of contact	1392	75.5
	Referral	62	3.4
	Died	5	0.3

Most of the items of patient’s record were present in 84%-99% of the checked records while the place of birth and date of birth were present only in few records (2%, 7.3% respectively). 78.3% of the checked records exceeded 80% level of completeness, while 21.7% were less than 80% level of completeness (Table 2).

Table (2): Completeness analysis of the items of patient’s record among the studied group records

Items	Completeness) N=1844) %		
Name	1844	100	
Age	1844	100	
I.D Number	1655	89.8	
Current Address	1783	96.7	
Date Of Birth	134	7.3	
place Of Birth	37	2	
Sex	1844	100	
Marital Status	1774	96.2	
Occupation	1830	99.2	
Clinical Data:	Patient chief complaint	1844	100
	History of present illness	1816	98.5
	Physical examination	1825	99
Past-History	1826	99.0	
Type of the Tumor	1844	100	
Primary Site	1746	94.7	
Laterality	1738	94.3	
Type of Reporting Source	1665	90.3	
Stage	1611	87.4	
Grade	1556	84.4	
Diagnostic Information	1844	100	
Date Of Initial Diagnosis	1738	94.2	
Date Of Initial Treatment	1745	94.6	
Provisional Diagnosis	1723	93.4	
Final Diagnosis	1844	100	
Reporting Hospital	1844	100	
Record Number	1844	100	
Date Of Last Contact	1609	87.3	
Registration date	1834	99.5	
Vital Status	1844	100	
Management: Medication name		1507	81.7
	Dose	1604	87
	Route	1567	85
	Frequency of the drug	1663	90.2
Referral	1477	80.1	
Final Record Analysis			
Completeness less than 80%	401	21.7	
Completeness 80% or more	1443	78.3	

There was a high percentage of records that exceed 80% of its completeness in all types of tumors, the highest percentage was for breast cancer, male genital tumors and blood cancer. While, head and neck tumors, skin tumors and respiratory tumors showed the lowest percentage among the studied group (Table 3).

Table (3): Level of completeness of medical records in different types of tumors among the studied group

Type of tumor	Level of completeness < 80% (n=401)		Level of completeness ≥80 % (n=1443)		Total	
	No	%	No	%	No	%
Female genital tumors	29	21.2	108	78.8	137	100
GIT tumors	94	25.8	270	74.2	364	100
Metastatic of unknown origin	19	26.0	54	74	73	100
Respiratory tumors	37	28.0	95	72.0	132	100
Skin tumors	15	28.3	38	71.7	53	100
Blood cancer	56	18.2	251	81.8	307	100
Male genital tumors	9	17.0	44	83.0	53	100
Breast cancer	81	17.1	394	82.9	475	100
Head and neck tumors	12	34.3	23	65.7	35	100
Musculoskeletal tumors	9	20.0	36	80.0	45	100
Urinary tract tumors	27	23.5	88	76.5	115	100
Brain and CNS tumors	13	23.6	42	76.4	55	100

The most common tumors among male patients were GIT tumors, blood cancer, and respiratory tumors, while the most common tumors among female patients were breast cancer, female genital tumors and GIT tumors among the studied participants (Table 4).

Table (4): Ranking of different types of Tumors among male (A) and female (B) studied group.

Ranking among the male studied group		Ranking among the female studied group	
Tumor	N (%) =870	Tumor	N (%)
GIT tumors	244 (28 %)	Breast Cancer	471 (48.4 %)
Blood Cancer	201 (23.1 %)	Female genital tumors	137 (14.1 %)
Respiratory tumors	114 (13.1 %)	GIT tumors	120 (12.3 %)
Urinary tract tumors	104 (12 %)	Blood Cancer	106 (10.9 %)
Metastatic of unknown origin	56 (6.4 %)	skin tumors	26 (2.7 %)
Male genital tumors	53 (6.1 %)	Musculoskeletal tumors	26 (2.7 %)
Brain and CNS tumors	32 (3.7 %)	Brain and CNS tumors	23 (2.4 %)
skin tumors	27 (3.1 %)	Head and neck tumors	19 (2 %)
Musculoskeletal tumors	19 (2.2 %)	Respiratory tumors	18 (1.8 %)
Head and neck tumors	16 (1.8 %)	Metastatic of unknown origin	17 (1.7 %)
Breast Cancer	4 (0.5 %)	Urinary tract tumors	11 (1.1 %)
Total	870 (100%)	Total	974 (100%)

The mean survival time was higher among the patients with records that exceed 80% of their completeness than the patients with lower level of completeness (< 80%) (Log Rank =6.44, P < 0.05) (Table 5).

Table (5): Survival distribution for different levels of completeness.

Item	Survival Mean 95% Confidence Interval	Survival Median 95% Confidence Interval	Log Rank	P value
Completeness less than 80%	31.34±0.79 (29.78- 32.90)	32.0 (29.48- 34.52)	6.44	0.011*
Completeness 80% or more	33.35±0.21 (32.93- 33.78)	33.0 (32.34 -33.66)		

*Significant

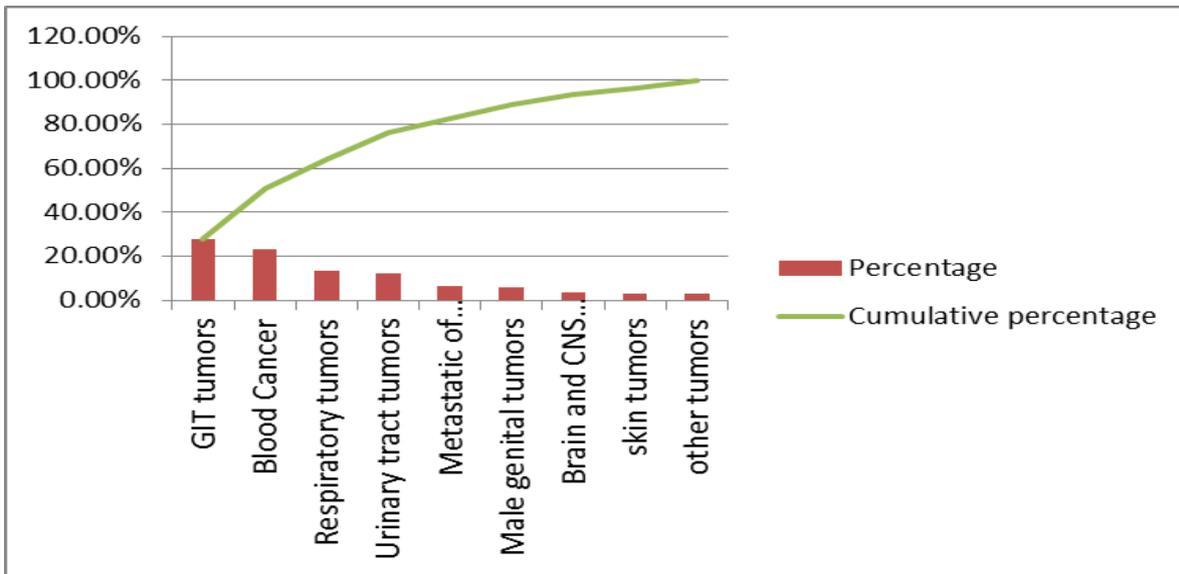


Figure (1): Pareto chart displaying different types of tumors among the male studied group.

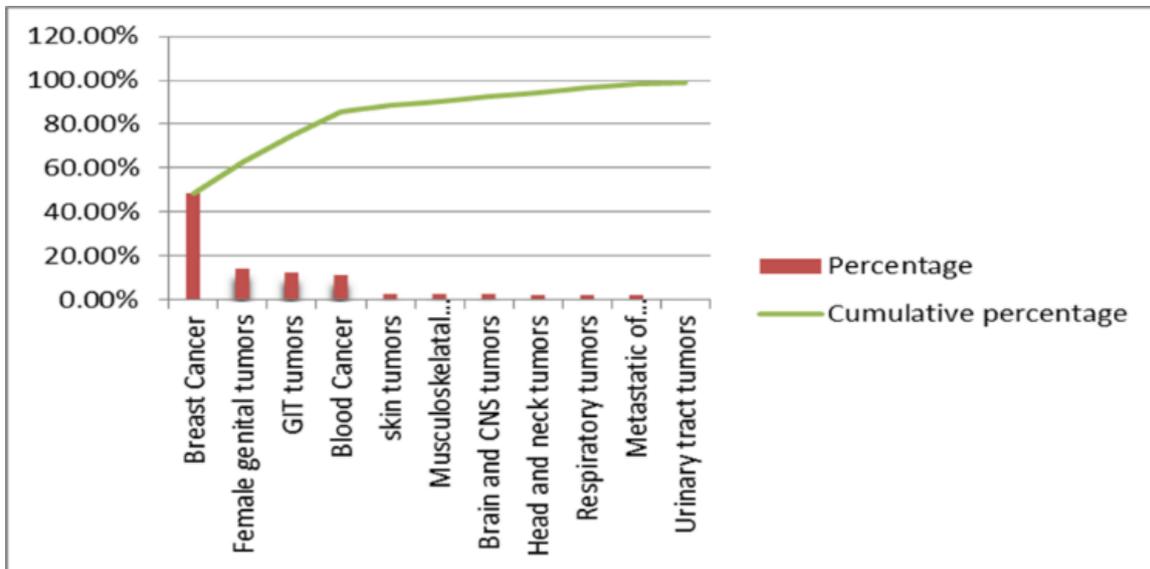


Figure (2): Pareto chart displaying different types of Tumors among the females studied group.

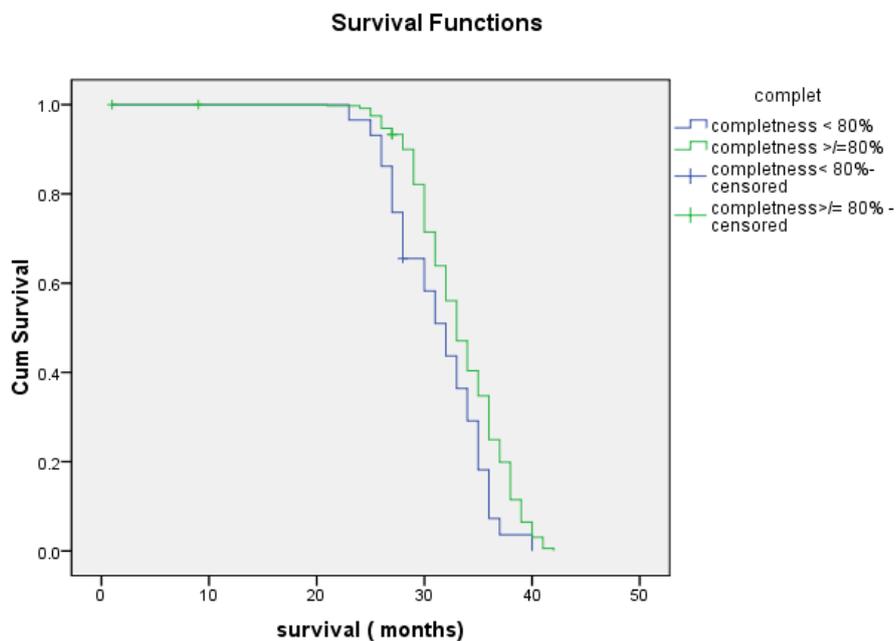


Figure (3): Kaplan Meier for survival time among different levels of record completeness.

DISCUSSION

Medical records are important means of evaluation and following up the medical service provided to the patient in any medical institution [8]. Considering the importance of the data registered in the medical records in following up the medical performance, treatment, planning within the health organization and making the right decisions, these documents must be perfect and complete [9]. The oncology medical records especially need to be accurate and complete as their data is used for getting insights expressing cancer epidemiology and the comparative effectiveness of therapies [3].

In the current study, the available records represented 86.6% of all 2019 academic year's records and 13.4% of the records were missing. At the Icelandic Cancer Registry the available records represent 99.15% [10], and at the Singapore Cancer Registry, they were 97.5% [11]. This low percentage of the available records in the current study may be due to allowing patients and researchers to take the only original copy of the file for consultation outside the hospital or for a research purpose, and therefore when it is lost, the file is completely lost, and there is no periodic inventory of the records to determine the lost files.

In this study 80% cutoff value for the level of completeness of the records was assumed, based on this level, this study revealed that 78.3% of records exceeded this level of completeness while 21.7% were less than it.

The patient's name, age, gender, address, occupation, marital status, and ID Number were present in almost all studied records in a percentage ranges from 89% to 100% of the records. These results are better than a study conducted in Egypt, where **El-salami et al.** [4] found that the patient identification part was present in more than 70% of checked records in El-Obor Health Insurance Hospital. Also, **Saravi et al.** [8] and **Tara et al.** [12] in Iran, found that the demographic characteristics in the patient identification part were present in 53% of the checked records at the hospitals of Mazandaran university and 49% of the checked records at Imam Reza Hospital respectively [8,12].

The Documentation of final diagnosis and provisional diagnosis was present in 100% and 93% of the checked records respectively. These results are also better than **Sinha et al.** [13] in South India who cleared that documentation of provisional diagnosis was found in 70%-90% of the checked records. **Adeleke et al.** [14] in Nigeria found that the provisional diagnosis was present in 94.2% of records.

Documentation of registration time and date of last contact are found in most of the checked records 99.5% and 87% respectively, which differs from **El-salami et al.** [4] in Egypt who found that the documentation of registration time and time of last

contact were the reverse in the General Hospital of Kafr El-Sheikh, 83.5% and 100% respectively.

Documentation of clinical data including patient's main complaint, history of present illness, physical examination, family history, smoking status, and documentation of past history were almost present in all the checked record (98.5%-100%). **Anwar et al.** [15] at a family health center in El-Shorouk City, Egypt, found that the documentation of clinical examination was present in 51.5% of checked records. These findings also are better than **El-salami et al.** [4] in the General Hospital of Kafr El-Sheikh who declared that the documentation of patient main complaint represented 92.5% of records. The present illness history was absent in all checked records at the General Hospital of El-Mahalla El-Kubra. The physical examination was present in 69.5% - 89% - 90% of checked records in Kafr El-Sheikh General Hospital, El Obor Health Insurance Hospital and El-Mahalla El-Kubra General Hospital respectively. Also, the documentation of past-history in El-Mahalla El-Kubra General Hospital was present in 28% of records.

The Management data which include treatment type, medication name, dose, frequency, and method of administration of the drug are complete in 81%-87%-90.2%-85% of the checked records respectively. These results are higher than the results of **Phalke et al.** [16] in India who showed that dosage, frequency, and method of administration of the drug were present in 64.9%- 73.7% - 75.2% of the records respectively [16].

1. Cancer-specific data which include primary site, laterality, stage, grade, and diagnostic information were complete in the checked records in a percentage 94.7% - 94.3% - 87.4% - 84% - 100% respectively.

The high percentages for the most items on the checklist in the current study could be explained by the high attention provided for cancer registry in 2019 at the oncology department represented at Menoufia cancer registry program with its special sheet which was added to the records at that year.

Regarding types of tumors and their association with the completeness of the records in this study the patient with Breast Cancer and Blood Cancer had more completed records than the other types of tumor, this is because these types of tumors receive special attention at the state level, represented by 100 million Seha Campaigns [17], and at the level of Menoufia Clinical Oncology Department at the Annual International Conference of the department [18]. **Baheya Foundation** [19] also organized a breast cancer awareness campaign in Menoufia in July 2019.

Regarding the treatment outcomes in this study, loss of contact and no clear outcomes represented 75% of the records, and concurrent treatment represented 20.8%. Patients with concurrent treatment had a high percentage of completed records, which may be

because the patient with concurrent treatment had a greater number of visits to the hospital, so more data are added to his record.

That study showed that Breast Cancer cases were the most frequently encountered cancer (25.7%), followed by GIT Tumors (19.7%), Blood Cancer (16.7%), Female Genital Tumors (7.4%) and Respiratory System Tumors (7.1%). These results agree with **El-Senbawy *et al.*** ^[20] in Egypt who tried to make a previous cancer registry trial at University Hospital of Menoufia (2012-2013) and found that Breast Cancer was the most common tumor in the whole population (22.1%), followed by Blood Cancer (16.3%), GIT Tumors (16.1%), Urinary Tract Tumors (8.5%), and Respiratory System Tumors (7%). The National Cancer Registry Program of Egypt found that the commonest sites for tumors were Liver Cancer (23.8%), Breast Cancer (15.4%) and Bladder Cancer (6.9%) for both sexes ^[7]. World Health Organization declared that the most common tumor in 2020 (in terms of new cases of cancer) was Breast Cancer and the 2nd most common tumors were lung cancers, followed by colon, rectum, prostate, skin (non-melanoma), and stomach cancer ^[21]. Which differs from this work's results due to the high prevalence of HCV in Egypt, which is a risk factor for liver cancer (considered one of the GIT tumors) so liver cancer took the 2nd most common tumor in Egypt ^[22].

Regarding sex and the frequency of tumors, the current study showed that 76% of cancers in male patients were GIT Tumors (28%), Blood Cancer (23.1%), Respiratory Tumors (13.1%), and Urinary Tract Tumors (12%). These results agree with **El-Senbawy *et al.*** ^[20] in Egypt who showed that GIT malignancies were the most common cancers among male patients representing 21%, followed by Blood Cancer (19.7%), Urinary Tumors (13.8%), Respiratory Tumors (11.2%), the National Cancer Registry Program of Egypt found that 50.6% of male cancers were Liver Cancer (18.7%), Bladder Cancer (12.7%), Non-Hodgkin's lymphomas (11.0%) and Respiratory Tumors (trachea, bronchus and lung) (8.2%) ^[7].

This study showed that 85.7% of cancer in the female patient were Breast Cancer (48.4%), Female Genital Tumors (14.1%), GIT Tumors (12.3%) and Blood Cancer (10.9%) among the female studied group. These results are consistent with **El-Senbawy *et al.*** ^[20] who showed that Breast Cancer represented 41.1%, followed by Blood Cancer (13.3%), GIT Tumors (11.2%) and Female Genital Tumors (9.6%). **National Cancer Registry Program of Egypt** ^[7] found that 56.4% of all cancer in females were Breast Cancer (38.8%), Blood Cancer (Non-Hodgkin's lymphoma) (8.5%), Liver Cancer (4.6%) and Ovarian

Tumors (4.5%). The difference in these percentages refers to that our study calculates the percentages according to the system, but the National Cancer Registry Program of Egypt calculates percentages according to the organs for example the GIT Tumors in our study include Liver Cancer, Stomach Tumors, Esophagus Tumors, GIST Tumors, Anal, Rectal and Intestinal Tumors so that explain the differences between the two studies.

In that study, the survival analysis for the patients of concurrent treatment up till 2022 showed that the survival time of the patients who have 80% completeness level of their records or more was significantly higher than those who have below 80% completeness level of their records. This result agrees with **Yang *et al.*** ^[3] who conducted a similar study in the United States and found that the patients with more complete documentation show higher survival time than those with missing data.

STRENGTHS AND LIMITATIONS

This study includes all cases of cancer registered at Menoufia University Hospitals (in terms of new cases of cancer) during the academic year 2019. Regarding the limitations, there was 284 records not present in the archive and there so not included in that study.

CONCLUSION

This work showed that in all types of tumors, there are a high percentage of records that exceed 80% level of its completeness; the highest percentage was for breast cancer, male genital tumors, and blood cancer, while the head and neck tumors, skin tumors and respiratory tumors showed the lowest percentage. The most common tumors among male patients were GIT tumors, blood Cancer, respiratory tumors and urinary tract tumors. The most common tumors among female patients were breast cancer, female genital tumors, GIT tumors and blood cancer.

RECOMMENDATION

Provide training programs for the doctors on the importance of quality medical documentation. Inclusion of a short course about hospital registrations in the educational course for medical students. Periodic checkup of the patient records every 6 months to identify the records whose patients had been discontinued from follow-up and communicate with them by telephone to find out the fate of these cases. The original copies of the records are not allowed to be taken out of the hospital but only a copy of it is allowed to be taken.

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