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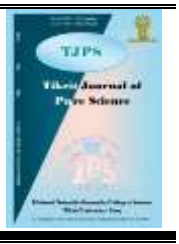

Application of Life Tables on Breast Cancer Patients Treated with Chemotherapy in Nineveh Province (2006-2010)

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Abstract

This study aims to construct life tables for true data of breast cancer patients treated with chemotherapy in Nineveh Governorate for the period 2006 to 2010 for both sexes and for different disease's stages. Patient's life table, the probability of survival starting from the beginning of treatment and the most important factors for treatment and follow-up of such patients were assessed. The results show that by using life tables technique, the probability of survival the patients treated with chemotherapy for five years since enrolled treatment decrease with advance of stages from 85.8% for stage I to 43.5% for stage IV, that indicate the importance of starting therapy during the earlier stage of the disease.

1. Introduction

Cancer is one of the most important diseases with increased incidence all over the world. Breast cancer is the number one in top ten cancers and it affects mainly females. There is more than one million case occur annually around the world, with incidence rate>80 case/100,000 population (WHO, 2003). The incidence rate of breast cancer in The United States of America and also United Kingdom was 123.6/ 100,000 populations at 2008, while in Saudi Arabia it was 18 case/100,000 populations in the same year. [1]

In Iraq, breast cancer is also number one among top ten cancers. According to the registry of Ministry of Health, Cancer Board for 2008, there were 2729 cancer cases, and 2637 (96.6%) were female and 92 (3.4%) were male. Additionally, the incidence rate in female were 16.7/100,000 population.

In Nineveh, and according to statistics of Cancer Registry Unit, Cancer Control Centre, Nineveh Health Directorate, there was 308 cases of breast cancer, 299 (97.1%) female and 9 (2.9%) male for the year 2010., while the incidence rate 19.9 per 100,000 populations which represents 44.9% of the total cancer cases.

Diagnosis of breast cancer depends on clinical examination and radiological imaging, followed by histopathological test. In general, the treatment of breast cancer is based on surgical operation followed by chemotherapy, radiotherapy and then other immune and hormonal treatments based on many factors mainly breast cancer stage.

Life tables were one of the most important statistical tests that can be used in determining the success of treatment that was given to the affected person for many years through detecting deaths due to that disease in a certain population for specific period of time, and detecting the probability of survival for certain years after diagnosis and starting of treatment. [2]

2. Objective of the Study

This study aimed to construct life tables for original data obtained from breast cancer patients treated with chemotherapy in Nineveh province from 2006 to 2010 in both sex for all stages of the disease. The probability of survival was calculated starting from the 1st year of treatment until the 5th year of treatment to determine the effect of treatment and subsequent follow up.

3. Materials of the study

All document sheets of breast cancer patients that were treated with chemotherapy from Cancer Registration Unit, Nineveh Heath Directorate, Mosul.

4. Community of the study

All breast cancer cases (607) that were treated with chemotherapy and have been recorded in Cancer Registration Unit, Department of Cancer Control,

Nineveh Heath Directorate in the period 1/1/2006 to 31/12/2010.

5. Variables of the study

Age, sex, stage of the disease, date of the breast cancer, type of treatment and year of death.

6. Theoretical aspect

6.1 Survival tables

Survival tables are considered as one of the most common methods used in epidemiological researches, and also one of the important scientific analysis methods used to determine the death. This method is applied to patients affected with specific disease and follow up them for specific period of time. [3]. The main concept of life tables is based on life follow up of specific presumed group of people starting from their birthday until the death of the last person among them. Therefore, life tables may be defined simply as the life history of presumed group having the same birthdays and undergo gradual dying out due to death at specific age. Accordingly, life tables have two main principles. [4]

The first principle

Require follow up of real group of people for long period of time from their birthday until the death of all of them. These types of life tables may be defined as current life tables. However, these tables have practical difficulties to produce due to the long time required to collect such information or data.

The second principle

Based on using of real death levels for the whole population with different age ranges (compound ranges) during specific period of time. These types of life tables may be defined as cohort life tables, and consider as the most common and practical ones. Nevertheless, yearly life tables based on five-year age intervals could be produced and called abridged life tables.

Life tables are considering as the only method to express death rates of a community during specific period of time. Also, the life tables could be used in all medical fields and they are considered as the standard method to determine the survival probability for a disease using specific treatment method. Therefore, 5 years survival probability could be used in clinical medicine as an indicator for treatment success, especially in cancer. [2]

Life tables construction

Current life tables or complete life tables are consisting of group of columns that simply consisted of [3],[4]

1. **Age Interval (x to x+1):** This column represent time interval between two specific age interval x and x+1
2. **No. Alive (l_x) :** Represent no. of alive under age x where $l_0 = 100{,}000$ when (x=0)
3. **Deaths (d_x) :** Deaths between x and x+1 (1 year)
4. **Prob. of Deaths(q_x) :** The conditional prob. to death of the patient at the time x+1 given survival at the time x
5. **Survival year (L_x) :** Cumulative time the patient survive between x and x+1
6. **Total survival time (T_x) :** Total survival years for the patient after age x
7. **Expectancy Life (e_x) :** Mean additional survival years within the age range, it can be calculated statistically by:

$$e_x = T_x / l_x$$

6.2 Survival Analysis

Survival analysis is consider as study of the time interval until the event falls, and the studied data must have known starting and ending characteristics. Survival analysis has different applications such statistics, engineering, medicine and epidemiology.

For example, survival analysis that presents data of age after surgical operation and analyze the time intervals of the event. Such analysis can be applied in different science aspects such as medicine, public health, engineering and economics. However, the main focusing in this study will be mainly in application of such techniques in medical field. [5]

6.2.1 Survival analysis models

Survival analysis model deals with the time precede an event. The most practical example is the time precedes death such as our present study. However, survival analysis can be used in different aspects as mentioned previously, with main focusing on the relationship between the time precede the event and other variables. The most applied model for survival analysis is Cox regression that can fit different aspects. [6]

The Survival analysis is related to analysis of data that contain three components: [7]

1- Dependent variable.

2- Withdraw data.

3- Interpreted data that affect survival interval (to be determined).

In this study, the dependent variable will be binary, either equal to 0 which represents the event (death), or equal to 1 which represents (survive). [8]

The ox regression method is considered as one of a novel methods that survival analysis could be applied, where the event itself could be defined as event time (survive or death) which appears after a time interval (short or long), while the interval which precede the event is called survival time. [9]

6.3- Method:

First construction of Survival in patients tabulated by years since enrolled in treatment (None Lost to Follow-up)

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Year of Treatment	No. of Patients Treated	Number Alive at End of Year				
		1^{st}Year	2^{nd}Year	3^{rd}Year	4^{th}Year	5^{th}Year
2006	⬭	-------	-----	---	--	-
2007	⬭	-------	-----	---	-- ▬	6 ⬬
2008	⬭	-------	-----	--- ▬	5 ⬬	
2009	⬭	-------	----- ▬	4 ⬬		
2010	⬭	------- ▬	3 ⬬			
Totals	1 ⬭	2* ⬬	.	.	.	.

* No. of survival at the end of every year.

Where:

⬭ No. of treated patients every year

⬭ (bold) Total no.of treated patients during (2006-2010)

⬬ No. of survival at the end of each year

▬ Withdrew patients during study period

And then calculating probability of surviving to the end of each year since enrolled in treatment as follow:

P_x	Probability of Survival for Each Year of the Study	Prob.
P_1	Prob. of surviving the 1^{st} year	
P_2	Prob. of surviving the 2^{nd} year given survival to the end of the 1^{st} year	
P_3	Prob. of surviving the 3^{rd} year given survival to the end of the 2^{nd} year	
P_4	Prob. of surviving the 4^{th} year given survival to the end of the 3^{rd} year	
P_5	Prob. of surviving the 5^{th} year given survival to the end of the 4^{th} year	

Where:

$$P_1 = \text{Prob. of surviving } 1^{st} \text{ year} = \frac{\text{no. of surviving 1 year since enrolled in treatment} = 2}{\text{total no. of treated patient} = 1}$$

And then calculate the prob. of surviving to the end of the second year of treatment where:

$$P_2 = \text{Prob. of surviving the } 2^{nd} \text{ year} = \frac{\text{no. of surviving patients at the end of 2nd year}}{\text{no. of surviving at the end of } 1^{st} \text{ year - no. of surviving 1 year since enrollment}}$$

And so on for P_3, P_4, P_5

And accordingly we can calculate the prob. of surviving for different years as follows:

Prob. of Surviving		Prob.
Prob. of surviving 1 yea	$=P_1$	
Prob. of surviving 2 years	$=P_1 * P_2$	
Prob. of surviving 3 years	$=P_1 * P_2 * P_3$	
Prob. of surviving 4 years	$=P_1 * P_2 * P_3 * P_4$	
Prob. of surviving 5 years	$=P_1 * P_2 * P_3 * P_4 * P_5$	

Then re-arrangement of data in life tables as follows:

Interval Since Beginning Treatment	Alive at Beginning of Interval	Died During Interval	Withdrew During Interval	No. Exposed to the Risk of Dying During Interval	Prob. of Dying	Prob. of Surviving	Cumulative Prob. of Survival
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
X	I_x	$d_x^{\#}$	w_x	L_x^{*}	q_x^{**}	p_x^{***}	P_x^{****}
1st year	1		–				
2nd year	2		–				
3rd year	3		–				
4th year	4		–				
5th year	5		–				

Where:
x : Interval Since Beginning Treatment

: Alive at Beginning of Interval
: Died During Interval
– : Withdrew During Interval

$$^{*}\ L_x = I_x - \frac{d_x + w_x}{2} \qquad ^{**}\ q_x = \frac{d_x}{L_x} \qquad ^{***}\ p_x = 1 - q_x \qquad ^{****}\ P_{x1} = p_{x1},\ P_{x2} = P_{x1} \times p_{x2}$$

7. Practical Aspect:
7.1 Practical Application:
This paper found that the age of more than 80% of breast cancer patients was 40 year and more with mean age of 50.85±11.32 year for both genre. 98% of cases was female and 2% was male, 83% of these cases was housewife, 14% was workers and 3% others. Surviving rate among patients treated with chemotherapy were 85.5% and death rate 14.5%.

Table 1 shows Year of Treatment, no. of Patients chemically Treated for allstages of disease, Number alive at end of each year. The table below illustrate that no. of cases for the year 2006 was 79 cases which was followod for five years, no of survival was 63 case. The difference between the two numbers was either due to deaths, cure or withdrawal. And so for all years of treatment.

Table (1): Survival in patients tabulated by years since enrolled in chemotherapy treatment (All stages) (None Lost to Follow-up)

Year of Treatment	No. of Patients Treated	Number Alive at End of Year				
		1st Year	2nd Year	3rd Year	4th Year	5th Year
2006	79	75	66	66	65	63
2007	85	79	76	74	**67**	
2008	152	149	144	**137**		
2009	142	137	**133**			
2010	149	**119**				
Totals	607	559*	419*	277*	132*	63*

* No. of survival at the end of every year.

Concerning table 2 showing the probability of surviving to the end of each year since enrolled in chemotherapy treatment for all stages of the disease.

Table (2): Probability of surviving to the end of each year since enrolled in chemotherapy treatment (All stages)

P_x	Probability of Survival for Each Year of the Study	Prob.
P_1	Prob. of surviving the1st year	0.921
P_2	Prob. of surviving the 2nd year given survival to the end of the 1st year	0.952
P_3	Prob. of surviving the 3rd year given survival to the end of the 2nd year	0.969
P_4	Prob. of surviving the 4th year given survival to the end of the 3rd year	0.943
P_5	Prob. of surviving the 5th year given survival to the end of the 4th year	0.969

* Calculation method is mentioned in 6.3

Table 3 shows the cumulative prob. of surviving and it will be decreased with increase years of living 0.921 to 0.776 and this mean that 77% of study population will stay a life for 5 years from the start of treatment .

Table(3): Cumulative probability of surviving different lengths of time (All stages)

Prob. of Surviving		Prob.
Prob. of surviving 1 yea	$=P_1$	0.921
Prob. of surviving 2 years	$=P_1 * P_2$	0.877
Prob. of surviving 3 years	$=P_1 * P_2 * P_3$	0.850
Prob. of surviving 4 years	$=P_1 * P_2 * P_3 * P_4$	0.801
Prob. of surviving 5 years	$=P_1 * P_2 * P_3 * P_4 * P_5$	0.776

Table 4 show re-arrangement of study data as standard formula for life table for all stages of life. Cumulative rate was decreased from the registration tell the end of the study from 0.918 for the first year to 0.805 for the fifth year.

Table(4): Rearrangement of data in standard format for life table calculations (All stages)

Interval Since Beginning Treatment	Alive at Beginning of Interval	Died During Interval	Withdrew During Interval	No. Exposed to the Risk of Dying During Interval	Prob. of Dying	Prob. of Surviving	Cumulative Prob. of Survival
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
x	l_x	d_x	w_x	L_x^*	q_x^*	p_x^*	P_x^*
1st year	607	48	0	583	0.082	0.918	0.918
2nd year	559	21	119	489	0.043	0.957	0.879
3rd year	419	9	133	348	0.026	0.974	0.856
4th year	277	8	137	204.5	0.039	0.961	0.822
5th year	132	2	67	97.5	0.021	0.979	0.805

* Calculation method is mentioned in 6.3

Table 5 show years of treatment and no. of patients treated chemically for stage 1 of breast cancer and no. of survival at the beginning of each year. By using no. from the same table so all cases at the beginning of each year of study share in final picture of treatment result and not cases followed for five year .and this was applied for table 9.13.17.

Table (5): Survival in patients tabulated by years since enrolled in chemotherapy treatment (Stage I) (None Lost to Follow-up)

Year of Treatment	No. of Patients Treated	Number Alive at End of Year				
		1stYear	2ndYear	3rdYear	4thYear	5thYear
2006	2	2	2	2	2	2
2007	3	3	3	3	**3**	
2008	11	11	11	**10**		
2009	2	2	**2**			
2010	6	**4**				
Totals	24	22*	18*	15*	5*	2*

* No. of survival at the end of every year.

Table 6 show the prob. of surviving for chemically treated patient at end of each year from the start of treatment and for all stages of disease and depend on table 5. little change noticed in surviving rate .and so for table 10.14.18 successfully.

Table(6): Probability of surviving to the end of each year since enrolled in chemotherapy treatment (Stage I)

P_x	Probability of Survival for Each Year of the Study	Prob.
P_1	Prob. of surviving the1st year	0.917
P_2	Prob. of surviving the 2nd year given survival to the end of the 1st year	1.000
P_3	Prob. of surviving the 3rd year given survival to the end of the 2nd year	0.938
P_4	Prob. of surviving the 4th year given survival to the end of the 3rd year	1.000
P_5	Prob. of surviving the 5th year given survival to the end of the 4th year	1.000

Table 7 show the cumulative prob. of surviving for stage 1 .this cumulative prob. Will decrease from 0.917 for one and tow year to 0.860 for three, four and five year successfully. And so for table 11.15.19.

Table (7): Cumulative probability of surviving different lengths of time (Stage I)

Prob. of Surviving		Prob.
Prob. of surviving 1 yea	$=P_1$	0.917
Prob. of surviving 2 years	$=P_1 * P_2$	0.917
Prob. of surviving 3 years	$=P_1 * P_2 * P_3$	0.860
Prob. of surviving 4 years	$=P_1 * P_2 * P_3 * P_4$	0.860
Prob. of surviving 5 years	$=P_1 * P_2 * P_3 * P_4 * P_5$	0.860

Table 8 show re arrangement for data in life table for stage 1 and notice decrease in cumulative rate for survival from starting till the end of study from 0.913 for first year to 0.858 for fifth year and it mean that about 86%of study population in stage 1 has chance to survive for 5 year after treatment and so on for table 12.16.20.

Table(8): Rearrangement of data in standard format for life table calculations (StageI)

Interval Since Beginning Treatment	Alive at Beginning of Interval	Died During Interval	Withdrew During Interval	No. Exposed to the Risk of Dying During Interval	Prob. of Dying	Prob. of Surviving	Cumulative Prob. of Survival
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
x	I_x	d_x	w_x	L_x^*	q_x^*	p_x^*	P_x^*
1st year	24	2	0	23	0.087	0.913	0.913
2nd year	22	0	4	20	0.000	1.000	0.913
3rd year	18	1	2	16.5	0.060	0.940	0.858
4th year	15	0	10	10	0.000	1.000	0.858
5th year	5	0	3	3.5	0.000	1.000	0.858

* Calculation method is mentioned in 6.3

Table (9): Survival in patients tabulated by years since enrolled in chemotherapy treatment (Stage II) (None Lost to Follow-up)

Year of Treatment	No. of Patients Treated	Number Alive at End of Year				
		1stYear	2ndYear	3rdYear	4thYear	5thYear
2006	45	44	42	42	41	40
2007	47	46	46	45	**41**	
2008	77	76	75	**74**		
2009	80	80	**79**			
2010	73	**58**				
Totals	322	304*	242*	161*	82*	40*

* No. of survival at the end of every year.

Table(10): Probability of surviving to the end of each year since enrolled in chemotherapy treatment (Stage II)

P_x	Probability of Survival for Each Year of the Study	Prob.
P_1	Prob. of surviving the1st year	0.944
P_2	Prob. of surviving the 2nd year given survival to the end of the 1st year	0.984
P_3	Prob. of surviving the 3rd year given survival to the end of the 2nd year	0.988
P_4	Prob. of surviving the 4th year given survival to the end of the 3rd year	0.943
P_5	Prob. of surviving the 5th year given survival to the end of the 4th year	0.975

Table (11): Cumulative probability of surviving different lengths of time (Stage II)

Prob. of Surviving		Prob.
Prob. of surviving 1 yea	$=P_1$	0.944
Prob. of surviving 2 years	$=P_1 * P_2$	0.929
Prob. of surviving 3 years	$=P_1 * P_2 * P_3$	0.918
Prob. of surviving 4 years	$=P_1 * P_2 * P_3 * P_4$	0.865
Prob. of surviving 5 years	$=P_1 * P_2 * P_3 * P_4 * P_5$	0.844

Table(12): Re-arrangement of data in standard format for life table calculations (Stage II)

Interval Since Beginning Treatment	Alive at Beginning of Interval	Died During Interval	Withdrew During Interval	No. Exposed to the Risk of Dying During Interval	Prob. of Dying	Prob. of Surviving	Cumulative Prob. of Survival
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
X	I_x	d_x	w_x	L_x^*	q_x^*	p_x^*	P_x^*
1st year	322	18	0	313	0.058	0.942	0.942
2nd year	304	4	58	273	0.015	0.985	0.928
3rd year	242	2	79	201.5	0.010	0.990	0.919
4th year	161	5	74	121.5	0.041	0.959	0.881
5th year	82	1	41	61	0.016	0.984	0.867

* Calculation method is mentioned in 6.3

Table (13): Survival in patients tabulated by years since enrolled in chemotherapy treatment (Stage III) (None Lost to Follow-up)

Year of Treatment	No. of Patients Treated	Number Alive at End of Year				
		1stYear	2ndYear	3rdYear	4thYear	5thYear
2006	20	20	17	17	17	17
2007	19	18	17	16	**15**	
2008	40	39	37	**36**		
2009	52	50	**47**			
2010	55	**49**				
Totals	186	176*	118*	69*	32*	17*

* No. of survival at the end of every year.

Table (14): Probability of surviving to the end of each year since enrolled in chemotherapy treatment (Stage III)

P_x	Probability of Survival for Each Year of the Study	Prob.
P_1	Prob. of surviving the1st year	0.946
P_2	Prob. of surviving the 2nd year given survival to the end of the 1st year	0.929
P_3	Prob. of surviving the 3rd year given survival to the end of the 2nd year	0.972
P_4	Prob. of surviving the 4th year given survival to the end of the 3rd year	0.969
P_5	Prob. of surviving the 5th year given survival to the end of the 4th year	1.000

Table(15): Cumulative probability of surviving different lengths of time (Stage III)

Prob. of Surviving		Prob.
Prob. of surviving 1 yea	$=P_1$	0.946
Prob. of surviving 2 years	$=P_1 * P_2$	0.879
Prob. of surviving 3 years	$=P_1 * P_2 * P_3$	0.854
Prob. of surviving 4 years	$=P_1 * P_2 * P_3 * P_4$	0.828
Prob. of surviving 5 years	$=P_1 * P_2 * P_3 * P_4 * P_5$	0.828

Table(16): Rearrangement of data in standard format for life table calculations (Stage III)

Interval Since Beginning Treatment	Alive at Beginning of Interval	Died During Interval	Withdrew During Interval	No. Exposed to the Risk of Dying	Prob. of Dying	Prob. of Surviving	Cumulative Prob. of Survival
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
X	I_x	d_x	w_x	L_x^*	q_x^*	p_x^*	P_x^*
1st year	186	10	0	181	0.055	0.945	0.945
2nd year	176	9	49	147	0.061	0.939	0.887
3rd year	118	2	47	93.5	0.021	0.979	0.869
4th year	69	1	36	50.5	0.020	0.980	0.851
5th year	32	0	15	24.5	0.000	1.000	0.851

* Calculation method is mentioned in 6.3

Table (17): Survival in patients tabulated by years since enrolled in chemotherapy treatment (Stage IV) (None Lost to Follow-up)

Year of Treatment	No. of Patients Treated	Number Alive at End of Year				
		1stYear	2ndYear	3rdYear	4thYear	5thYear
2006	12	9	5	5	5	4
2007	16	12	10	10	**8**	
2008	24	23	21	**17**		
2009	8	5	**5**			
2010	15	**8**				
Totals	75	57*	41*	32*	13*	4*

* No. of survival at the end of every year.

Table(18): Probability of surviving to the end of each year since enrolled in chemotherapy treatment (Stage IV)

P_x	Probability of Survival for Each Year of the Study	Prob.
P_1	Prob. of surviving the1st year	0.760
P_2	Prob. of surviving the 2nd year given survival to the end of the 1st year	0.837
P_3	Prob. of surviving the 3rd year given survival to the end of the 2nd year	0.888
P_4	Prob. of surviving the 4th year given survival to the end of the 3rd year	0.866
P_5	Prob. of surviving the 5th year given survival to the end of the 4th year	0.800

Table(19): Cumulative probability of surviving different lengths of time (Stage IV)

Prob. of Surviving		Prob.
Prob. of surviving 1 yea	$=P_1$	0.760
Prob. of surviving 2 years	$=P_1 * P_2$	0.636
Prob. of surviving 3 years	$=P_1 * P_2 * P_3$	0.565
Prob. of surviving 4 years	$=P_1 * P_2 * P_3 * P_4$	0.489
Prob. of surviving 5 years	$=P_1 * P_2 * P_3 * P_4 * P_5$	0.391

Table(20): Rearrangement of data in standard format for life table calculations (StageIV)

Interval Since Beginning Treatment	Alive at Beginning of Interval	Died During Interval	Withdrew During Interval	No. Exposed to the Risk of Dying During Interval	Prob. of Dying	Prob. of Surviving	Cumulative Prob. of Survival
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
X	I_x	d_x	w_x	L_x^*	q_x^*	p_x^*	P_x^*
1st year	75	18	0	66	0.273	0.727	0.727
2nd year	57	8	8	49	0.163	0.837	0.608
3rd year	41	4	5	36.5	0.110	0.890	0.542
4th year	32	2	17	22.5	0.089	0.911	0.493
5th year	13	1	8	8.5	0.118	0.882	0.435

* Calculation method is mentioned in 6.3

Table 21 indicate that summarization of the cumulative Probability of Survival since enrollment to the end of interval, which decreased gradually to the lowest level in the fourth stage of the disease.

Table(21): Cumulative Probability of Survival since enrollment to the end of interval

Interval Since Beginning Treatment X	Cumulative Prob. Of Survival P_x				
	Stage I	Stage II	Stage III	Stage IV	All Stages
1st year	0.913	0.942	0.945	0.727	0.918
2nd year	0.913	0.928	0.887	0.608	0.879
3rd year	0.858	0.919	0.869	0.542	0.856
4th year	0.858	0.881	0.851	0.493	0.822
5th year	0.858	0.867	0.851	0.435	0.805

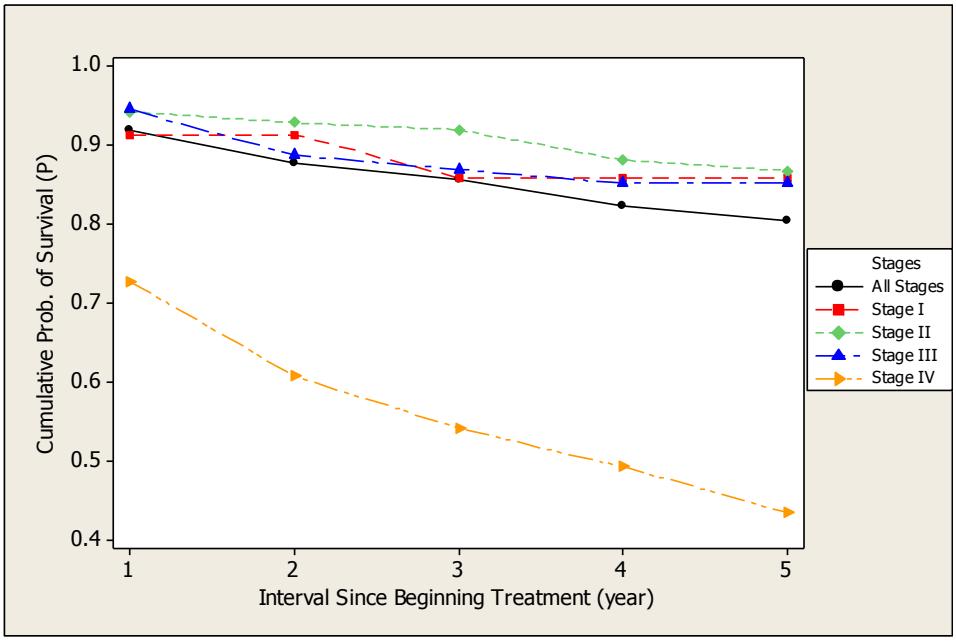

Figure (1): Survival curve for the breast cancer patients from 2006 to 2010 according to the Stages of disease.

Conclusions

1. There is an increasing in the percentage of incidence of breast cancer with aging.
2. The majority of cancer cases were in female.
3. Using life tables, the study shows that probability of survival of chemotheraptic treated patients (for 5 years of treatment) are decreased as the breast cancer

progress where the survival probability was decreased from 85.8% in the first stage to 43.% in the fourth stage (final stage).
4. The treatment during the early stages of the disease is so importance.
5. The study shows that 77% of study population will stay a life for 5 years from the start of treatment .
6. The Cumulative rate was decreased from the registration tell the end of the study from 0.918 for the first year to 0.805 for the fifth year

Recommendations

1. Taking into consideration the development of specialized statistical staff, rehabilitation in hospitals and health centers, development of statistical centers in hospitals and laboratories, including those dealing with cancer, and knowledge of the factors influencing the survival time by adding new information to the data of the patients, year of marriage, date of diagnosis of injury, duration of stay of the injured person, does the patient smoke or not, does he have relatives with the same disease? So that scientific studies can be conducted on these diseases and to show the real effects of the variables on these diseases, without obtaining misleading results.
2. There is a need to encourage and expand health research related to cancer through the collection of data on the spread of the disease, the rate of infection, and the factors associated with its emergence, and the importance of the adoption of government hospitals on the method of accurate diagnosis of these diseases, with respect to the difficulties faced by the researcher to obtain the required data.
3. Intensifying awareness campaigns through various media such as newspapers, magazines, television, lectures, and publishing brochures about cancer in general and the factors that lead to infection of these diseases.
4. The importance of providing statistical data for all cancer patients treated in hospitals and indicating their final health status for future research and studies.
5. Conducting survival analysis studies, finding out the factors affecting the survival time in different regions of our country for cancer patients and other diseases, social and economic phenomena where the response variable is binary, taking long periods and large sample size through Cox-model and other survival analysis methods, Comparing between these methods, and understanding of the similarities and differences between them.

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تطبيق جداول الحياة على مرضى سرطان الثدي المعالجين كيماويا في محافظة نينوى (2010 – 2006)

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الملخص

تهدف هذه الدراسة إلى إنشاء جداول الحياة لبيانات حقيقية حول مرضى سرطان الثدي المعالجين كيماويا في محافظة نينوى للفترة من عام 2006 ولغاية 2010 ولكلا الجنسين ولمراحل المرض المختلفة. حيث تم جمع 607 حالة (جميع مرضى سرطان الثدي المعالجين كيماويا للفترة المذكورة أعلاه).وقد تم تكوين جدول الحياة للمرضى وحساب احتمالية البقاء على قيد الحياة منذ بدء العلاج ولمراحل المرض المختلفة، وقياس أهم العوامل المؤثرة على المعالجة والمتابعة للمصابين. بينت نتائج الدراسة ومن خلال استخدام أسلوب جداول الحياة أن احتمالية بقاء المرضى (المعالجين كيماويا) على قيد الحياة ولخمس سنوات منذ البدء بالعلاج تقل مع تقدم مرحلة المرض حيث أن هذه الاحتمالية انخفضت من 85.8% في المرحلة الأولى الى 43.5% في المرحلة الرابعة (الأخيرة) من المرض مما يشير الى أهمية بدء العلاج خلال المراحل الأولى من المرض.