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STATISTICAL STUDY OF CANCER IN DIYALA GOVERNORATE

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ABSTRACT

Background: Cancer is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body. Not all tumors are cancerous; benign tumors do not spread to other parts of the body. Possible signs and symptoms include a lump, abnormal bleeding, prolonged cough, unexplained weight loss and a change in bowel movements. While these symptoms may indicate cancer, they may have other causes. Over 100 types of cancers affect humans. Aims of Study: To Identify and Classify different types of Cancers in Diyala Government and Correlate them with different parameters, namely age, gender, grade …etc. Patients, and Methods: This is a retrospective study based on isolation of One hundred and fifty eight patients from different regions of Diyala Governorate diagnosed with cancer from the archive of the Histopathological Laboratory in Iraq- Diyala Governorate- Baquba City by Dr. Salam Hasoon Pathologist, between the years 2012-2016; for all cases we do statistical analysis for age, sex, organ involved, type of operation, type of cancer, grade, stage and date of diagnosis and correlation of each of these parameters with each other. Results: the highest type of cancer within the sample was breast cancer where it reached 39 in the rate of 24.9% followed by skin cancer number 30 in the rate of 18.9% and then Lymph N. number 12 in the rate of 7.8%; the remaining sample 76 are other cancers in the rate of 48.4%. In this study we do statistical analysis for cancer cases regarding different clinico- pathological parameters, Age, Sex, Type of cancer, Grade and Stage. Age and Sex parameters were available for each patient, Whereas Grade and Stage Parameters were unavailable for each patient due to flees of some patient from the histopathological examination, diagnosed here by fine needle cytology or histopathological examination of the excisional biopsy only, and outside this government the further evaluation for grade and stage for missed cases may be performed there after the expected radical excision of the cancer. For cancer types percentages, we find that Breast cancer is the most common cancer type in Diyala Governorate (25%) followed by skin cancer (19%) and then Lymph node cancer (8%). The all other types of cancer constitute about (48%). We note that lung cancer cases were just 3 cases unlike the rest of Iraq this is attributed to diagnosis of most of cases outside this Governorate. The same is applied to Carcinoma of the prostate, colon and ovary. For Breast cancer, we find that most of the cases occur in the fifth and sixth decades and the mean age is 50 years. For Skin Cancer is most common in the sixth and seventh decades with mean age 63 years. For Lymph Node cancer is common the forth decade and the mean age is 41 years. For other all other types of cancer are common in the sixth decade and mean age is 53 years. For all cancer types we find that age 60 is the most frequent age affected and the mean age is 53 years. So the age is directly related to the development of cancer in Diyala Governorate. The age also has a Signiant effect on grade and stage of cancer (Directly related). Male to female ratio is 1.6/1. For histological Grade, we find that Grade II is more common in CA Breast (64%) and Grade I is more common is skin cancer (60%) and Grade II & III are equally common in lymph node cancer (50%). For other types of cancer Grade II is the most common (51%). For all cancer types we find that Grade III is the most common (45%). For Breast cancer, we find that invasive Ductal Carcinoma is the most common type. For Skin Cancer, Basal Cell Carcinoma is the most common, whereas for Lymph Node, Non- Hodgkin's lymphoma is the most common type of cancer. Conclusion: Breast cancer is the most common cancer type in Diyala Governorate (25%) followed by skin cancer (19%) and then Lymph node cancer (8%). The age is directly related to the development of cancer in Diyala Governorate.

KEYWORD: Cancer, Diyala Governorate.

INTRODUCTION

Background: Cancer is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body.[1][2] Not all tumors are cancerous; benign tumors do not spread to other parts of the body.[2] Possible signs and symptoms include a lump, abnormal bleeding, prolonged cough, unexplained weight loss and a change in bowel movements.[3] While these symptoms may indicate cancer, they may have other causes.[3] Over 100 types of cancers affect humans.[2]

Tobacco use is the cause of about 22% of cancer deaths.[1] Another 10% is due to obesity, poor diet, lack of physical activity and drinking alcohol.[1][4] Other factors include certain infections, exposure to ionizing radiation and environmental pollutants.[5] In the developing world nearly 20% of cancers are due to infections such as hepatitis B, hepatitis C and human papillomavirus (HPV).[1] These factors act, at least partly, by changing the genes of a cell.[6] Typically many genetic changes are required before cancer develops.[6] Approximately 5–10% of cancers are due to inherited genetic defects from a person's parents.[7] Cancer can be detected by certain signs and symptoms or screening tests.[1] It is then typically further investigated by medical imaging and confirmed by biopsy.[8]

Aims of Study

To Identify and Classify different types of Cancers in Diyala Government and Correlate them with different parameters, namely age, gender, grade …etc.

PATIENTS, MATERIALS AND METHODS

This is a retrospective study based on isolation of One hundred and fifty eight patients from different regions of Diyala Governorate diagnosed with cancer from the archive of the Histopathological Laboratory in Iraq-Diyala Governorate- Baquba City by Dr. Salam Hasoon Pathologist, between the years
2012-2016; for all cases we do statistical analysis for age, sex, organ involved, type of operation, type of cancer, grade, stage and date of diagnosis and correlation of each of these parameters with each other.

RESULTS

A total of 158 Cases of different types of cancers in different regions in Diyala Governorate are subjected to statistical analysis regarding age, sex, grade. etc. mainly to the most common types of cancer noted in this study.

Table: Classification of Cancer in Diyala Governorate.

No.	Patient Name	Age	Sex	Organ	Surgery	Type	Gr	St	Date
1	Adel A.	50	♂	Pleura	Pleural Biopsy	T-Cell Lymphoma			012
2	Sagban I.	60	♂	Bronchus	Bronchial Wash	Small Cell Carcinoma			012
3	Ibrahim A.	54	♂	Submandibular L.N	F.N.A	Non- Hodgkin's Lymphoma			012
4	Ahmad J.	15	♂	Ant.Mediastinal Mass	Biopsy	Dysgerminoma	3		012
5	Jamela J.	72	♀	Lt. Breast Mass	Excisional Biopsy	Invasive DC	2		012
6	Hussein M.	43	♂	Supra- glottis Mass	Laryngeal Biopsy	Squamous Cell Carcinoma	1		012
7	Hussein N.	75	♂	Lung	Pleural fluid Cytology	Undifferentiate d Carcinoma	3		012
8	Hamdia**M.**	73	♀	Skin Tumor	Excisional **Biopsy**	Squamous Cell **Carcinoma**	1		012
9	Hamed H.	58	♂	Lung Mass	Sputum Cytology	Poorly Differentiated Carcinoma	3		012
10	Hameda J.	42	♀	Rt. BreastMass	Excisional Biopsy	Invasive DC	2		012
11	Khadeja H.	63	♀	Femur	Bone Biopsy	Metastatic DC			012
12	Khadeja N.	73	♀	Nose Lesion	Skin Biopsy	Malignant Melanoma			012
13	Kholud S.	57	♀	Breast Mass	Excisional Biopsy	Recurrent DC	2		012
14	Rahema M.	47	♀	Ovariantumor	Ascetic fluid	Metastatic Carcinoma			012
15	Redassa H.	77	♀	Gastric Mass	Gastrectomy	Gastric diffuse Carcinoma	3	II	012
16	Sami N.	57	♂	Both breasts	FNAC	Invasive DC			012
17	Saja L.	17	♀	Tibia	Bone Biopsy	Osteosarcoma			012
18	Suhair S.	55	♀	Breast Mass	FNAC	Invasive DC			012
19	ShamsaI	70	♀	ParotidMass	FNAC	Carcinoma			012
20	Sabria A.	60	♀	Breast Mass	FNAC	Invasive DC			012
21	Sabiha I.	60	♀	Pleural fluid	Fluid Cytology	Metastatic DC		IV	012
22	Sade'a M.	60	♀	ThyroidMass	FNAC	Carcinoma	3		012
23	Taha Kh.	84	♂	BladderMass	Biopsy	Transitional Cell Carcinoma	2		012
24	Adela Kh.	32	♀	Breast	Mastectomy	Invasive DC	3		012
25	Abbas F.	67	♂	Skin, Scalp	Skin Biopsy	Malignant Melanoma			012
26	Abbas M.	63	♂	Larynx	Biopsy	SCC	2		012
27	Azeeza D.	58	♀	Uterus	Hysterectomy	Endometrial Carcinoma	2	I	012
28	Ali S.	52	♂	Skin	Biopsy	BCC			012
29	Fatima A.	38	♀	Breast Mass	FNAC	Invasive DC	3		012
30	Feda'a G.	62	♀	Bone Marrow	Biopsy	Multiple Myeloma			012
31	Fawzia Kh.	68	♀	OvarianMass	Ascetic Fluid	Metastatic Carcinoma		IV	012
32	Karama K.	35	♀	Cervix	Biopsy	SCC	3		012
33	Kefah K.	40	♀	Breast	Biopsy	Recurrent DC	3		012
34	Kawthar A.	35	♀	Uterus	Hysterectomy	Leiomyosarcoma	2	III	012
35	Mohammad A.	55	♂	Brain	Biopsy	Astrocytoma	3		012
36	Marwan H.	11	♂	Cervical L.N.	FNAC	Lymphoblastic Lymphoma	3		012
37	Mehdia A.	44	♀	Breast	Mastectomy	Invasive DC	3	III	012
38	Najeha H.	40	♀	Ovarian Mass	Oophorectomy	Mucinous Carcinoma	1		012

39	Nedhal A.	30	♀	Skin, Nose	Skin Biopsy	BCC			012
40	Nori J.	62	♂	Bladder	Biopsy	Transitional CC	2		012
41	Noria M.	48	♀	Breast Mass	Excisional Biopsy	Invasive DC	2		012
42	Isra'a L.	24	♀	Gluteal Mass	Excisional Biopsy	Liposarcoma	2		013
43	Khaleda M.	43	♀	Uterine Mass	Hysterectomy	Choriocarcinoma			013
44	Rajeha J.	65	♀	Thyroid	FNAC	Thyroid Carcinoma			013
45	Raja'a I.	32	♀	Thoracic Vertebra	Excisional Biopsy	Fibrosarcoma	1		013
46	Sajeda H.	60	♀	Breast Mass	FNAC	Invasive DC			013
47	Sa'ad I.	30	♂	Brain Mass	Excisional Biopsy	Astrocytoma	2		013
48	Suhaila N.	59	♀	Breast Mass	FNAC	Invasive DC			013
49	Farha M.	40	♀	Breast Mass	FNAC	Invasive DC			013
50	Kawthar M.	61	♀	Breast Mass	FNAC	Invasive DC			013
51	Mohammad A.	13	♂	Spinal Cord Dura	Excisional Biopsy	Gangiloneurobl astoma			013
52	Medeha A.	50	♀	Breast Mass	FNAC	Invasive DC			013
53	Mayada S.	30	♀	Cervical L.N.	FNAC	Malignant Lymphoma			013
54	Hana'a Kh.	44	♀	Ovary	Ovarian Cystectomy	Papillary Serous Carcinoma	3		013
55	Zahra Kh.	54	♀	Face Skin	Skin Biopsy	BCC			014
56	Ibtesam H.	30	♀	Cervical Mass	Hysterectomy	SCC	2		014
57	Ahmad G.	73	♂	Liver	Liver Biopsy	Metastatic Adeno CA	2		014
58	Ahmmad Moham.	60	♂	Lungs Masses	Brush Cytology	SCC			014
59	Ahmad Mahdi	62	♂	Inguinal L.N.	Excisional Biopsy	Metastatic AdenoCA			014
60	Ismael K.	60	♂	Skin	Excisional Biopsy	BCC			014
61	Ismael N.	74	♂	Stomach	Gastric Biopsy	Adenocarcinom a	2		014
62	Aseel M.	17	♀	Thyroid	Excisional Biopsy	Papillary CA			014
63	Amal K.	48	♀	Breast Mass	Excisional Biopsy	Invasive DC	2		014
64	Amal M.	15	♀	Cervical L.N.	Excisional Biopsy	Metastatic CA			014
65	Iman F.	50	♀	Uterine Mass	Hysterectomy	Endometrial CA	2	I	014
66	Badria H.	70	♀	Ileo- Cecal Mass	Rt. Hemi-Colectomy	Adenocarcinom a	2	IV	014
67	Bringe S.	44	♀	Breast Mass	FNAC	Invasive DC			014
68	Basead N.	45	♀	Breast Mass	FNAC	Invasive DC			014
69	Bahae M.	25	♂	Neck Mass	Excisional Biopsy	Hodgkin's Lymphoma			014
70	Hasna M.	64	♀	Uterine Mass	Hysterectomy	Endometrial CA	2	I	014
71	Duae R.	8	♀	Brain Tumor	Biopsy	Astrocytoma	2		014
72	Rawdha N.	60	♀	Face Skin Tumor	Excisional Biopsy	BCC			014
73	Zahra A.	53	♀	Breast Mass	FNAC	Invasive DC			014
74	Zahra Kh.	56	♀	Face Skin Tumor	Excisional Biopsy	BCC			014
75	Zuhra F.	68	♀	Ascetic Fluid	Cytology	Metastatic Adenocarcinoma			014
76	Sarha A.	60	♀	Cervical L.N.	Excisional Biopsy	Non-Hodgkin's Lymphoma			014
77	Sahra N.	58	♀	Ascetic Fluid	Cytology	Metastatic CA			014

78	Seham I.	55	♀	Breast Mass	FNAC	Carcinoma			014
79	Shefeca Sh.	76	♀	Breast Mass	Mastectomy	Invasive DC	3	III	014
80	Shereen M.	70	♀	Skin Tumor	Excisional Biopsy	BCC			014
81	Taha M.	57	♂	Omental Mass	Excisional Biopsy	Metastatic CA			014
82	Abdul S.	67	♂	Skin Mass	Excisional Biopsy	BCC			014
83	Obaid M.	75	♂	Lung Mass	Bronchial Cytology	Squamous Cell CA			014
84	Ali A.	64	♂	Rectal Mass	Biopsy	Adenocarcinom a	2		014
85	Emad I.	63	♂	Thigh Mass	FNA Cytology	Liposarcoma			014
86	Amsha I.	70	♀	Urinary Bladder	Urine Cytology	Transitional Cell CA			014
87	Ghania Y.	50	♀	Uterine Cervix	Cervical Biopsy	Squamous Cell CA	2		014
88	Fawzia H.	65	♀	Skin Mass	Excisional Biopsy	Squamous Cell Carcinoma	2		014
89	Kadhim H.	86	♂	Urinary Bladder	Urine Cytology	Transitional Cell CA			014
90	Kaffi H.	84	♀	Nose Skin	Excisional Biopsy	BCC			014
91	Malia S.	65	♀	Breast Mass	Mastectomy	Invasive DC	3	II	014
92	Mahrosa A.	60	♀	Parotid gland	Incisional Biopsy	Adenoid Cystic CA			014
93	Mahmd H.	55	♂	Skin tumor	Excisional Biopsy	BCC			014
94	Marwa A.	30	♀	Ovary	Fluid Cytology	Ovarian CA			014
95	Mahdia Kh.	46	♀	Breast Mass	Mastectomy	Invasive DC	3	IV	014
96	Nesreen B.	32	♀	Breast Mass	FNA Cytology	Intracystic Papillary CA			014
97	Nehla A.	47	♀	Breast	Slide Review	Invasive DC	II		014
98	Noria A.	50	♀	Colonic Mass	Hemi- Colectomy	Adenocarcinom a	2	III	014
99	Hajera J.	50	♀	Brain tumor	Biopsy	Glioblastoma Multiforme	4		014
100	Huda A.	27	♀	Bilateral Ovarian Masses	Excisional Biopsy	Adenocarcinom a	2		014
101	Wedad A.	47	♀	Breast Mass	FNA Cytology	Invasive DC			014
102	Ibrahem H.	80	♂	Nose Skin Tumor	Excisional Biopsy	BCC			015
103	Ahmad Sh.	55	♂	Face Skin tumor	Excisional Biopsy	BCC			015
104	Ahmad A.	45	♂	Urinary Bladder	Biopsy	Transitional Cell CA	2		015
105	Hadhen K.	80	♀	Face Skin Tumor	Excisional Biopsy	BCC			015
106	Hasan A.	70	♂	Face Skin Tumor	Excisional Biopsy	BCC			015
107	Hasna A.	55	♀	Chest Mass	Excisional Biopsy	Recurrent DC	3		015
108	Hussein A.	70	♂	Colon Mass	Left Hemi- Colectomy	Adenocarcinom a	2	II	015
109	Hakema Kh.	80	♀	Breast Mass	Mastectomy	Invasive DC	3	III	015
110	Hakema S.	65	♀	Gastric Mass	Biopsy	Adenocarcinom a	2		015
111	Halema H.	54	♀	Breast Mass	Mastectomy	Invasive DC	2	III	015
112	Hamda S.	60	♀	Face Skin Tumor	Excisional Biopsy	BCC			015
113	Haider Moh.	35	♂	Cervical L.N.	Excisional Biopsy	Metastatic Papillary CA			015
114	Haider Mahdi	60	♂	Ear Skin Tumor	Excisional Biopsy	BCC			015
115	Khaton M.	40	♀	Face Skin tumor	Excisional Biopsy	BCC			015
116	Khalaf Z.	55	♂	Face Skin Tumor	Excisional Biopsy	BCC			015

117	Khalaf M.	51	♂	Cervical L.N.	Biopsy	Metastatic CA			015
118	Duae' Kh.	21	♀	Thyroid Mass	Thyroidectom y	Papillary CA			015
119	Rahma A.	75	♀	Lung Tumor	Bronchial Brush Cytology	Large Cell Carcinoma			015
120	Radhia H.	70	♀	Face Skin Tumor	Excisional Biopsy	BCC			015
121	Zuhara Gh.	59	♀	Abdominal Mass	Excisional Biopsy	Sarcomatoid CA	3		015
122	Salman M.	65	♂	Gluteal Mass	Excisional Biopsy	Malignant Fibrous Histiocytoma			015
123	Salwa M.	52	♀	Breast Mass	Excisional Biopsy	Invasive DC	2	III	015
124	Samera A.	55	♀	Breast Mass	Excisional Biopsy	Invasive Lobular CA			015
125	Sunnia Sh.	61	♀	Gall Bladder Mass	Excisional Biopsy	Adenocarcinoma	2		015
126	Sunnia A.	53	♀	Ovarian Mass	Excisional Biopsy	Papillary serous CA			015
127	Sahla Kh.	62	♀	Face Skin tumor	Excisional Biopsy	BCC			015
128	Subhi R.	38	♂	Abdominal wall Mass	Excisional Biopsy	Metastatic Gastric Adenocarcinoma			015
149	Refeat H.	90	♂	Face Skin tumor	Excisional Biopsy	BCC			016
150	Rawae T.	28	♀	Cervical L.N.	Excisional Biopsy	Hodgkin's Lymphoma			016
151	Saleha N.	40	♀	Breast Mass	Excisional Biopsy	Invasive DC	2		016
152	Attia H.	88	♂	Face Skin Tumor	Excisional Biopsy	Squamous Cell CA	1		016
153	Fatima A.	65	♀	Endometrium	Hysterectomy	Endometrial CA	2	II	016
154	Fendia M.	50	♀	Omentum Mass	Excisional Biopsy	Metastatic Ovarian CA	3	IV	016
155	Kafee H.	85	♀	Face Skin tumor	Excisional Biopsy	BCC			016
156	Nadera F.	59	♀	Endometrium	Biopsy	Endometrial CA	1		016
157	Nesreen I.	38	♀	Breast Mass	Excisional Biopsy	Invasive DC	2		016
158	Waheda A.	49	♀	Axillary L.N.	Excisional Biopsy	Metastatic CA	2		016

Table: The types of cancer for different age groups.

Type of Cancer	No. of cases	(31-40)		(41-50)		(51-60)		(> 60)		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%
1.Breast	39	7	18	12	31	13	33	7	18	39	24.9
2.Skin	30	2	7	2	7	11	36	15	50	30	18.9
3.Lymph N.	12	5	41	2	17	2	17	3	25	12	7.8
4. other cancer	76	10	13.2	18	22.4	30	39.4	19	25	76	48.4
Total	158	24	79.2	34	72.4	56	125.4	44	118	158	100

Note from table (2) above that the highest type of cancer within the sample was breast cancer where it reached 39 in the rate of 24.9% followed by skin cancer number 30 in the rate of 18.9% and then Lymph N. number 12 in the rate of 7.8% ; the remaining sample 76 are other cancers in the rate of 48.4%. As shown in the following figure:

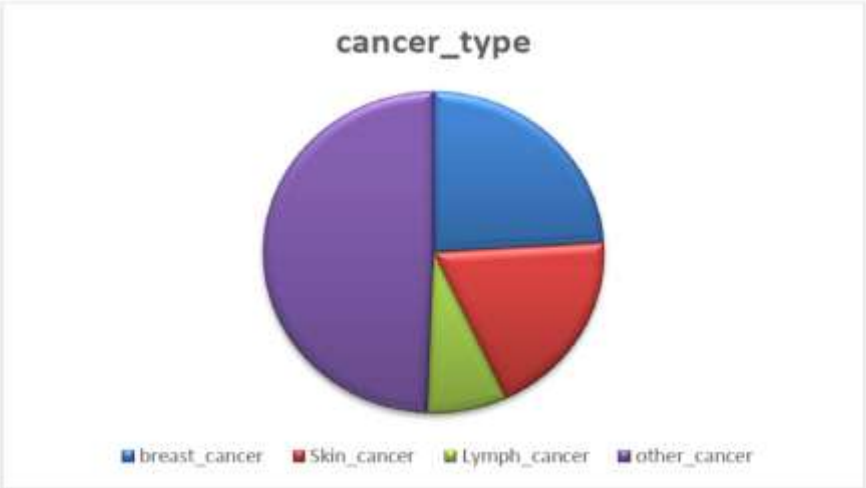

Figure (1): Illustrating the percentages of different cancer types.

Table (3): Types of cancer for age groups with sex.

Type of Cancer	No. of cases	(31-40)		(41-50)		(51-60)		(> 60)		Total	
		M	F	M	F	M	F	M	F	M	F
1.Breast	38	0	7	0	12	1	12	0	7	1	37
2.Skin	30	1	1	1	1	7	4	6	9	15	15
3.Lymph N.	12	2	3	1	1	1	1	2	1	6	6
4.other	78	10	0	19	0	18	1	29	0	76	1
Total	81	13	11	21	14	27	18	37	17	98	60

DISCUSSION

In this study we do statistical analysis for cancer cases regarding different clinico- pathological parameters, Age, Sex, Type of cancer, Grade and Stage. Age and Sex parameters were available for each patient, Whereas Grade and Stage Parameters were unavailable for each patient due to flees of some patient from the histopathological examination, diagnosed here by fine needle cytology or histopathological examination of the excisional biopsy only, and outside this government the further evaluation for grade and stage for missed cases may be performed there after the expected radical excision of the cancer.

For cancer types percentages, we find that Breast cancer is the most common cancer type in Diyala Governorate (25%) followed by skin cancer (19%) and then Lymph node cancer (8%). The all other types of cancer constitute about (48 %). We note that lung cancer cases were just 3 cases unlike the rest of Iraq this is attributed to diagnosis of most of cases outside this Governorate. The same is applied to Carcinoma of the prostate, colon and ovary.

For Breast cancer, we find that most of the cases occur in the fifth and sixth decades and the mean age is 50 years. For Skin Cancer is most common in the sixth and seventh decades with mean age 63 years. For Lymph Node cancer is common the forth decade and the mean age is 41 years. For other all other types of cancer are common in the sixth decade and mean age is 53 years.

For all cancer types we find that age 60 is the most frequent age affected and the mean age is 53 years.

So the age is directly related to the development of cancer in Diyala Governorate.

The age also has a Signiant effect on grade and stage of cancer (Directly related).

Male to female ratio is 1.6/1.
For histological Grade, we find that Grade II is more common in CA Breast (64%) and Grade I is more common is skin cancer (60%) and Grade II & III are equally common in lymph node cancer (50%).
For other types of cancer Grade II is the most common (51%).
For all cancer types we find that Grade III is the most common (45%).
For Breast cancer, we find that invasive Ductal Carcinoma is the most common type.
For Skin Cancer, Basal Cell Carcinoma is the most common, whereas for Lymph Node, Non-Hodgkin's lymphoma is the most common type of cancer.

CONCLUSION

1. Breast cancer is the most common cancer type in Diyala Governorate (25 %) followed by skin cancer (19 %) and then Lymph node cancer (8%).
2. The age is directly related to the development of cancer in Diyala Governorate.
3. The age also has a Signiant effect on grade and stage of cancer (Directly related).
4. Men are more affected by cancer than women in Diyala Governorate (1.6 to1).
5. Unfortunately, about a half of cancer patients in Diyala presented with a higher grade.

Recommendation

1. A bigger study including more cancer patients that presented to all Diyala hospitals and private clinics in order to reach more precise view on the cancer
1. prevalence in this governorate.
2. Enforce physician – pathologist communication in order to follow all cancer cases and try to limit all their data within this governorate.
3. Initiate a local early detection of cancer in order to catch cancers in a lower grade and stage as possible especially for CA Breast and for older people (> 50 years).

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