Quality Ambulatory Oncology Nursing Practice For Chemotherapeutic patients

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Abstract: Ambulatory health care services have been described as the main stay of cancer care. As the need for ambulatory services continues to escalate, so will the demands on the oncology nurse.The scope of ambulatory oncology nurses responsibilities is to provide an appropriate level of cancer care to meet the need of patients for safe, effective care that also is cost efficient. The aim of the study were to quality improve ambulatory oncology nursing staff knowledge, clinical psychomotor skills and practice activities for dealing with ambulatory oncology patients receiving chemotherapy. The study was conducted at Ambulatory Oncology Department of Tanta Cancer Institute affiliated to Ministry of Health, Gharbia Governorate. Sample included all available (44) nurses and (50) ambulatory oncology patients. The collection of data was achieved by ambulatory oncology nursing checklist, knowledge test, patient education need assessment sheet and development of an education program about ambulatory oncology nursing knowledge and practice activities for dealing with oncology patients undergoing chemotherapy. The study results revealed that a statistical significant improvement found for the knowledge and practice of studied nurses immediate post and three months post program than pre-program. The study recommended that; it is important to conduct in-service training program for ambulatory oncology nurses for dealing with oncology patient undergoing chemotherapy, periodical evaluation and making feedback and enforcement of knowledge and practice.

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1. Introduction

Changing health care economics, advances in technology, and consumer preference have escalated the growth of ambulatory oncology services and expand the ambulatory oncology nurses role.Currently 80 -90% of the cancer care is delivered in ambulatory oncology setting. More than 11 million people are diagnosed with cancer every year worldwide. It is estimated that there will be 16 million new cases annually by the year 2020 worldwide [(1)].Cancer is a disease with a profound effect on every aspect of life whether physical, physiological, social or spiritual.

Cancer is the second leading cause of death after heart disease in United States. It is the primary cause of death in women between ages of 35 and 74[(2)]. In Egypt, the mean age of cancer patients is 48 years, two decades younger than the mean age of American cancer patients [(3)]. The major goal cancer therapy is to treat patients effectively with appropriate therapy to prevent further metastasis, relieve symptoms and maintain a high quality of life as long as possible[(4)].Multiple modalities are often employed in cancer treatment (surgery, chemotherapy, radiotherapy and biotherapy) [(5)].

Chemotherapy is the primary method of treatment for several forms of cancer. Additionally it is the treatment of choice for malignancies of the hematopoitic system and for solid tumor that have metastized regionally or distally [(6)]. The goals of chemotherapy are cure, control and palliation. Chemotherapy can be given to oncology patients through different ways, depending on the drugs to be administrated [(7)]. Chemotherapy is a major part of oncology patient treatment and requires special nursing care during it's preparation, administration, storing, disposing of supplies and unused chemotherapy [(8)] Chemotherapy administration is a significant aspect of the ambulatory oncology nursing. It carries with it great responsibilities for the nurse in terms of patient care, patient and family communication and education, and collaboration and coordination between multiple departments and a heightened potential for harm, not only to the patient, but also to the nurse and health care institution.

Quality of care of patient receiving chemotherapy is a challenging in oncology nursing specialty. As discussed by ***Potter and Perry (1997)[(9)], Hunter (1995)[(10)],*** the goals of ambulatory oncology department include the following: focus on health promotion and health education, disease prevention, chronic disease management and support for self-care and caregiver, give emotional, social, physical and spiritual support to patient who have a terminal

illness, maintain and develop client and family's health, promotion of the study and research regarding causes, prevention and treatment of cancer disease, provide effective and efficient management of ambulatory care improve and reduce the length of stay and complication, and promotion of diagnostic and consultative services.

Porter (1995)[11] the functions of ambulatory oncology department are: to provide for the community a major source of specialist diagnostic medical opinion where the knowledge, skills and resources of the specialist are backed up by the resources of the hospitals, provision of special treatment for which facilities may not exist elsewhere, provide intensive counseling for both individual and group, specialized medical care, provide follow-up care to patient after hospitalization and management of cancer on an ambulatory basis, as a center of the referral network for specialized hospital and physician services, a source of support for the group practice by making accessible to him some of the technical diagnostic services such as radiology and pathology, and the ambulatory oncology department provide minor surgical procedures for a client who does not remain overnight in a hospitals. To promote quality nursing care for patient undergoing chemotherapy, there is a demand for knowledge, practice and personal skills from nursing staff and others who are involved in patient care. However, quality of nursing performance in ambulatory oncology department require nurses to have enough background knowledge on the disease, frequent training for chemotherapy preparation, administration and how to deal with side effects and complication [12].

The role of the ambulatory oncology nurse is pivotal to ensure quality health care [13]. The essential components of a comprehensive evaluation for cancer patient include complete history taken review of symptoms and physical examination, laboratory tests, imaging studies and biopsy to determine the classification and stages of the disease [14,15]. Today's competitive market focuses attention on quality nursing care that meet or exceed customer expectations. Oncology nurses in ambulatory care settings needs to keep abreast of all scientific and technological advances and discuss the issues raised by them in the context of providing quality care to oncology patients in a cost contianment environment. ***Verran (1981)*** [16] identify domains of areas of nursing practice to include: counseling, health maintenance care, primary care, patients and families education, therapeutic care, normative care, communication and documentation. Counseling seeks to encourage the client to formulate his / her own awareness of his/ her own way. It is the process that involves the personnel interactive relationship [17]. It aims at helping those counseled to understand themselves and other to adjust to the environment, and to develop skills for finding the right solution for the problems. Additionally, it helps individuals develop positive attitudes and set themselves realistic goals[18].

Nursing is a caring practice in which nurses foster heath promotion maintenance, or restoration of function [19]. Since cancer and is treatment impact the entire patient including physical psychological, social and spiritual well being, quality of life information gathered by nurses can provide valuable nursing assessment data [20]. While primary care is the provision of integrated, accessible health care services by nurses who are accountable for addressing a large majority of personnel health care needs, develop a sustained partnership with patients and practicing in the context of family and community [21].

Patient and family education plays a key role in the patient's successful, uncomplicated recuperation with proper instruction, the family and patient may be informed about the physical needs and involved both before and after a particular procedures, furthermore, they may realize their need for more information, so it is the nurse's role not only to educate but also to objectively assess their learning needs. However, patient education is "the process of influencing patient behavior, producing changes in knowledge, attitudes and skills required to maintain and improve health [22]. Also, nurses have important role in technical procedures which involving; assist with procedures, prepare client physically for procedures, chaperon during procedures, inform client about treatment, witness signing consent forms, administer oral or intramuscular medications and collect specimens [23].

Normative care is the delivery of service received by clinic patients and significant others involving; traditional entry and exit procedures, provision of assistance in preparation for and during primary care visit, general direction to another care provider, communication, coordination and general assistance of the other care worker[24]. Patient and family interaction are an important dynamic and must be used to prepare for the initiation of cancer treatment. Preparation before the treatment is a vital to the overall success or lack of prescribed therapy. Patient and family assessment and education are critical and must be geared toward the individual needs of the patient[25].

Nursing documentation that describes the care provided and the patient's response is an important component of the nurse's role [26]. However, documentation is defined as written evidence of the

interaction between and among health professionals, patients and their families and health care organizations, the administration of tests, procedures, treatment and patient education and the results and patient's responses to them [27]. The scope of ambulatory oncology nursing is diverse, reflecting the needs of individuals of different ages, with different forms of disease, receiving different treatments. So a critical responsibilities of ambulatory oncology nursing is to provide an appropriate level of cancer care to meet the needs of patients for safe, effective care that also is cost efficient[12,13].

2. Material and Methods

Setting

The study was conducted at Ambulatory Oncology Department of Tanta Cancer Institute affiliated to Ministry of Health, Gharbia Governorate.

Subject of the study

The subject included in the study was two groups:

1- All available (44) working nursing staff at ambulatory oncology department.
2- Available subject (50) of ambulatory oncology adult patients undergoing chemotherapy treatment and admitted to the previously mentioned setting.

Tools

To achieve the aim of the present study four tools were used:

1- Ambulatory oncology nursing checklist.

This tool was developed by researcher using a tested taxonomy generated by ***Verran (1981)*** [16], and expanded by ***Tighe et al. (1985)*** [28] and ***Hunter et al. (1995)*** [29] and ***AACN (2003)*** [30]. The checklist was used to assess quality of current nursing practice activities for dealing with ambulatory oncology receiving chemotherapy. It covered eight domains of responsibility areas of the ambulatory oncology nursing care. The domains demonstrated as follows:

1-***Patient counseling domain*** include activities in which the ambulatory oncology nurse provide the professional guidance and support to oncology patients in regard to general reassurance on health status and / or disease state and support during clinic visit. This area included 10 items.

2-Health care maintenance domain include activities in which ambulatory oncology nurse responsibility directed toward continuing a state of patient wellness including follow up monitoring of status and instruction on general health care needs.

3- Primary care domain include activities related to the responsibility of ambulatory oncology nurse for physical assessment and follow up of medical and broader health care needs including general screening for specialized referral, physical diagnosis and treatment.

4-Patient education domain includes activities in which the ambulatory oncology nurses teach patients as well as patient's family regarding specific health or illness self-care.

5-Therapeutic care domain perhaps the most important responsibility of ambulatory oncology nurse is to deliver direct physical care to oncology patient following the direction of a health care team member and the observation and measurement of the results of that care or the care of other.

6-Normative care domain include activities related to the delivery of services received by most clinic patients involving traditional entry and exit procedure and general direction or transportation to another care provider.

7-Communication domain includes activities related to nursing responsibility associated with the provision of information to and interaction with other health professionals regarding specific patient centered issues.

8-Documentation domain includes activities related to the role of ambulatory oncology nurse in the provision of written factual material for the purpose of authenatication and / or supportive evidence of health care.

Scoring system

The scales responses were on 3 points, scaling of not done = 0, done incorrectly =1, and done correctly = 2. Scoring represent varying levels of nurses performance ranging from poor scores to good scores, poor = < 65% of care performed, moderate = < 85% of care performed and good = at least 85% of care performed.

2- Knowledge test (Pre/ post format)

It was developed by the researcher on Arabic language after reviewing of related literature to collect data from ambulatory oncology nurses for the purpose of assessing their knowledge about chemotherapy administration, it comprised the following:

a- Nursing staff characteristics include 11 questions on age, level of education, martial status, years of experience, and years of experience at ambulatory oncology department, position and previous conference attendance about chemotherapy.
b- Questions on oncology nursing aspects of oncology nursing care of chemotherapeutic patients. It include (68) questions distributed as the following:
   - Questions about cancer in adult, pathophysiology, factors contribute to

cancer, warning signs and symptoms and different treatment modalities.

- Questions about chemotherapy treatment (aim of chemotherapy administration technique of administration side - effect and complication, safe handling, venous access devices and infusion pumps.

c- Question about eight responsibility areas of ambulatory oncology nursing care which include patient counseling, health care maintenance, primary health care, patient education, therapeutic care, normative care, communication, and documentation.

Scoring system

Each item of the questionnaire was allotted a score of "I" if the answer is "correct" and a score of "zero" if the answer is "wrong". Scores represent varying levels of ambulatory oncology nurses knowledge ranging from poor (< 65%), moderate (< 85%) and good (> 85%).

3- Patient education need assessment sheet.

It was developed by the researcher in Arabic language to gather information about:

a) Patient socio demographic data as age, sex, educational level, occupation, marital states.
b) Patient past and present health history including present diagnosis, recurrence of cancer, cancer surgical history, present chemotherapy schedule.
c) Question about knowledge on warning signs of cancer, risk factors of cancer, chemotherapy time schedule, side-effects of chemotherapy, management of chemotherapy side- effects and follow up schedule.
d) The scoring responses were on 2 point scaling. Each answer were scored as yes = 1 or no = 0.

4- Education training program for nurses.

The development of this program were based on the result of the observation of nurses on checklist (tool 1), nurses knowledge assessment (tool 2), the patient education needs assessment (tool 3), and the recommendation of relevant studies. The program were aim at quality improve ambulatory oncology nursing staff knowledge, clinical psychomotor skills and nursing practice activities for dealing with ambulatory oncology patient receiving chemotherapy. The program was included content on:

a) Knowledge on cancer disease, factors contribute to cancer, different type of cancer treatment, chemotherapy treatment (administration technique, method for safe handling, side-effects of treatment, side-effects management) complication and preventive measures.
b) Knowledge and techniques needed to perform counseling, health maintenance care, primary health care, health education, therapeutic care, normative care, communication and documentation. The program included
   1- Program objectives.
   2- Program contents information.
   3- Teaching – learning strategies of the program.

Method

1- An official letter was sent for the responsible authorities at the ambulatory oncology department of Tanta Cancer Institute, Gharbia Governorate to obtain the approval and assistance in data collection.
2- Tools of study were submitted to five experts in nursing administration and medical- surgical nursing to get their suggestion about content validity and applicability of the tools.
3- Opinions of the experts on tools of study were analyzed and determined the following;
   -Tool (1) faces validity 95.28%, content validity index (CVI) 100%, and internal consistency reliability 0.786
   -Tool (2) faces validity 90.12%, CVI 96.67 % and internal consistency reliability 0.887
   -Tool (3) faces validity 97.58%, content validity index 94.7%, and internal consistency reliability 0.739. Based on the experts` responses, the researcher takes the items agreed on and works with it.
4- Nurse knowledge about clinical activities for caring of cancer patient receiving chemotherapy were obtained using nurse's knowledge test (tool 2).
5- Data from cancer patients were collected by tool (3) during their attendance to the ambulatory oncology department
6- Monitoring of staff nurses actual nursing practice activities in caring for cancer patients receiving chemotherapy were done by the researcher observation pre and post the program in the morning, and afternoon shifts using tool (1). The researcher observed 2-3 nurses / shift.
7- Data were collected in seven months, period from 5th May 2009 to 16 th November 2009.
8- An educational program for ambulatory oncology nurses on ambulatory caring knowledge and practice was developed and written in Arabic language and implemented by the researcher. Ambulatory oncology nurses subjects were 44 divided into four groups. Each group was composed of 11 nurses. The program was repeated four times to cover the four groups. The duration of each program is five days, one session two hours each day. It was preferable to

start the session at 12 P.M -2 P.M as it is the most suitable time for nurses after finishing with the busy morning hours and evaluation at the end of sessions.

3. Results

Table (1) shows demographic characteristics of cancer patients undergoing chemotherapy. The age of the subjects ranged from 20 to 60 years with mean age 51.64 ± 9.38. Patients (8%) their age range was 40 ≥ - 60 years. The age group 20 - < 40 years represent 14% of the subjects. Male patients (56%) and 44% were females. Married patients were 84%, while an equal percentage (8%) were either single or widowed. Regarding to educational level, 50%of patients were illiterate and 4% university education. The rest 24%, 22% and 4%, were primary, preparatory, secondary and university education respectively. Patients (66%) had no work. More than half (54%) of subjects lived in rural area and the rest in urban area.

Table (2) shows patients` characteristics of type of treatment, time since treatment started and treatment cycle. Majority (82%) of subjects received chemotherapy, while 18% received both chemotherapy and radiotherapy. Patients 6% started treatment since 1 - < 4 months and 16% since 4 - < 6 months. More than half (54%) of cancer patients were at fourth cycle of treatment, 30% on fifth cycle, 20% on third cycle and 16% on sixth cycle.

Table (3) shows cancer patients` characteristics of knowledge on risk factors, warning signs and symptoms, medication management, side- effects and follow up. About two thirds (60%) of patients did not know the cancer risk factors, most of them (80%) had incorrect knowledge on warning signs and symptoms of cancer. Majority (80%) of the subjects had no knowledge on medication management (frequency and duration). Most of the patients (90%) had no information on follow –up schedule but have knowledge on side-effects of chemotherapy.

Table (4) Illustrates nursing staff characteristics including their age, marital status educational level, years of experience, experience at ambulatory oncology department as well as their type of work at this department. Nurses (48.7%), (45.5%) were in the age group 30-50 years, and < 30 years respectively. While only 6.8% of nurses were in the age > 50 years. Nurse's age ranged from 21-56 years with mean age 2.95 ± 8.57. Nursing staff (77.3%) were married, (18.2%) single and (4.5%) widowed.

The education of half of nursing staff were diploma of the nursing secondary school, while 47.7% diploma of the technical institute with specialty in nursing science. Only one nurse (2.3%) had B.Sc. degree.

Equal percentage (43.2%) of nursing staff had 1-5 or > 10 years of experience. Nurses who had 5-10 years of experience consisted 13.6% of nursing staff. The mean years of experience were 10.50 ±9.26 with range 1-35 years. Nurses 47.7% had 1-5 years of experience at ambulatory oncology department, while (31.8%) had 5-10 and (20.5%) had > 10 years of experiences at ambulatory oncology department. All the nursing staff was working in chemotherapy out patient clinic.

Table (5) nurses` characteristics of attendance of training program, and competence evaluation. This table shows that 93% of nurses did not receive any training program related to chemotherapy. Only (6.8%) attended general training program inside the ambulatory oncology department. None of the nurses were receive competence evaluation either previous or regular.

Table (6) shows mean score of nurse's knowledge about care of patient undergoing chemotherapy pre, post and 3 months post program. The knowledge on chemotherapy showed low (1.12± 2.0) mean knowledge for nurses which increase significantly (p=0.0001) to be 8.11± 0.81 post program and 5.0± 0.94 three months post program. The table shows statistical (P = 0.001) significant increases in nurses knowledge about all items of care of patient undergoing chemotherapy (cancer in adult, side effect of chemotherapy, complication of chemotherapy and nursing management) post,and 3 months post program.

The figure illustrates that 65.9% of nurses had poor knowledge pre-program about cancer in adult compared to post program and 3 months post program none still have poor level.There was statistically significant improvement of nurses ` level of knowledge on cancer in adult post and 3 months post program than pre-program (p= 0.0001)

The figure shows that 34.1% of nurses had poor knowledge pre-program about chemotherapy compared to none still have poor level post and 3 months post program none. There was statistically significant improvement of nurses` level of knowledge on chemotherapy post and 3 months post program than pre-program (p= 0.0002)

The figure illustrates that 47.7% of nurses had poor knowledge pre-program about management of chemotherapy side effects compared to 90.9% and 81.8% post program and 3 months post program. There was statistically significant improvement of nurses ` level of knowledge about management of chemotherapy side effects post and 3 months post program than pre-program (p= 0.0002).

The figure illustrates that 9.1% of nurses had poor knowledge pre-program about management of chemotherapy complication compared to none of

nurses still have poor level post program and 3 months post program.There was statistically significant improvement of nurses ` level of knowledge on management of complication of chemotherapy post and 3 months post program than pre-program (p=0.0002).

The figure shows that 20.5 % of nurses had poor and 59.1 had moderate level knowledge pre-program about management of patient undergoing chemotherapy compared to none of nurses still have poor level post program and 3 months post program. There was statistically significant improvement of nurses level of knowledge about management of patient undergoing chemotherapy post and three months post program than pre-program (p= 0.0001).

Table (7) Illustrates level of nurses` practice on nursing management of patient undergoing chemotherapy pre, post and 3months post program. pre-program 27.3 % of nurses their level of practice was poor, 52.3% moderate and 20.5% good.But post program none of nurses still have poor practice, still few (2.3%, 9.1%) nurses showed moderate practice about nursing management of patient undergoing chemotherapy post and three months post program respectively. There was statistical significant improvement (p=0.0001) in level of nurses practice (97.9%,90.9%) good score post and three months post program respectively.

The figure illustrates the level of nurses` practices on patient counseling of patient undergoing chemotherapy pre, post and 3months post program.None of the nurses have good level of practice on patient counseling pre-program compared to 88.4% post program, which decreased to 70.5% in the 3 months post program. There was statistically significant improvement of nurses ` level of practice on counseling of patient undergoing chemotherapy post and 3 months post program than pre-program (p= 0.0001).

The figure illustrates the level of nurses` practices on health care maintenance pre, post and 3months post program. Nurses 65.9% had poor level of practice on health care maintenance of patient undergoing chemotherapy in pre-program post program (2.3%), and 3 months post program (4.5%). There was statistically significant improvement of nurses ` level of practice on health care maintenance post and 3 months post program than pre-program (p=0.0001).

The figure illustrates the level of nurses` practices on primary care of patient undergoing chemotherapy pre, post and 3months post program. Nurses (79.5 %) had poor level of practice on primary care of patient undergoing chemotherapy in pre-program compared to 2.3% and 6.8% and three months post program. There was statistically significant improvement of nurses ` level of practice on primary care of patient undergoing chemotherapy post and 3 months post program than pre-program (p=0.0001).

The figure illustrates the level of nurses` practices on education of patient undergoing chemotherapy pre, post and 3months post program. Nurses 25% had poor level of practice on education of patient undergoing chemotherapy pre-program 2.3% post program and 4.5% three months post program. There was statistically significant improvement of nurses ` level of practice on education of patient undergoing chemotherapy post and 3 months post program than pre-program (p= 0.0001)

The figure reveals the level of nurses practice on normative care pre, post and 3months post program. Nurses (22.7%) have poor level of practice on normative care pre-program compared to none of nurses still had poor practice post and three months post program. There was statistically significant improvement of nurses ` level of practice on normative care post and 3 months post program than pre-program (p= 0.0001).

The figure shows the level of nurses` practice on communication pre, post and 3months post program. Nurses 68.2% had poor level of practice on communication pre-program, 2.3% post program and 4.5% three months post program. There was statistically significant improvement of nurses ` level of practice on communication post and 3 months post program than pre-program (p= 0.0002).

The figure shows the level of nurses` practice on documentation pre, post and 3months post program. Nurses 74.5% had poor practice on documentation pre-program, 2.3% post program and 4.5% months post program**.**There was statistically significant improvement of nurses ` level of practice on documentation post and 3 months post program than pre-program (p= 0.0001)

Table (8) reflects the correlation between nurses` knowledge and practices on nurse's knowledge and practices on nursing care of patients undergoing chemotherapy. Positive correlation was detected between nurse's knowledge and practice pre, post and three months post program. Nurses displaying more knowledge had a good practice pre, post and three months post program (P = 0.000, 0.002, 0.001). On the other hand, a positive correlation was detected between nurse's practice and their knowledge. Those having good practices of patients care are holding a good knowledge about nursing care of patients undergoing chemotherapy.

Table (1) Demographic characteristics of cancer patients undergoing chemotherapy.

Variables	Patients (n = 50)	
	N	%
Age		
20-	7	14.0
40-	33	66.0
≥ 60	10	20.0
Range	20-60	
Mean ± SD	51.64 ± 9.38	
Sex		
Male	28	56.0
Female	22	44.0
Martial status		
Single	4	8.0
Married	42	84
Widowed	4	8.0
Education level		
Illiterate – read & write	25	50.0
Essential & preparatory	12	24.0
Secondary education	11	22.0
University education	2	4.0
Occupation		
Not work	33	66.0
Work	17	34.0
Residence		
Urban	23	46.0
Rural	27	54.0

Table (2) Patients' characteristics of type of treatment, time since treatment started and treatment cycle. N=50

Patients' characteristics	No	%
Type of treatment		
Surgical +Chemotherapy	41	82.0
Surgical + Radiotherapy + Chemotherapy	9	18.0
Time since treatment started		
≤ 2 months	30	60.0
4 months	8	16.0
6 + months	12	24.0
The treatment (chemotherapy) cycle		
3rd cycle	10	20.0
4th cycle	17	34.0
5th cycle	15	30.0
6th cycle	8	16.0

Table (3) Cancer patients characteristics of knowledge on risk factors, warring signs and symptoms of cancer, medication management, possible side-effects and follow-up. N=50

Knowledge	Yes		No	
	No	%	No	%
Risk factor	20	40.0	30	60.0
Warning signs and symptoms	10	20.0	40	80.0
Medication management				
Frequency	10	20.0	40	80.0
Duration	10	20.0	40	80.0
Goal	30	60.0	20	40.0
Side effects Had information about chemotherapy possible reaction (Nausea & vomiting, hairloss, fatigue, stomatitis, hot flashes, night sweatting, diarrhea, constipation)	45	90.0	5	10.0
Symptoms that must be reported to the physician or nurse (bone pain, cough, fever, fatigue, mouth sore, lump in any site in the body)	35	70.0	15	30.0
Follow up Follow up every 3 months for 2 years, every 6 months for 2-3 years and once for 3-5 years.	5	10.0	45	90.0

Table (4) Nursing staff characteristics

Characteristics	Nursing staff (n=44)	
	N	%
Age		
<30	20	45.5
30-50	21	47.7
>50	3	6.8
Range	21-56	
Mean±SD	32.95±8.57	
Marital status		
Single	8	18.2
Married	34	77.3
Widow	2	4.5
Educational level		
BScN	1	2.3
Technical institute with specialty in nursing science	21	47.7
Diplom	22	50.0
Years of experience		
1-5	19	43.2
5-10	6	13.6
10+	19	43.2
Range	1-35	
Mean±SD	10.50±9.26	
Years of experience at ambulatory oncology department		
1-5	21	47.7
5-10	14	31.8
10+	9	20.5
Range	1-20	
Mean±SD	6.77±4.79	
Type of work at ambulatory oncology department		
Chemotherapy	44	100.0
Radiotherapy	0	0.0
Chemotherapy & Radiotherapy	0	0.0

Table (5) Nurses characteristics of attendance of training program, and competence evaluation.

Nurses ` characteristics	Nurses (n=44)	
	N	%
Attendance of training program		
General training program		
Yes	3	6.8
No	41	93.2
If yes, where	(n=3)	
Inside outpatient clinic	3	100.0
Ministry of Health	0	0.0
Other	0	0.0
How many?		
Once	3	100.0
Twice	0	0.0
Three times	0	0.0
Special training program in chemotherapy		
Yes	0	0.0
No	44	100.0
Competence evaluation		
Previous		
Yes	0	0.0
No	44	100.0
Regular		
Yes	0	0.0
No	44	100.0

Table (6): Mean score of nurses` knowledge about care of Patient undergoing chemotherapy pre, post and 3 months post-program. n=44

Knowledge items (Ideal range)	Nurses Knowledge score				
	Preprogram	Post-program	3 months post-program	F	*P*
	Range Mean±SD	Range Mean±SD	Range Mean±SD		
Cancer in adult 0-14	0-6 3.91±2.61	1-13 10.57±1.69	1-11 9.91±1.95	160.23*	0.0001*
Chemotherapy 0-10	0-4 1.12±2.0	1-9 8.11±0.81	1-7 5.0±0.94	247.75*	0.0001*
Side effects of chemotherapy 0-13	0-5 3.18±1.45	1-12 11.73±0.87	1-11 7.45±1.17	200.52	0.0001*
Complication of chemotherapy 0-7	0-4 3.55±1.72	1-6 5.55±0.73	1-5 4.41±1.48	110.02*	0.0002*
Nursing management 0-27	0-18 13.55±6.19	1-26 24.84±2.52	1-24 23.57±4.18	187.14*	0.0001*

***Significant**

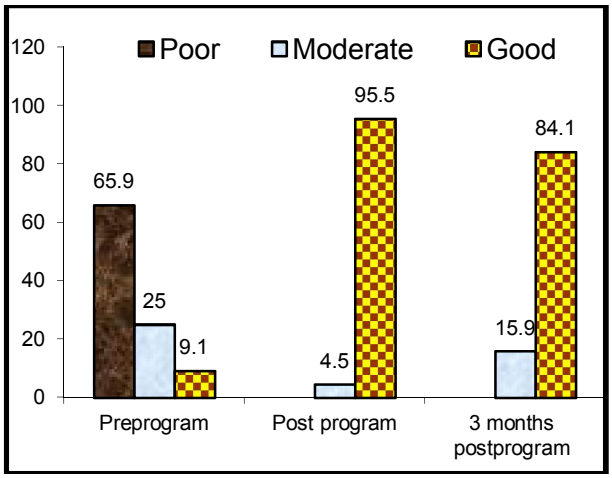

Figure (1): Level of nurses` knowledge about cancer in adult pre, post and 3 months post-program.

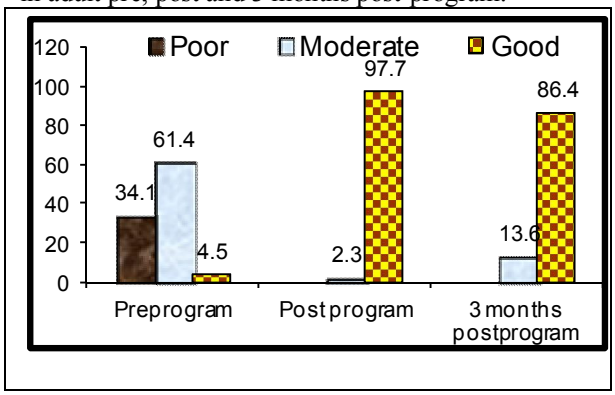

Figure (2): Level of nurses` knowledge on chemotherapy pre, post and 3 months post-program.

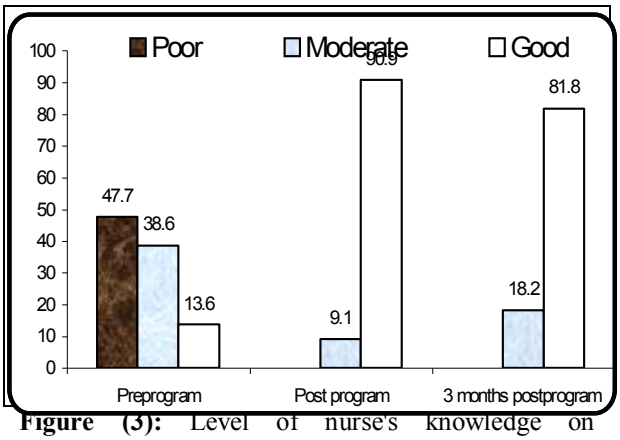

Figure (3): Level of nurse's knowledge on management of chemotherapy side-effects pre, post and 3 months post-program.

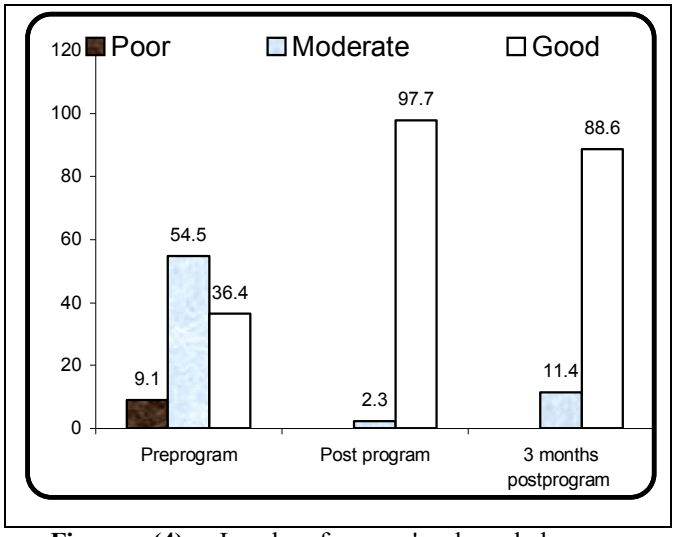

Figure (4): Level of nurse's knowledge on management of complications of chemotherapy pre, post and 3 months post-program**.**

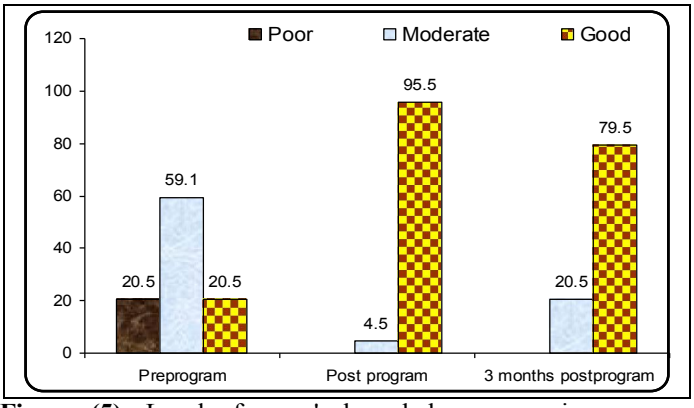

Figure (5): Level of nurse's knowledge on nursing management of patient undergoing chemotherapy pre, post and 3 months post-program**.**

Table (7): Level of nurses` total practices on nursing management of patient undergoing chemotherapy pre, post and 3 months post-program.

Time of assessment	Level of nurses practices on nursing management of patient undergoing chemotherapy (n=44)					
	Poor (0 - <13)		Moderate (13< 26)		Good (26-39)	
	N	%	N	%	N	%
Pre-program	12	27.3	23	52.3	9	20.5
Immediately post-program	0	0.0	1	2.3	43	97.7
Three months post-program	0	0.0	4	9.1	40	90.9
F	88.90*					
P	0.0001*					

*Significant

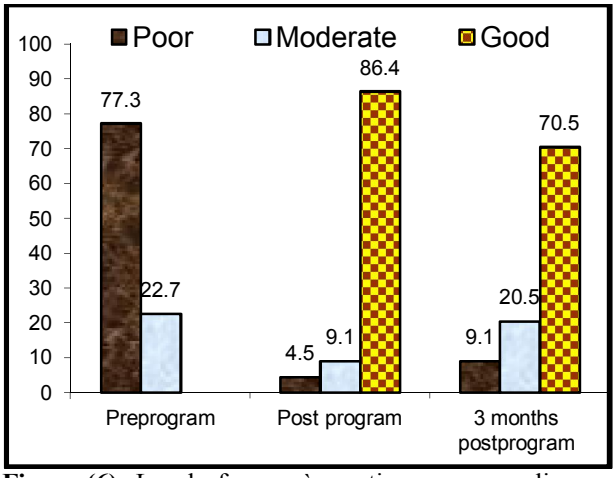

Figure (6): Level of nurses` practices on counseling of patient undergoing chemotherapy pre, post and 3 months post-program.

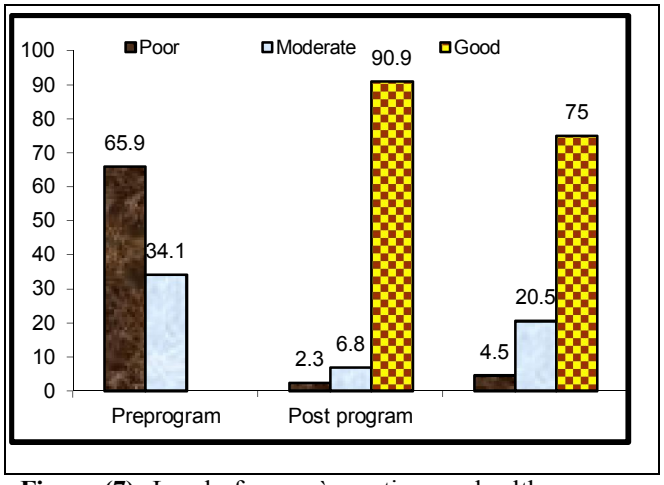

Figure (7): Level of nurses` practices on health care maintenance of patient undergoing chemotherapy pre, post and 3 months post-program.

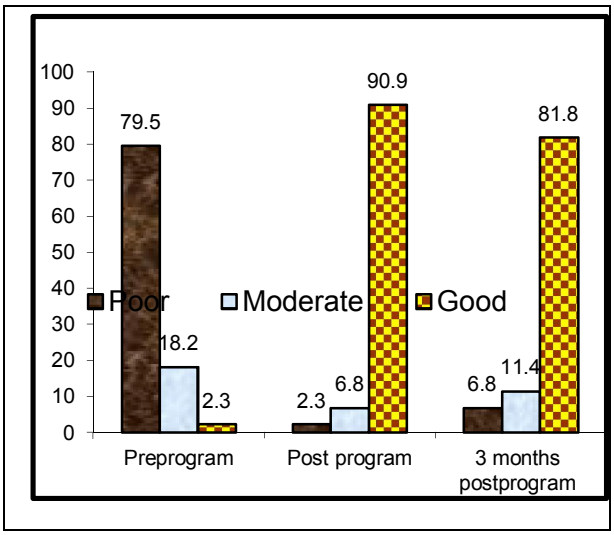

Figure (8): Level of nurses` practices on primary care of patient undergoing chemotherapy pre, post and 3 months post-program.

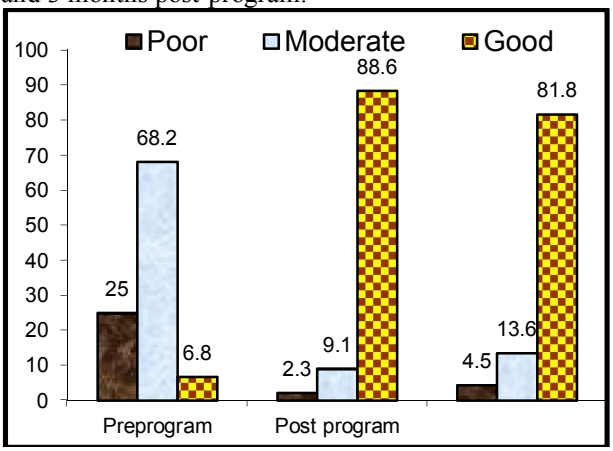

Figure (9): Level of nurses` practices on education of patient undergoing chemotherapy pre, post and 3 months post-program.

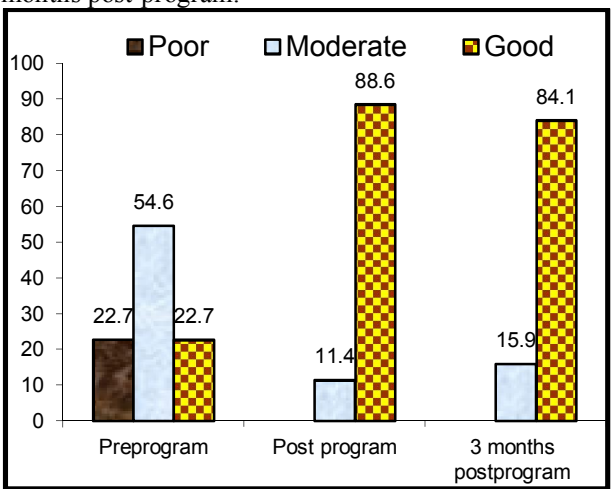

Figure (10): Level of nurses practices on normative care pre, post and 3 months post program.

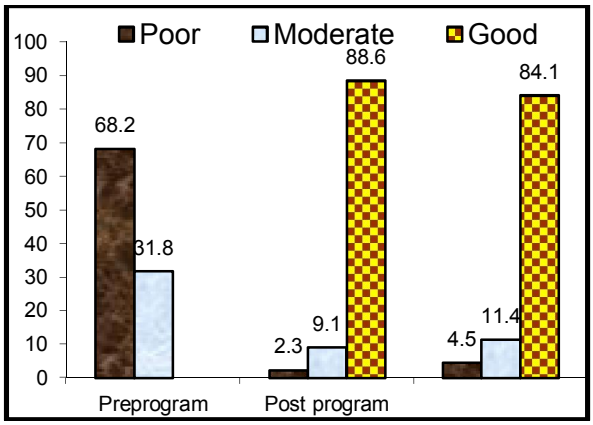

Figure (11): Level of nurses` practices on communication pre, post and 3 months post program.

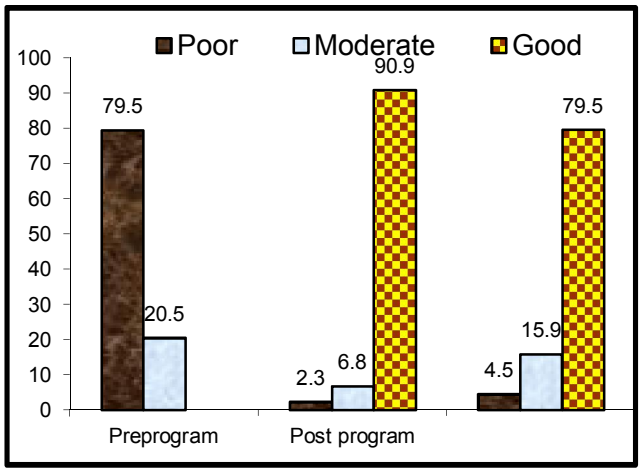

Figure (12): Level of nurses` practices on documentation pre, post and 3 months post-program.

Table (8) Correlation between nurses knowledge and practices on nursing care of patients undergoing chemotherapy pre, post and three months post-program.

Variables	Correlation between nurses knowledge and practice n=44					
	Preprogram		Post program		3 months post-program	
	r	*P*	r	*P*	r	*P*
Knowledge	28.5	0.000*	96.5	0.002*	90.9	0.001*
Practices	28.5	0.001*	97.5	0.001*	82.5	0.002*

*Significant

3. Discussion

Chemotherapy administration is a significant aspect especially for ambulatory oncology patients, it carries with it areas of nurses responsibilities for nursing practice in terms of therapeutic patient care, patient and family communication and education. However, present study result revealed that most oncology patients undergoing chemotherapy treatment were male in the middle age, married, illiterate, read and write, not working and from rural areas. Scientifically the cancer incidence is more frequent in men than women by 2:5 times, less commonly seen in those younger than 40 years of age and most commonly occurs in people between age 50 years to 70 years Besides the fact that the age of the occurrence of cancer is above 40 years, it is less common to find the persons in those age group unmarried.

The result of present study showed that most of the patients had no work, this may be due to many factors, among them age, disabilities caused by the disease itself, its treatment schedule or the side - effects of the drugs. Most of the patients have surgical intervention and were on chemotherapy treatment in different cycles. The chemotherapy given to be conservative treatment to control metastasis of the tumor and palliative therapy.

Majority of the clients in present study found to have knowledge regarding side-effects of treatment, this might be due to most of them treated with combined treatment and experienced most side–effects. Omar *et al.,* (2003)[31] support present study results and found that chemotherapeutic agents causes side -effects that can appear immediately, after a few day, within few weeks, or months as stomatitis, alopecia, anorexia and diarrhea.

Result of the present study revealed that most of the patients have incorrect knowledge on risk factors, warning signs and symptoms, medication management and follow up treatment schedule. This might be due to the lack of patient health education by nurses prior to treatment in the form of patient conference and group discussion. Or in some cases the patients were unable to understand nurse's information due to their poor physical condition and the effect of the illness on their psychological ability. The nurse's deficient, incorrect nurse's knowledge and over work load could be important factor..

Unfortunately the present study revealed that nurses had poor knowledge about cancer in adult, chemotherapy, and management of chemotherapy, with few complete right answers on its questions, this may be attributed to the majority of nurses lack background on basic nursing knowledge on cancer and chemotherapy. Those nurses need to be equipped with essential knowledge and skills to support themselves, patients and their families.

The present study result denotes the importance of providing those nurses with refreshment courses and in-service education program on basic nursing knowledge needed for oncology department patient. There is apparent need for developing such programs as well as implementing comprehensive preservice

orientation education program to safe the quality of the future ambulatory oncology patient nursing care.

Also pre-program implementation assessment data revealed that nurses had poor knowledge about management of patient undergoing chemotherapy. This showed low level of nurses knowledge about aspects of management of chemotherapeutic patients including; patient counseling, health carte maintenance, primary care, patient education, therapeutic care, normative care, communication and documentation. This fact reflects lack provision of in-service refreshing education or training opportunities that expend the staff knowledge and skills. This result supported by *El-Kazeh, (2002)* [32] report that oncology nursing care require a broad base of knowledge in both pathophysiology and psychological areas and frequently in values complex technical and psychomotor skills.

Result of the present study revealed that pre-program nurses have only few total correct practice in nursing activity of counseling, health care maintenance, primary care and therapeutic care. Besides, they do incorrect practice of normative care, communication and documentation. Most probably those nurses poor practice was due to absence of general pre-service orientation, special training programs on chemotherapy, beside the absence of control in term of competence evaluation for them.

The results of present study revealed positive significance correlation between nurse's knowledge and practice on nursing care of patient undergoing chemotherapy. This means that that nurses poor knowledge displaying poor practice. Indeed the quality of nursing care of those nurses is influenced by their knowledge. Most probably those nurses' values, judgment, and skills to care of patients and their cognitive ability to decide on a plan of action depend on their education. The nursing action begins with nurse's knowledge, philosophy and practice skills, the nurse learn knowledge to improve her practice and experience.

Post program, the present study showed significant improvement of the nurses means score of knowledge on cancer, chemotherapy, side effect, management and complication management as well as nursing care of chemotherapeutic patients as well as nurses showed improvement of their practice. Really, improvement of those nurses knowledge makes them understand the cancer disease process. There improvement of knowledge and practice indicate that the program designed according to heir need of theories which have direct relevance to their practice experiments.

Analysis of present data revealed that none of nurses have good level of practice on patient counseling pre-program. The fact is that those nurses do not encourage the patient to verbalize anger and fear about diagnosis and impact, they did not discuss any of methods of treatments or explain chemotherapeutic regimen, possible side effects, complications of chemotherapy and its management strategy as presented in table in. Either those nurses practice was on no scientific bases, or they do not have enough time to conduct patient counseling properly.

Result of this study revealed that majority of nurses showed either incorrect or not done health care maintenance practice for patient. Those nurses are lacking the principals of health care management practice plus their poor knowledge on nursing management of chemotherapy patient. Most probably those nurses multiple responsibilities, such as providing preventive health care measures congruent with patient age and risk factors, follow up and treating common acute and chronic illness, so their over work load induced them to overlook health care maintenance practice.

Pre- program result of present study showed that most of nurses (79.5%) had poor practice on primary health care of patient undergoing chemotherapy. Those nurses incorrectly obtain complete patient history, assess physical condition of patient before chemotherapy, note any previous care, asses health habits of patient regarding nutrition regimen, they did not use nursing diagnosis or plan expected patient outcome. Moreover, they didn't evaluate patient care outcome, not refer the patient to other health care provider agencies when needed. Those nurses need to correctly identified and developed care plan to clarify misunderstanding and meet the client need. Really those nurses lack knowledge and skills on planning, diagnosis and evaluate patient undergoing chemotherapy those nurses need to know that nursing diagnosis and evaluation are base don analysis of the assessment findings which include health status data.

Post program result in the present study showed significant improvement of nurse's practice of providing primary care. They became able to make complete pre- chemotherapy assessment, take complete patient medical and surgical history as opportunities to know allergies, recent treatment, review of patient physical findings, review of side effects if any experienced by patient, previous treatment and pervious interventions, psychosocial status of patient and family, review of laboratory data test. Also, they became able to make nursing diagnosis and plan for nursing care.

The results of present study indicated that nurses, patient and families education activity was performed with low mean score at pre-program. However, patients and families educations is

important part of nurse's role, and it contribute to continuity of care and assist nurses to become knowledgeable about health care and to make informed decisions. This finding may be due to excessive number of patient and shortage of nurses. Besides, short time which can not permit for health education guidance because patients does not stay in the clinics for long time in addition to lack of health education from medical staff related to treatment, nature of disease and complication. *Ali (2003)*[33] support this study result and found that patient education activities is the lowest performed activities by nurses in the professional nursing category.

Post program data analysis in present study showed that there was statistical significant improvement of nurse's level of practice related to patient education. Those nurses participate family members in the care of patients, instruct client on home and self-care practices, providing individualized physician instructions. Most probably those nurses identify patient learning needs and develop a teaching plan to clarify misunderstanding and meet the patient needs. They hoped to give effective patient and family education by including the right educational materials, and making sure that they are accurate, age - specific, easily accessible and appropriate to patient and family needs. They wanted family's approaches to accept their patients` treatment to improve both patient and family outcomes. Consequently that family and patient educational preparation could change nurse's approaches to service delivery and the view to their work.

Observation data of present study revealed that high percent of nurses were not practice therapeutic care correctly pre-program.This may reflect a lack of in-services educational program. Those nurses need to acquire psychomotor skills in many ambulatory oncology, common psychomotor skills among them venipuncture, administration of intravenous medications, blood therapy, and care of venous access devices

The present study revealed statistical significant improvements of nurse's level of total practice on therapeutic care of patient undergoing chemotherapy post program. They were correctly collect blood specimens and give blood transfusion. Correctly prepare chemotherapy, route of its administration, and dispose used supplies and unused drugs with safe precautions. They correctly manage drug spills, extravasation and anaphylaxis as well as handle patient body fluid. *Barnett (1992)*[34], focused on the nurses that should be aware to the action and side effects of all medication administrated to the patient and take history about patient's allergic reaction from any prescribed medication.

Pre-program study results showed that considerable number of nurses had poor level of practice on normative care. The result indicated that there are barriers to practice of nurses related to normative care as lack of time and lack of support staff. Besides those nurses need to know their role in assisting the physician with the examination and preparing of equipment and cleaning up,directs patient to the right doctor at the right time, gives him direction on preparing for examination, and select, she may select patients who show signs of distress and illness to receive more urgent attention and care.

Post program results analyses of this study presented significant improvement of nurses level of practice on normative care as they check clinic admission criteria,direct patient to the right doctor at the right time, transport clients to other service place, schedule patients appointment, arrange the clinic follow up appointments, approve urgent appointment, set up room before and after work, report for any disturbance in the equipment, sterilize medical supplies and equipment, set out all apparatus ready for use, prepare request for needed supplies and equipment.

Current study post program data showed statistically significant improvement of nurse's level of practice on communication. As those nurses properly helping patient meet his emotional needs through communicating with others. They encourage patients to ask questions, express his feeling, needs and complaints. As well as they explained nursing procedures with patients prior to performing it.They become able to communicate a feeling of acceptance and concern toward their patients.

Pre-program researcher observation assessment in present study showed that the nurses had poor practice on documentation.Those nurses do not record side effects and patient response to chemotherapy drugs, patient assessment, nursing care plan and nursing intervention. Those nurses were using to document in patient chart only drugs administration. Although the nursing process notes were included as part in the patient chart, they document vital signs in separate papers temporary kept in the patient chart. Most probably nurses need to be familiar with the existed charts technique of documentation and follow it correctly. *Shokery (1998)* [35] support the present study result and found that documentation activity was the lowest performed activity by the out patient clinic nurses.

Post program data of present study showed statistically significant improvement of nurse's level of practice and knowledge about documentation. Those nurses accurately document treatment given, care provided, and side effect of treatment and patient response to care. They correctly document nurse's

observation and nursing assessment. Some of them do not revise and up date nursing care plan and pass that to the head nurse of the department The study revealed that the nurse's knowledge and practice level was high immediately post program and diminished at 3 months post program, but still better than the preprogram data. The fact is that the total score of knowledge and practice were very low in pre-program implementation phase and significantly increased post program. This could direct the attention toward the importance of the implemented program and its usefulness as a mean for improving and maintaining quality nurses practices, knowledge and attitude toward management of ambulatory chemotherapeutic patients.

The conclusion of these discussion states that lack of knowledge and training were the most important reasons responsible for the low quality of nurses practices. So, the ambulatory oncology nursing staff must be sensitive for factors leading to patient mortality, poor prognosis and patient outcome. This had implied that the nurse should have critical responsibility for determining and implementing effective patient care that lie outsides the physician realm of medical diagnosis and implementation of therapeutic nurses. Extending staff knowledge base beyond those acquired in the general training is required to improve nurse's practice and to prepare them for extending their role in ambulatory oncology setting.

Conclusion

At pre-program, the study revealed a lack of knowledge for the ambulatory oncology nurses, related to oncology knowledge on cancer in adult, chemotherapy, nursing activities for dealing with chemotherapeutic patient which include patient counseling, health maintenance care, primary care, patient education, therapeutic care, normative care, communication and documentation. Also, lack of practice activities for dealing with chemotherapeutic patient including patient counseling, health maintenance care, primary care, patient education, therapeutic care, normative care, communication, and documentation. Statistically significant correlation found between knowledge and practice of studied nurses where their knowledge were lacking consequently the practice, the same after implementing program on caring oncology patient under going chemotherapy the ambulatory nurses improved their knowledge affected their practice. After 3 months the ambulatory nurses knowledge and practice slightly decreased, they need periodical implementation of that in-service training program and the department need for pre orientation program for future nurses high quality care..

Recommendations

Based on the results of the current study, the following recommendations are suggested:

- The ambulatory oncology nurses should have baccalaureate level of education and specialty training on ambulatory oncology nursing.
- Orient nurses about the job description of their role, and the followed standard of care.
- Provide a guidance book about nursing procedures to guide nurses in dealing with oncology patient undergoing chemotherapy.
- Establishment of central in-service educational department in hospital to periodically refresh nurse's knowledge and practice.
- Plan and implement educational program periodically about oncology patient undergoing chemotherapy stressing the patient education about chemotherapy treatment.
- Nursing quality care committee should be established in the ambulatory oncology department.
- Improve the working condition, and give attention for benefits and rewards for clever nurses.
- A simplified educational self package should be given to cancer patient including treatment regimen and self care activity of daily living.
- Raise the awareness of public about early detection of cancer and its treatment modalities, including chemotherapy, through mass media as TV and / or radio program.
- Further studies should be conducted to study nurse's ambulatory service in different areas of specialties.

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References

1-Jamal A. ***et al.*** (2007): Cancer statistics,. CA Cancer J Clin. Jan-Feb, 2007; Vol; 57.

2-Ali N., and Khalil H. (1991)**:**A comparison of American and Egyptian cancer patients attitudes and unmet needs. Cancer Nurs.**;** 16: 193-203.

3-Ali N., Ibrahim A., and Shafik N. (1986): An investigation into knowledge and attitudes toward cancer among Egyptian lay public and cancer patients. J Egypt Nat Cancer Inst.**;** 2: 585-95.

4-American Cancer Society(1997): Cancer Facts & Figures, New York: Author.**.**

5-Anderson J.(1989): The nurse's role in cancer rehabilitation, Cancer Nursing.; 12 (2): 85-94.

6-Cassileth B., Lusk E., and Bodenheimer B(1991): Chemotherapeutic toxicity- the relationship between patients pre-treatment expectations and post-treatment results. Am J Clin Oncol.**;** 8: 419-425.

7-Carroll D., and Rose K. (1992): Chemotherapeutic toxicity- the relationship between patients pre-treatment expectations and post-treatment results. Am J Clin Oncol.; 8: 419-425.

8-Carroll D; and Rose K. (1992):Treatment leads to significant improvement: Effect of conservative treatment on pain in lymphodema. The professional Nurse; 8(1): 32-36.

9-Potter, P. and Perry, A. (1997): Fundamental of nursing: Concepts, process and practice. (4th ed.) St. Louis, C.V. Mosby company,**;** pp. 639.

10-Hunter I. (1995): Moving closer: Palliative care clinic. Nursing Times**;** 91: 30-31.

11-Porter, H. (1995): The effect of ambulatory oncology nursing practice models on health resource utilization: Part I collaboration or compliance. Journal of Nursing Administration; 25: 21-29.

12-Joseph A. (1990):Ambulatory care: An objective assessment Journal of nursing administration,; 20: 18-24.

13-Kavanagh J., and Vlasses F(1995): Dimensions of the staff nurse role in ambulatory care: part II comparison of role dimensions in four ambulatory settings. Nursing Economic**;** 13: 152-165.

14-King C.R., Ferrell B.R., Grant M., and Sakurai C. (1995):Nurses perceptions of the meaning of quality of life for bone marrow transplant survivors. Cancer Nursing; 18:s 118-129.

15-Klein R. (1971): A crisis to grow on. Cancer**;** 28:1660-5.

16-Verran J.A. (1998): Delimeation of ambulatory care nursing practice. Ambulatory Care Nursing Practice; 4: 1-12.

17-Padilla G.V., present C. and Grant M.M. (1997):A physical and psychosocial outcomes in cancer patients: a comparison of different age groups British Journals od Cancer**;** 76 (2): 251-255.

18-Schmale A.H., Morow G.R., and Schmitt M.H. *et al.* (1983):Wellbeing of cancer survivors, Psychosom Med.; 45: 163-169.

19-Gross J and Johnson B. (1994): Hand Book of Oncology Nursing, 2nd ed., Boston, James and Bartlett publishers, 512-515.

20-Stierley E. (1994): Oncology Nursing, 2nd ed., Saint Louis, Mosby Co., 181-86.

21-Kaplan M. (1983):The cancer patient. Cancer Nurs., 6(1):103-7.

22-Saifeldin I. National Cancer Registry, 2002.

23-Carp Z. (2004): Managing Chemo Side Effects. Available at http:/ww.breastcancer. org/res news signup. Html**;.**

24-Feeley N. and Leritte T. (1992): Development of professional practice based on the McGill mode, of nursing in an ambulatory care setting. Journal of Advanced Nursing;17: 801-808.

25-Way L. (1997): Current Surgical Diagnosis and Treatment, 9th ed., New York, Lange Medical Book; 929-32.

26-Feeley N. and Leritte, T. (1992): Development of professional practice based on the McGill mode, of nursing in an ambulatory care setting. Journal of Advanced Nursing,; 17: 801-808.

27-Geneva R. (1996): Nursing practice: Report of WHO Expert committee. World health organization**;** 7-9.

28-Tighe G.M. Fisher G.S. and Hustings C. *et al.* (1985): A study of the oncology nurse role in ambulatory care. Oncology Nursing Forum; 12 (6) 23-27.

29-Hunter W.S., Cooley E.M. and Lin M.E. *et al.* (1994): The ambulatory oncology nurses role Seminars in Oncology Nursing; 10 (4): 245-253.

30-The American Academy of Ambulatory Care Nursing (AAACN) (2003): Ambulatory care nursing conceptual framework; 25 (2): P 14.

31-Omar S, and Khalid H. *et al.* (2003): Review breast cancer in Egypt. A review of disease presentation and detection strategies. National Cancer Institute, University of Cairo, WHO Regional office for the Eastern Mediterranean, Orientale, Egypt;9:3.

32-El Kazeh E. (2002): A study on Knowledge, Attitude and Practice of Breast Cancer Clients and Their Relatives In Tanta, Faculty of Nursing, Ain Shams University; 73-75.

33-Ali N. (1993): **Preparing** student nurse role in patient education. Journal of Nurse Educators; 18:27-29.

34-Barenett, A. and Mayer, G (1992): Ambulatory care management and practice. (1st ed.) Gaithersburg. Maryland, An Aspen Company**;** 244 -250.

35-Shokery M.W. (1998): Evaluation of Nurse's role in the outpatient clinics in Shebien El-Kom Hospitals, Msc., Thesis, unpublished Thesis, Faculty of Nursing, Menoufiya University;66

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