

## Discussion

The present study aimed to assess mothers' knowledge and attitude regarding care of their children undergoing chemotherapy.

The mother plays important roles where children with cancer are often limited in their opportunities to develop independence and autonomy. The limitations come from restrictions placed by treatment regimens and therapy-related complications. Therefore, mothers can promote their children more comfortable, prevention of infection; regulate activity, nutrition, skin care, and emotional support. Therefore, mothers must be informing in a manner that they can fully understand the nature of the disease, its course, treatment, complication and prognosis (**Thompson, 2000**).

The findings of the current study revealed that, more than half of children 61% were in age group of 1 :< 4 years and according to their level of education it was clear that, 52% of them were not yet enrolled. In addition, 53% of children were male and 77% of mothers and their children were living at rural residence. In relation to duration of illness, it was found that, more than two thirds of children 67% reported less than one year. These findings are supported by **Elattar et al., (2007)**, **Davis et al., (2005)**, **Stiller (2004)** , and **Mark & louise (2001)** who stated that, annual incidence of childhood cancer peaks in the first year of life and under 5 years of age. In developed countries only 0.5% and world wide about half of all the childhood cancer cases diagnosed before 15 years of age actually occur below the age of 5 years. Worldwide, the incidence of childhood cancer for boys is substantially higher than for girls, a boy to girls' ratio of 2:1 there were 1,184 (61.1%) boys and 753 (38.9%) girls.

As regard medical diagnosis of the studied children it was found that, 34% of children having leukemia, lymphoma 20%, Wilm's tumor 14%, neuroblastoma 10%, liver tumor 5%, brain tumor, bone tumor and retinoblastoma were 4%, immature teratoma 3% and skin 2% of all children. This is in the same line with **Elattar et al., (2007)** who reported that, in EGYPT the incidence of cancer type was leukemia, (33.2%) new cases. Lymphoma was the next most common (18.1%), followed by brain tumors accounting for 7.1%, of all childhood cancer. According to **Little (2005)** hematological malignancies, tumors of the central nervous system account for the majority of all cancers. Leukemia make up most (approximately 25%) childhood cancers, which nearly 80% are ALL, followed in frequency by tumors of the CNS 20% most childhood brain tumors are in the posterior fossa, neuroblastoma 7%, non-Hodgkin lymphoma 6%, Wilm's tumor 6% virtually all kidney tumors, Hodgkin's disease 5%, rhabdomyosarcoma 3%, retinoblastoma 3%, osteosarcoma 3%, and Ewing sarcoma 2%.

As regard common age for occurrence of childhood cancer it was found that, more than half of mothers (56%) stated all ages, while 44% of mothers reported 1 :< 5 years. This is an agreement with **Robison (2005)** who stated that cancer can develop in children at any age, but certain malignancies have a predilection for specific age groups. The incidence is higher for children under five and for those ages 15-19, and lower for children ages 5-14. For example, neuroblastoma, retinoblastoma and Wilm's tumor most commonly occur in children between birth and four years of age, where as osteosarcoma, Ewing's sarcoma and Hodgkin's disease tend to occur in children more than 10 years of age.

The current study revealed that, more than half of children 63% has no family history of cancer. This is agreement with **Chow et al., (2006)**

**and Jones (2006)** who reported that the family history is considered as a heritable factors were do not play a strong causal role in most childhood cancer.

Regarding mothers' age, the present study revealed that 45% of mother's age ranged between 25 :< 30 years and mean age was  $32.9 \pm 6.85$  years. On this is inconsistent with **Hatfield and Klossner (2006)** who stated that, the positive association of older maternal age of years 35 or more and childhood cancer especially leukemia is established by multiple studies.

The present study showed that, the predisposing factors/causes of childhood cancer as reported by more than one third of mothers 37% were envy, environmental pollution, low immunity of the child and genetic factors. This is in an agreement with **Dorak et al., (2005)** who reported that high levels of ionizing radiation, radiotherapy, and infectious diseases contracted during the first 12 months of life, increased risk of some childhood cancers. In addition Parental occupational which exposures to radiation or chemicals and medical conditions during pregnancy or before conception and Parental exposures to environmental toxins, such as pesticides, solvents or other household chemicals and maternal diet during pregnancy. Cancer arising because of highly penetrant mutations associated with hereditary cancer (e.g. retinoblastoma) is unlikely to account for more than 15% of all cases.

As regard, knowledge of mothers about concept of disease, 45% of mothers stated that it is curable. This is in the same line with **Richardson et al., (2005) and Kingston et al., (2004)** who suggest that 75 % of childhood cancer can expect real cure.

Regarding knowledge of mothers concerning manifestations of childhood cancer, it was found that more than half 56% of mothers reported sudden weight loss. This is not in accordance with **Pizzo et al., (2002)** who stated that symptoms of childhood cancer depend on the type of cancer, there may be frequent bruising (leukemia), pain in the arms or legs (bone cancer), swollen abdomen (neuroblastoma), dizziness or seizures (brain tumor).

As regards knowledge of mothers about complications of childhood cancer, it was found that 37% of mothers reported infertility and metastasis. This is in the same line with **Vonderweid (2005) and Miller (2006)** who stated that, studies estimate that two thirds of children have at least one chronic or late-occurring complication (late effect) of their cancer therapy, with about one third having serious or life-threatening complications. Furthermore, children have an excess risk for early mortality due to second cancers. Additionally increased risk of morbidity, mortality and diminished quality of life associated with their previous cancer therapy.

In relation to knowledge of mothers about physical impact on children, undergoing chemotherapy, more than half of mothers 55% who reported impaired body image, while 15% of mothers reported pain, repeated medical investigation, growth retardation, disfigurement, loss of body part, anemia and decreased immunity. This result is congruent with **Pizzo et al., (2002)** who reported that children with cancer also experience changes in their physical appearance; the curative therapy administered for the cancer affects growing and developing tissues. Furthermore, child undergoing chemotherapy has many harsh physical impacts, may be reversible such as weight gains or losses, loss of hair, mouth ulcers, anemia, pain and decreased immunity or may be permanent

such as amputation or skeletal abnormalities, visible disfigurements, the change in physical image is a constant reminder for children with cancer that they are different from other children. Additionally, about 10% of children reported moderate to extreme pain because of their cancer therapy.

In relation to mothers' knowledge about negative emotional impact on children undergoing chemotherapy, the study found that more than half of mothers 61% reported irritability and poor school achievement and attendance, and 20% of mothers reported depression, aggression, isolation, and stigma. This result is congruent with **Kyngas et al., (2007)** who stated that, it is crucial to consider psychological issues when evaluating children with cancer where psychological outcomes are complex, where 17% of children had depression, somatic, or anxious symptoms, while 13% of them expressed frequent fears related to their cancer experience. Furthermore, increased prevalence of posttraumatic symptoms, researchers have concluded that children with cancer experience significantly more anxiety related to the seriousness of their illness. In addition, **Melman and Sanders (2006) & Thompson and Stanford (2006)** concluded that, emotional impact as loss of self-esteem for the child, that lead to a lack of self-confidence resulting in regressive behavior, a withdrawal from peers and a fear about going to school thus affecting their emotional and social adjustments, as well as their academic performances. Furthermore, greater risk for difficulties with peer relations and may face teasing, questions, and comments from peers and feeling of unattractive.

The researcher believes that, cancer treatment has an emotional impact on children as feeling of uncertainty about cure, diagnosis, treatment, symptoms management, and future. In addition, different

emotions as fear, powerlessness, denial, stress, guilt, sadness, anticipatory loss, anger, shock and confusion.

Regarding mothers' knowledge about cognitive and neurological impact of cancer and chemotherapy on the children, it was found that, more than half of mothers 62% reported memory impairment and lack of concentration. This is emphasized by **Brown (2004) & Meadows and Silber (2000)** who reported that, the long-term effects of cancer and chemotherapy on cognitive abilities include impaired intellectual functioning, difficulties with higher conceptual abilities, memory functioning, visual-motor functioning, visuographic abilities, fine motor skills. Various signs of attention deficit, hyperactivity disorder such as distractibility, impulsivity and concentration problems and central nervous system.

In relation to mothers' knowledge about negative social impact of childhood cancer on the family of the affected children, the study found that, more than half of mothers 57% reported hopelessness, phobia from death and conflict between family members. This result is congruent with **Dollinger (2005) and Chesler et al., (2003)** who reported that the diagnosis of childhood cancer in a families that change their order of priorities forever, overwhelming family dynamics, separated from their peers and family stress. Siblings may also be angry due to potential to perceive threatened or actual losses because of their brother or sister's illness disrupted their life and their parents may not seem to have time for them, getting all attention to their brother or sister and causing worry for everyone in the family.

The researcher believes that practice nurse going to assessment to determine strengths, vulnerabilities, and coping abilities is present. The

mothers often suffer from the symptoms of post-traumatic stress, so provides them what calls stress inoculation, teaching problem-solving skills and the importance of considering total family structure, including the sibling's emotional needs.

As regards mothers' knowledge about financial impact of childhood cancer on the family of the affected children it was found that, 82% of mothers stated cost of transport, while more than one third of them reported cost of treatment and investigation and insufficient income. This finding is matching with **Richardson et al., (2005)** who stated that, families of childhood cancer dealing with the illness does not end when treatment ends, children may experience post-treatment problems and complications. Therefore, they need follow-up testing and screening for years and the most dreaded of all-relapses after treatment ends, these stresses and strains of the experience have continuing financial impact.

The researcher view that childhood cancer costs decreasing the amount of money coming into the household, the child's illness affected the normal day-to-day routines, creating stress for both parents who were trying to manage work, family, and home issues.

Regarding knowledge of mothers about treatment of cancer in children it was found that chemotherapy was known by (93%) of the studied mothers. This is in the same line with **Behrman and Kliegman (2002)** who reported that the most common form of childhood cancer treatment is chemotherapy, where it has both local and systemic effects.

As regards knowledge of mothers about definition of chemotherapy, it was known by 32% of the studied mothers. This is matched with **Wilkes and Burke (2004)** who stated that the majority of mothers do not

know the scientific definition of chemotherapy, where chemotherapy is the use of anti-cancer (cytotoxic) drugs to destroy cancer cells. There are over 50 different of chemotherapy drugs and several drugs may be combined this is known as combination chemotherapy.

In relation to purpose of chemotherapy the study found that more than half of mothers 55% stated that interfere with the proliferation of fast growing malignant cells. This result is congruent with **Robin and Miller (2007)** who stated that chemotherapy is used to prevent cancer cells from multiplying, invading adjacent tissue, or developing metastasis and in most cases, chemotherapy works by interfering cancer cell's ability to grow or reproduce.

As regards knowledge of mothers about duration of treatment with chemotherapy, it was found that 27% of mothers reported 1 :> 3 months. This is not agreement with **Dollinger (2005)** who stated that duration of chemotherapy depends on the type of cancer, child health and ability to tolerate the drugs and the types of drugs given. Chemotherapy may be given daily, weekly, or monthly, there is a rest period that may follow a course of treatment before the next course begins.

As regards mothers' knowledge about route of chemotherapy administration, more than three quarters 89% of mothers reported intravenous route. This match with **Fischer and David (2003)** who reported that chemotherapy may be given in different ways, depending on the type of cancer and the chemotherapy drugs used. Sometimes, two or more types of chemotherapy may be use together as intravenous and oral, while intravenous route broadly used.



In relation to mothers' knowledge about side effects of chemotherapy two-thirds 65% of mothers reported loss of appetite. This is in the same line with **Pratt (2005) and David (2003)** who reported that, chemotherapy drugs are toxic to normal cells as well as cancer thus may induce serious side effects, nausea and vomiting are common, Loss of appetite may be due to nausea or the stress of undergoing cancer treatment.

Regarding level of mothers' knowledge about care of physical problems of their children undergoing chemotherapy, the study found that 16% of mothers reported good knowledge in care of anorexia, diarrhea and constipation, while they reported average knowledge in care of vomiting and reported poor knowledge regarding care of dry skin. This result is congruent with **Meadows and Silber (2000)** who reported that, nowadays children and teenagers with cancer are likely to receive aggressive therapy and frequently report considerable numbers of common physical problem. Alternatively, mothers may be shifting from active treatment with the goal of cure to symptom management with the goal of comfort. There are several long-term physical and medical conditions that can occur because of cancer and its various treatments, including fever, vomiting and diarrhea, constipation, dry skin, dry mucous membrane, bleeding, joint and bone pain, in addition to various short-term problems, including weight gain or weight loss and hair loss.

The researcher views that mothers had different levels of experience, while assessments are needed to understand and manage the physical symptoms of their child's illness. Mothers wanted written information for reference when healthcare professionals were not available and they desired detailed and well-defined information about the child's treatment. Mothers should be involved in decision making

related to their child's treatment and should understand the risks and side effects. Specific information that focus on how to care for their sick child is also needed, in addition information about their child's condition that essential for mother's peace of mind which allowing them to feel some control over the situation, stay optimistic.

Regarding mothers' knowledge about care of emotional problems it was found that, (74%), (69%) and (67%) of mothers reported psychological support, reassurance and play, repetitively. This result is in agreement with **Perlman et al., (2002)** who reported that, support communication between doctors, parents, teachers, school nurses, and the child's peers. Participating in school activities is critical to emotional well being. The mothers sure, that does not feel their children victimized or punished, also pain and anxiety management, psychosocial support and providing children recreational activities.

In relation to knowledge of mothers about care of scholastic problems one third and more of the studied mothers reported encouragement of school reentry after cancer diagnosis (42%), encourage many of child to participate in ordinary tasks, responsibilities and school activity (39%) and provide school with up to date medical information regarding child condition (36%). This is an agreement with **Varni and Katz (2005)** who reported that, mothers facilitate a successful school reentry after cancer diagnosis and treatment, provide the school with accurate and up-to-date medical information and communicate effectively and regularly with school personnel regarding the child's condition. In addition, mothers encourage and facilitate continued interactions with classmates and peers, ensure that the child keeps up with his school assignments and encourage the child to participate in school activities.

Regarding mothers knowledge about care of their children it was found that hospitalization, psychological support and laboratory tests required before chemotherapy were reported by (87%), (78%) and (74%) of them respectively. This is in the same line with **McKay (2004)** who stated that preparation before chemotherapy treatments are coming to hospital, informed consent from parents before any procedure performed or any form of medical care provided. In addition, some other preparation as medical tests, wear comfortable cloths, going the child to dentist, wear wig before child loss hair, anti-emetics before chemotherapy administered, child should not eat for about two hours before the treatment appointment and arrange for transportation.

In relation to mothers' knowledge about care of their children during and after hospitalization, as bed rest, distraction of attention and emotional support with reported by (82%), (65%) and (61%) of them respectively. This is an agreement with **Fischer and David (2003)** who reported that, during and after treatment, usually parents stay with their child during the treatment when a chemotherapy treatment takes a long time. The parent may prepare child by wearing comfortable clothes, favorite game, an audiotape may help pass the time and ease the stress of receiving chemotherapy and anti-emetic drugs help to less feelings of nausea to decrease nausea from occurring just after a chemotherapy session.

The researcher views that mothers need to arrange for child care both during treatment and afterwards, including, taking all prescribed medications, maintaining good nutrition by getting enough calories and taking a daily multivitamin, drinking at least eight cups of fluids per day, getting plenty of rest and helpful to breathe fresh air or get mild exercise,

such as taking a walk. Tests and exams can help determine the effectiveness of chemotherapy.

Regarding knowledge of mothers about continuity of care at home it was found that, most (91%), (86%) and (84%) of mothers reported gentle physical hygiene, safe food and wash hands frequently respectively. This is an agreement with **Hileman et al., (2005)** who reported that, assessment of knowledge of mother is to identify her capacity of care to their children at home, which now cancer care done on an outpatient basis and the mother often administer medications and perform other nursing procedures. The nurses make sure that the mothers understand care plan.

The researcher believed that, increase mother involvement in the day-to-day care of their child with cancer, which has multifaceted needs, professionals recognize the home care needs of child, and teach mothers how to provide effective technical care skills as monitoring and reporting symptoms, providing personal care (bathing, walking, and dressing), nutritional considerations, coordination of care (scheduling appointments and calling a physician), monitoring disease status, and financial activities. Also seek information on strategies for reassuring child with decreased energy, as well as about managing other symptoms, if the mothers are informed and supported the mother become less anxious, and will see the experiences of caring in a more positive light. A significant result will be the increased role of mothers in caring for child with cancer at home.

The current study revealed that, there was statistical significant association between level of mothers' education and their total level of knowledge about care of their children undergoing chemotherapy. Where

mothers received, secondary and university education reported good knowledge in comparison with illiterate and other low level of mothers' education and monthly family income was 93% of them were between 200:≤300 pounds / month. This is in the same line with **Weitzner et al., (2006)** who stated that, mothers with low socioeconomic status report more problems because of limited resources and a reduced capacity to provide adequate care. The mothers with lower levels of education reported poorer physical care to their children.

As regards mothers attitude towards care of their children undergoing chemotherapy, there was a statistical significant association between mothers total level of knowledge and their attitude towards care of their children undergoing chemotherapy, where (55%) of mothers who were having good knowledge had positive attitude, while (54.6%) of mothers who were having poor knowledge had negative attitude. This is in the same line with **Enskar et al., (2007)** who reported that, there is association between mothers attitudes and the child health, where positive attitude of mothers' results in better functioning of the immune system of the child and feeling good can actually help bodies function more effectively. Thirty years ago, the goal is simply curing the cancer, now the goal emphasis on quality of life.