

Economic Condition Affects Breast Cancer Care- A Cross Sectional Study in Bangladesh.

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Abstract

Background: Socio-economic condition plays a role on taking decision for cancer treatment beside this out pocket expenditure is a headache for cancer patients. For that, pattern of financial assistance for breast cancer treatment and associated factors were explored.

Method: A cross sectional study was carried out with 200 samples; those were selected randomly from the listed patients who attended in the day care centre of chemotherapy.

Results: Maximum respondents first visited to health care provider at II and III stage with first symptom as lump on breast or axilla, no patients came at stage I. Along with family and neighbor, social welfare also play a positive role to assist finance. Donation was the major means to collect money and two or three sources were needed at a time for collecting money. In chi square (χ^2) test, economic condition had a significant role on care seeking. Simultaneously by ANOVA it was found that mean difference was more at age 31-40 year of age. After 50 years, care seeking time was intersect, here Main effect of age was $F(1, 192) = 1.92, p=0.162$; Main effect of economic condition was $F(3, 192) = 0.27, p=0.847$; Inter effect was $F(2, 192) = 1.77, p=0.154$.

Conclusion: After knowing cancer, she and her family member become puzzled to collect money. For that necessary measure should be taken to easy availability of expenditure cost. It is recommended to launch public health insurance as soon as possible.

1. Background:

Cancer holds the second position among the non-communicable diseases under study of World Health organization (WHO) (1). The World Health Organization (WHO) estimates approximately 1.38 million new breast cancer cases each year, resulting in 458,000 deaths annually. Unsurprisingly, mortality rates are much higher in the developing world where women often only seek medical assistance and diagnosis in the late stages—unaware of what is wrong and reluctant to shell out on medical costs. In Bangladesh, poor access to medical facilities, stigmatization along with lack of knowledge about the disease mean that a mere 11 percent of Bangladeshi women receive diagnosis in the early stages. Like in much of the world, breast cancer is the most common cancer amongst Bangladesh's female population, with 32.8 percent of female cancer patients suffering from this strain of the disease. The nation's public medical services—overstretched and underfunded—simply cannot provide the care required by breast cancer sufferers (2).

Though Bangladesh is the third quickest growth in the number of high net-worth individuals in the world in the next five years, as poor people's residence Bangladesh is in 5th position (3). 2 crore 41 lacs peoples are still in extreme poverty level. Wages in Bangladesh increased to 13258 BDT/Month in 2017 from 12897 BDT/Month in 2016. The current minimum wage of 5,300 taka (the equivalent of about 63 USD) has not been revised since 2013, and it is far below any credible living wage estimate (4). Living Wage Family in Bangladesh remained unchanged at 15100 BDT/Month in 2018 from 15100 BDT/Month in 2017(5).

Concerns about financial burden among breast cancer patients are particularly troubling due to the costly multidisciplinary approach currently required to treat breast cancer. This multidisciplinary approach, regardless of insurance status, results in increased out-of-pocket expenses such as deductibles, and co-pays for hospitalizations and physician visits (6).

Patients' reasons for late presentation were fear (40%), not aware of disease severity (40%), fear of losing a breast (40%), referral problems (34%), financial problems (8%), and transportation problems (6%). Approximately 33% sought medical help from traditional healers, and 65% regularly attended clinics (7). Maximum cost for health care is met by Out-of-pocket expenditure. Out-of-pocket healthcare expenditures of households in Bangladesh comprise 64.3% share of the total health expenditure and collectively spent approximately Taka 103.46 billion (US\$1.49 billion) in yearly on health. Hence, Out-of-pocket expenditure for health care services have been sufficiently costly in Bangladesh. However, identified factors that are associated with higher individual out-of-pocket costs include advanced disease and associated medications, hormone therapy, insurance gap payments, and greater traveling distances to the hospital (8).

It is reported that magnitude of cancer is increasing in a rapid pace globally. The disease poses huge burden of mortality and morbidity. Magnitude of cancer has also increased among the countries of South East Asia region. About 2 million new cases of cancer are diagnosed each year and 10 lack people are living with different types of cancer with overall incidence rate of 182 per 100,000 populations in Bangladesh. Rising burden of cancer in Bangladesh will pose serious implications for the management and financing of the health sector. For this, health strategies may have to be reformed and activities of the health sector may have to be drastically reorganized in order to meet the challenges of the increasing burden of cancer along with other non-communicable diseases. Cancer causes serious economic damage to the households since medical care required against the disease is usually very expensive. Cancer exerts huge economic pressure both on the household economy as well as public health sector. It is imperative to estimate the disability and economic burden of cancer patients as no comprehensive and rigorous study in this regard is available at present in the context of Bangladesh. The purpose of this study is to identify the exact financial situation of the respondents; the magnitude of cancer care affected by economic which will provide data essential for formulating policies and strategies to

combat this burning public health problem by determining the socio-economic condition that affects breast cancer care of Bangladeshi breast cancer patients.

2. Methodology:

2.1 Methods : A cross sectional study was carried out to determine the socioeconomic status of breast cancer patients with present treatment history, pattern of financial assistance was explored, way of money collection for breast cancer treatment and compare the economic condition with care seeking time. Though total number of samples were calculated as 113 { $p = 8\%$ (7), $z = 1.96$, $d = 0.05$ } but 200 samples were selected randomly from the listed patients who attended in the day care centre for chemotherapy. Randomization by lottery method and was enrolled them according to their selection criteria, but some were excluded by exclusion. Patients with mental disability, recurrence of breast cancer, treatment failure, incomplete treatment, history of metastasis, hearing impairment and who did not comply with the informed written consent were excluded from the study. To avoid recall bias newly diagnosed primary carcinoma (breast cancer) patients were selected. The questionnaire included socio demographic questions of patients, question about current treatment status of the respondents, medical care seeking time for diagnosis and treatment, pattern of sources of collect money for breast cancer treatment, way of collect money for breast cancer treatment. Clinical information such as stage of disease, type of surgical management was obtained from a review of medical records. Questionnaire was prepared by reviewing literatures of qualitative study which was done in South East Asian Region (9–12) and from various models (13, 14). Perspectives of the study were explained to the respondents and informed consent was taken from each respondent. Face to face interview was taken from diagnosed breast cancer patients admitted in selected hospital by pretested semi structured questionnaire. Interview was taken to 40–45 minutes in length. In total 200 patients completed the interview. The reason for non completion included being too tired, having poor physical health, lack of interest. Generalization was assured as because patients from whole country came to this only public cancer hospital for treatment and diagnosis.

2.2 Statistical analysis

Statistical analyses of the data were performed using the Statistical Package for the Social Sciences (SPSS) for Windows, version 23.0 (SPSS Inc.; Chicago, IL, USA). Descriptive statistics like frequency distribution, mean, median, mode, range, standard deviation etc. were calculated by SPSS program. Association was seen between help seeking time and other variables by Pearson's Chi-square (χ^2) 2 × 2 table at $p < 0.05$ level of significance. To compare the care seeking time and other factors two way ANOVA was done.

2.3 Ethical Considerations: According to Helsinki Declaration, Ethical Clearance was taken from Institutional Review Board (IRB) of National Institution of Preventive and Social Medicine NIPSOM (NIPSOM/IRB/2016/18) and before taking interviews written permission was taken from the authority of National Institute of Cancer Research and Hospital, Dhaka Bangladesh (NICRH/Ethics/2016/204-5). Informed Written Consent was taken from each.

3. Results

3.1 Description of study population: Socio economic status of the breast cancer patients was summarized in the Table 1. Results showed that $n=90$ (45%) were illiterate, $n=69$ (34.5%) were in primary education (1-8 class), secondary (SSC) and above 41 (20.5%). More than two third, $n=166$ (83%) of the respondents were house wife and rest of them $n=34$ (17%) were engaged in service. Majority of the respondents $n=166$ (83%) had no monthly self income. In case of monthly family income $n=78$ (39%) respondents were in 1000-5000-taka income group, $n=85$ (42.5%) respondents had family income between 6000-10000 taka. 11000-15000 and above 37 (18.5%). $n=156$ (78%) respondents were married followed by widow and separated 44 (22%). results showed that $n=27$ (13.5%) were in 26-30 years age group, $n=29$ (14.5%) were in (31-35) years age group. Maximum respondents $n=43$ (21.5%) belongs to 36-40 years age group, $n=34$ (17%) were in 41-45 age group, $n=34$ (17%) were in 41-45 years age group, $n=35$ (17.5%) were in 46-50 years age group and rest of the respondents $n=32$ (16%) were more than 50 years age group, mean age was 42 years. Distributions of the stage of breast cancer patients were summarized. Results showed that no patients were found in stage I, in stage II only $n=34$ (17%) respondents were suffered. Majority of patients were in advanced stage. $n=133$ (66.5%) were in stage III and $n=33$ (16.5%) respondents were categorized as stage IV. Maximum 100 (50%) financial assisted by social welfare of cancer hospital, husbands 87 (43.6%), relatives 54 (27%), sons 44 (22%), neighbors 20 (10%) and only 7 (3.5%) by their daughters. According to types of monetary management maximum 117 (58.5%) breast cancer patients solved their expenditure from donation. In total 76 (38%) managed money by borrowing, 60 (30%) expend from self income, 57 (28.5%) sold land or properly and only 7 (3.5%) managed money from saving. In total 98 (49%) patients use double sources and 18 (9%) patients used triple source for monetary management and single source was required for 84 (42%).

3.2 Between group comparisons: Association of delay with socio economic status of the respondents was analyzed using Pearson's Chi-square (χ^2) method and summarized in Table 2. Results showed that delay was found to be significantly ($p < 0.05$) associated with family income of the respondents. Delay > 6 months is more there who had (2000-10000) take monthly family income (68.7%, $n=112$). No significant ($p > 0.05$) was found with other socio demographic variable. Association between economic conditions with delay of the respondents was analyzed using Pearson's Chi-square (χ^2) method and summarized in Table 2. Results showed that economic condition was found to be significant by ($p < 0.05$) associated with the Care seeking to the initial medical consultation and definitive treatment of the cancer (provider delay) 6.775 ($p=0.009$), Woman first noticing a breast cancer symptom and receiving treatment (total delay) 8.740 ($p=0.003$), economic condition was associated with family income ($p=0.002$).

In Table 3 cross relation was seen between family income and staging of cancer. No one come to seek treatment in stage I, one thirty-three (133) breast cancer patients came to seek treatment at stage III. Fifty-seven patients' family income were 1000-5000-taka, fifty-four patients family income were 6000 -10,000 taka, and rest 22 patient's family income were 11000 taka and above.

4. Discussion And Conclusion:

Cancer causes serious economic damage to the households since medical care required against the disease is usually very expensive. Cancer exerts huge economic pressure both on the household economy as well as public health sector (1). An expense on cancer is as like double edge sword. In Bangladesh, even after the high net worth individual will grow quickly people in this area are still regresses to seek medical care especially in cancer due to financial problem. In a study it was found that the majority of patients received assistance with costs associated with radiation therapy and approximately 70% of subjects needed financial assistance with two or more services (15). Majority n = 100(50%) of respondents sought financial assistance from social welfare department of cancer hospital. Then husband, son, neighbors, relatives also assisted financially. Maximum respondents 117(58.5%) received money as donation. Others were managed money by borrowed, selling properties or land and saving as well. Maximum 49% (n = 98) respondents needed financial assistance from double source, 42% (n = 84) solved from single source; only 9% (n = 18) patients collect money from triple sources.

Results of 172 patients, 50 of each had T2, T3, or T4 stages, and 22 had T1 (7). Majority of patients were in advanced stage. n = 133(66.5%) were in stage III and n = 33(16.5%) respondents were categorized as stage IV. Majority of patients n = 149 (74.5%) initially presented with a lump in breast while in a study it was found that the main presenting complaint for women with tumors was a lump (96%) and 24% presented with breast pain (7).

A patient named Basanti Majumder clutching her baby and speaks of a pain in her left breast and fears her cancer may have returned. She stares briefly at the floor and giggles nervously. "I'm not going to the doctor now for financial reasons (2)". In a study, it was found that delay of care seeking due to financial problem only 8% (7). But in this study, out of 200 sample 157(78.5%) respondents stated that due to economic problem medical care seeking was hampered and delayed. In many countries' health insurance is a way to pay bills. But in Bangladesh most of them had no health insurance facilities along with high out pocket expenditure (16). Still health system financing is regressive.

High family socioeconomic status independently predicted early care seeking (AOR = 2.23, p = 0.013) and in logistic regression it is $\beta = 1.148$, odds ratio.11, p = 0.032 at 95% CI where lower value0.01 and upper value 0.83(17).

Still the treatment of non communicable disease as well as cancer is an out-pocket expenditure. When the patients diagnosed as cancer finance is a problem to start treatment. Public health insurance is not established yet in Bangladesh. For poor patient's social welfare department play a role in cancer hospital but it was not sufficient. Cancer patients collect money from two or three sources. Financial constrain should be overcome to start early diagnosis and treatment which will beneficial for survival time. To combat this rising burden, implementation of management and finance in health sector should be emphasized. Health strategy for communicable disease should be reformed and drastically reorganized in order to meet the challenges of the increasing burden of cancer along with other non-communicable diseases. Because this was a cross-sectional study, inference could not be done clearly. There was a chance of recall bias. A large sample size and in-depth interview could provide more reliable information. Despite of hospital-based study due to one specialized cancer hospital in Bangladesh whole cancer patients ultimately came to this hospital. That's why the study represents the whole country.

Declarations

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4.2 Conflict of Interest: The authors have no conflicts of interest to declare.

4.2 Financial Disclosure: The author declared that this study has received no financial support.

4.4: Availability of Data and Materials: We consider our data private but the corresponding author will make it available upon reasonable request.

4.5: Ethical Declarations:

4.5.1 : Ethics approval and Consent to participate : Ethical Clearance was taken from Institutional Review Board (IRB) of National Institution of Preventive and Social Medicine NIPSOM (NIPSOM/IRB/2016/18) and before taking interviews written permission was taken from the authority of National Institute of Cancer Research and Hospital, Dhaka Bangladesh (NICRH/Ethics/2016/204-5). Informed Written Consent was taken from each.

4.5.2: Consent for Publications: Not Applicable

4.5.3: Competing Interests: The Authors declare that they have no competing Interests.

4.6: Authors Contributions: All authors has read and consented to the final draft of the manuscript. Dr. Khursheda Akhtar was involved in the Concept of study, Design study , methods and materials, Data Collection and Processing, Analysis and Interpretation, Literature Search, Writing Manuscript, Critical Review. Professor Dr. Jahangir Hossain, Dr. Khodeza Akhtar , Dr. Shamsun Nahar was involved in Concept, Supervision, Materials , Data Collection and Processing, Analysis and Interpretation , Literature Search, Writing Manuscript, Others Authors were involved in Design methods and materials , Data Collection and Processing, Literature Search , Idea sharing and help in report writing. Overall Dr. Khursheda was leading the research.

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Tables

Table I: Descriptive statistics of breast cancer patients (n=200)

Variables	Frequency	Percentage
Education:		
Illiterate	90	45
Primary (1-8 class)	69	34.5
Secondary and above	41	20.5
Family income (in taka)		
1000-5000	78	39
6000-10000	85	42.5
11000-15000 and above	37	18.5
Mean: 8937±880		
1 dollar=80.00 taka		
Marital status		
Married	156	78
Widow and Separated	44	22
Age in years		
26-30	27	13.5
31-35	29	14.5
36-40	43	21.5
41-45	34	17
46-50	35	17.5
More than 50	32	16
Mean 42±9		
Stage of breast cancer		
Stage I	0	0
Stage II	34	17
Stage III	133	66.5
Stage IV	33	16.5
Assisted financial by person/ organization		
Social welfare	100	50
Husband	87	43.5
Relatives	54	27
Son	44	22
Self	23	11.5
Neighbors	20	10
Daughter	7	3.5
Type of sources of monetary management		
Donation	117	58.5
Borrow	76	38
Sell land or property	60	30
Saving	57	28.5
*Multiple responses	7	3.5
Sources required for monetary management		
Single source		
Double source	84	42
Triple source	98	49
	18	9

Table II: Association of care seeking time with socio economic status (n=200)

Variables	Care seeking time		Comment
	Within 6 months	More than 6 months	χ^2 , df=1
	n (%)	n (%)	
Occupation			
Service	14(41%)	20(58.8%)	0.808
Housewife	55(33.1%)	111(66.9%)	p=0.369
Family income (Taka/month)			
2000-10000	51(31.3%)	112(68.7%)	4.022
12000-70000	18(48.6%)	19 (51.4%)	p= 0.045
Marital status			
Married	55(35.3%)	101(64.7%)	0.18
Separated/Divorced	14(31.8%)	30(68.2%)	p=0 .672
Age (in year)			
26-50	56(33.3%)	112(66.7%)	0.632
51 to above	13(40.6%)	19(59.4%)	p=0 .426
Provider delay*			
Within 6 months	68(79.1%)	54(44.3%)	6.775
More than 6 months	56(71.8%)	22(28.2%)	p= 0.009
Total delay**			
Within 6 months	23(53.5%)	20(46.5%)	8.74
More than 6 months	46(29.3%)	111(70.7%)	p= 0.003
* Provider delay= Care seeking to the initial medical consultation and definitive treatment of the cancer			
** Total delay=Woman first noticing a breast cancer symptom and receiving treatment			

Table III: Cross relation between family income and staging of cancer

Family Income in Taka*	Staging of cancer			Totals
	stage 2	stage3	stage4	
1000-5000 Tk	13	57	9	79
6000-10,000 Tk	12	54	18	84
11000- more than 11000 Tk	9	22	6	37
Total	34	133	33	200
*1 dollar=80.00 taka				

Figures

Care Seeking Time

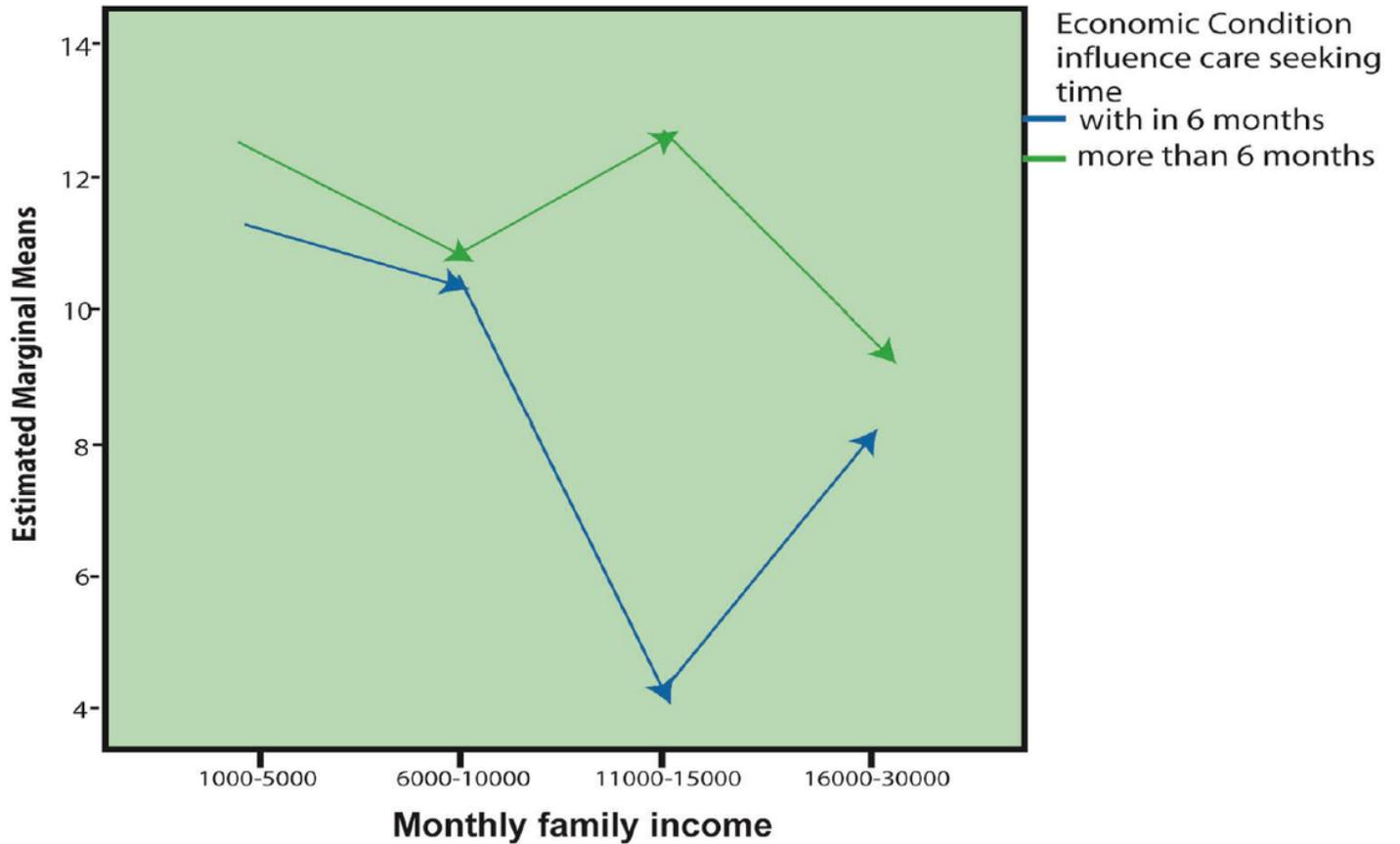


Figure 1

Two-way analysis of variance (Two-way ANOVA) among care seeking time, family income and economic condition (n=200) Relationship among care seeking time, family income and economic condition was summarized. Care seeking time was more than 6 months those who had economic problem (1000-5000-11 vs.12; 6000-10000-10 vs. 10; 11000- 15000- 4 vs. 12; 16000-30000-7 vs. 9). Maximum care seeking time was those who had monthly family income1000-5000 taka and 11000-15000 taka. Economic problem at 11000-15000 taka caused the highest care seeking time (Mean 12). Here Main effect of family income was $F(3, 192) = 0.0608, p=0.611$; Main effect of economic condition was $F(1, 192) = 2.31, p=0.130$; Inter effect was $F(3, 192) = 0.96, p=0.410$.

Care Seeking Time

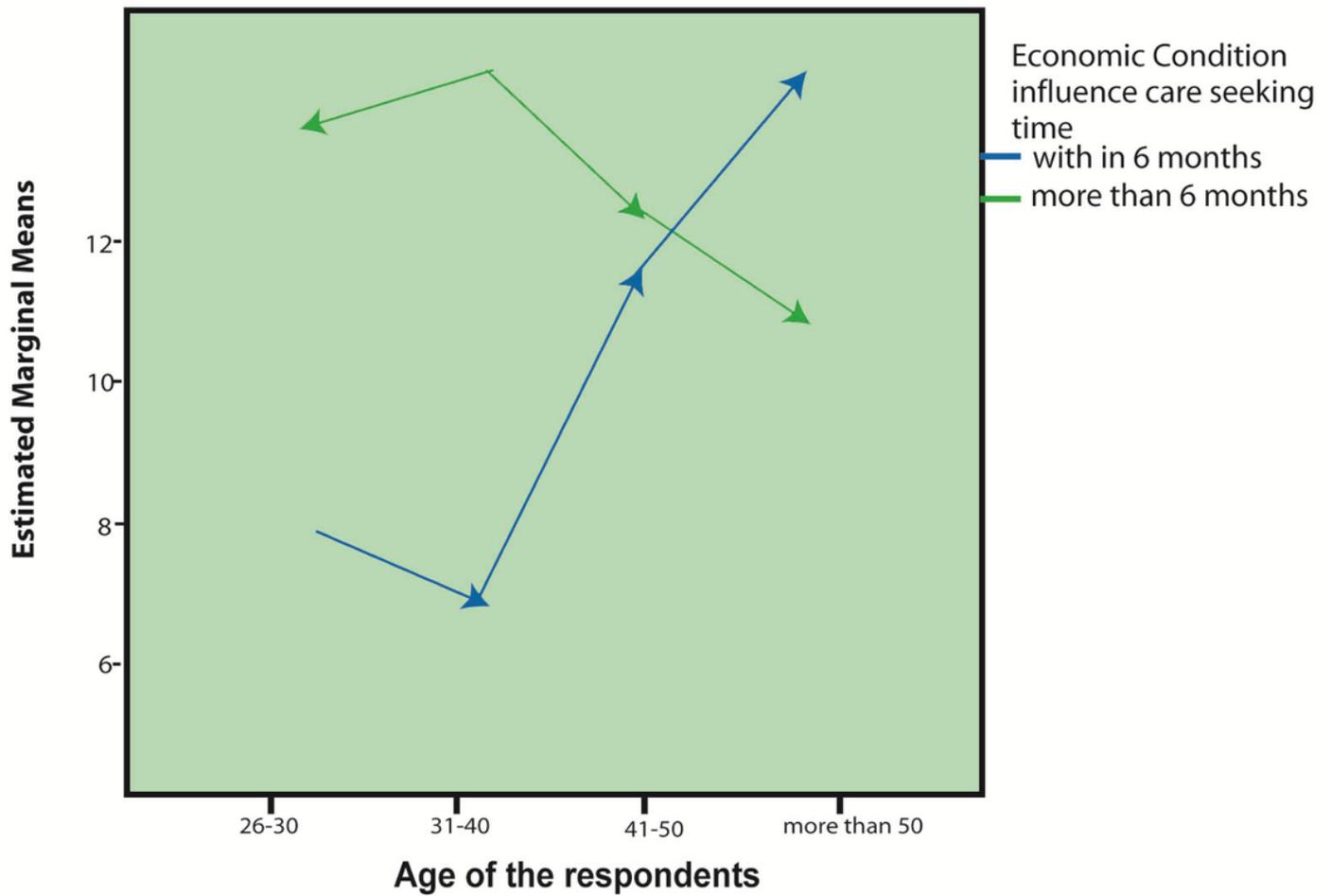


Figure 2

Two-way analysis of variance (Two-way ANOVA) among care seeking time with age in years and economic condition (n=200) Relationship among care seeking time, age in years and economic condition was summarized. At age 26-30 years, those who had no economic problem had less care seeking time (7vs.12). At age 31-40 years, those who had no economic problem care seeking time mean became sharply low and those who had economic problem to manage the money care seeking time mean sharply rise, but at age >50 years care seeking time mean was reversed (12 vs. 10). Here Main effect of age was $F(1, 192) = 1.92, p=0.162$; Main effect of economic condition was $F(3, 192) = 0.27, p=0.847$; Inter effect was $F(2, 192) = 1.77, p=0.154$.

Care Seeking Time

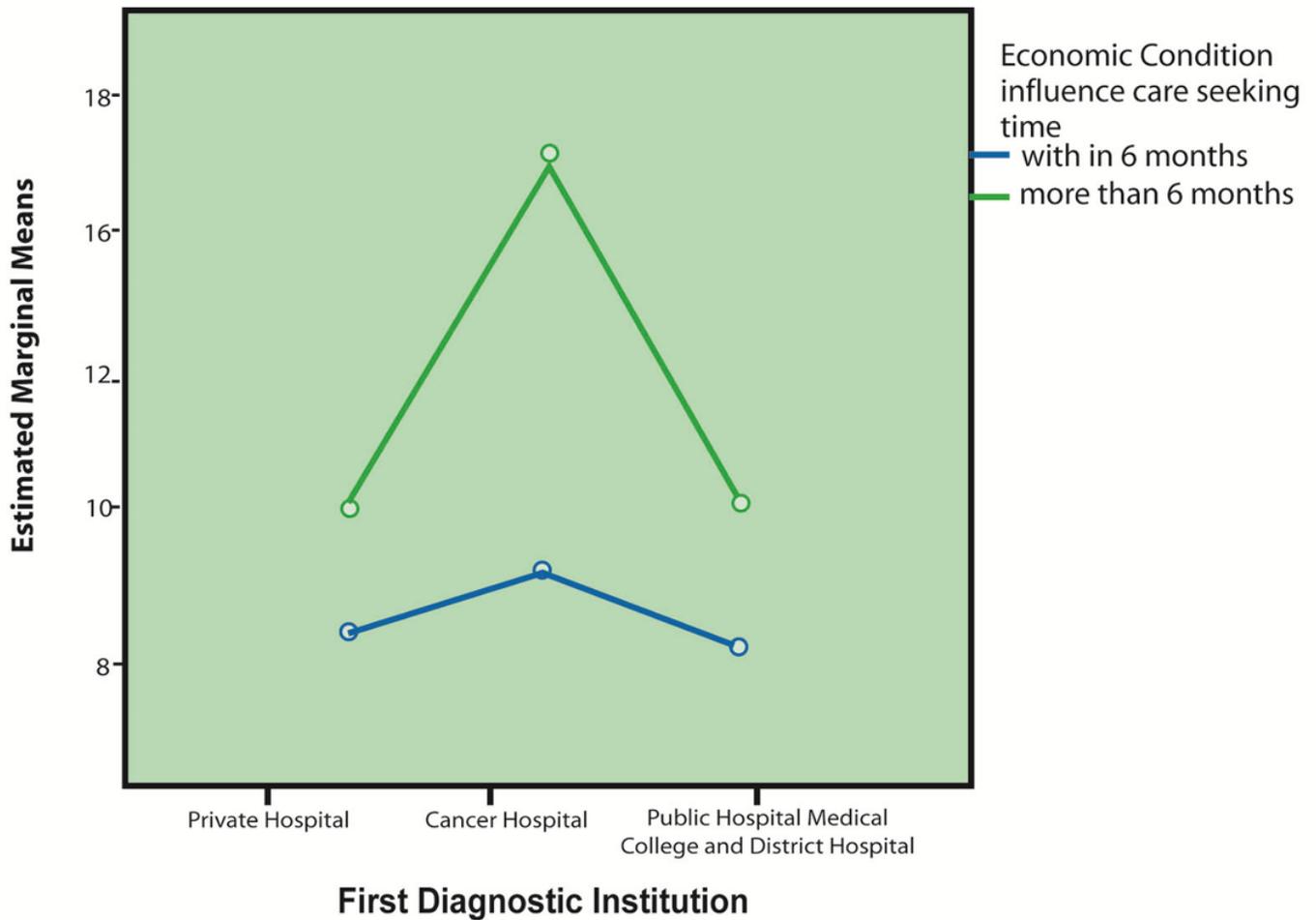


Figure 3

Two-way analysis of variance (Two-way ANOVA) on delay with first diagnostic institution and economic condition (n=200) Relationship among care seeking time, first diagnostic institution and economic condition was summarized in Figure 3. Care seeking time mean was higher for those who face economic problem than another group. Those who had no economic problem to consult at private hospital, was care seeking time less (Mean=9 vs.11) than the patients had economic problem. Those who had no economic problem, consulted at cancer hospital had care seeking time less. Those who had economic problem, consulted at cancer hospital care seeking time most (Mean=17). Here Main effect of economic condition was $F(1, 194) = 2.26, p=0.131$; Main effect of diagnostic institute was $F(2, 194) = 0.50, p=0.610$; Inter effect was $F(2, 194) = 0.233, p=0.793$.