ASSESSMENT OF PATIENT SATISFACTION UPON ESTABLISHMENT OF PHARMACEUTICAL CARE IN ONCOLOGY

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In partial fulfillment for the Award of the Degree of

MASTER OF PHARMACY
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Submitted by
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CERTIFICATE

This is to certify that the dissertation work entitled "**Assessment of Patient Satisfaction upon Establishment of Pharmaceutical Care in Oncology"** submitted by **REG.NO.261240610** is a bonafide work carried out by the candidate under the guidance of **MR.V.SIVAKUMAR, M.Pharm**., and submitted to The Tamilnadu Dr. M.G.R Medical University, Chennai, in partial fulfillment for the Degree of **MASTER OF PHARMACY IN PHARMACY PRACTICE** during the academic year 2013-2014.

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DECLARATION

I do hereby declare that the dissertation work entitled "**Assessment of Patient Satisfaction upon Establishment of Pharmaceutical Care in Oncology**" submitted to the Tamil Nadu Dr. M.G.R. Medical University, Chennai in the partial fulfillment for the Degree of **MASTER OF PHARMACY IN PHARMACY PRACTICE**, was done under the guidance of **MR. V.SIVAKUMAR.,M.PHARM** at the Department of Pharmacy Practice, KMCH College of Pharmacy, Coimbatore, Tamil Nadu during the academic year 2013-2014.

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EVALUATION CERTIFICATE

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Examination Center: KMCH College of Pharmacy, Coimbatore

Date:

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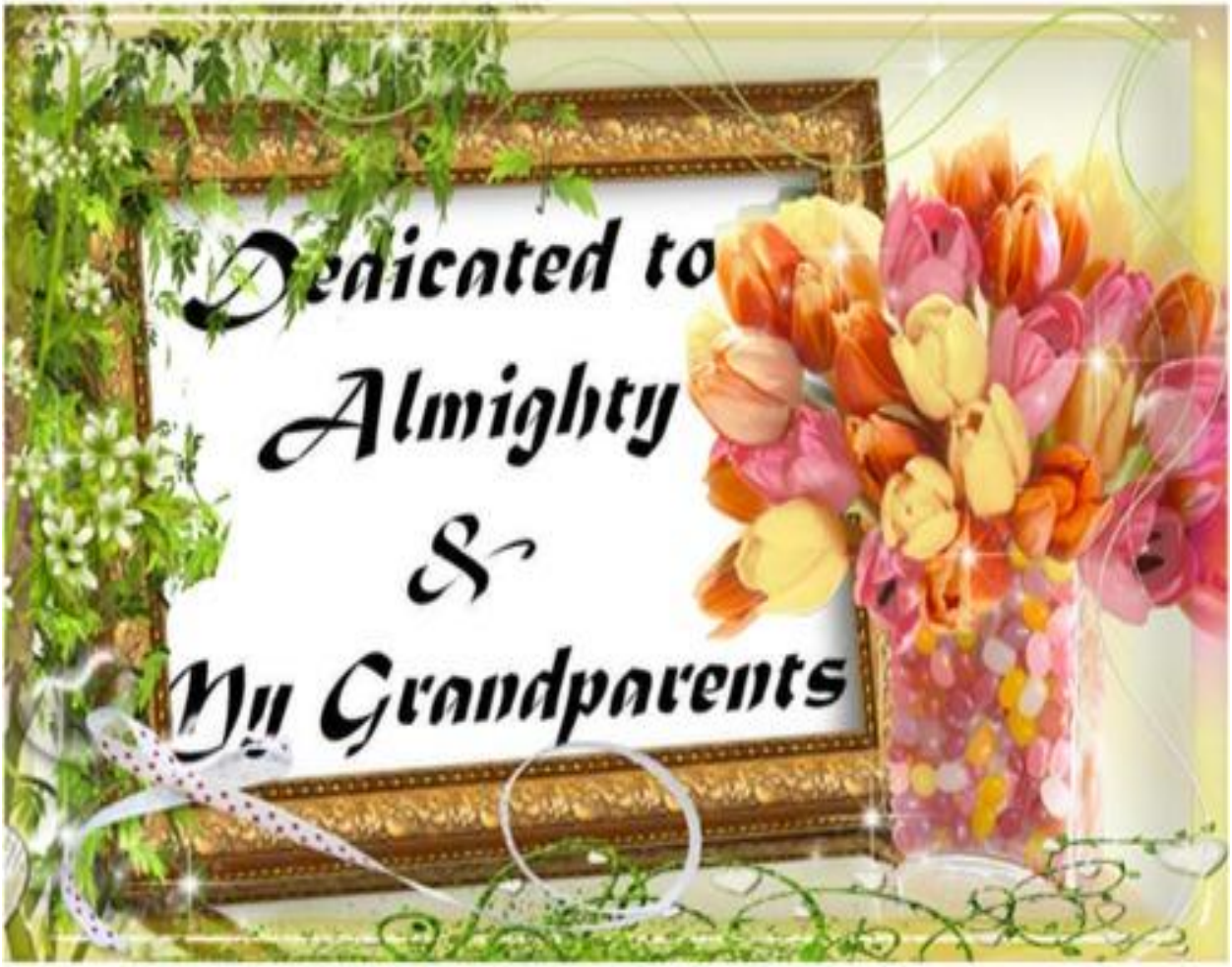
Dedicated to
Almighty
&
My Grandparents

ACKNOWLEDGEMENT

"The attitude of gratitude can raise your altitude; being thankful is a magical way to reach the top" -*Unknown Author*

I take this occasion to owe my indebted gratitude towards all those who have continued to support me accomplish this project.

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"The true value of a teacher is determined not by what he knows, nor by his ability to impart what he knows, but by his ability to stimulate in others a desire to know." -Prof. Robert Lee Madison.

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ABBREVIATIONS

ADE	-	Adverse Drug Events
ADR	-	Adverse Drug Reaction
CNS	-	Central Nervous System
CTRC	-	Cancer Therapy & Research Center
DDI	-	Drug-Drug Interaction
DRP	-	Drug Related Problem
GI	-	Gastrointenstional
MCMM	-	Multiprofessional Cancer Medication Management
NSAIDs	-	Non-Steroidal Anti Inflammatory drugs
OTC	-	Over the Counter
PIL	-	Patient Information Leaflet
PPE	-	Palmar Plantar Erythrodyspepsia
PS-CaTE	-	Patient Satisfaction with Cancer Treatment Education
QoL	-	Quality of Life
SCP	-	Seamless Care Programme
Sig	-	Significance
TOPCaBS	-	The Oddedina Prostate cancer screening behaviour scale

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INTRODUCTION

A cancer diagnosis places considerable stress on patients and their families. They find themselves discomfort with the strange health system; making serious decisions with long term consequences; living with uncertainness about the nature, cause and indefinite progress of the disease; living with a disrupted family, work, social life and facing the possibility of becoming increasingly dependent on others[1].

Pharmaceutical care is initiated in the oncology department of our hospital to create a better experience for cancer patients by delivering patient centered care. In 1990, Helper and Strand introduced the concept of pharmaceutical care. They understand pharmaceutical care as a responsible provision of drug therapy for the purpose of achieving definite outcomes that improves the patients'quality of life[2]. Further pharmaceutical care is considered as a patient centred, outcome oriented pharmacy practice that requires the qualified pharmacist to work in concert with the patient and other health care provider.[3] 'Patient perception of care' encompasses both patient satisfaction and their experience of care. Patient satisfaction is a subjective, evaluative assessment that is derived from expectations, needs, past experiences, opinions and attitudes[4].

In recent years, awareness has risen of how patients perceive the quality of their health care[5,6]. Consequently, patient satisfaction assessment has become an important tool to gain attention and value amongst the health care system. It has become increasingly important for health care professionals to systematically measure patients' perceptions of and satisfaction with their care. Evaluation of patient satisfaction in oncology involves a diverse array of

methodologies that includes in-depth interviews, focus discussion groups, consultation of voluntary groups and analyses of complaints and surveys. However patient satisfaction survey still continues to be the most widely used mode of objectively and systematically determining cancer patient's perception of the health care received[7].

Particularly in cancer patients, stress is a factor that affects them emotionally and contributes to least satisfaction to a greater extend.. Patient's stress can be amplified by long waiting room times, lack of information and poor communication between clinic staff and patients[8]. Cancer patients showed a desire for maximum amount of information regarding their treatment, preferred for open communication about their illness and displayed high levels of hope to develop coping strategies and to initiate self- care behavior[9]. The Ottawa charter for health promotion initiated this noel way of approach. It emphasizes the relevance of treatment education for patients to increase control over their health and to be able to take responsibility for their well-being[10].

Educating the patient or representatives regarding the treatment, medication information on directions of use, prevention and management of adverse effects, storage and lifestyle modifications, verbally or in a written form altogether comes under patient counselling. Pharmacists may use patient information leaflets which may result in improved understanding and acceptance of treatment reccomendations[11.]Many a times, pharmacist cannot identify and manage all of the drug related problems that patient experience. Rather, the goal should be to maximize patient benefit with available resources. Pharmacist need to identify those problems

for which management or prevention would result in the greatest benefit for as many patients as possible[12].

. At the other side, clinical role of pharmacist in oncology as well as in other departments remained neglected for years within India. The pharmacists themselves have shown reluctance towards assuming such clinical role and responsibilities. However, this scenario has started undergoing promising changes in the recent past[13]. As part of establishment of pharmaceutical care in the oncology department of our hospital, we utilize this study to contribute patient oriented services and also to find out the effectiveness of the service upon their satisfaction, thus show the importance of pharmaceutical service in clinical setup.

2. REVIEW OF LITERATURE

A literature review of 23 relevant articles on the various aspects of pharmaceutical care and patient satisfaction in oncology published between March 1999 and September 2013 is discussed here and it led us to organize the study in a progressive manner.

A survey was done in Germany by **Liekweg *et al*** to measure patient satisfaction with information in cancer treatment and to support the development of pharmaceutical care strategies for cancer patients by detecting and compensating information deficiencies. The Canadian PS-CaTE was translated into German. They have distributed the questionnaires to two groups, the pre-test group and main test group. The pre-test group was intended to check the reliability of instrument and main test group to find out the satisfactory levels on a 5 point Likert scale. Out of 47 completed questionnaires, the pre-test established a good reliability of the instrument. From their main survey, 232 questionnaires showed a median score of 3.5, where 5 represented the highest degree of satisfaction. Their findings could motivate pharmacists to actively provide information for cancer patients. The assessment of patient satisfaction can contribute to the outcome evaluation of pharmaceutical care[14].

Lorenzo *et al.*, conducted a study in Italy in order to find out how Italian cancer patients rate the information they are given and whether the use of booklets and videotapes can improve their quality of life. Cancer patients between the age of 18-80 were included in the study at their first cycle of chemotherapy and randomized to fill in questionnaire on perceived quality of information, level of psychological distress, perceived severity and curability of disease and Quality of Life (QoL) .In a total of 328 patients from 21 cancer centres, 86-93% considered the booklets are either “very useful” or “useful”. The videotape was regarded “quite” or “much” complete than the booklet (87%). 81% of patients reported

the information given to them had improved their knowledge about disease / chemotherapy "a lot" and 87% reported "enough". The study has concluded that information patients received from the oncologist is highest rated as long as they were devoted enough time. Booklets and videotapes can partially overcome the lack of oral information given by doctors. They also suggest that a better informed patient does help the oncologist save time[15].

An observational study was conducted by **Mckee *et al.,*** on patient satisfaction with pharmacy services at CTRC, Texas to assess the role of the patient-pharmacist relationship and enhance patient satisfaction with care. They have developed a survey tool of 20 item, 2 page and administered to oncology patients in the time period of December 2009 to February 2010. They have also measured time spent with pharmacists, knowledge of medication therapy and willingness to pay for clinical pharmacy services. From this cross sectional study, 86% stated that it is important for patients to discuss their treatment with a pharmacist and 76% requested pharmacy follow-up at future visits. Their study also says that the patients were willing to pay for pharmacy counselling services[16].

Ruder *et al* conducted a retrospective descriptive analysis of clinical interventions by the clinical oncology pharmacist from September 2004-October 2006 to describe clinical interventions and assess the impact of consultation by the clinical oncology pharmacist on patient care. The interventions were categorised as drug related and consultative.Drug related interventions included medical reconciliation, dosing, adverse effect management and prevention. Consultations incorporated drug information questions, patient visits and patient education sessions. They have documented 583 clinical interventions among 199 patients. Average time spent was 10 minutes. Their results revealed that drug related and consultative interventions accounted for 35% and 65% respectively. They have also received a feedback

results from patients and colleagues which evaluated the pharmacist services with positive ratings of 95% and 98% respectively[17].

Albada *et al.,* conducted a study to assess the effects of a pre-visit website with tailored information and question prompt sheet on breast cancer patients. A total of 197 counselees were randomized to receive usual care and intervention group who received usual care along with website information about genetic counselling and all patients completed a pre and post visit questionnaire. From their study, counselees in the intervention group (n=103) had higher levels of recall of information from consultation (p=0.02) and better fulfilment of information needs (p=0.03). They have concluded that pre-counselling can lead to more effective for first visit breast cancer genetic counselling[18].

Edwards *et al.,* evaluated pharmacist directed Seamless Care Program conducted at the Dr.H.Bliss Murphy Cancer Centre in Canada. Their study was designed in such a way that the patient received SCP visits before and after the chemotherapy treatment was intended. SCP performed a thorough medication safety check to verify the order against regimen protocols, including a drug interaction check, recalculation of the dose and verification of patient laboratory values. The program has also counselled the patients on their treatment, identified and resolved any DRPs. They have divided the total study population of 200 to 100 in control group and 100 in intervention group. The study identified an average of 3.7 DRPs per intervention patient. They have also found out that the patients receiving adjuvant treatments were identified to have more DRPs compared to those receiving palliative treatment. They have also assessed their intervention satisfaction from the physicians, oncology nurses and pharmacists and got a positive result with the information collected and distributed by SCP. This study was limited to intervention group. A comparison

of intervention and control groups could have extracted more differences in quality of life measures and healthcare professional needs[19].

A prospective study was carried out by **Wong WS *et al***., to evaluate the impact of clinical pharmacist in ambulatory hematology-oncology clinics. Patients who were newly diagnosed, had multiple medical problems, or took three or more medications were selected and reviewed one day prior to their clinical visits. The study has recorded the clinical significance of the pharmacist interventions and patient outcomes. 211 pharmacy interventions were documented within a 36 day period. The most frequent pharmacy activity was patient counselling followed by therapeutic recommendations. The results showed 13.7% interventions were chemotherapy related and 86.3% were not.94.8% interventions were accepted by physicians and other healthcare professionals. Thus they concluded that clinical pharmacist in outpatient hematology-oncology can result in decreased health care cost and an improvement in quality of patient care [20].

Iconomou *et al,* conducted a study to identify the specific informational needs of primary caregivers of cancer patients receiving chemotherapy in a Greek outpatient setting and to assess their preference for cancer-specific booklets, their levels of satisfaction with communication and their psychological status. They have also examined whether their need for information was associated with their preference for written information, level of satisfaction, and levels of psychological distress and to find possible associations between satisfaction and psychological distress. 78 caregivers participated in the study and data were collected by structured individual interviews. Their results show that the main findings to emerge were that a significant proportion of the caregivers had elevated needs for information, which were positively associated with a preference for cancer-specific printed material. Participants experienced heightened levels of anxiety and depression, which were

independent of the need for information, preference for printed material or satisfaction with communication. In addition, the rates of anxiety and depression observed highlight the need for a more thorough evaluation and management of caregivers' psychological morbidity in their oncology setting[21].

Another study by **Sherlaw-Johnson *et al.,*** investigated cancer patient satisfaction with care and the extent to which it varies between and within hospitals. Dissatisfaction was greater in younger, female patients. Breast cancer patients expressed least, and prostate cancer patients expressed greatest dissatisfaction. Hospital satisfaction varied by cancer type (for breast, colorectal and prostate cancer patients), and with more effect on in-hospital than out-of-hospital care. Breast, colorectal and prostate cancers showed significant pair-wise correlations for standardized satisfaction scores, particularly for in-hospital care[22].

Bremberg ER *et al.,* conducted a study to establish the importance of a pharmacist in the health care team to improve drug use in an oncology ward in a Swedish hospital. They identified DRPs and used a questionnaire to evaluate pharmacist contribution in oncology ward.114 DRPs were identified in 58 patients. Pharmacist gave solutions for each drug related problem.78 suggestions (59.6%) out of 114 were implemented by physician. Two were partly followed, whereas 32 suggestions were not clear if any changes were made.12 suggestions were not followed. Completed questionnaires were collected from 58% of physicians and 55% from which it was concluded that a pharmacist can improve drug use and optimize the therapy in the oncology ward as a member of healthcare team[23].

A prospective, descriptive, cross-sectional study of interventions made by pharmacists in dispensing of chemotherapy doses was conducted by **Knez L *et al.,*** at a tertiary cancer centre in London. The pharmacists were shadowed by two research pharmacists during the

clinical screening of chemotherapy prescriptions and release of prepared drugs. An expert panel of pharmacy staff rated the clinical significance of the recorded interventions. Twenty one pharmacists' interventions recorded from 130 prescriptions. "Drug and therapy" (38%), clerical (22%) and "dose, frequency and duration"(19%) related problems, most often required an intervention, identifying areas in chemotherapy prescribing that need improvement. The proposed recommendations were implemented in 86% of the cases. Many recorded interventions (48%) were ranked to have had a "very significant" influence on patient care. Thus the study concludes clinical interventions made by pharmacists had a significant impact on patient care. It also states that the integration of pharmacists' technical and clinical roles into dispensing of chemotherapy doses is required for providing high-quality cancer services[24].

Odedina FT *et al.,* conducted a cross sectional study to explore the role of pharmacists in Florida as health educators and risk communicators in the prevention of prostate cancer. They have also assessed the knowledge of pharmacist about prostate cancer by using TOPCaBS. Their results showed 55% of participants scored 80% on the knowledge scale, whereas 15% scored less than 60%. 95% of pharmacists in their study would like to have additional training on prostate cancer which may be beneficial to patients. Thus, this study concluded that pharmacists were willing to take responsibility of health education and risk communication in prevention and detection of prostate cancer[25].

In a survey conducted by **Taylor *et al.*,** to report the impact on patient satisfaction by routine counselling on Natural Health Products (NHP) which are commonly used by cancer patients, the patients visited the cancer centre for the first time were recruited before (control) and after (intervention) the introduction of routine structured counselling by a pharmacist. Out of 265 completed questionnaires, the scores for overall and all subscales were

significantly increased in the intervention group. They have concluded that patient satisfaction increased with the routine structured patient counselling[26].

Jansen *et al*., evaluated (1) whether early-stage breast cancer patients perceived that they had treatment choice with regard to adjuvant chemotherapy, (2) what reasons patients provide for their perception of having had no choice of treatment, and (3) whether the perception of treatment choice is related to the satisfaction with the assigned treatment, experienced chemotherapy burden and QoL. A total of 448 patients, treated between 1998 and 2003, filled in the questionnaire. Of the 405 patients answered the question on treatment choice, 316 patients (78%) had perceived no choice. The most frequently indicated reason for lack of choice was: 'I follow the doctor's advice.' The authors found no difference in the levels of satisfaction with assigned treatments. However, they found an interaction effect, which indicated that the impact of perception of treatment choice on QoL was dependent upon whether the patient had been treated with chemotherapy or not. The study concluded that in cases when the decision to be treated or not has the potential consequences for the chance of survival, patients' QoL may not be improved by the perception of having had a choice of treatment[27].

Miranda *et al*., investigated how many hospital admissions in oncology are related to a DDI or an ADR. The study was designed to include all cancer patients admitted to oncology ward during an eight-month period. They have retrospectively evaluated the charts of each patients for reasons of hospitalization, using a 4-point scale (definitely, probably, possibly, or unlikely associated). A total of 458 admissions were eligible and among unplanned admissions (n=298), 39 were considered to be associated with an ADE,33 with an ADR, and six with a DDI. The most common DDI involved warfarin, captopril, and anti-inflammatory agents, and the most frequent ADR was neutropenic fever post-chemotherapy.

Thus the conclusion of the study shows one in 10 unplanned hospitalizations of cancer patient is associated with an ADE[28].

Yet another study was conducted by **Dohler *et al.***, in Germany to define the task allocation in multiprofessional cancer medication management with a special focus on the role of pharmacist as well as patient education and counselling. As part of the study they have held local focus group meetings to identify MCMM tasks. They have included professionals from German Cancer society to evaluate the acceptance of MCMM model. As a result the MCMM model comprised of 38 tasks in which 11 on patient education and counselling. The study rated it reasonable (79%) and feasible (68%) respectively. The barriers and benefits of multi-professional team-works stated were patient,-team,-therapy,-structure and resources related. The study came to a conclusion by integrating pharmacist with responsibilities in patient education and counselling and prevention of drug related problems[29].

Annunziata MA *et al.*, conducted a prospective study in 175 patients to evaluate the impact of information level on quality of life in cancer patients previously studied for their information level. The information level was determined by means of a questionnaire that explored the degree of information on diagnosis and status of disease, the patient's interpretation of disease status, and satisfaction with the information received. Their study also evaluated Quality of life, some months after evaluation of the information level, by means of the Functional Living Index for Cancer (FLIC) and the State-Trait Anxiety Inventory (STAI 1-2). The result revealed the information was adequate in 53.7% patients. An adequate level of information was present more frequently among patients aged < or = 65 years and in those patients followed at a cancer institute. There was no difference in the quality of life of adequately versus inadequately informed patients. Satisfaction with the information received influenced quality of life in both age groups. The objective clinical

variables (active disease present and ongoing treatment) negatively affected quality of life in patients <65 years, whereas the subjective perception of the presence of disease was associated with a worse quality of life in older patients. The study concluded that, although the level of information did not affect the quality of life, satisfaction with the information was associated with a better quality of life[30].

Another prospective study conducted by **Mc Lennan ND *et al.,*** in oncology referral centre concluded that a higher rate of beneficial outcomes was achieved by pharmacist interventions. They have studied 1493 admitted patients to determine the clinical outcomes associated with pharmacist interventions in a period of two months.674 interventions were documented for 295 patients. The results showed that more than one intervention was required for 47% patients and the clinical outcomes for 10% of interventions were assessed and the remaining 90% resulted in documented clinical benefit[31].

In another study by **Liekweg *et.al*** stated that pharmaceutical care concepts have a good potential of supporting the idea of drug management programs. They have summarized pharmacy services in oncology department as central cytotoxic services, drug information services, therapeutic drug monitoring, nutritional support, parenteral medications, unit dose system, compilation of medication history and pharmaceutical care. Patient adherence can be improved by patient education and counselling before and during treatment, regarding the drug therapy, adverse effects and complementary treatment. They have reported an increased satisfaction with cancer treatment education. Thus concluded that pharmaceutical care concepts support idea of supportive care and may be integrated in disease management process[32].

Davidson *et al.,* examined 435 cancer patients throughout Northern Ireland during a three-month period. While overall satisfaction scores were relatively high, there was considerable variation. The interaction between perceived satisfaction scores were relatively high , there was considerable variation. The interaction between perceived satisfaction and quality of care, communication, tumor site, and age was significant. The younger patients (<45 years) were less satisfied with communication of diagnosis than the older patients. They were also less satisfied with the privacy in the outpatient clinic when the tests were carried out and the time it took for the diagnosis to be reached. From the results, those patients with high incidence of tumors, i.e., breast, lung and colorectal reported significantly higher satisfaction than patients suffering from 'other cancers', i.e., prostate, gynaecological and gastric cancers[33].

N. Sreelalitha et *al.,* discussed about the pharmaceutical care services provided by the pharmacists in Indian scenario. They consider pharmacy as a major component in the health care system is under reprofessionalism and the care concept requires pharmacists to change their practice from product oriented to patient oriented. The study also shows that the provision of pharmaceutical care requires monitoring the regimen's effects, revising the regimen as the patient's condition changes, documenting the results, and assuming responsibility for the pharmacotherapeutic effects[13].

Broadfield L collected information on a set of toxicity outcome indicators from a multidisciplinary group and implemented at the Hamilton Regional Cancer centre. A revised system for chemotherapy ordering and documentation was implemented. Orders were written for complete protocols, rather than individual drugs. At each patient visit along with orders for chemotherapy drugs, supportive care medications, blood results. Each patient was also rated for four common toxicities of chemotherapy like vomiting, diarrhoea, nausea and

stomatitis. Pharmacists in the dispensary, review these toxicity ratings, as each dose of chemotherapy is validated before dispensing, thus making interventions if needed[34].

Feyer *et al*., conducted a study to examine the frequency of side effects and fatigue in ambulatory cancer patients and analysed how these symptoms are reflected in patient satisfaction. 41 private practices and 8 day hospitals in Germany took part in the study. The respondents were 4,538 patients with cancer (response rate: 82%). The diagnoses were: 25% breast cancer, 21% colorectal cancer, 11% lymphomas and 12% haematological malignancies. The most frequent single side effects were fatigue (60%), hair loss (54%), nausea (51%), sleep disturbance (42%), weight loss (36%), diarrhoea (32%) and mouth ulcerations (31%). The results revealed no significant association between total number of side effects and patient satisfaction. It was concluded that side effects and especially fatigue are frequent problems in cancer patients and are related to the patients' assessment of cancer care[35].

3. METHODOLOGY

A prospective interventional study on assessment of patient satisfaction upon establishment of pharmaceutical care was conducted in Kovai Medical Centre and Hospital, Coimbatore..

Objective:

Primary Objective – Assessment of patient satisfaction upon the establishment of pharmaceutical care.

Secondary Objective - Establishment of Pharmaceutical care and improvement in patients' quality of life

Study Site:

We received Ethics Clearances from "KMCH ETHICS COMMITTEE" in order to conduct the study in Kovai Medical Center and Hospital, Coimbatore.

Study Period:

The study was carried over a period from the month of May 2013 to February 2014.

Study Population:

Inclusion Criteria:

- Patients diagnosed with cancer and admitted for chemotherapy.
- Patient selection determined by physician.
- Patients from whom oral consent is received.

Exclusion Criteria:

- No special exclusion criteria

Study Materials

1) **Modified-Patient Satisfaction with Cancer Treatment Education Questionnaire. (PS-CaTE)** (Adopted from Canadian PS-CaTE questionnaire)[14] **(Annexure I)**

The PS-CaTE questionnaire measures patients' satisfaction with the information they received about their chemotherapy. It is used to assess the service given by the pharmacist upon patient counselling and its effect on perceived satisfaction. Additionally one question was added to measure the satisfaction with information provided on handling of drugs. Use of herbs and vitamins mentioned in the original questionnaire was modified by including use of drugs.

The questionnaire consists of three parts.

Part I - Sociodemographic characteristics of the patient.

Part II- Sources of information regarding chemotherapy utilized by the patients

Part III- Contains 15 questions that evaluates the patients' perception on the information given during their cancer treatment on a five point Likert scale.

0 = Not specified, 1 = strongly disagree, 2 = disagree, 3 = uncertain,4= agree, 5 = strongly agree.

2) **Data Collection Form (Annexure II)**

This is the form used to collect individual details like name, age, sex, past medical history and medication history, diagnosis, and chemotherapy.

3) Patient Information Leaflet (PIL) (Annexure III)

Patient information leaflet consists of the information regarding the common side effects, the detection and the management of side effects along with general instructions to be followed by a patient receiving chemotherapy.

Study Procedure

The whole study consists of three phases.

Phase I- includes the preparation of supportive materials, planning for establishment of pharmaceutical care, identifying the patients and assessment of patient satisfaction in control group.

Phase II- includes identifying and following the patient, establishment of pharmaceutical care and then assessing the patient satisfaction in intervention group.

Phase III- includes the analysis of data.

Control group:

- Random selection of the sample from general population.
- Patients receive treatment in the hospital from general Oncology department care set up.

Intervention group:

- Random selection of the sample from general population.

- Along with general care set up in hospital, patient also receives pharmaceutical care.

Pharmaceutical care is given to the intervention group once the identification of patients is done and the assessment of satisfaction was done in both control and intervention groups.

ESTABLISHMENT OF PHARMACEUTICAL CARE

Establishment of Pharmaceutical care is primarily the initiation of services from the basic level by introducing the pharmacist to the clinical setup in a systematically planned approach to bring beneficial outcome for the patients. Further development on the same area will lead to complete establishment in an organized structure. **Pharmaceutical care** describes specific activities and services through which an individual pharmacist co-operates with a patient and other health professionals to promote health, prevent disease and to assess, initiate and monitor medication use to ensure that drug therapy regimens are effective and safe aiming at patient's health related quality of life and positive clinical outcomes. The following services are focused under pharmaceutical care in this study.

- **Patient Counselling:**

Patients are counseled regarding their disease, treatment, prevention and management, life style modifications.

- Counselling on disease: The patients are informed about the present condition and relevance of continuing the treatment without fail pertaining to the different stages and specificity of disease. e.g., locally advanced disease, metastatic disease.

- Counselling on treatment: The patients being considered as the benefiter of the care plan, they are informed about the choices of treatments, course of therapy and importance of chemotherapy than other complementary treatments.

- Counselling on drugs: The patients are informed about the dose, usage, possible side effects, detection and management of commonly seen side effects and the warning symptoms to be reported immediately.

- Counselling on life style: The patients are informed about dietary modifications, exercise and drug-disease related changes and measures to overcome those to cope up with the treatment modalities.

Out of four sections of counseling, each said to possess 25% to achieve absolute establishment of this area. The four sections considered to be the part of complete patient counseling are

1) Pre-counseling -25%
2) Counseling during the treatment -25%
3) Counselling while discharge -25%
4) Distribution of handwritten or printed leaflet -25%

Pre-counselling is the counselling given on the day of diagnosis or before treatment as part of informing the choices of cost based therapies, course of therapy and the relevance to continue with the treatment without fail. Counselling during the treatment includes the details about drugs, its side effects, methods to manage and prevent the side effects etc. Counselling while discharge deals with the handling and administration of discharge medications along with the life style and

dietary modifications. Distribution of a handwritten or printed information leaflets make the counselling effective with improved information recalls by the patients.

- **PIL**

Preparation of the information leaflet is done according to the information needs shown by the patients, reviewing the treatment protocols and considering the common side effects of chemotherapy. Two steps coming under PIL are:

1) Preparation of PIL - 50%
2) Distribution of PIL - 50%

The other services like dose calculation, pharmacist interventions, ADR monitoring and chemotherapy mixing are not focused since the establishment need much time and people to deliver the services promptly.

ASSESSMENT OF PATIENT SATISFACTION

Patient Satisfaction is a subjective and evaluative assessment that is derived from their expectations, needs, past experiences, opinion and attitudes. It is a key indicator of quality of life.

The questionnaire was distributed among the patients of both group and the filling is done in the presence of pharmacist.

Assessment parameters for patient satisfaction

AGE :- Adult age was classified to three groups.

- Young adults : 18-35 years
- Middle-aged adults : 36-55 years
- Older adults : Above 55 years

No patients under the age of 18 are there in the study.

EDUCATION :- Level of education was classified to two groups.

- Educated: Graduates and higher university degree holders.
- Not educated: Those who got a school level and no formal education.

The whole set of questions of Part III was further divided to 4 subsets for the assessment of patient satisfaction. Satisfaction score ranges from 0 to 5 and average mean value will be taken for calculation.

Subset 1: - about Cancer treatment

- 3/15 questions
- It includes Question No.1, 4 and 9.

Subset 2:- about Side effects

- 4/15 questions
- It includes Question No.2, 3, 5 and 10

Subset 3:- about Complementary treatment options and drug use

- 4/15 questions
- It includes Question No.6, 7, 8 and 11

Subset 4:- about information sources and how the information was presented.

- 4/15 questions
- Question No.12, 13, 14 and 15 comes under subset 4

Overall: - about overall satisfaction with the information provided.

- 15/15 questions
- It includes Question No.1 – 15

Statistical Analysis

Data entry was done using Microsoft Excel 2010 and analysis was carried out by using SPSS® 20.0 for Windows. The comparison of satisfaction scores between control and intervention groups were done by using one-way ANOVA and the relationship of age and education with the perceived satisfaction was performed using Multivariate Analysis of Variance (MANOVA).

Limitations

Pre-counselling is not performed in this study as an initial stage of establishment, at present there is no provision to interfere with treatment plan directly and to prior inform patient about the course of therapy that even can decide if they want to continue or not.

Preparation of PIL is designed in a common way regardless of the standard format that includes font, style, size, layout etc.

PIL contain instructions and information in general to all type of cancer patients. So distribution of PIL is not done since the leaflet should be specific to a particular patient to avoid unnecessary anxiety among them. Direct access to patients is restricted at the present setup and thus the selection of sample was determined by the physician.

5. RESULTS

Out of 119 patients in the total study population, control group consists of 60 patients and intervention group consists of 59 patients.

Age wise distribution

Most of the cancer cases fall in the age group of 40-60, having 67 patients in this age group followed by 36 patients in the age group of 60-79. Age distribution is almost similar in both control and intervention group. (Table 2 & Figure 1)

Gender wise distribution

Out of total patients, the predominance of patients receiving chemotherapy were male 58.82 %, (N=70) and female were only 41.17%, (N= 49). (Table 3 & Figure 2)

Type of Cancer

Among solid tumors, breast cancer (35) was the most common diagnosis in our study population, followed by lung and then rectal cancer. (Table 4 & Figure 3)

Level of Education

In our study population, majority of patients (53%) were school educated, 39% had college education and only 8% were illiterate (Table 5 & Figure 4).

Adverse Drug Reactions

There were 14 types of adverse reactions documented in which predominant types consisted of nausea/vomiting (41), hyperpigmentation (29), myalgia (22) and mucositis.(20) (Table 8 & Figure 7),Figure 7 (a) shows the number of adverse reactions on affected body systems. The four body systems were central nervous system, dermatologic, gastro intestinal and musculoskeletal.

Establishment of Pharmaceutical Care

Patient counseling (50%) was given to the intervention group (n=59). and based on our findings about the common adverse reactions we have developed patient information leaflet to manage side effects of chemotherapy, PIL preparation (50%). (Table 6 & Figure 5)

1. Patient Counselling

Out of 119 patients, 59 patients in intervention group were given patient counseling. Among the four sections of patient counseling, counselling during the treatment (25%) and counselling while discharge (25%) were given to patients whereas pre-counseling (0%) and distribution of handwritten or printed information leaflet (0%) were not given.

2. Patient Information Leaflet

A general information leaflet for cancer patients undergoing chemotherapy (Annexure III) was prepared (50%) on the basis of data collected form the study. But the distribution of leaflet was not achieved (0%)and thus it can also be considered as partial fulfillment of the plan.

ASSESSMENT OF PATIENT SATISFACTION

A total of 60 questionnaires were collected from the control group and 59 questionnaires from the intervention group. The majority of patients were satisfied with the information given on cancer treatment in both the groups. The subset evaluation elucidated the differences in satisfaction between several information areas and overall satisfaction as a superior measure. Patient satisfaction with information was significantly improved upon pharmaceutical care. Subset 1 achieved a mean score of 4.25 in intervention group and was only 4 in control group (p=0.008). The mean score for Subset 2 was found to be significantly increased from 2.50 in control group to 4.19(p=0.000) in intervention group. Subset 3 attained a score of 3.24 in intervention group from 2.07(p=0.000) in control group. Subset 4 assessing satisfaction with information sources and the way counseling presented attained a score of 4.15 in control group and 4.36(0.021) in intervention group. Overall satisfaction was significantly improved from a mean score of 3.04 in control group to 4.12 (p=0.000)in intervention group.(Table 9, Figure 8 and Table 12)

Satisfaction Assessment based on Age and Education

Overall satisfaction among the three age groups in control population is 2.67, 2.97 and 3.23 in young adults, middle-aged adults and older adults respectively. The satisfaction scores given by the intervention population is improved to 4.14, 4.29 and 3.96 (p=0.000) by the respective age groups. Subset 1 control group scores are 4.17, 3.97 and 4.00 in young, middle aged and older adults respectively and the scores in intervention population are 4.43,4.38 and 4.11 in the same age groups. In Subset 2, control population gave the mean scores of 2.50, 2.30 and 2.75 in young, middle-aged and older adults. Whereas the intervention population showed a significant higher scores of 4.29, 4.33 and 4.04 (p=0.007) in the respective age group. Subset 3 scores in control group are 2.17, 1.87 and 2.29 and the scores have improved to 2.71, 3.13 and 3.46 in the respective age groups in intervention population. Subset 4 gives

2.67(control) to 4.14(intervention), 4.20(control) to 4.46(intervention) and 4.04(control) to 4.29(intervention) by young, middle-aged and older adults respectively.(Table 10, Figure 9(a) and 9(b), Table 13.(b))

Education wise satisfaction assessment

Overall, both the educated and not educated groups showed almost similar scores.3.04 and 3.09 in control group has improved to 4.19 and 4.08 in intervention group. This means both educated and not educated group patients are satisfied upon establishment of pharmaceutical care and shows our counselling is aptly applicable to educated and not educated group as well. On Subset 1 evaluation, both educated and not educated groups shows mean scores of 3.96 and 4.03 in control population to 4.24 and 4.26 in intervention population in respective educated and not educated groups.. Subset 2 scores show values of 2.50 in control and 4.14 in intervention by educated group and 2.50 in control and 4.14 in intervention population by not educated group. The satisfaction is significant in intervention group.($p=0.021$). Subset 3 evaluation shows the control population of educated and not educated group scores of 1.88 and 2.21. In intervention groups the scores of 2.86 and 3.45 given by the respective education level groups.. Subset 4 mean scores of control population educated and not educated groups are 4.23 and 4.09 and 4.43 and 4.32 by the intervention population respectively. (Table 11, Figure 10(a) &(b), Table 13(b))

Information Sources

Patients utilize their oncologist as the source of information in maximum number .of cases. Internet and others including family relatives, friends are the second choice for information

sources. In control group pharmacists were not identified as a resource person (0%).But in pharmaceutical care intervention group, participants started identifying the service of pharmacist as their information source (41%) after repeated conversations and counselling sections.(Table 7 & Figure 6).

5. TABLES AND GRAPHS

TABLE 1. CHARACTERISTICS OF THE TOTAL STUDY POPULATION

	Control (n=60)	Intervention (n=59)
Average Age	**52.64±3.56**	**52.67±3.31**
Gender		
Male	**35**	**36**
Female	**25**	**24**
Education		
Educated	**26**	**21**
Not educated	**34**	**38**
Type of cancer		
Breast Cancer	**19**	**16**
Lung Cancer	**9**	**8**
Rectal Cancer	**6**	**4**
Colon Cancer	**3**	**3**
Oesophageal Cancer	**3**	**3**
Prostate Cancer	**2**	**2**
Ovarian Cancer	**1**	**3**
Others	**15**	**18**

TABLE 2: AGE-WISE DISTRIBUTION IN CONTROL AND INTERVENTION GROUP

Age	Control (n=60)	Intervention (n=59)
Below 20	0	0
20-39	8	9
40-59	37	30
Above 59	15	20

FIGURE 1:AGE-WISE DISTRIBUTION IN CONTROL AND INTERVENTION GROUP

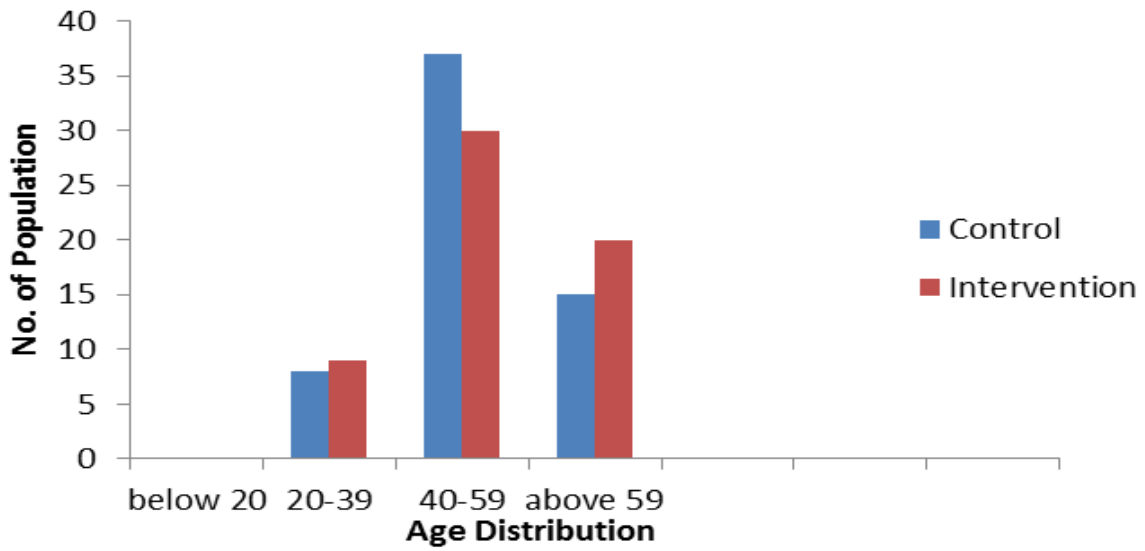

TABLE 3: GENDER-WISE DISTRIBUTION IN STUDY POPULATION

Gender	Control (n=60)	Intervention (n=59)	Total (n=119)
Male	35	36	70
Female	25	24	49

FIGURE 2: GENDER-WISE DISTRIBUTION IN STUDY POPULATION

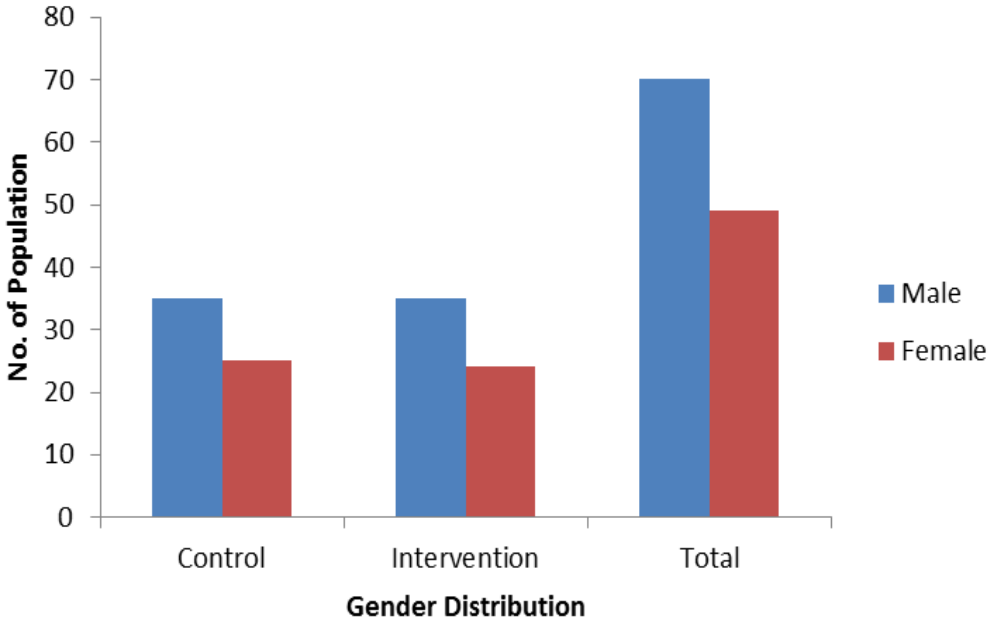

TABLE 4: DIAGNOSIS IN CONTROL AND INTERVENTION GROUP

Type of Cancer	Control (n=60)	Intervention (n=59)
Breast	19	16
Cervix	2	2
Colon	3	3
Lung	9	8
Rectal	6	4
Oesophageal	3	3
Ovary	1	3
Prostate	2	2
Ewing's Sarcoma	1	4
Others	14	14

FIGURE 3: SHOWS THE TYPE OF CANCER IN STUDY POPULATION

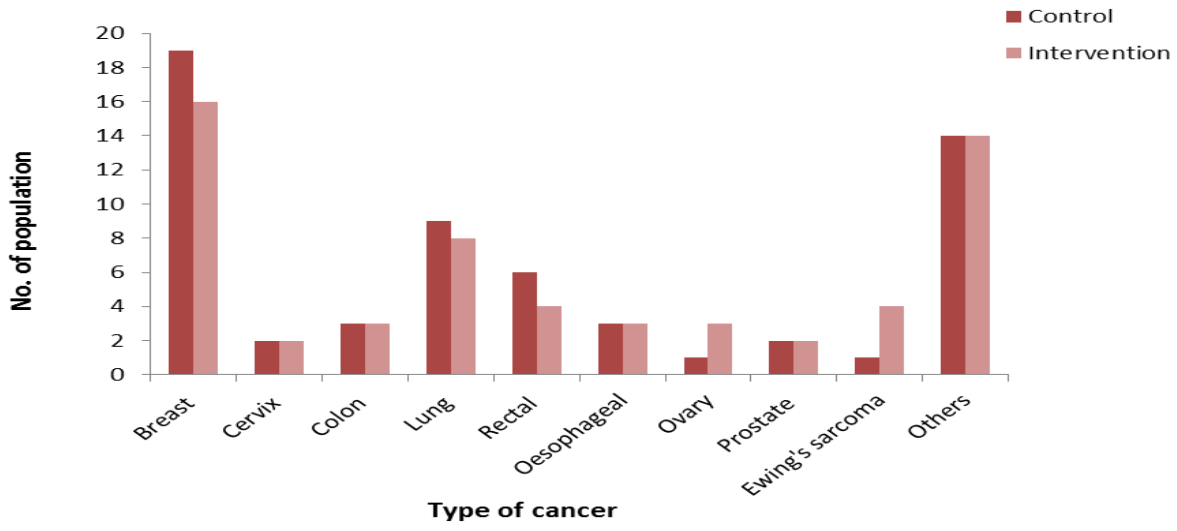

TABLE 5: LEVEL OF EDUCATION IN TOTAL STUDY POPULATION

Level of Education	No. of Population	Percentage (%)
Illiterate	9	8
School	63	53
College	47	39

FIGURE 4: SHOWS LEVELS OF EDUCATION AMONG STUDY POPULATION

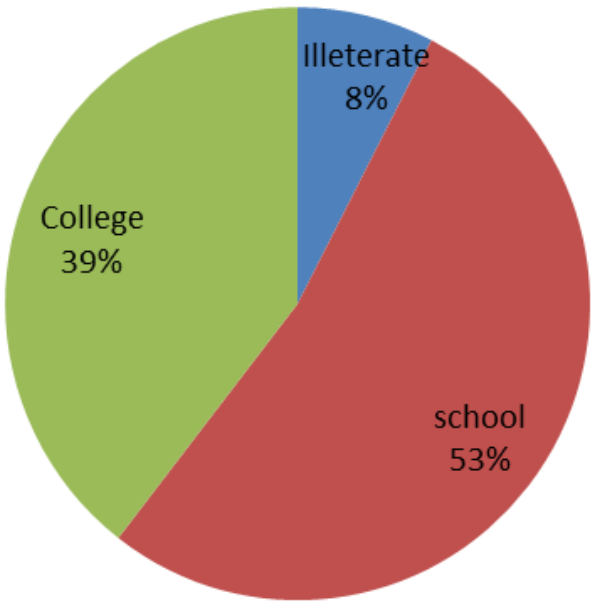

TABLE 6: ESTABLISHMENT OF PHARMACEUTICAL CARE

ELEMENTS OF PHARMACEUTICAL CARE	PERCENTAGE OF ESTABLISHMENT (%)
Patient Counselling	**50**
1.Pre counselling	**0**
2.During the treatment	**25**
3.Discharge medication	**25**
4.Handwritten or printed leaflet	**0**
Patient Information Leaflet	**50**
1.Preparation	**50**
2.Distribution	**0**

FIGURE 5: SHOWS THE DETAILS OF ESTABLISHMENT OF PHARMACEUTICAL CARE

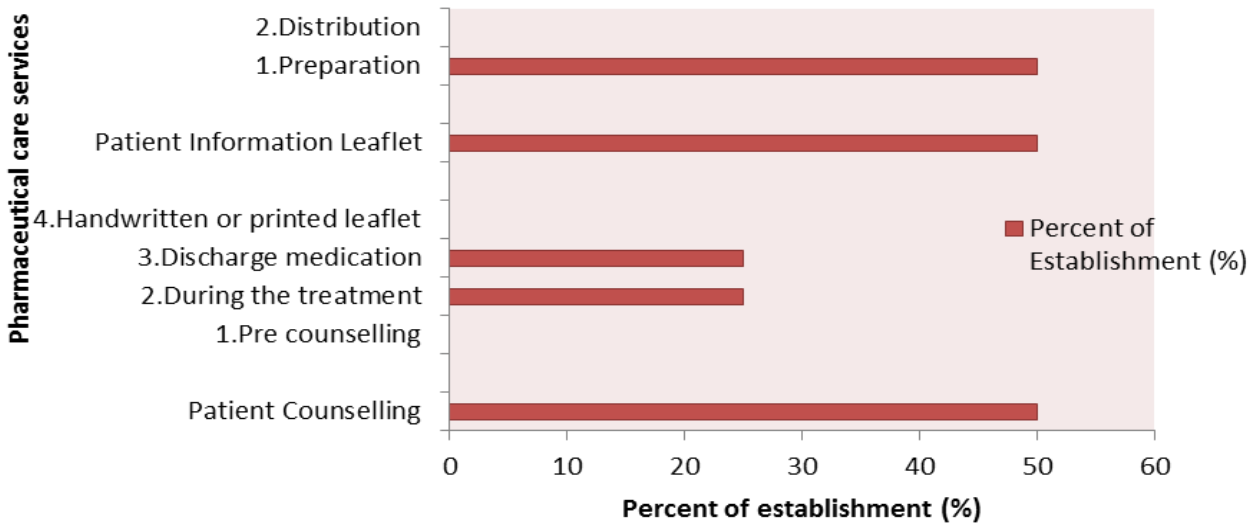

TABLE 7: INFORMATION SOURCES USED BY THE STUDY POPULATION IN BOTH GROUPS

Information Sources	Control (n=60)	Intervention (n=59)
Oncologist	60	59
Nurse	12	14
Pharmacist	0	24
Books	4	3
Internet	21	18
Others	14	9

FIGURE 6: SHOWS INFORMATION SOURCES USED BY THE STUDY POPULATION IN BOTH GROUPS.

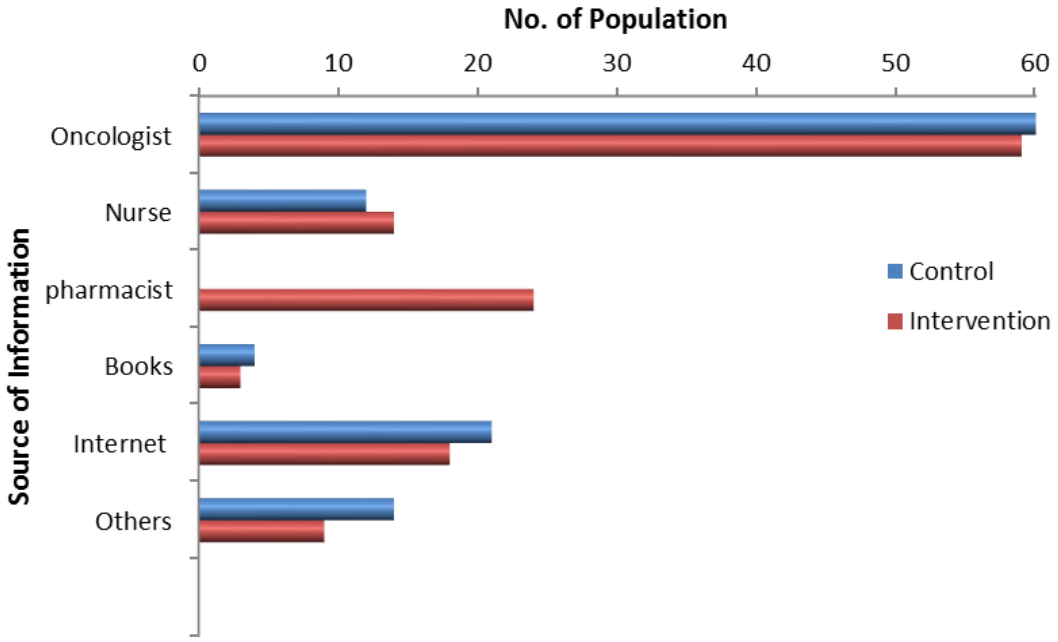

TABLE 8: ADVERSE DRUG REACTIONS IN TOTAL POPULATION

Adverse Drug Reactions	No. of Population
Diarrhoea	20
Constipation	18
Lack of Appetite	13
Mucositis	20
PPE	8
Hyperpigmentation	29
Extravasation	12
Onycholysis	10
Nausea/Vomiting	41
Neuropathy	13
Hiccups	11
Myalgia	22
Leg Cramps	8

FIGURE 7: ADVERSE REACTIONS IN STUDY POPULATION

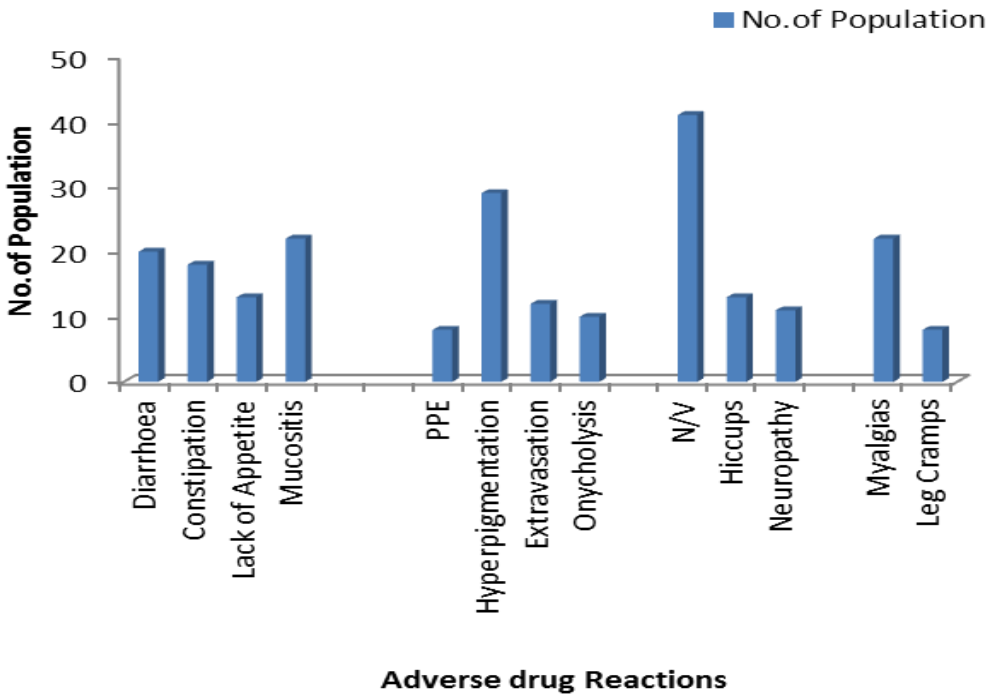

FIGURE 7 (a): SHOWS ADVERSE REACTIONS AFFECTED BODY SYSTEM

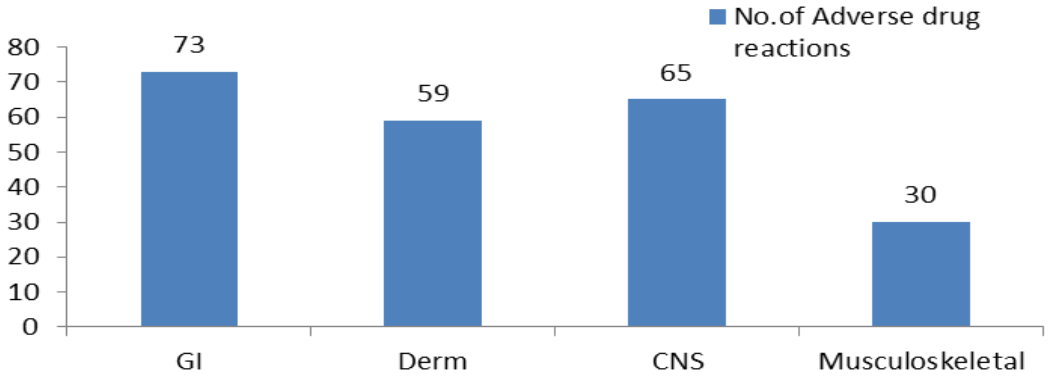

TABLE 9: PATIENT SATISFACTION SCORES ON OVERALL AND SUBSET EVALUATION IN CONNROL AND INTERVENTION GROUP

Groups	Control (n=60)	Intervention (n=59)
Ca treatment(Subset 1)	4	4.25
Side effects (Subset 2)	2.50	4.19
Complementary treatment (Subset 3)	2.07	3.24
Information presented (Subset 4)	4.15	4.36
Overall	3.04	4.12

FIGURE 8: SHOWS PATIENT SATISFACTION SCORES ON OVERALL AND SUBSET EVALUATION

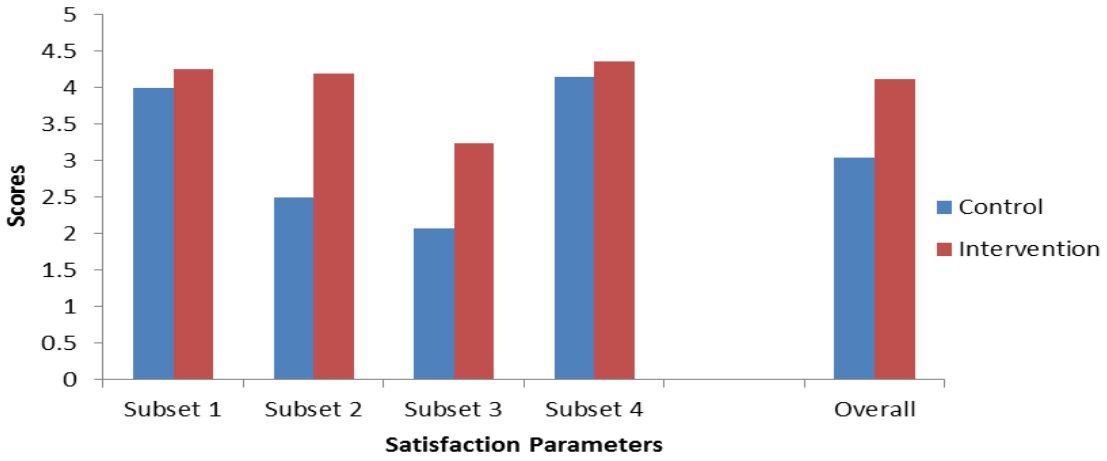

TABLE 10 : AGE VERSUS SATISFACTION SCORES IN BOTH GROUPS

Age	Variables	Control (n=60)	Intervention (n=59)
Young adults	Cancer treatment	4.17	4.43
	Side effects	2.50	4.29
	Complementary treatment	2.17	2.71
	Information presented	4.33	4.29
	Overall	2.67	4.14
Middle-aged adults	Cancer treatment	3.97	4.38
	Side effects	2.30	4.33
	Complementary treatment	1.87	3.13
	Information presented	4.20	4.46
	Overall	2.97	4.29
Older adults	Cancer treatment	4.00	4.11
	Side effects	2.75	4.04
	Complementary treatment	2.29	3.46
	Information presented	4.04	4.29
	Overall	3.23	3.96

FIGURE 9 (a): SHOWS AGE VERSUS SATISFACTION SCORES IN CONTROL GROUP

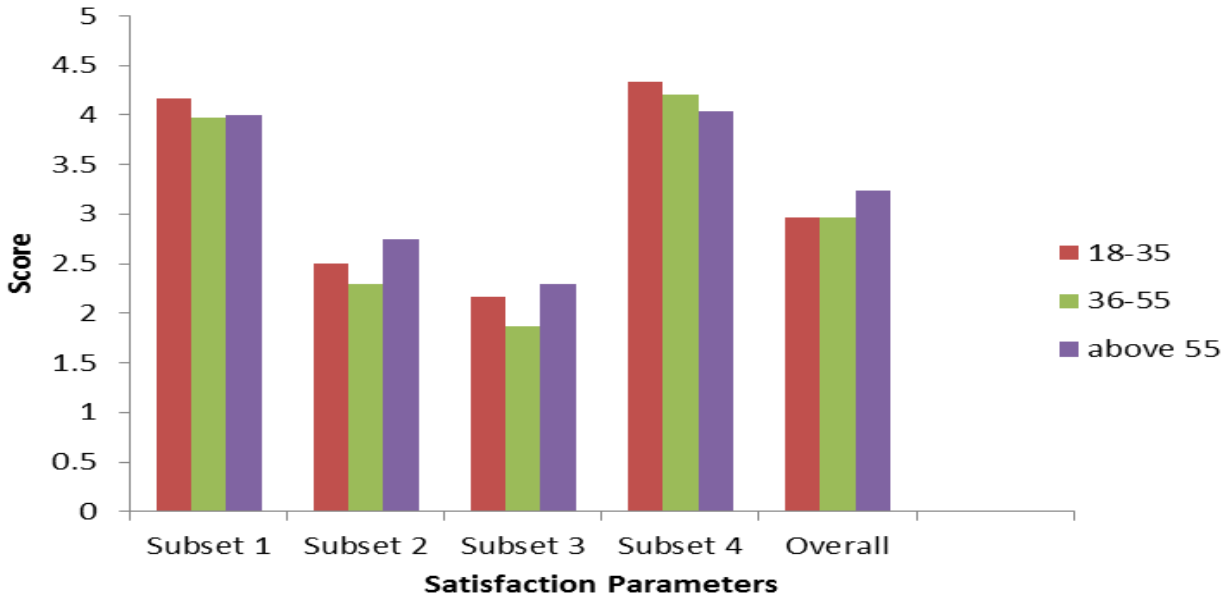

FIGURE 9 (b) : SHOWS AGE VERSUS SATISFACTION SCORES IN INTERVENTION GROUP

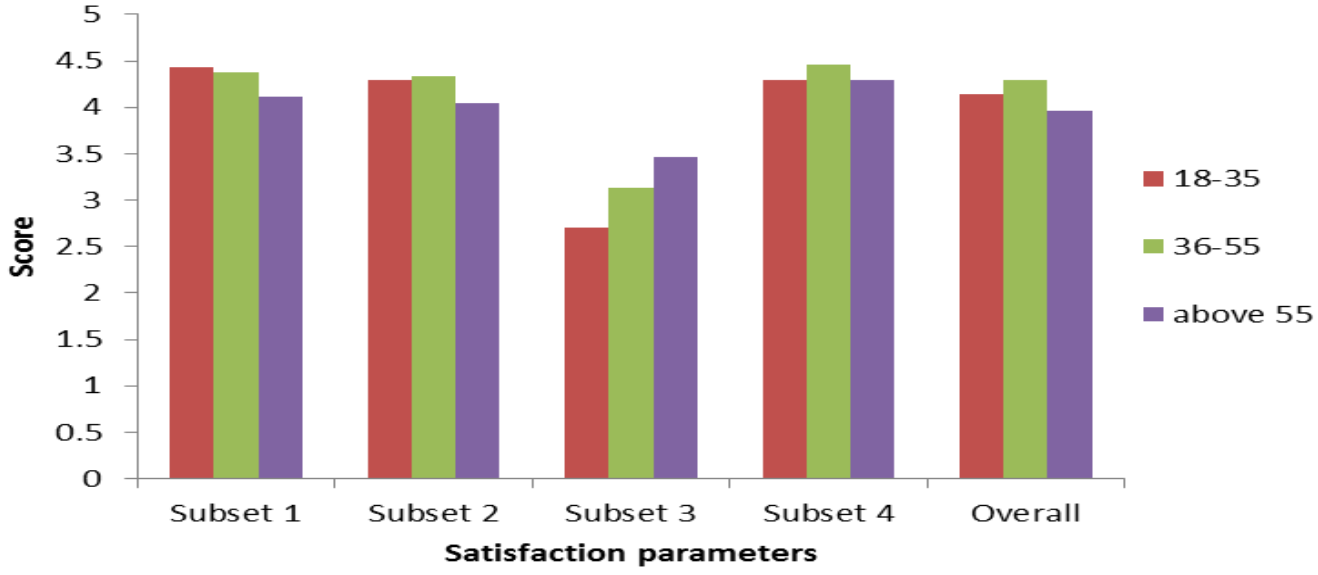

TABLE 11. EDUCATION VERSUS SATISFACTION SCORES IN BOTH GROUPS

Education	Variables	Control (n=60)	Intervention (n=59)
Educated	Cancer treatment	3.96	4.24
	Side effects	2.50	4.14
	Complementary treatment	1.88	2.86
	Information presented	4.23	4.43
	Overall	3.08	4.19
Not Educated	Cancer treatment	4.03	4.26
	Side effects	2.50	4.21
	Complementary treatment	2.21	3.45
	Information presented	4.09	4.32
	Overall	3.09	4.08

FIGURE 10(a): SHOWS EDUCATION VERSUS SATISFACTION SCORES IN CONTROL GROUP

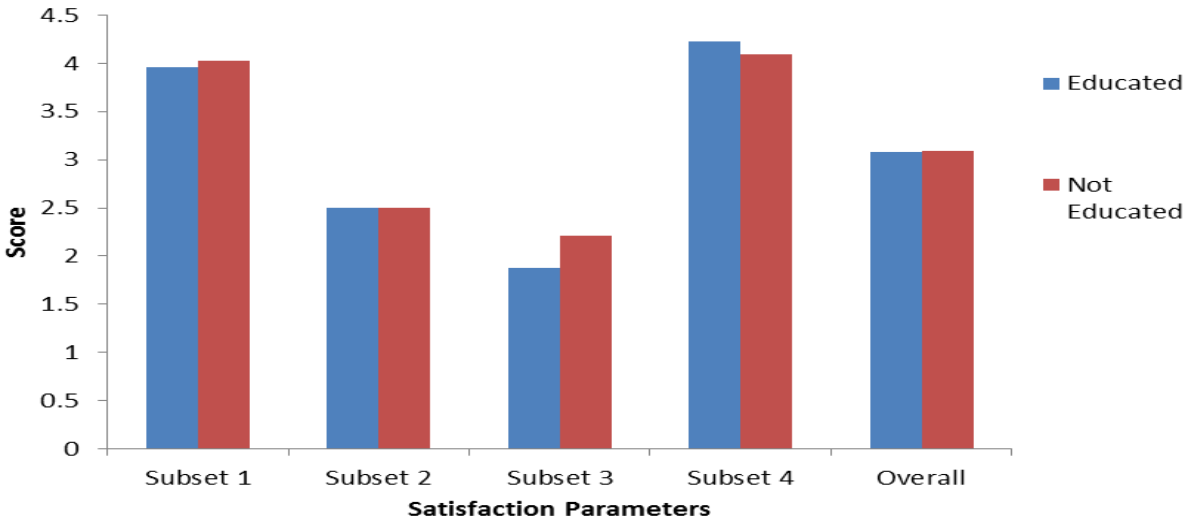

FIGURE 10(b): SHOWS THE EDUCATION VERSUS SATISFACTION SCORES IN INTERVENTION GROUP

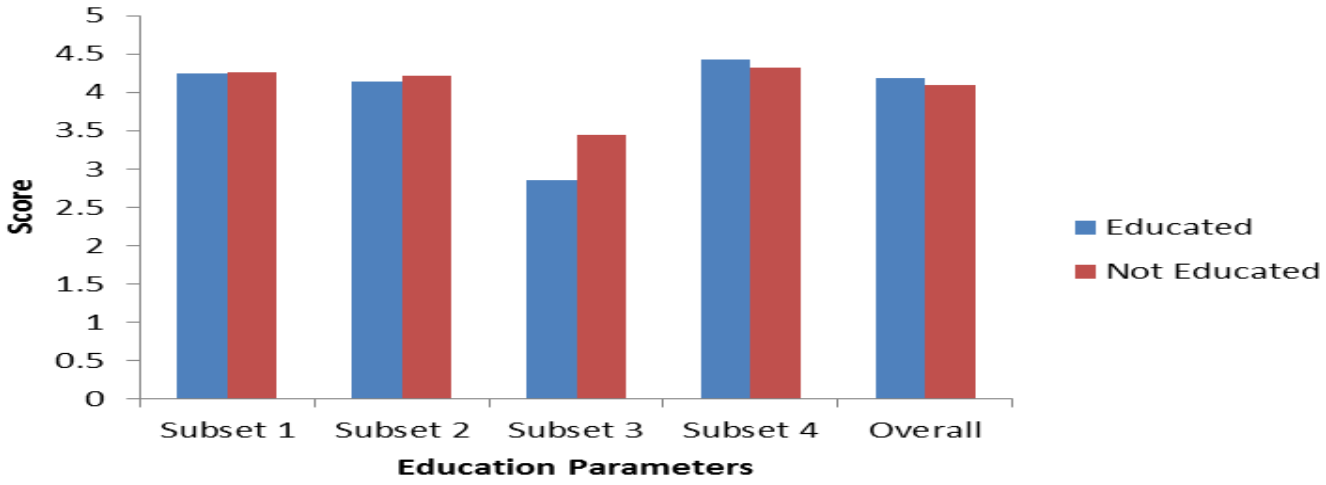

TABLE 12: SUBSET AND OVERALL ANALYSIS OF SATISFACTION IN CONTROL AND INTERVENTION GROUP

One Way ANOVA:

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Cancer treatment	Between Groups	1.923	1	1.923	7.214	.008
	Within Groups	31.186	117	.267		
	Total	33.109	118			
Side effects	Between Groups	84.605	1	84.605	190.549	.000
	Within Groups	51.949	117	.444		
	Total	136.555	118			
Complementary Treatment	Between Groups	40.765	1	40.765	40.279	.000
	Within Groups	118.411	117	1.012		
	Total	159.176	118			
Information presented	Between Groups	1.262	1	1.262	5.431	.021
	Within Groups	27.175	117	.232		
	Total	28.437	118			
Overall	Between Groups	34.504	1	34.504	64.783	.000
	Within Groups	62.315	117	.533		
	Total	96.819	118			

TABLE 13: ASSESSMENT OF AGE AND EDUCATION WISE SATISFACTION IN BOTH GROUPS

a. Between Subject Factors

		Value Label	N
Group	1	Control	60
	2	Intervention	59
Age	1	young adults	13
	2	middle-aged adults	54
	3	older adults	52
Education	1	Not educated	72
	2	Educated	47

b. Multivariate Analysis

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Group * Age	Cancer treatment	.932	2	.466	1.813	.168
	Side effects	4.385	2	2.192	5.239	.007
	Complementary	1.651	2	.826	.845	.432
	Information presented	.027	2	.014	.057	.945
	Overall	4.285	2	2.143	4.088	.019
Group * Education	Cancer treatment	.584	1	.584	2.269	.135
	Side effects	2.307	1	2.307	5.513	.021
	Complementary	.486	1	.486	.497	.482
	Information presented	.078	1	.078	.323	.571
	Overall	1.619	1	1.619	3.089	.082

6. DISCUSSION

The prospective interventional study was aimed to assess the patient satisfaction on treatment education upon establishment of pharmaceutical care in oncology.

Cancers are mainly occurring in the age group of 40-60 years, showing 67 patients in this age group followed by 35 patients in the age group of 60-70 years. These results obtained in our study was similar to the results obtained by the study conducted by **Ganjewala D (2009)** in Madhya Pradesh during April,2005, in which 51% patients fell in the age group of 50-75%, followed by 41% in age group of 25-50 years and 8% in 0-25 years.[36]

Based on our study, the predominance of patients receiving chemotherapy were men (58.82%, N=70) and female cancer patients were only 41.17%. These results reciprocates the result of study conducted by **Zekb A et al.,(**2008) in Pakistan during the period of 2000-2004, in which out of 1105 cancer patients, 62% were males and 38% were females [37].

In a study conducted by **Matsuyama RK, et al.,** showed, out of 138 patients, 36 patients were diagnosed with lung cancer, 33 diagnosed as gastro intestinal and the follower by 32 patients with breast cancer. Whereas in our study out of 119 patients,35 patients were diagnosed with breast cancer followed by 22 with gastro intestinal and 17 with lung cancer[38].

Level of education plays a role in the understanding of information given while counseling. Those with comparatively low level of education showed a higher demand for information on chemotherapy. Among 119 patients of the study, 53 % had completed a school level of education, 39 % completed college level education and only 8% were found to

be illiterate. These results are similar to the study conducted by **Matsuyama RK et al.(2011).** Over half the sample had completed education above high school while 25% had attained only a high school diploma or General Education Diploma (GED). 23% had less than high school[38].

Adverse drug reactions are monitored and documented in the study as a part of pharmaceutical service and out of total patients, predominant type of adverse effect consisted of nausea/vomiting(41) hyperpigmentation (29), myalgia (22) and mucositis (20) and diarrhoea (20). These results are similar to the study conducted by **Ruder AD et.al**.,(2010) who conducted a retrospective descriptive analysis of clinical interventions by the oncology pharmacist. Out of 131 adverse events documented by the pharmacist, the predominant types of adverse events consisted of nausea/vomiting (23), rash (21), diarrhoea (17), and myalgia (15)[17].

Patient Satisfaction Assessment

a. Overall satisfaction

Overall satisfaction measures all the 15 questions in the questionnaire. In control group, the average mean score was 3.04 and in intervention group it improved to 4.12. (p=0.000). The significant increase in the intervention group is suggestive to highlight the positive influence of pharmaceutical care. The scores could be maximized in several areas by considering the information needs and demands of the patients.

b. Subset 1

In the first subset which measures the satisfaction for cancer treatment information, control group has given a mean score of 4 and 4.25 (p=0.008)is given by the intervention group. This indicates there is already a better care set up receiving information educaton about cancer treatment in the hospital. Along with the general set up, our additional counseling sections improved their satisfaction significantly.

c. Subset 2

Second subset that covers the questions about side effects and its management was an area which appreciably showed a very good response in intervention group. The score was improved from 2.50 (control) to 4.19 (intervention) (p=0.000). A detailed informative discussion session about side effects and its management shows a significant improvement in the intervention group thereby enabling the patients to manage their side effects.

d. Subset 3

Evaluation of subset 3 about complementary treatment options gives a mean score of 2.07 in control group and 3.24 in intervention group. It clearly shows that the patients are poorly satisfied and discussion on this area was not encouraged as the score is too low in the control group. From the intervention group satisfaction level was significantly improved (p=0.000) and they are somehow satisfied with the pharmacist given patient counseling. Still this area needs to be concentrated to achieve maximum level of

satisfaction by discussing various aspects, benefits and risks clearly about the complementary treatment options.

e. **Subset 4**

How information is delivered to the patient has an important impact in the understanding and perceived satisfaction. The score in control group is 4.15 and in the intervention group it shows improvement to 4.36 (p=0.021). This indicates in both group patients were well satisfied and received the information in a clear, easily understandable manner. But in addition, the individual approach given by the pharmacist to the intervention group has got improved satisfaction from the patients.

Age wise satisfaction assessment

Overall satisfaction among the three age groups in control population is 2.67, 2.97 and 3.23 in young adults, middle-aged adults and older adults respectively. The satisfaction scores given by the intervention population is improved to 4.14, 4.29 and 3.96 by the respective age groups which shows the improved satisfaction level is statistically significant (p=0.019). This shows that the counselling given was well satisfied by the intervention population in all the three age groups. Subset 1 was also well satisfied by the all the three age groups (4.17, 3.97 and 4.00) in young, middle aged and older adults of control population respectively. The scores in intervention population are 4.43,4.38 and 4.11 in d same age groups respectively. Scores are not significant but still we can observe the improvement on satisfaction level in intervention group. In Subset 2, control population gave the mean scores of 2.50, 2.30 and 2.75 in young, middle-aged and older adults. Whereas the intervention population showed a significant higher scores of 4.29,

4.33 and 4.04 (p=0.007) in the respective age group. In spite of the difference in age our counselling concentrating on the various aspects of side effects and detailed information has shown an appreciable improvement and the patients are well satisfied. Subset 3 scores in control group are 2.17, 1.87 and 2.29 and the patients are poorly satisfied with information on complementary treatment options. Upon counselling the intervention population the scores have improved to 2.71,3.13 and 3.46 in the respective age groups. Statistically the satisfactory scores are not significant. Still we can observe the improvement in intervention group. Subset 4 gives 2.67(control) to 4.14(intervention), 4.20(control) to 4.46(intervention) and 4.04(control) to 4.29(intervention) by young, middle-aged and older adults respectively. The patients are well satisfied in intervention group but it can be improved still to maximize the satisfaction level.

Education wise satisfaction assessment

Overall, both the educated and not educated groups showed almost similar scores.3.04 and 3.09 in control group has improved to 4.19 and 4.08 in intervention group. This means both educated and not educated group patients are satisfied upon establishment of pharmaceutical care and shows our counselling is aptly applicable to educated and not educated group as well. On Subset 1 evaluation, both educated and not educated groups shows mean scores of 3.96 and 4.03 in control population to 4.24 and 4.26 in intervention population in respective educated and not educated groups. Improvement is slight but yet observable from the satisfaction scores in intervention group. Subset 2 scores show values of 2.50 in control and 4.14 in intervention by educated group and 2.50 in control and 4.14 in intervention population by not educated group. The satisfaction is significant in intervention group.(p=0.021).In spite of education our counselling was effective in both

the education level groups which gave an appreciable improvement of satisfaction level. On subset 3 evaluation, control population of educated and not educated group showed the mean scores of 1.88 and 2.21.Coming to the intervention group we can observe the increased scores of 2.86 and 3.45 by the respective education level groups. Satisfaction is improved, but yet to be focused in this area to enhance the satisfaction level. Subset 4 mean satisfactory scores of control population educated and not educated groups are 4.23 and 4.09 which upon intervention by pharmacist improved to 4.43 and 4.32 by the education level group respectively.

In a study conducted in Germany by **Liekwig A et al.,** (2012), the patient received education on cancer treatment as part of pharmaceutical care implementation. The study population was divided into control group (N= 48) as those receiving conventional chemotherapy education and pharmaceutical care intervention group (N=50). In a similar way our study included 60 patients in control group and 59 patients in intervention group for whom patient counseling was given to improve the medication adherence of patients. They have also performed patient satisfaction assessment with cancer treatment education on both the groups. The global satisfaction score and the subscale analysis showed a statistically significant improvement from control group to intervention group except for the complementary treatment options. Median scores of 4.0,4.0,4.0, 3.9 in control group was improved to 4.4,4.3,4.2,4.5,4.4 in intervention group for subscale analysis of satisfaction with information provided on cancer treatment, side effects, complementary treatment options, information sources and global satisfaction respectively. Similar way In our study, the results shows statistically significant in Subset 1, 2, 3, 4 and overall. The satisfaction scores obtained

in our study for control group are 4, 2. 50, 2.07, 4.15 and 3.04 whereas 4.25, 4.19, 3.24, 4.36 and 4.12 in the intervention group for the respective subsets and overall value[39].

The information sources used by the patients were examined to know the recognition of pharmacist among the population. In both the groups, oncologist was the main resource person. Control group patients didn't consider pharmacist as their information source at all which clearly shows there have been no previous pharmacist services established under pharmaceutical care in the hospital. 41% of pharmaceutical care intervention group found pharmacist also as their information source in our study. Similar way, **Liekweg et.al**, conducted a sequential study in Germany to develop a questionnaire measuring patient satisfaction with treatment education for cancer patients.. Pharmacist seemed to play a minor role as source of information in the pretest and main test groups[14.]

Age was considered to play a role in perceiving satisfaction. In our study, age showed significant satisfactory scores on overall assessment (p=0.019) and subset 2 regarding side effects (p=0.007). As per the study conducted by **Walker et.al**.,(1999), patient satisfaction was predicted by younger age[40]. Education of patient has also got an impact on satisfactory scores. In a study conducted by **Rahmqvist et.al.,** in Sweden, patient characteristics and quality dimensions related to patient satisfaction was examined and the results showed that those with less education are more satisfied than the patients with more education. Whereas in our study educated and not educated group showed almost similar satisfaction scores[41.].

Obstacles

- Awareness on pharmaceutical services among patients and other health care professionals is very low.

As the clinical pharmacist is exposed for the first time to the patient, unwillingness to cooperate and to disclose their actual underlying problems and opinions should be considered as the failure of effective pharmaceutical care services.

- Direct patient-staff relationship

Most of the cases observed show a good satisfaction for general care set up (control group) and they don't prefer any change from the general care by an additional care group showing reluctance to reveal the actual information need of patient.

- Lack of knowledge on psychological support

Cancer patients demand lots of psychological support. Lack of knowledge to handle the difficult situations is faced while approaching individual patients.

- Lack of communication provisions with the healthcare professionals

Access to oncologist and other health professionals was not always easier and consume enough time.

- Lack of professionals

As the continuous day and night hours are necessary to give complete pharmaceutical care for individual patient, lack of personnel in the pharmacy department could be considered as a

major drawback because lack of supervision on, mixing, administration and monitoring for adverse reactions and reporting should be handled from the point of admission till discharge for every individual patient receiving chemotherapy.

6. CONCLUSION

In conclusion, our results suggest that patients seem to show good response with satisfaction towards patient counselling upon pharmaceutical care in oncology. Patient satisfaction is beneficial to improve patients' quality of life, thereby leading to achieve positive clinical outcome.

Currently, patients are well satisfied about cancer treatment information with the general set up. But the introduction of pharmaceutical care could still improve the level of satisfaction to maximize the clinical benefits. The counseling on complementary treatments is yet to be improved as most of the patients are somehow satisfied with the information given about that. Different age groups and education levels show difference in satisfaction level and our way of approach should be set in that way to bring considerable improvement for all of them. A need based information education is always preferable to satisfy all kind of patients. We found significant progress with higher satisfaction upon knowledge on side effects and its management by the establishment of pharmaceutical care. This knowledge will improve patient compliance and enables then to cope up with further treatment modalities.

Identifying the pharmacist by the patient is the first step of progress from which pharmaceutical care services can grow further. At present, the profession of oncology pharmacist is at a very low level and scarcely identified by patient. Similar studies concentrating on various areas of pharmaceutical care can improve the profession as well as patients' outcome. .

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RECOMMENDATIONS

1. Awareness on importance of pharmaceutical services among patients and other healthcare providers should be created.

2. Relationship between a pharmacist and a patient should develop to assure them that they can also contribute to their beneficial health status.

3. Practical learning methods for patient counselling should include emotional and psychological aspects also.

4. Responsibilities of pharmacist are more and currently not in an authentic position. This situation must change and should start involve in direct plan for patient.

Patient Satisfaction with Cancer Treatment Education Questionnaire

Part I

This part of the questionnaire deals with general data.

1) Age in years:
2) Gender

   ☐ Female ☐ Male

3) Marital Status

   ☐ Married ☐ Unmarried ☐ Widowed

4) Current living Situation

   ☐ Living alone ☐ Living with Family ☐ Living in institution

   (e.g., nursing home/care home)

5) Education

   ☐ No Formal Education ☐ School
   ☐ Graduate ☐ Higher University degree

6) Occupation

   ☐ Employed ☐ Business ☐ Pensioner
   ☐ Housewife ☐ Student ☐ Workers
   ☐ Others

7) I know of my illness
   a. Time since:
   b. ☐ Hospitalised ☐ In Outpatient treatment at oncologist
      ☐ Inpatient treatment at hospital oncologist

8) I am in an active support group.

   ☐ Yes ☐ No

Part II

Please briefly answer a few questions about the sources of information you use.

1. What or who is currently your main source of information about your treatment?

(Please tick all options that apply to you)

☐ Doctor ☐ Nurse ☐ Pharmacist ☐ Internet

☐ Books ☐ Others

2. What or who was previously your main source of information about your treatment?

(Please tick all options that apply to you)

☐ Doctor ☐ Nurse ☐ Pharmacist ☐ Internet

☐ Books ☐ Others

Part III

Please tick any of the following statements on a number. It expresses how strong you are with the information to satisfaction.

Please let us know your opinions about all the information with you to the present date.

Place: Date:

		Strongly disagree (1)	Disagree (2)	Uncertain (3)	Agree (4)	Strongly agree (5)	Not Specified
1	I am satisfied with the information I have been given about my cancer treatment.						
2	I am satisfied with the information I have been given about possible side effects on my treatment.						
3	I am satisfied with the information I have been given about what to do if side effects happen.						
4	I am satisfied that I get enough opportunity to ask questions about my cancer treatment						
5	I am satisfied that I get enough opportunity to ask questions about how to manage side effects .						
6	I am satisfied that I get enough opportunity to ask questions about the use of drugs and complementary therapies.						
7	I am satisfied with the answers to my questions about the use of drugs and complementary therapies.						

		Strongly Disagree (1)	Disagree (2)	Uncertain (3)	Agree (4)	Strongly Agree (5)	Not specified
8	I am satisfied with the explanations about possible interactions between my prescribed cancer treatment and other treatments I amusing or thinking about using.						
9	I am satisfied that I am able to make informed choices about my cancer treatment.						
10	I am satisfied that I am able to make informed choices about how to manage side effects						
11	I am satisfied that I am able to make informed choices about the use of drugs and complementary therapies						
12	I am satisfied with the available information resources such as the hand-outs and staff.						
13	I am satisfied with the instructions given about taking and handling of my medications.						
14	Overall, I am satisfied with the manner in which the information is provided. It is friendly, respectful and non-judgemental.						
15	I am satisfied with the way treatment information is presented to me. It is clear and easy to understand.						

WE ARE GRATEFUL FOR ANY FURTHER COMMENTS AND SUGGESTIONS.

THANK YOU FOR THE TIME YOU HAVE MADE HEREWITH.

IT SERVES YOU AND OTHER PATIENTS.

DATA COLLECTION FORM

Name of Patient: Date of Admission:

IP No: Date of Discharge:

Age: Gender: Name of Consultant:

Body Wt.: Height:

Symptoms:

Past Medical History:

Past Medication History:

Diagnostic Test:

Diagnosis:

Drug Regimen

CHEMOTHERAPY

Date	No	Start Time	Drugs	IV Fluid	Dose	RoA	End Time	Duration

SUPPORTIVE MEDICATIONS

Date	No	Drugs	Dose	RoA	Time of Administration

DISCHARGE MEDICATIONS

No	Drugs	Dose	RoA	Frequency	Duration

CHEMOTHERAPY AND YOU

Chemotherapy aims primarily for the control of systemic spread of cancer cells**.** The drugs are most often injected into the bloodstream through an intravenous needle in your arm. Everyone reacts differently to chemotherapy and some people may have no side effects at all. Here we will see few commonly seen side effects and more importantly how to manage it during the complete course of treatment.

No	Possible Side effects	How it may develop?	How to manage it?
1.	Hair loss	Mainly noted in the scalp hair; Other body hair is frequently lost. Typically begins after 2-3 weeks of first chemotherapy treatment. Re-growth of hair usually begins 6-8 weeks after the completion of chemotherapy.	1.Wearing wigs 2.Using scarves or other head coverings
2.	Mouth sores and Sore throat	Ulcers in the mouth, dryness of the mouth, pain, infection, bleeding and difficulty swallowing.	1. Rinse your mouth with A salt/soda solution (1 tsp. salt, 1 tsp. baking soda, 1 glass of water). 2. Use soft bristle tooth brush.
3.	Anaemia/Weakness	Fatigue, headache, dizziness, tiredness, looking pale, racing heartbeat.	Include iron rich food diet like green leafy vegetables, gooseberries, dry fruits etc.
4.	Nausea and Vomiting, Loss of appetite	Usually begin on the day of treatment and can last 1-3 days after chemotherapy.	1. Eat foods at room temperature. 2. Eat 5-6 small frequent meals. 3. Take a short walk before meals. 4. Exercising may increase your appetite
5.	Infection	Usually develops 7-14 days after chemotherapy. High temperature, shivering, cough, rashes and diarrhoea.	1. Check your temperature and contact hospital if 100oF or more. 2. Keep away from crowded places and people suffering from infections.

GENERAL INSTRUCTIONS:

- Drink 2 to 3 L of water daily.
- Not to receive vaccination during treatment.
- Use contraception (non hormonal) during treatment and 4-6 months after; Avoid breast feeding.
- Avoid hazardous tasks, since confusion, dizziness may occur.
- Avoid crowds to reduce the risk of infection.
- Avoid use of OTC products with aspirin, ibuprofen and other NSAIDs.
- Avoid spicy, heavily seasoned or citrus food.

SPECIAL INSTRUCTIONS:

If you have received the treatment with the following drugs, please note the additional instructions given below.

1. Report hearing disturbances and ringing in the ears.

   (CARBOPLATIN, CISPLATIN)

2. Report numbness, tingling sensation on face, fingers and toes.
   (PACLITAXEL, DOCETAXEL, OXALIPLATIN, CISPLATIN, CARBOPLATIN, VINBLASTINE, VINCRISTINE, IFOSFAMIDE)

3. Use sunscreen or do not expose to direct sunlight.
   (5-FLUOROURACIL, METHOTREXATE, TAMOXIFEN, VINBLASTINE)

4. Avoid exposure to hot water, contact with harsh chemicals like detergents, cleaning products and report redness, blisters, cracking and peeling of skin on hands and foot.
   (CAPECITABINE, 5-FLUOROURACIL, DOXORUBICIN)

5. Report visual problems and unusual vaginal bleeding.
   (TAMOXIFEN)

Keep in mind that the following changes occur with particular treatment and will disappear after the course of therapy.

- Pain in muscle and joints (DOCETAXEL, PACLITAXEL)
- Urine and other body fluids may appear orange to red in colour for 2 days. (DOXORUBICIN, EPIRUBICIN)
- Pruritus, vaginal bleeding and hot flushes (TAMOXIFEN)
- Impotence and amenorrhea (CARBOPLATIN,CHLORAMBUCIL,CISPLATIN, CYCLOPHOSPHAMIDE)

If you have any questions or need more information, please ask. Remember that health care professionals, family and friends can help during this time. Together we can help you find the best ways to cope with your chemotherapy treatment.

ASSESSMENT OF PATIENT SATISFACTION UPON ESTABLISHMENT OF PHARMACEUTICAL CARE IN ONCOLOGY

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INTRODUCTION

- A cancer diagnosis places considerable stress on patients and their families. They find themselves discomfort with the strange health system; making serious decisions with long term consequences; living with uncertainness about the nature, cause and indefinite progress of the disease[1].
- Pharmaceutical care is considered as a patient centered, outcome oriented pharmacy practice that requires the qualified pharmacist to work in concert with the patient and other health care provider [2] .

- ‘Patient perception of care’ encompasses both patient satisfaction and their experience of care. Patient satisfaction is a subjective, evaluative assessment that is derived from expectations, needs, past experiences, opinions and attitudes[3].
- **Patient satisfaction assessment** has become an important tool for health care professionals to systematically measure patients’ perceptions of care [4].
- Cancer patients show a desire for maximum amount of information regarding their treatment, prefer open communication about their illness and displayed high levels of hope to develop coping strategies and to initiate self- care behavior [5].

- At the other side, **clinical role of pharmacist** in oncology as well as in other departments remained neglected for years within India[6].

- **Pharmaceutical care** is initiated in the oncology department of our hospital to create a better experience for cancer patients by delivering patient centered care. As part of establishment of pharmaceutical care we utilize this study to contribute patient oriented services and also to find out the effectiveness of the service upon their satisfaction, thus **show the importance of pharmaceutical service in clinical setup.**

MATERIALS & METHODS

A prospective interventional study on establishment of pharmaceutical care and its patient satisfaction assessment in a tertiary care hospital was initiated.

Objective

- Primary objective : Assessment of patient satisfaction on pharmaceutical care.
- Secondary objective : Establishment of pharmaceutical care and improvement of quality of life.

Study Site:

- We received Ethics Clearances from "KMCH ETHICS COMMITTEE" in order to conduct the study in Kovai Medical Center and Hospital, Coimbatore.

Study Period:

- The study was carried over a period from the month of May 2013 to February 2014.

Study Population:

Inclusion Criteria**:**

- Patients diagnosed with cancer and admitted for chemotherapy.

- Patient selection determined by physician.
- Patients from whom oral consent is received.

Exclusion Criteria:

No special exclusion criteria.

STUDY MATERIALS

1. Modified-Patient Satisfaction with Cancer Treatment Education Questionnaire. (PS-CaTE) (Adopted from Canadian PS-CaTE questionnaire) [7].

The questionnaire measures patients' satisfaction with the information they received about their chemotherapy.

.

It consists of three parts

- **Part I -** Sociodemographic characteristics of the patient.
- **Part II-** Sources of information regarding chemotherapy utilized by the patients
- **Part III-** Contains 15 questions that evaluates the patients' perception on the information given during their cancer treatment on a five point Likert scale.

2. Data Collection Form

- This is the form used to collect individual details like name, age, gender, past medical history and medication and medication history, diagnosis, and chemotherapy.

Patient Information Leaflet (PIL)

- Patient information leaflet consists of the information regarding the common side effects, the detection and the management of side effects along with general instructions to be followed by a patient receiving chemotherapy.

Study Procedure

- The whole study consists of three phases.

- **Phase I-** includes the preparation of supportive materials, planning for establishment of pharmaceutical care, identifying the patients and assessment of patient satisfaction in control group.

- **Phase II-** includes identifying and following the patient, establishment of pharmaceutical care and then assessing the patient satisfaction in intervention group.
- **Phase III-** includes the analysis of data.

Control group:

- Random selection of the sample from general population and patients receive treatment in the hospital from general Oncology department care set up.

Intervention group:

- Along with general care set up in hospital, patient also receives pharmaceutical care.

General treatment education

Pharmacist given patient education

The following services are focused under pharmaceutical care in this study.

Patient Counselling:

- Patients are counseled regarding their disease, treatment, prevention and management, life style modifications.
- Out of four sections of counselling, each said to possess 25% to achieve absolute establishment of this area. The four sections considered to be the part of complete patient counseling are:

1. Pre-counseling -25%
2. Counseling during the treatment -25%

- Counselling while discharge -25%
- Distribution of handwritten or printed leaflet-25%

❖ Pre-counselling :counselling given on the day of diagnosis or before treatment as part of informing the choices of cost based therapies, course of therapy and the relevance to continue with the treatment without fail.

❖ Counselling during the treatment : includes the details about drugs, its side effects, methods to manage and prevent the side effects etc.

❖ Counselling while discharge : deals with the handling and administration of discharge medications along with the life style and dietary modifications.

- Distribution of a handwritten or printed information leaflets : make the counselling effective with improved information recalls by the patients.

PIL (Patient Information Leaflet)

- Preparation of the information leaflet is done according to the information needs shown by the patients

Two steps under PIL are:

- Preparation of PIL - 50%
- Distribution of PIL - 50%

The other services like dose calculation, ADR monitoring and chemotherapy mixing are not focussed since the establishment need much time and people to deliver the services promptly.

Assessment parameters for patient satisfaction

Age : Adult age was classified to three groups.

- Young adults : 18-35 years
- Middle-aged adults : 36-55 years
- Older adults : Above 55 years

Education : Level of education was classified to two groups.

- Educated: Graduates and higher degree holders.

The whole set of questions of Part III was further divided to 4 subsets for the assessment of patient satisfaction.

Subset 1: - about cancer treatment

Subset 2: - about side effects

Subset 3: - about complementary treatment options

Subset 4: - about the manner how information presented

Overall: - overall satisfaction with information provided

Satisfaction scores for all subsets and overall ranges from 0 to 5 and their average mean is taken for further calculation

Statistical Analysis

- Data entry was carried out by using Microsoft Excel 2010. and analysis was done by using SPSS® 20.0 for Windows The comparison of satisfaction scores between control and intervention groups were done by using one-way ANOVA and the assessment based on age and education with the perceived satisfaction was performed using Multivariate Analysis of Variance (MANOVA).

Limitations

- Pre-counselling is not performed in this study as an initial stage of establishment, at present there is no provision to interfere with treatment plan directly and to prior inform patient about the course of therapy that even can decide if they want to continue or not.
- Preparation of PIL is designed in a common way regardless of the standard format that includes font, style, size, layout etc.
- Distribution of PIL is not done since the leaflet should be specific to a particular patient to avoid unnecessary anxiety among them.

RESULTS

ASSESSMENT OF PATIENT SATISFACTION

- A total of 60 questionnaires were collected from the control group and 59 questionnaires from the intervention group.
- Patient satisfaction with information was significantly improved upon pharmaceutical care.
- Subset 1 achieved a mean score of 4.25 in intervention group and was only 4 in control group (p=0.008).
- The mean score for Subset 2 was found to be significantly increased from 2.50 in control group to 4.19(p=0.000) in intervention group.

- Subset 3 attained a score of 3.24 in intervention group from 2.07(p=0.000) in control group.
- Subset 4 assessing attained a score of 4.15 in control group and 4.36(0.021) in intervention group.
- Overall satisfaction was significantly improved from a mean score of 3.04 in control group to 4.12 (p=0.000)in intervention group.(Table 8, Figure 8 and Table 13)

Age and education upon perceived patient satisfaction

- In intervention population all the age group reported significantly higher satisfaction on information provided about side effects (Subset 2) (p= 0.007) and in overall (p=0.019) .
- In all the other categories of Subset 1, 3, and 4 the age didn’t show any significant result on satisfactory scores. (Table 9,10, 16 & Figure 9 &10).
- Both educated and not educated group of patients was found to be highly satisfied whit Subset 2 (p=0.021). (Table 11,12, 16 & Figure11 & 12).

Information Sources

- Patients utilize their oncologist as the source of information in maximum number of cases.
- Internet and others including family relatives, friends are the second choice for information sources.
- In control group pharmacists were not identified as a resource person (0%).
- But in pharmaceutical care intervention group, participants started identifying the service of pharmacist as their information source (41%) after repeated conversations and counselling sections.(Table 6 & Figure 6).

Establishment of Pharmaceutical Care

1. Patient Counselling (50%)

- Out of 119 patients, 59 patients in intervention group were given patient counseling. Among the four sections of patient counseling, counselling during the treatment (25%) and counselling while discharge (25%) were given to patients whereas pre-counseling (0%) and distribution of information leaflet (0%) were not given.

2. Patient Information Leaflet (50%)

- A general information leaflet for cancer patients receiving chemotherapy (Annexure III) was prepared (50%)on the basis of data collected form the study. But the distribution of leaflet (0%)was not done.

TABLES AND GRAPHS

TABLE 1 : AGE- WISE DISTRIBUTION IN CONTROL AND INTERVENTION GROUPS

Age	Control (n=60)	Intervention (n=59)
Below 20	0	0
20-39	8	9
40-59	37	30
Above 59	15	20

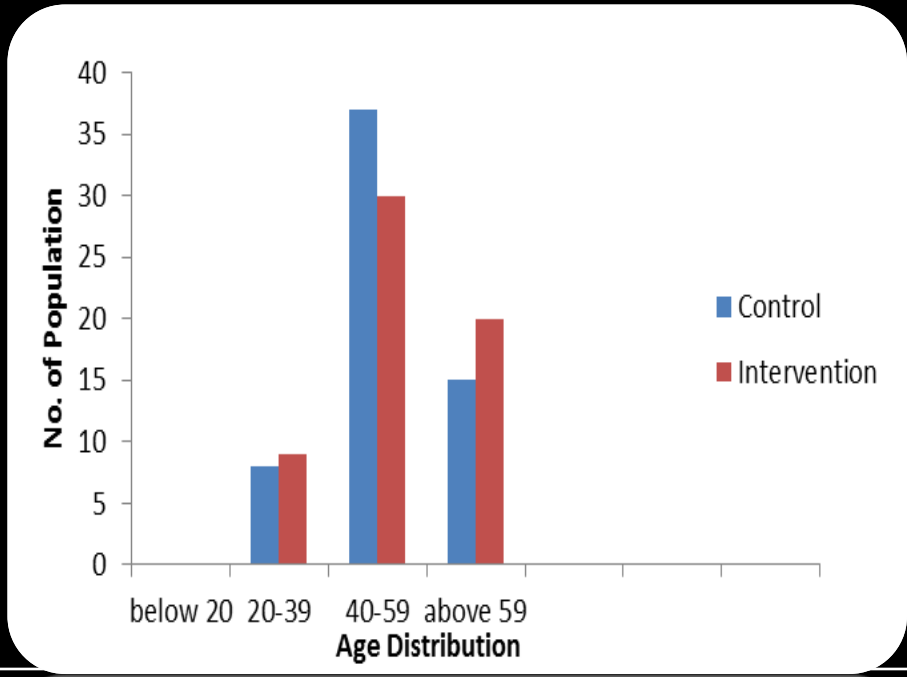

FIGURE 1 : AGE- WISE DISTRIUTION AMONG STUDY POPULATION

TABLE 2: GENDER-WISE DISTRIBUTION IN STUDY POPULATION

Gender	Control (n=60)	Intervention (n=59)	Total
Male	35	35	70
Female	25	24	49

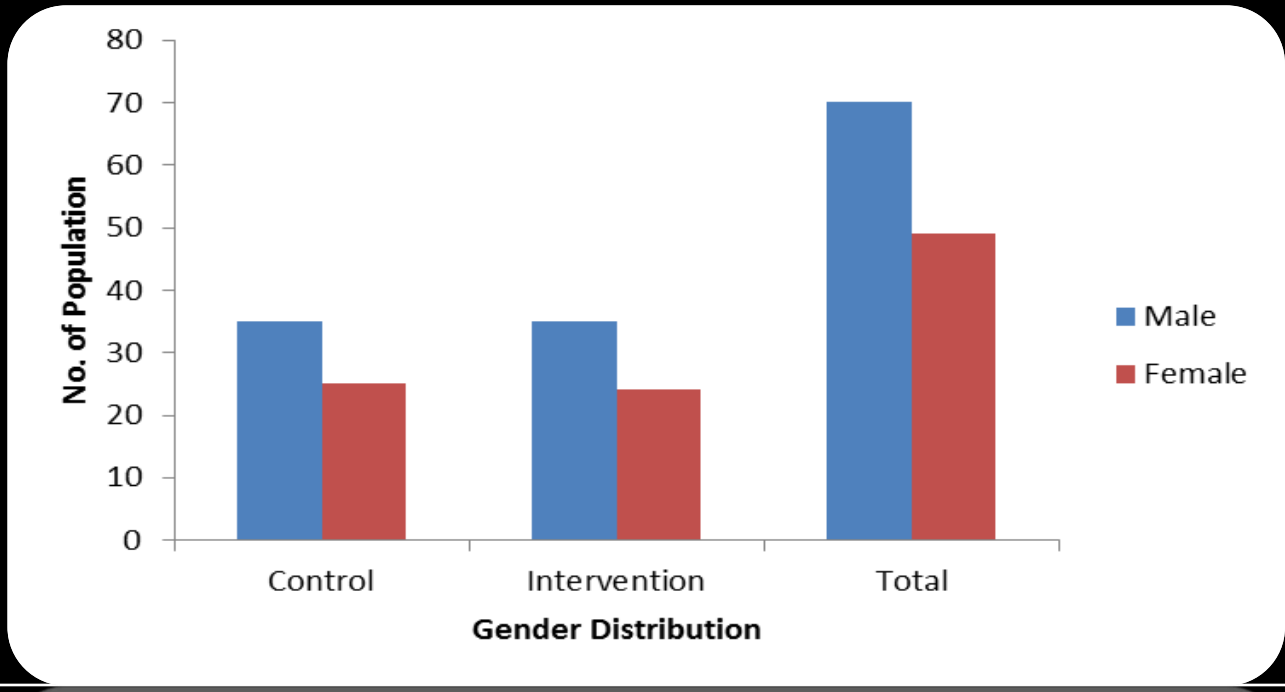

FIGURE 2: GENDER-WISE DISTRIBUTION IN STUDY POPULATION

TABLE 3: DIAGNOSIS IN STUDY POPULATION

Type of Cancer	Control (n=60)	Intervention (n=59)
Breast	19	16
Cervix	2	2
Colon	3	3
Lung	9	8
Rectal	6	4
Oesophageal	3	3
Ovary	1	3
Prostate	2	2
Ewing's Sarcoma	1	4
Others	14	14

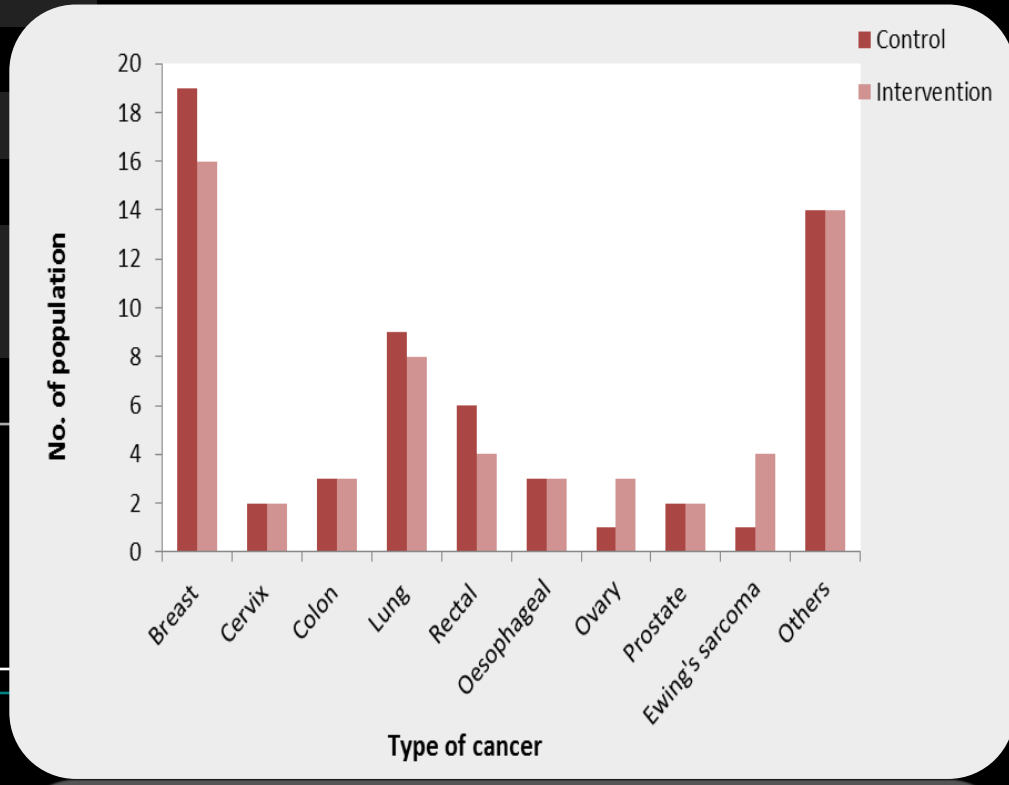

FIGURE 3: SHOWS THE TYPE OF CANCER IN STUDY POPULATION

TABLE 4: LEVEL OF EDUCATION IN STUDY POPULATION

Level of Education	No. of Population	Percentage (%)
Illiterate	9	8
School	63	53
College	47	39

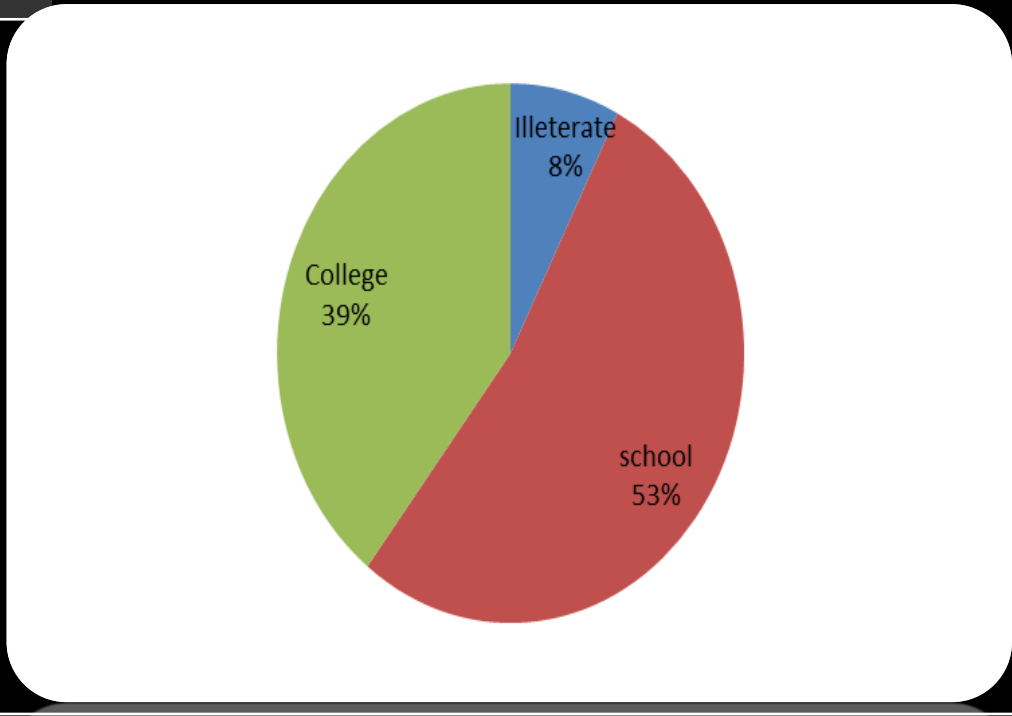

FIGURE 4: SHOWS LEVELS OF EDUCATION AMONG STUDY POPULATION

TABLE 5. ESTABLISHMENT OF PHARMACEUTICAL CARE

ELEMENTS OF PHARMACEUTICAL CARE	PERCENTAGE OF ESTABLISHMENT (%)
Patient Counselling	50
1.Pre counselling	0
2.During the treatment	25
3.Discharge medication	25
4.Handwritten or printed leaflet	0
Patient Information Leaflet	50
1.Preparation	50
2.Distribution	0

FIGURE 5: SHOWS THE DETAILS OF ESTABLISHMENT OF PHARMACEUTICAL CARE

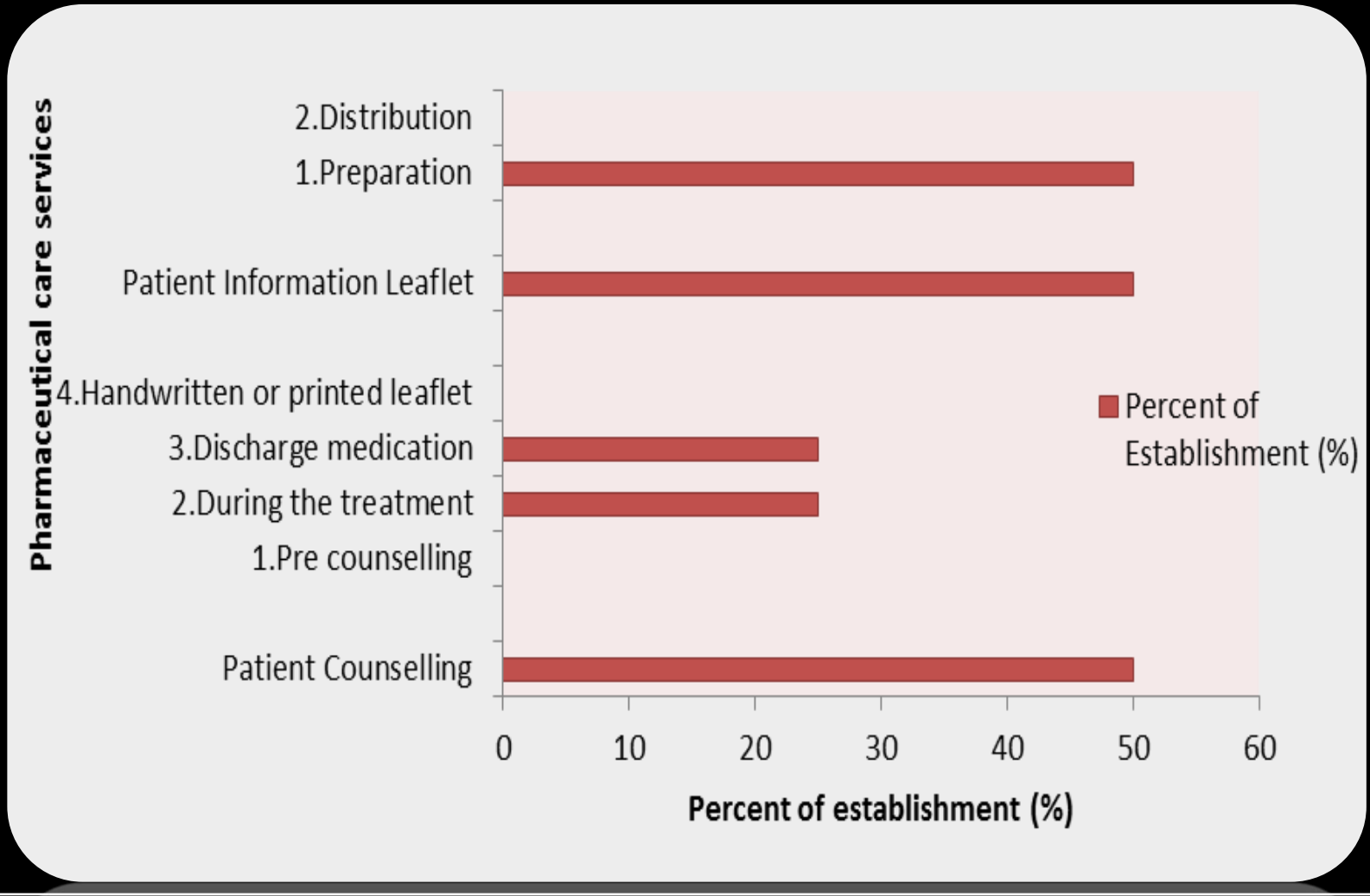

TABLE 6: INFORMATION SOURCES USED BY THE STUDY POPULATION

Information Sources	Control	Intervention
Oncologist	60	59
Nurse	12	14
Pharmacist	0	24
Books	4	3
Internet	21	18
Others	14	9

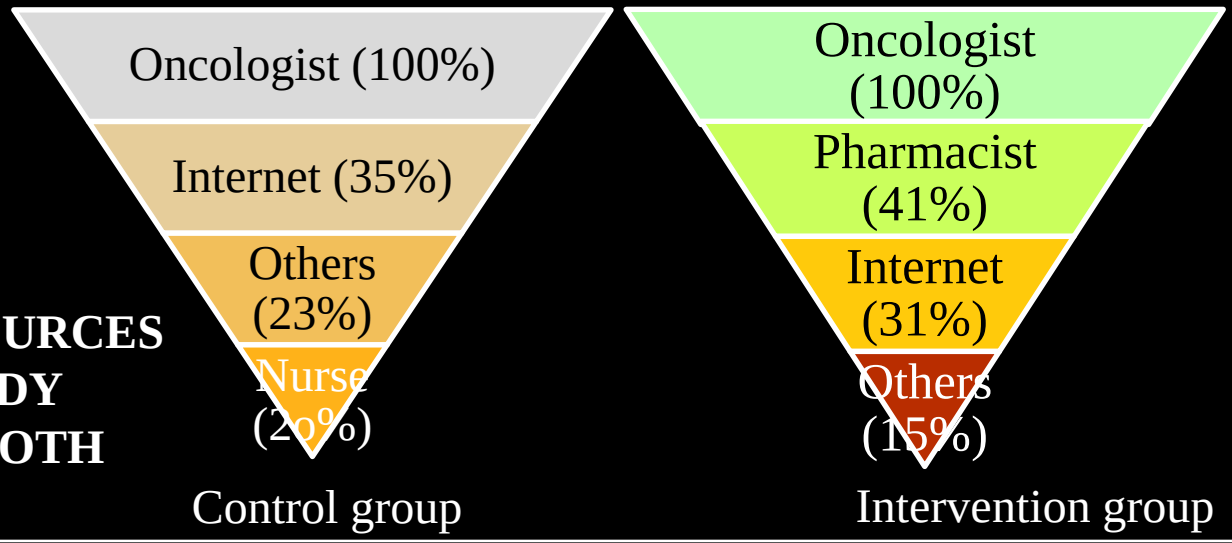

FIGURE 6: SHOWS INFORMATION SOURCES USED BY THE STUDY POPULATION IN BOTH GROUPS.

TABLE 7: ADVERSE DRUG REACTIONS IN STUDY POPULATION

Adverse Drug Reactions	No. of Population
Diarrhoea	20
Constipation	18
Lack of Appetite	13
Mucositis	20
PPE	8
Hyperpigmentation	29
Extravasation	12
Onycholysis	10
Nausea/Vomiting	41
Neuropathy	13
Hiccups	11
Myalgia	22
Leg Cramps	8

FIGURE 7: ADVERSE REACTIONS IN STUDY POPULATION

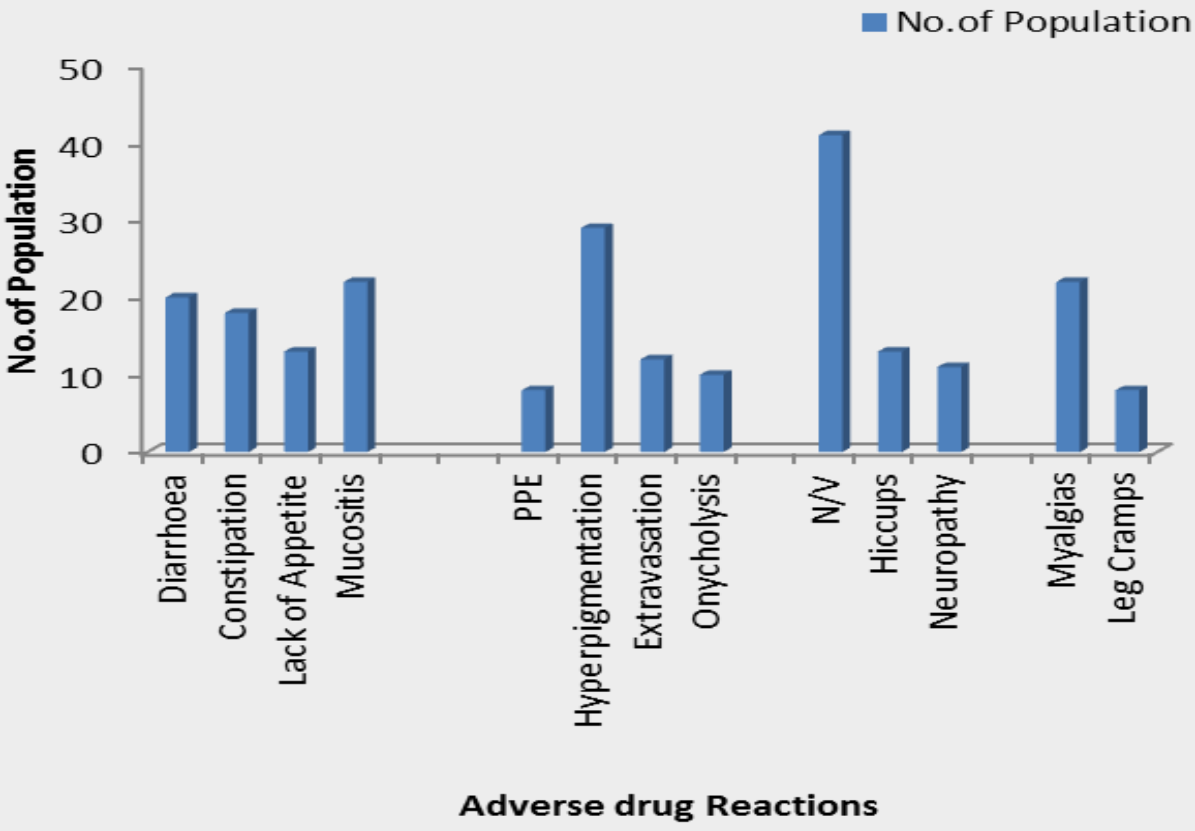

TABLE 8: PATIENT SATISFACTION SCORES ON OVERALL AND SUBSET EVALUATION

Groups	Control (n=60)	Intervention (n=59)
Subset 1	4	4.25
Subset 2	2.50	4.19
Subset 3	2.07	3.24
Subset 4	4.15	4.36
Overall	3.04	4.12

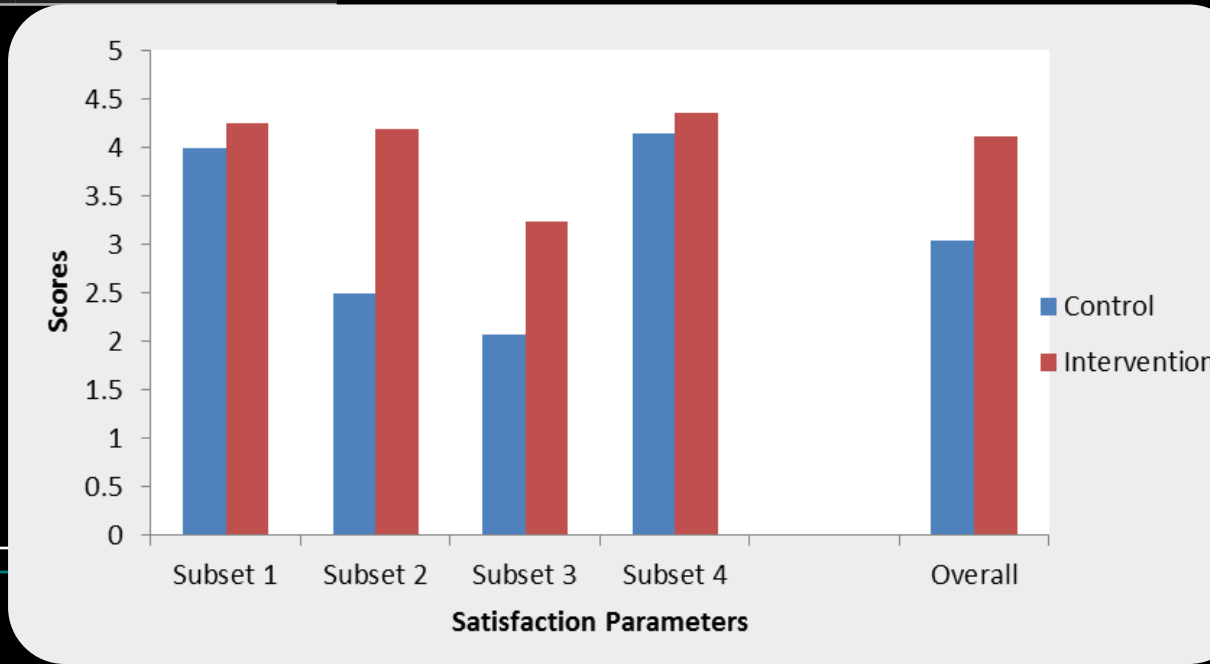

FIGURE 8: SHOWS PATIENT SATISFACTION SCORES ON OVERALL AND SUBSET EVALUATION

TABLE 9 : AGE VERSUS SATISFACTION ASSESSMENT

Age	Variables	Control (n=60)	Intervention (n=59)
Young adults	Cancer treatment	4.17	4.43
	Side effects	2.50	4.29
	Complementary treatment	2.17	2.71
	Information presented	4.33	4.29
	Overall	2.67	4.14
Middle-aged adults	Cancer treatment	3.97	4.38
	Side effects	2.30	4.33
	Complementary treatment	1.87	3.13
	Information presented	4.20	4.46
	Overall	2.97	4.29
Older adults	Cancer treatment	4.00	4.11
	Side effects	2.75	4.04
	Complementary treatment	2.29	3.46
	Information presented	4.04	4.29
	Overall	3.23	3.96

FIGURE 9 (a): SHOWS AGE VERSUS SATISFACTION SCORES IN CONTROL GROUP

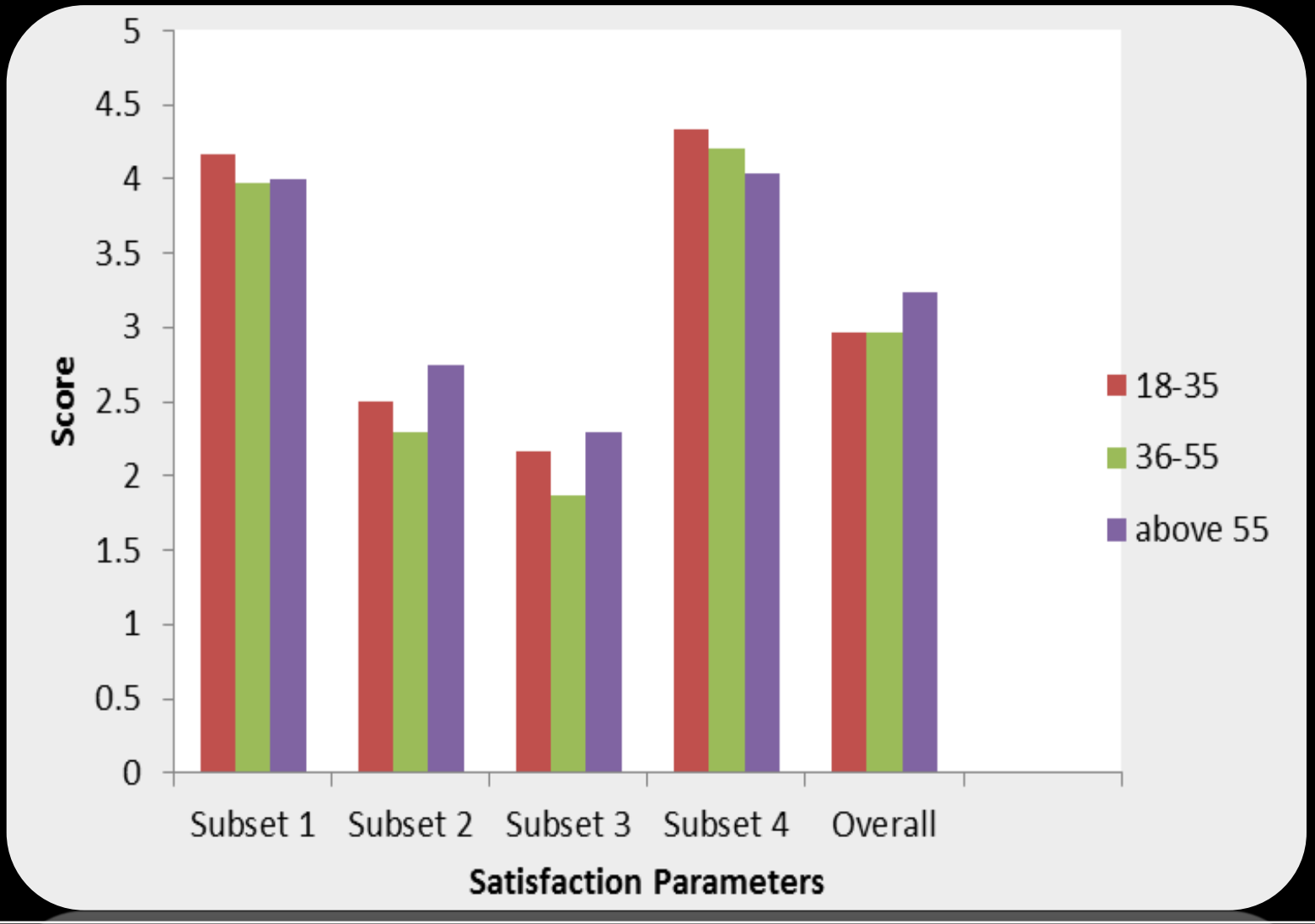

FIGURE 9 (b) : SHOWS AGE VERSUS SATISFACTION SCORES IN INTERVENTION GROUP

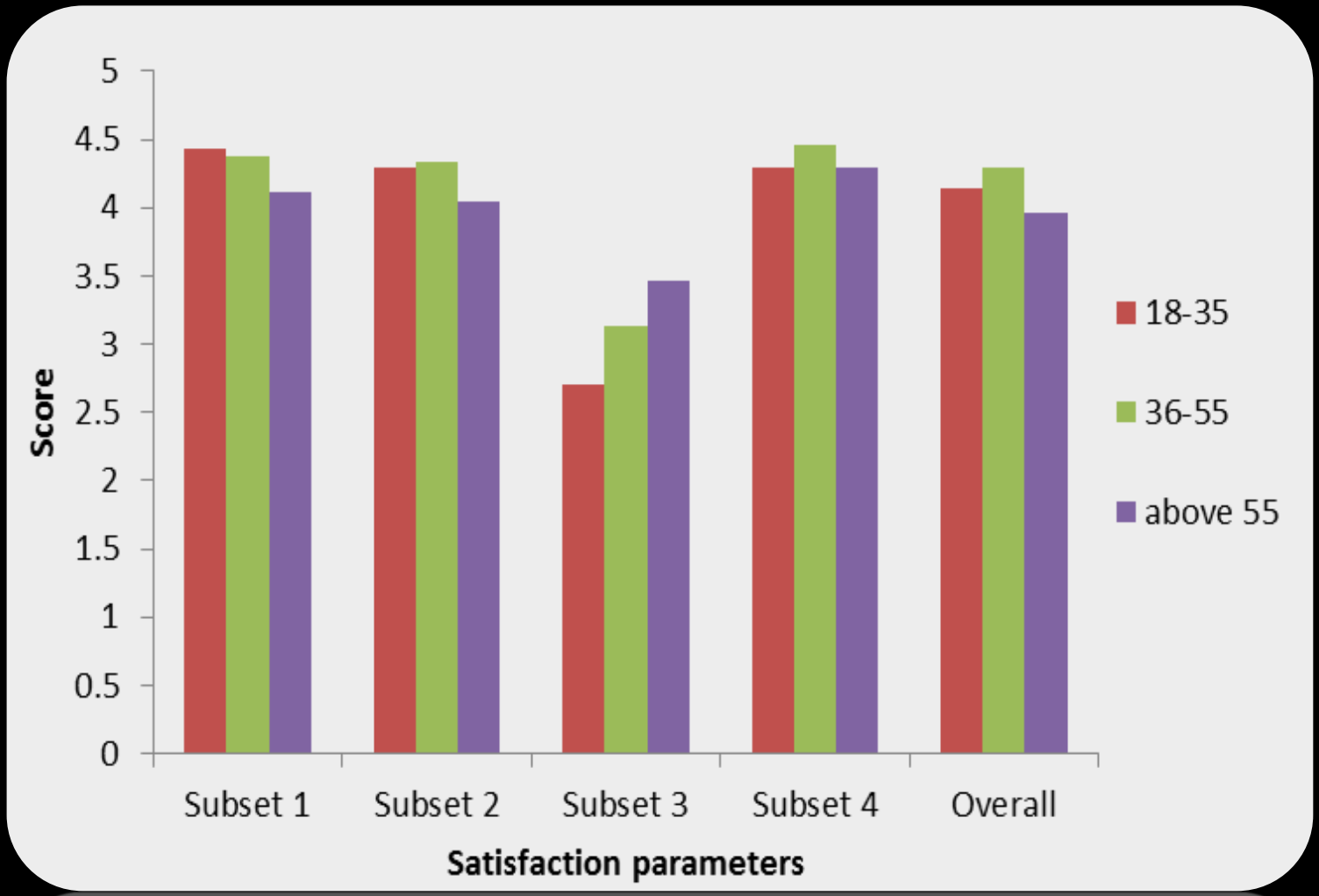

TABLE 10 .EDUCATION VERSUS SATISFACTION ASSESSMENT

Education	Variables	Control (n=60)	Intervention (n=59)
Educated	Cancer treatment	3.96	4.24
	Side effects	2.50	4.14
	Complementary treatment	1.88	2.86
	Information presented	4.23	4.43
	Overall	3.08	4.19
Not Educated	Cancer treatment	4.03	4.26
	Side effects	2.50	4.21
	Complementary treatment	2.21	3.45
	Information presented	4.09	4.32
	Overall	3.09	4.08

FIGUR 10 (a): EDUCATION VERSUS SATISFACTION SCORE IN CONTROL GROUP

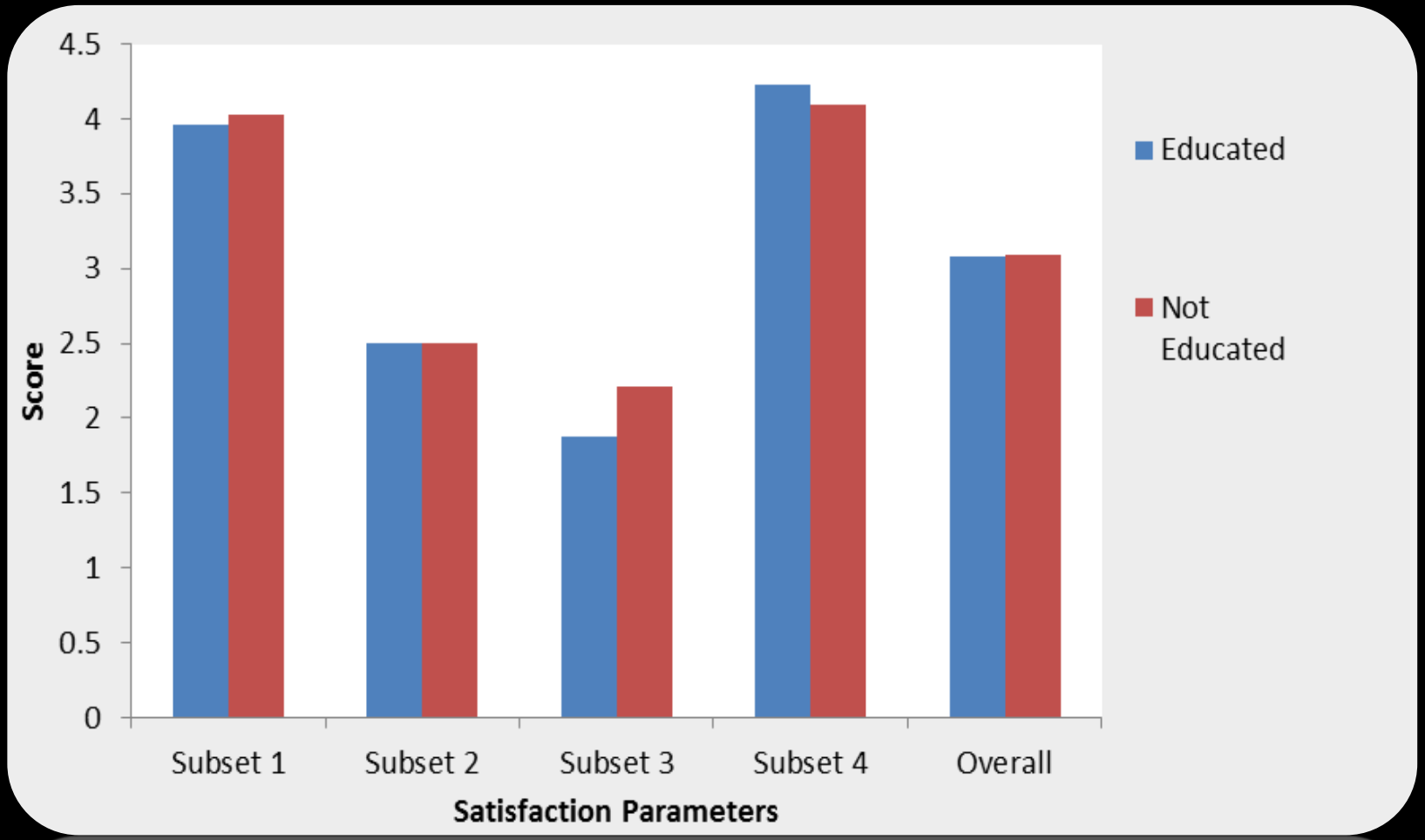

FIGURE 10(b): SHOWS THE EDUCATION VERSUS SATISFACTION SCORES IN INTERVENTION GROUP

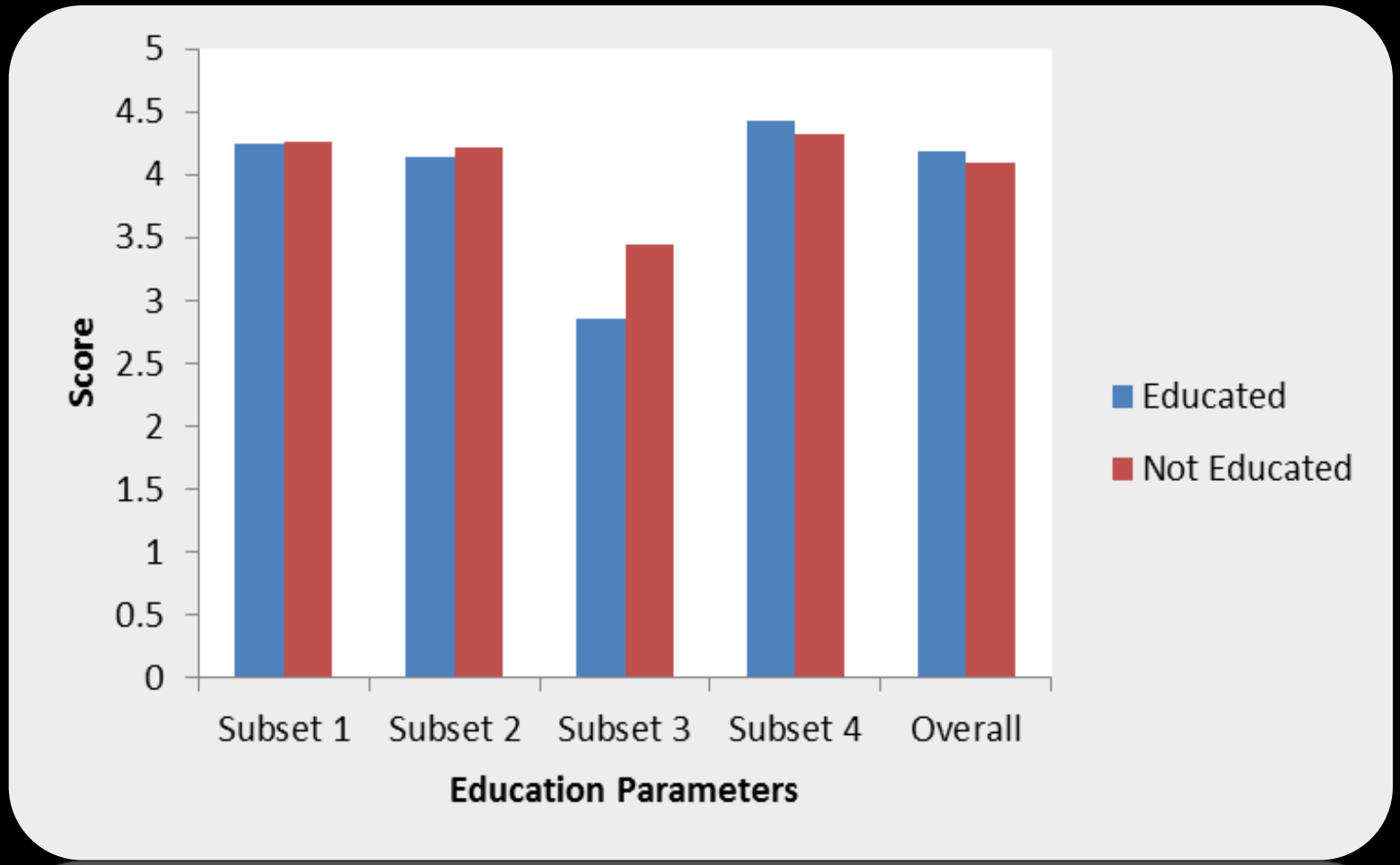

TABLE 11: SUBSET AND OVERALL ANALYSIS OF SATISFACTION IN CONTROL AND INTERVENTION GROUP

One way ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Ca treatment	Between Groups	1.923	1	1.923	7.214	.008
	Within Groups	31.186	117	.267		
	Total	33.109	118			
Side effects	Between Groups	84.605	1	84.605	190.549	.000
	Within Groups	51.949	117	.444		
	Total	136.555	118			
Complementary	Between Groups	40.765	1	40.765	40.279	.000
	Within Groups	118.411	117	1.012		
	Total	159.176	118			
Information source	Between Groups	1.262	1	1.262	5.431	.021
	Within Groups	27.175	117	.232		
	Total	28.437	118			
Overall	Between Groups	34.504	1	34.504	64.783	.000
	Within Groups	62.315	117	.533		
	Total	96.819	118			

TABLE 12: ASSESSMENT OF RELATIONSHIP OF AGE AND EDUCATION ON PERCEIVED SATISFACTION

a) **Between Subject Factors**

		Value Label	N
Group	1	Control	60
	2	Intervention	59
Age	1	young adults	13
	2	middle-aged adults	54
	3	older adults	52
Education	1	Not educated	72
	2	Educated	47

b) **Multivariate Analysis (MANOVA)**

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Group * Age	Ca treatment	.932	2	.466	1.813	.168
	Side effects	4.385	2	2.192	5.239	.007
	Complementary	1.651	2	.826	.845	.432
	Information source	.027	2	.014	.057	.945
	Overall	4.285	2	2.143	4.088	.019
Group * Education	Ca treatment	.584	1	.584	2.269	.135
	Side effects	2.307	1	2.307	5.513	.021
	Complementary	.486	1	.486	.497	.482
	Information source	.078	1	.078	.323	.571
	Overall	1.619	1	1.619	3.089	.082

6. DISCUSSION

The prospective interventional study was aimed to assess the patient satisfaction on treatment education upon establishment of pharmaceutical care in oncology.

- Cancers are mainly occurring in the age group of 40-60 years, showing 67 patients in this age group followed by 35 patients in the age group of 60-70 years.
- These results obtained in our study was similar to the results obtained by the study conducted by Ganjewala D (2009) in Madhya Pradesh, in which 51% patients fell in the age group of 50-75%, followed by 41% in age group of 25-50 years and 8% in 0-25 years[8].

- Based on our study, the predominance of patients receiving chemotherapy were men (58.82%, N=70) and female cancer patients were only 41.17%. These results reciprocates the result of study conducted by Zekb A et al.,(2008) in Pakistan during the period of 2000-2004, in which out of 1105 cancer patients, 62% were males and 38% were females[9].

- In a study conducted by Matsuyama RK, et al., showed, out of 138 patients, 36 patients were diagnosed with lung cancer, 33 diagnosed as gastro intestinal and the follower by 32 patients with breast cancer. Whereas in our study out of 119 patients,35 patients were diagnosed with breast cancer followed by 22 with gastro intestinal and 17 with lung cancer[10].

- Level of education plays a role in the understanding of information given while counseling. Those with comparatively low level of education showed a higher demand for information on chemotherapy.

- Among 119 patients of the study, 53 % had completed a school level of education, 39 % completed college level education and only 8% were found to be illiterate.

- These results are similar to the study conducted by Matsuyama RK et al. Over half the sample had completed education above high school while 25% had attained a high school diploma or General Education Diploma (GED) and 23% had less than high school[10].

Overall satisfaction measures all the 15 questions in the questionnaire. In control group, the average mean score was 3.04 and in intervention group it improved to 4.12. (p=0.000). The significant increase in the intervention group is suggestive to highlight the positive influence of pharmaceutical care. The scores could be maximized in several areas by considering the information needs and demands of the patients.

The satisfaction scores has sinificanty improved to 4.25, 4.19, 3.24, 4.36 and 4.12 in the intervention group for the respective subsets and overall value .

- In a study conducted in Germany by Liekwig A et al., (2012), the patient received education on cancer treatment as part of pharmaceutical care implementation. The study population was divided into control group (n= 48) as those receiving conventional chemotherapy education and pharmaceutical care intervention group (n=50).

- The global satisfaction score and the subscale analysis showed a statistically significant improvement from control group to intervention group except for the complementary treatment options. Median scores of 4.0,4.0,4.0, 3.9 in control group was improved to 4.4,4.3,4.2,4.5,4.4 in intervention group for subscale analysis of satisfaction[11].

Age and education wise satisfaction assessment

- Overall satisfaction among the three age groups in control population is 2.67, 2.97 and 3.23 in young adults, middle-aged adults and older adults respectively. The satisfaction scores given by the intervention population is improved to 4.14, 4.29 and 3.96 by the respective age groups which shows the improved satisfaction level is statistically significant (p=0.019).

- This shows that the counselling given was well satisfied by the intervention population in all the three age groups. Subset 2 also showed significant improvement(p=0.007).
- As per the study conducted by **Walker et.al**., patient satisfaction was predicted by younger age[12.]

- Education of patient has also got an impact on satisfactory scores. In a study conducted by Rahmqvist et.al., in Sweden, patient characteristics and quality dimensions related to patient satisfaction was examined and the results showed that those with less education are more satisfied than the patients with more education whereas is in our study educated and not educated groups showed almost similar satisfaction and sidnificant satisfaction is observed about information given about side effect[13.]

- The information sources used by the patients were examined to know the recognition of pharmacist among the population. In both the groups, oncologist was the main resource person.
- Control group patients didn't considered pharmacist as their information source at all shows that similar pharmaceutical services are not provided to patients previously. 41% of pharmaceutical care intervention group found pharmacist also as their information source in our study.
- Similar way, **Liekweg et.al**, conducted a sequential study in Germany to develop a questionnaire measuring patient satisfaction with treatment education for cancer patients.. Pharmacist seemed to play a minor role as source of information (2.2%)in the pre-test and (24%)main test groups[7].

Obstacles

- Awareness on pharmaceutical services among patients and other health care professionals is very low.
- Direct patient-staff relationship
- Lack of knowledge on psychological support
- Lack of communicating provision with the healthcare professionals
- Lack of professionals

CONCLUSION

- Patients seem to show good response with satisfaction towards patient counselling upon pharmaceutical care in oncology.
- Patient satisfaction is a beneficial clinical outcome to improve patients' quality of life.
- We found significant progress with higher satisfaction upon knowledge on side effects and its management by the establishment of pharmaceutical care.
- This knowledge will improve patient compliance and enables then to cope up with further treatment modalities.

- Identifying the pharmacist by the patient is the first step of progress from which pharmaceutical care services can grow further.
- At present, the profession of pharmacist in a clinical set up is at a very low level and scarcely identified by patient.
- Similar studies concentrating on various areas of pharmaceutical care can improve the profession as well as patients' outcome.

RECOMMENDATIONS

1. Awareness on importance of pharmaceutical services among patients and other healthcare providers should be created.
2. Relationship between a pharmacist and a patient should develop to assure them that they can also contribute to their beneficial health status.
3. Practical learning methods for patient counselling should include emotional and psychological aspects also.
4. Responsibilities of pharmacist are more and currently not in an authentic position. This situation must change and should start involve in direct plan for patient.

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