

# Effect of Video Games, Drawing and Story-Telling on Happiness and Relaxation among Children Undergoing Chemotherapy

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**Abstract:** Cancer is considered as one of the stressful and life-threatening events which cause children to feel unhappiness and tension. The study aimed to investigate the effect of video games, drawing, and story-telling on happiness and relaxation among children undergoing chemotherapy. **Materials and method:** Design: A quasi-experimental research design was used in the study. Subjects: - A convenient sample of 200 children suffering from cancer undergoing chemotherapy were equally and randomly assigned into four groups, the first was the control group (50 children) who received only usual routine care, the study groups were (the second group was drawing group (50 children), the third was video games group (50 children), and the fourth was storytelling group (50 children). Setting: the study was conducted at the pediatric nursing department at the Oncology Institute at Sohag City and Sohag University Hospital and Fayoum University Hospital. Tools: Three tools were used in the current study; demographic characteristics tool, the Happiness Face Scale, and the Relaxation Scale were utilized for data collection. Results: A highly significant difference was found between children in the video game, drawing, story-telling, and control groups regarding their happiness, where more mean scores of children happiness were rated by the children in the video games group (5.2+0.94). A highly significant difference was detected between children in the video game, drawing, story-telling, and control groups regarding their relaxation scores, and fewer mean scores of children's relaxation were rated by the children in the drawing group (1.4+0.8). Conclusion: Children undergoing chemotherapy who received video games, drawing, and story-telling had experienced high happiness and relaxation scores compared to children in the control group who received daily routine hospital care only. Recommendations: Pediatric nurses should involve video games, drawing, and story-telling in routine care among children undergoing chemotherapy to promote and improve their happiness and relaxation.

**Keywords:** Children, chemotherapy, drawing, story-telling, and video games, happiness, relaxation.

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## 1. INTRODUCTION

Cancer is a major health concern for children, it is estimated that 1 in 4 children will have cancer, and included more than half of those diagnosed will die from the disease and some tumors are more common. There are different risk factors for developing cancer and different needs for both medical and psychosocial care provision (Zhang, 2015).

Distraction is an effective technique that makes children's attention away from noxious stimuli and it includes several methods. By these methods, pleasant things deflect attention from medical procedures and reduce the perception of pain; this method is much less expensive than drug therapy (Bergomi et al., 2018).

Distraction methods include visual distraction (counting objects, watching TV), vocal distraction (listening to music), touch motion distraction (slow regular breathing), drawing, and purposive distraction (using toys). Other interventions include relaxation, hypnosis, modeling, desensitization, contingency management, selective attention, stress inoculation, cognitive restructuring, and coping skills training (Abd El-Gawad et al., 2015).

An audio-visual distraction like video games distraction is a simple method that helps nurses to solve the problem of lack of attention that diverts attention from a noxious stimulus through passively redirecting the subject's attention (Rezai et al., 2017). Video games distraction direct concentration to other and take the attention away from own pain and concentrate on concern for someone else, more positive thoughts and distract with other sensations i.e. video games distraction can jog emotions and break the connection between the person and his/her emotional pain (Kaheni et al. 2016).

Storytelling as a distraction technique reduces the amount of observed distress behavior among children undergoing chemotherapy (Shapiro, 2011). Also, children enjoy listening to stories that induce motivation and fun and make them personally involved in a story (Scott et al., 2010). Some researchers advocated that listening to short stories is an effective technique used with the preschool child with cancer during hospitalization (Academy for Guided Imagery, 2010).

Drawing has a positive effect on happiness and relaxation levels by distracting children from situations of suffering in a hospital, and provides the experience of enjoyable events, as well as helping children to focus on play activities and feel relaxed (William et al., 2016), and it is improving happy memories, and helps children to cope with difficult situations, which is reflected by lowering cortisol hormone levels and causes happiness and relaxation (Shah, 2017).

The role of the pediatric nurse for children with cancer undergoing chemotherapy includes helping them to be emotionally stable, teach them relaxation techniques (Heinemann and Boyce, 2012). Nurses should help children to engage in drawing, story-telling, and video games activity and help in pain alleviation during procedures and the reduction of such pain and fear because it is the responsibility of health care professionals is to improve children happiness and relaxation for maintaining patient safety by using various pharmacological and non-pharmacological interventions (Lee and Yeo, 2013). Nurses should relieve a child's suffering not only because of the consequences of unrelieved pain but also because pain management may have benefits such as earlier mobilization, shortened hospital stays, and reduced costs (Harsh, et al., 2014).

#### Significance of the study:

Cancer causes negative effects on children, there are many activities to help children with cancer undergoing chemotherapy experience good feelings and making them feel happy and relaxed. There is a lack of studies that discuss the importance of video games, drawing, and story-telling on improving children's happiness and relaxation during chemotherapy. So, the current study was to investigate the effect of video games, drawing, and story-telling on happiness and relaxation among children undergoing chemotherapy.

#### Aim of the study:

To investigate the effect of video games, drawing, and story-telling on the happiness and relaxation among children undergoing chemotherapy.

#### Operational definitions:

**Relaxation** is a state your body can learn where it is soft and loose and the mind is free from stress. Easily replace negative and strict thoughts with soft, gentle, and positive ones. It helps to slow the heart rate, reducing the activity of stress hormones, slowing your breathing rate, and helping you to naturally breath well by encouraging deeper breathing.

**Happiness** is the state of feeling or showing pleasure or contentment. It isn't a long-lasting, permanent feature or personality trait, but a more fleeting, changeable state.

#### Research hypothesis:

Children undergoing chemotherapy who received either video games, drawing, or story-telling will have significantly higher scores of happiness and relaxation compared to children in the control group.

## 2. SUBJECTS AND METHOD

### Research design:

A quasi-experimental research design was used in this study.

### Setting:

The study was performed in the pediatric department at the Oncology Institute at Sohag city and Sohag university hospital and Fayoum University Hospital.

### Subjects:

A convenient sample of 200 children undergoing chemotherapy from 6 to 12 years from the previously mentioned setting six months from July 2020 to December 2020, who equally and randomly divided into four groups, the first was the control group (50 children) who received only usual routine care, the second was drawing group (50 children), the third was video games group (50 children), and the fourth was storytelling group (50 children).

### The inclusion criteria were:

1. Children undergoing chemotherapy from both genders in the age group from 6-12 years.
2. Conscious children.
3. Can communicate with the researchers and cooperatively.

### Exclusion criteria

1. Children under the effect of any anticonvulsant or analgesic drug.
2. Children who are critically ill.

### Tools of data collection:

**Tool (I):** An Interview Structured Questionnaire in addition to medical history about cancer, this tool was developed by the researcher after reviewing the related literature; it included two parts as follow:

**Part 1:** It included three questions related to the personal characteristics of the children as age, gender, and residence

**Part 2:** It included two questions related to the medical data of the studied children about cancer which include duration of the disease and treatment.

### Tool (II): The Happiness Face Scale:

It was adopted by **Holder, (2010)** to measure the happiness level of children which was modified from the Faces Scale. It consisted of seven faces on the original Face Scale for measuring happiness have the same eyes, different levels of a smile, with no explanations for the emotion of each face (distinguished by using the alphabet from A to G), with adding details of emotion to the face pictures, such as adding extra characteristics to the eyes, and the mouth or smile.

The Happiness Face Scale had a single item question: "What is the feeling of your level of happiness (which means favorite, satisfied, or joyful or comfortable). The rating of happiness scores consists of 0 is considered most unhappy, very unhappy is 1, a little unhappy is 2, indifferent is 3, a little happy is 4, very happy is 5, and most happy is 6. The lower the scores reflect the lower the happiness while the higher the score the higher the levels of happiness. The content validity of the Happiness Face Scale had been verified by three experts and the Content Validity Index (CVI) was 0.98. Reliability of the Happiness Face Scale (Cronbach's Alpha = 0.86).

### Tool (III): the Relaxation Scale:

It was adapted by **ELSA Support, (2015)** to measure relaxation levels. It is modified by the Emotional Literacy Support Assistant (ELSA) relaxation thermometer scale with permission. The original relaxation scale explains represent the feelings of relaxation. Moreover, the higher score represents deep relaxation while the lower score represents anger, the scores by switching and changing the face pictures that represent the feelings of relaxation. The rating of relaxation scores consists of 0 is considered angry, frustrated or annoyed is 1, sad or upset is 2, beginning to calm down is 3, relaxed is 4, very relaxed is 5, and deeply relaxed is 6.

The feeling of relaxation could be measured using one questionnaire by asking the question “What is the feeling of your level of relaxation (which means independence from pressure or stress)?.” Participants could select the answer from the picture which was similar to their feeling of relaxation that demonstrated their overall feeling of relaxation from the Relaxation Scale. The content validity of the Relaxation Scale had been verified by three experts and the Content Validity Index (CVI) was 0.99. Reliability of the Relaxation Scale (Cronbach’s Alpha = 0.82) (Lief, 2017).

#### **Method of data collection:**

Before starting this study, administrative permission was obtained from the Dean of the Faculty of Nursing Sohag University. Administrative approval was obtained from managers in the previously mentioned setting.

Data collection was conducted from the beginning of July 2020 to the end of December 2020. The interview was conducted on two days each week from 9.00 a.m. to 12.00 p.m. Data collection was done during the routine work of the selected setting. The participants took about 20-30 minutes to fulfill the questionnaire and the other used tools were completed by the researchers.

The video games were administered, through the researcher's laptop beside the routine care which contains funny and educational games for about 30 minutes and was followed by assessing the happiness and relaxation scores among children by using the happiness scale and relaxation scale.

The drawing was administered, by giving the child a sketch and colored pencils for drawing beside the routine care and ask them to draw what they want for about 15 minutes and followed by assessing the happiness and relaxation scores among children by using the happiness scale and relaxation scale.

The storytelling was administered by the researchers besides the routine care and was followed by assessing the happiness and relaxation scores among children by using the happiness scale and relaxation scale. Telling the story took about twenty minutes by using a fun and educational story type that had made children feel happy. It is consisted of colorful pages and attractive graphics and contained one line or one sentence per page. These stories are revolved around things the child knows, such as his or her family and compassion for nature.

The feeling of relaxation is measured using the Relaxation Scale by asking the question "What is the feeling of your level of relaxation and ask the child to select the answer from the picture which was similar to their feeling of relaxation. The scale was shown to the children and they were asked to choose their relaxation from numbers 0 to 6.

Researchers explained for each face to help children understand the meaning of each face and to make it easier to decide which face picture was close to or similar to their feeling of happiness as well as for their feeling of relaxation.

For the participants in the control group, they received the usual care (the standard care for pediatric patients undergoing chemotherapy in the ward consisted of drug administration, procedures, and nursing care to them normally given during chemotherapy).

The evaluation was done through video games or drawing or storytelling distraction techniques on happiness and relaxation of children undergoing chemotherapy by faces, happiness scale, and relaxation scale.

#### **Tool validity and Reliability**

Content validity of the tools was determined and the content of the data collection tools was submitted to a panel of five experts in Pediatric Nursing and Pediatric Oncology with more than ten years of experience in the field. Modifications of the tools were done according to the panel judgment on the clarity of sentences, appropriateness of the content, sequence of items, and accuracy of scoring and recording of the items.

Tools reliability was tested using internal consistency methods (Alpha Cronbach's test for the first tool, its result was 0.89 which indicates good reliability of the tool.

#### **Pilot study:**

A pilot study was carried out on 10 % of the studied school-age children (20), for modification clarification and estimation of the time needed for filling the study tools and testing the feasibility of the research process. The unclear items were clarified, unnecessary items were omitted and new items were added. Those who shared in the pilot study were excluded from the study sample.

**Ethical consideration:**

Written consent was obtained from the mothers of the children. The researchers explained to each child and his mother the aim and benefit of the study. The mothers were informed that their participation is voluntary and had the ethical right to participate or refuse participation in the study and emphasized that their responses were confidential, and had their right to withdraw from the study any time without giving further explanation. Privacy and confidentiality were resolutely kept in all data collection procedures.

**Statistical analysis:**

Data collected and analyzed by computer program SPSS" ver. 21" Chicago. Categorical variables were described by number and percent, where continuous variables were described by the means and standard deviation (M, SD). A Pearson's correlation is used to determine the significance between variables in the same group. Significance is considered when  $P < 0.05$  while  $P > 0.05$  is considered not significant.

**3. RESULTS**

**Table 1:** Showed personal characteristics of children. Regarding the age, (55%), (50%), (52%), and (50%) of children who received video games, drawing, story-telling, and control groups were mostly aged  $8 < 10$  years with mean  $\pm$ SD ( $4.37 \pm 0.74$ ,  $4.70 \pm 0.72$ ,  $4.54 \pm 0.63$ , and  $4.60 \pm 0.81$  respectively). Males were most prominent in video games, drawing, story-telling, and control groups (53%, 52, 60, and 61% respectively). As regard residence (61%), (47%), (45%), and (60%) of children who received video games, drawing, story-telling, and control groups were living in urban areas respectively.

**Table 2:** Demonstrated the medical diagnosis of children in video games, drawing, story-telling, and control groups. The results illustrated that no statistically significant difference was found between groups' different diagnoses as a brain tumor, kidney tumor, leukemia, pelvic tumor, thyroid tumor, and pulmonary tumor. It was observed that leukemia was mostly found between children in all groups.

**Table 3:** Illustrated medical data among children in all studied and control groups and it was observed that (69%), (72%), (65%), and (75%) of children video games, drawing, story-telling, and control groups had cancer for one year respectively. The results showed (65%), (25%), (55%), and (63%) of children video games, drawing, story-telling, and control groups were treated with infusion methods, while (35%), (75%), (45%), and (37%) of children were treated with infusion & intramuscular methods.

**Table (4)** indicated that there was a highly significant difference among video game, drawing, story-telling, and control groups regarding their happiness, where more mean scores of children happiness were rated by the children in the video games group ( $5.2 \pm 0.94$ ).

**Table (5)** revealed that there was a highly significant difference in children's relaxation scores among the video game, drawing, story-telling, and control groups. Less mean scores of children relaxation were rated by the children in the drawing group ( $1.4 \pm 0.8$ ).

**Table (1): Frequency distribution of the studied children in video games, drawing, story-telling, and control groups regarding their characteristics (n=200)**

| Items                        | Video games group (n= 50) |    | Drawing group(n=50) |    | Story-telling group (n=50) |    | Control group (n=50) |    | X2  | p-value      |
|------------------------------|---------------------------|----|---------------------|----|----------------------------|----|----------------------|----|-----|--------------|
|                              | No                        | %  | No                  | %  |                            |    | No                   | %  |     |              |
| <b>Age: (years)</b>          |                           |    |                     |    |                            |    |                      |    |     |              |
| 6 - < 8                      | 3                         | 6  | 5                   | 10 | 4                          | 7  | 5                    | 9  | N.S | <b>0.237</b> |
| 8 - < 10                     | 28                        | 55 | 25                  | 50 | 26                         | 52 | 25                   | 50 |     |              |
| 10 – 12                      | 19                        | 39 | 20                  | 40 | 20                         | 41 | 20                   | 41 |     |              |
| <b>M <math>\pm</math> SD</b> | $4.37 \pm 0.74$           |    | $4.70 \pm 0.72$     |    | $4.54 \pm 0.63$            |    | $4.60 \pm 0.81$      |    | N.S | 0.917        |

|                   |    |    |    |    |    |    |    |    |     |       |
|-------------------|----|----|----|----|----|----|----|----|-----|-------|
| <b>Gender:</b>    |    |    |    |    |    |    |    |    | N.S | 0.198 |
| Male              | 27 | 53 | 26 | 52 | 30 | 60 | 31 | 61 |     |       |
| Female            | 23 | 47 | 24 | 48 | 20 | 40 | 19 | 39 |     |       |
| <b>Residence:</b> |    |    |    |    |    |    |    |    | N.S | 0.298 |
| Urban             | 31 | 61 | 23 | 47 | 22 | 45 | 31 | 62 |     |       |
| Rural             | 19 | 39 | 27 | 53 | 28 | 55 | 19 | 38 |     |       |

N.S: Not significant

**Table (2): Frequency distribution of the studied children in video games, drawing, story-telling, and control groups regarding medical diagnosis (n=200)**

| Diagnosis       | Video games group (n= 50) |    | Drawing group(n=50) |    | Story-telling group (n=50) |    | Control group (n=50) |    | p-value   |
|-----------------|---------------------------|----|---------------------|----|----------------------------|----|----------------------|----|-----------|
|                 | No                        | %  | No                  | %  | No                         | %  | No                   | %  |           |
| Brain tumor     | 3                         | 6  | 5                   | 10 | 5                          | 10 | 4                    | 8  | 0.877 N.S |
| Kidney tumor    | 4                         | 8  | 4                   | 8  | 4                          | 7  | 3                    | 6  | 0.787 N.S |
| Leukemia        | 23                        | 47 | 20                  | 40 | 20                         | 41 | 21                   | 42 | 0.317 N.S |
| Pelvic tumor    | 8                         | 16 | 9                   | 18 | 9                          | 18 | 9                    | 18 | 0.706 N.S |
| Thyroid tumor   | 11                        | 22 | 7                   | 15 | 7                          | 14 | 8                    | 16 | 0.201 N.S |
| Pulmonary Tumor | 1                         | 2  | 2                   | 4  | 1                          | 2  | 2                    | 4  | 0.211 N.S |

N.S: Not significant

**Table (3): Distribution of the studied children in video games, drawing, story-telling, and control groups regarding their medical data (n=200)**

| Items                                       | Video games group (n= 50) |    | Drawing group(n=50) |    | Story-telling group (n=50) |    | Control group (n=50) |    | p-value |
|---|---------------------------|----|---------------------|----|----------------------------|----|----------------------|----|---------|
|   | No                        | %  | No                  | %  | No                         | %  | No                   | %  |         |
| <b>Duration of disease in years:</b>        |                           |    |                     |    |                            |    |                      |    |         |
| 1 year                                      | 34                        | 69 | 36                  | 72 | 33                         | 65 | 37                   | 75 | 0.013*  |
| 2 years                                     | 11                        | 21 | 12                  | 23 | 13                         | 25 | 9                    | 18 |         |
| 3 years or more                             | 5                         | 10 | 3                   | 5  | 5                          | 10 | 4                    | 7  |         |
| <b>Type of chemotherapy as a treatment:</b> |                           |    |                     |    |                            |    |                      |    |         |
| Infusion                                    | 33                        | 65 | 13                  | 25 | 27                         | 55 | 31                   | 63 | 0.02*   |
| Infusion + IM                               | 17                        | 35 | 37                  | 75 | 23                         | 45 | 19                   | 37 |         |

**Table (4): Means differences of happiness among the studied children in the video game, drawing, story-telling, and control groups (n=200)**

| Items           | Video games group (n= 50) |   | Drawing group(n=50) |   | Story-telling group (n=50) |   | Control group (n=50) |   | X2    | p-value |
|-----------------|---------------------------|---|---------------------|---|----------------------------|---|----------------------|---|-------|---------|
|                 | No                        | % | No                  | % | No                         | % | No                   | % |       |         |
| Happiness scale | 5.2 ±0.94                 |   | 3.69 ± 0.75         |   | 4.60 ±1.09                 |   | 2.70 ± 0.84          |   | 17.78 | 0.000   |

(\*\*\*) Statistically significant at p<0.0001

**Table (5): Means differences of relaxation among the studied children in a video game, drawing, story-telling, and control groups (n=200)**

| Items            | Video game (n= 50) |   | Drawing group (n=50) |   | Story-telling group (n=50) |   | Control group (n=50) |   | X2  | p-value |
|------------------|--------------------|---|----------------------|---|----------------------------|---|----------------------|---|-----|---------|
|                  | No                 | % | No                   | % | No                         | % | No                   | % |     |         |
| Relaxation scale | 4.85 ±1.01         |   | 2.84 ± 0.83          |   | 2.55 ±1.18                 |   | 1.4±0.8              |   | 6.4 | 0.000   |

(\*\*\*) Statistically significant at p<0.0001

#### 4. DISCUSSION

Distraction is considered the most effective procedure to increase happiness and relaxation during routine care. So the study aimed to investigate the effect of video games, drawing, and story-telling on the happiness and relaxation of children with cancer

The results of the present study revealed that males were most prominent in video game, drawing, story-telling, and control groups. The study's results are in the same line with the results conducted by the **worldwide organization, (2016)** which reported that the cancer incidence in male was higher than in the female. Also, these findings are agreed with **El Sayed et al., (2019)**, who carried out a study about "Effect of Story-Telling on Reducing the Intensity of Nausea and Vomiting among Children Undergoing Chemotherapy" among 100 children in Sohag city and found the same.

The results of the present study indicated that leukemia was mostly found between children in all groups as a medical diagnosis of children in video games, drawing, story-telling, and control groups. These results were following a study conducted by **Abdel Hadi, (2010)** who studied comprehensive care in pediatric cancer patients and mentioned that acute lymphatic leukemia was the most common type of cancer in children, and **El Sayed et al., (2019)** also, reported the same findings.

The current study revealed that more than two-thirds of video game, drawing, story-telling groups and three-quarters of children in the control group had cancer for one year respectively. This finding is similar to the study conducted by **Hassan, (2015)** about "Effect of Guided Imagery Relaxation Session and Story-Telling on the Intensity of Nausea and Vomiting among Children Undergoing Chemotherapy" and found that approximately one-half of children had cancer for less than 6 months. Similarly, **Abd El Razik (2010)** who conducted a study about "Effect of Educational Program on Quality of life for patients with cancer undergoing chemotherapy" found that more than two-thirds of children developed cancer for less than one year. This is attributed to delayed cancer discovery among the young age of children.

The results of the current study showed that approximately two thirds, one quarter, more than half, and less than two-thirds of children in video games, drawing, story-telling, and control groups were treated with infusion methods, while more than one third, three quarters, less than half and more than one-third of children were treated with infusion & intramuscular methods.

These results are supported with the results conducted by **Hassan, (2015)** who reported in his study in Tanta city about "Effect of Guided Imagery Relaxation Session and Story-Telling on the Intensity of Nausea and Vomiting among Children Undergoing Chemotherapy" that treatment was either administered for children intravenously or Intrathecally. Also, these results are similar to **Abd El Hadi, (2010)** who stated that the majority of children received chemotherapy through different routes depending on the type of cancer and the chemotherapy drugs used.

The results of the current study indicated that there was a highly significant difference among video game, drawing, story-telling, and control groups regarding their happiness and there was a highly significant difference of children's relaxation scale among the video game, drawing, story-telling, and control groups. This may be due to children's attention was occupied by distraction technique activation was reduced in the areas of the brain (**Martin, 2010**).

These results are supported by **Kodchakon et al., (2018)** who conducted a study in Thailand about "A Randomized Control Trial of Guided-Imagination and Drawing-Storytelling in Children with Cancer" and found that children with cancer who received GIM and computer drawing- storytelling had significantly higher scores for happiness, relaxation, and lower levels of vital signs representing more relaxation.

Also, are in agreement with **Abd El-Gawad et al., (2015)** who studied the effect of interactive distraction versus cutaneous stimulation for venipuncture pain relief among 100 Egyptian children at Ain Shams University Hospitals and found that distracting technique was effective in the reduction of pain during a routine procedure for hospitalized children.

Also, **Cerne et al. (2015)** who conducted a study about "A Randomized Controlled Trial Examining the perspective from a developing country. Journal of Effectiveness of Cartoons as a Distraction Child Health Care " and found that procedures in oncology departments and distraction technique before and during procedures had benefits because it is cheap and easily available, require less staff and accepted by the children and their families and there is no harm to children and it can increase the children participation and improve their coping in another experience.

## 5. CONCLUSION

The current study concluded based on the results and study hypothesis that children undergoing chemotherapy who received video games, drawing, and story-telling had experienced high happiness and relaxation scores compared to children in the control group who received daily routine hospital care only.

## 6. RECOMMENDATIONS

1. Pediatric nurses should involve video games, drawing, and story-telling in routine care to promote and improve the happiness and relaxation of children with cancer
2. Parents' education and nurses about video games, drawing, and story-telling as distraction techniques for children with cancer.
3. Types of equipment that used for distraction techniques should be available in the hospitals such as toys, attractive books, puppets, video games, bubbles, and drawing equipment as a sketch and colored pencils for drawing that distracts the children and hold their attention.

## REFERENCES

- [1] Abd El Razik, S. (2010): Effect of educational program on quality of life for patients with cancer undergoing chemotherapy, doctoral Degree, Faculty of Nursing, Benha University.
- [2] Abd El-Gawad S M and Elsayed L A. (2015): Effect of interactive distraction versus cutaneous stimulation for venipuncture pain relief in school-age children. *Journal of Nursing Education and Practice*, 5(4): 32-40.
- [3] Abdel Hadi S. (2010): Comprehensive care in pediatric cancer patient, *Pediatric oncology NCI, Egypt*. Retrieved from [www.nic.ed.eg](http://www.nic.ed.eg).accessed.
- [4] Academy for Guided Imagery, (2010): Certification training. Retrieved from: [http://www. Academy for Guided Imagery.com](http://www.Academy for Guided Imagery.com)
- [5] Bergomi P, Scudeller S, Pintaldi A, and Dal Molin. (2018): Efficacy of non-pharmacological methods of pain management in children undergoing venipuncture in a pediatric outpatient clinic: A Randomized Controlled Trial of Audiovisual Distraction and External Cold and Vibration, *Journal of Pediatric Nursing* 42. May, DOI: 10.1016/j.pedn.2018.04.011
- [6] Cerne D L, Sannino and Petean MA., (2015): Participation in the care of a hospitalized child: A Randomised Controlled Trial Examining the perspective from a developing country, *Journal of Effectiveness of Cartoons as a Distraction Child Health Care*. Online publication DOI: Technique. *Nurs Child Young People*, 27(3): 28-33. 10.1177/136749351559865.
- [7] Drawing-Storytelling in Children with Cancer, *Pacific Rim Int J Nurs Res*; 22(4) 386-400
- [8] El Sayed S A, Hekmat Ibrahim, Nahid Thabet Mohamed, and Manal Mohamed Ahmed (2019): Effect of story-telling on reducing the intensity of nausea and vomiting among children undergoing chemotherapy, *Article 17, Volume 7, Issue 17, Spring 2019, Page 164-172*. DOI: 10.21608/ASNJ.2019.56979.
- [9] ELSA Support (2015): Relaxation thermometer. Available from: <http://www.elsa-support.co.uk/relaxation-thermometer>
- [10] Harsh V, Vivek V, Amanlo K, Ruku S, Neha C, and Krushnan V. (2014): Comparison between the analgesic effect of two techniques on the level of pain perception during venipuncture in children up to 7 Years of Age: A Quasi-Experimental Study, *Manag*; 5(6):425-34.
- [11] Hassan A. Gh. (2015): "Effect of guided imagery relaxation session and story-telling on the intensity of nausea and vomiting among children undergoing chemotherapy, doctoral Degree, Nursing, Tanta University.
- [12] Heinemann K and Boyce A., (2012): Emergencies in pediatric oncology. *Therapeutic drugs*. Chapter 13, Springer, New York, pp. 105-106.



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- [13] Holder M, Coleman B, and Wallace J. (2010): Spirituality, religiousness, and happiness in children, *J Happiness Studies*; 11(2): 131–50.
- [14] Kaheni S, Rezai M, Bagheri M, Goudarzian A. (2016): The Effect of distraction technique on the pain of dressing change in Kahani et al. *Int J Pediatr*, Vol.4, N.5, Serial No.29, May 1801 3-6-Year-old Children. *International Journal of Pediatrics*; 4(4):1603-10.
- [15] Kodchakon P, Sasitorn P, Wantanee W, and Thirachit Ch. (2018): A Randomized control trial of guided-imagination and
- [16] Lee E and Yeo Y. (2013): Relaxation practice for health in the United States: findings from the National Health Interview Survey. *J Holist Nurs*; 31(2):139-48.
- [17] Lief J. (2017): Music stimulates emotions through specific brain circuits. [cited Jul 11]. Available from: <http://jonliefmd.com/blog/music-stimulates-emotions-through-specific-brain-circuits>
- [18] Martin A. (2010): Measuring chemotherapy-induced nausea and emesis. *Cancer*, 98(6):645-655.
- [19] Rezai M, Goudarzian A, Koulaee and Nesamil. (2017): The effect of distraction techniques on the pain of venipuncture in children: A Systematic Review. *J Pediatr Rev*. January, 5(1): e9459. Doi: 10.17795/jpr-9459.
- [20] Scott D, Donahue D, and Mastrovito R. (2010): Comparative trial of clinical relaxation and an antiemetic drug regimen in reducing chemotherapy-related nausea and vomiting.
- [21] Shah P. (2017): 10 Benefits of storytelling for kids, Available from [http://www.momjunction.com/articles/benefits-story-telling-yor-kids\\_0036903](http://www.momjunction.com/articles/benefits-story-telling-yor-kids_0036903)
- [22] Shapiro M. (2011): Progress in preventing chemotherapy-induced nausea and vomiting. *Cleveland clinic journal of Medicine*, 69:609-617
- [23] William HC, Chung JO, Kwok. (2016): Play interventions to reduce anxiety and negative emotions in hospitalized children. *BMC Ped*; 16 (1): 1-9.
- [24] Worldwide organization (2016): Cancer priorities in developing countries. *Annually Oncology*, 12(8):112-120. Retrieved from [www.globalhealth.org/cancer-priorities-in-developing-countries](http://www.globalhealth.org/cancer-priorities-in-developing-countries), *annually oncology*, 12(8):1120120. retrieved from [ww.globalhealth.org/](http://ww.globalhealth.org/)
- [25] Zhang (2015): Mail-in questionnaire for monitoring nausea and vomiting in oncology outpatients. *American Journal of Health-System*, 55(54):1903-1906.