

# Effectiveness of an Educational Program on the Nurses Knowledge for Children with Burns Injuries attending Burns Specialist Hospital in Baghdad City

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**Abstract- Objective(s):** Identify nurses' the relationships between nurse's demographic characteristics like (age, gender, level of education, years of experience in burn units, monthly income, course of training in burns) and their knowledge provided for children with burn injuries attending burns specialist hospital in Baghdad city.

**Methodology:** A quasi-experimental study design was carried out at the non-Teaching Hospital in Baghdad City from June 1<sup>th</sup> of 2016 up to the 30<sup>th</sup> of June 2017.

Non probability (purposive) sample of (46) nurses were selected from burns wards in non-Teaching Hospital in Baghdad City, and they have at one year of experience in burn units of the Hospital.

The study instruments consisted of two major parts was constructed for the purpose of the study. First part related to nurse's demographic data, the second part related to nurse's knowledge which composed of (40) items of nurses' knowledge of child's with burns at burn units.

The data and were collected by using of constructed questionnaire, which consisted of (40) items self-administrated method used and filled by using the questionnaire. Select the stability of the questionnaire during and select the pilot study through a group of 16 experts. Been described of data analyzed through using of two statistical approaches: descriptive statistical analysis and inferential statistical analysis.

**Results:** The study results revealed table shows that the study group nurses' knowledge at the pre-test is fail, while at the post-test one and their knowledge is changes and they become more knowledge able.

Moreover, the findings reflect that no significant relationship between nurse's knowledge and their age, gender, monthly income, training sessions, number of training sessions and place of training.

**Recommendation:** The study recommended that an educational by providing educational posters, guidelines, pamphlets and manuals, and training program of burns care one. Important for the nurses working in burns wards, developing of follow up child's with burns and the nurses' education level should be improved through an increasing the number of professional nurses employed in burns wards.

**Index Terms-** Assessment, Nurses' Knowledge, Children, Burns Injuries

## I. INTRODUCTION

The normal skin consists of two layers the dermis, which forms the main bulk of the skin, consists of a layer of connective tissue composed of an interlacing network of collagen and elastic fibers that is responsible for the strength and elasticity of the skin. The dermis also contains blood and lymphatic vessels, nerves, sensory receptors, sweat and sebaceous glands and hair follicles. The dermis is thicker in certain areas such as palms, soles and dorsal aspects of the body and it is very thin in the eyelids, scrotum and penis. Beneath the dermis is the subcutaneous fat that separates the dermis from the underlying structures (1)

The burn team finds out whether or not the patient needs help with breathing or any other aspects of staying alive. One or more intravenous (IV) access lines are started so that important fluids can be given to the patient as needed. Through these IV lines, the patient is quickly given pain or other medications to make them more comfortable, and provide extra fluid so the patient doesn't go in to "shock". Burn injuries cause the body to release chemicals into the good, so that fluids leak out of the blood vessels and into the lungs and areas around the burn. Over the first few hours, and maybe even days to weeks, this makes the patients look swollen or puffy, and at means that extra fluids must have given to keep up with their needs. After several days to weeks, this will stop happening, the fluids will go back into the bloodstream (2) .

It lacks blood vessels and has few nerve endings. The bottom layer of the epidermis is called the basal layer where cells continually divide and move up through the epidermis to replace the old dead cells that fall off the skin surface. The dermis is much thicker than the epidermis. It contains blood vessels, nerves, lymph vessels, hair follicles, and sweat glands. It is held together by a protein called collagen. The subcutaneous layer is a connective tissue layer at the base of the skin. Consisting mostly of fat, it carries major blood vessels and nerves to the overlying skin (3) .

Stated that nursing care is provided for people with widely diverse health and sick care needs in multiple contexts worldwide. The knowledge and competence to meet such a wide variety of care needs may be daunting for the student starting a programmer of study to become a registered nurse. Nursing programmers are designed to allow knowledge and Knowledge experience to be accumulated and assimilated by the nursing student within the 3 or 4 year course period. (4)

Optimal care of the burn patient requires a distinctive multidisciplinary approach. Positive patient outcomes are dependent on the composition of the burn care team and close collaboration among its members. At the center of this team is the burn nurse, the coordinator of all patient care activities. The complexity and multisystem involvement of the burn patient demand that the burn nurse possess a broad-based knowledge of multisystem organ failure, critical care techniques, diagnostic studies and rehabilitative and psychosocial skills (5). The burns are a common cause of preventable injury, affecting over 1 million people in the United States, leading to the hospitalization of almost 40,000 children each year and over 1000 deaths. Half of burn injuries are in children under the age of 4 years. Although children are often burned by contact with hot liquids, household appliances, sun exposure, etc, and scalding burns are the most common burn injury in younger children (2).

The moderate and severe burn injured patients are in the high risk category for pressure area development according to the Braden scoring protocol; as they have reduced levels of mobility and skin integrity is compromised. Therefore, the pressure area prevention and treatment of burn wound and management (3).

The burn injury is the most devastating injury because the young skin of a child tends to burn more quickly and deeply than adult skin, and at lower temperatures. Moreover, the child has endured a number of painful surgical procedures over an extended period of time. Even though advances have been made in techniques to improve care management, expediting the child's physical recovery from deep partial and full-thickness burns, and the emotional and the physical scarring of the child last a lifetime. The economic impact is huge on the family and society as a whole when a child is severely burned. The psychological and emotional devastation for the child and the child's family, though not on the same scale, is a culmination of the child's injury, extreme pain, hospitalization and the consequence of the burn. Caring for a child who is burned demands specialized knowledge and skills to efficiently attend to all of the child's needs (4).

There are many factors impact on the care to the patient with burn injury that deliver. Therefore, providing safety of burn nursing care to there is important, accordance with clinical Knowledge guidelines which is developed by the service. The minimization of infection risk is a priority issue for the service with infection surveillance mechanisms in place. Medical, nursing and allied health staffing levels and expertise are sufficient to maintain safety in the management of burn patients. The service promotes fire safety and burn prevention activities in the community. Optimal first aid management and initial resuscitation of the patient with a severe burn injury are providing (3).

Burn injuries cause the body to release chemicals into the good, so that fluids leak out of the blood vessels and into the lungs and areas around the burn. During the first hour of care, the burn team finds out whether or not the patient needs help with breathing or any other aspects of staying alive. One or more intravenous (IV) access lines are started so that important fluids can be given to the patient as needed. Through these IV lines, the patient is quickly given pain or other medications to make them

more comfortable, and provide extra fluid so the patient doesn't go in to "shock". Over the first few hours, and maybe even days to weeks, this makes the patients look swollen or puffy, and it means that extra fluids must have given to keep up with their needs. After several days to weeks, this will stop happening, the fluids will go back into the bloodstream (5).

The wound care needs to be undertaken in the context of the local environment many excellent alternatives being developed to access to costly products which is not an option in many settings. In these situations, creativity and innovation have led to. In some instances, sophisticated products are available but lack of clinical experience makes them difficult to use (6).

Nurses spend more time with their patients each day than any other of the multidisciplinary team members and have the most interactions with the patient and family, During physician rounds, the attending physician talks to the patients and their family and continues on with other patients, while the nurse provides the hour to hour care and reinforces repeatedly to the family what the physician has said as well as the plan of care and the course of the care. Families of the dying patient also interact most with the nurse (7).

There are many burns patients need to undergo cleaning and debridement, which involves removing devitalized tissue around the wound, and this should only be done by a health care professional (2).

The situation in Iraq published data regarding burns in Iraq including Kurdistan are scarce. The WHO estimates that there were 3, 390 fire-related deaths in 2004 in Iraq which is equivalent to a death rate of 12.3 per 100,000 per year, which is higher than the global rate (8).

Therefore, highlights Annual death rate from burns in the pediatric population in Colombia was 0.901 per 100,000. Fire is the principal cause of burn deaths in Colombia, followed by electrical burns. The average annual percent mortality change for burn deaths was 5.17%. Children under 5 years of age account for the highest mortality rates (11).

**Methodology:** This chapter deals with methods which are used in the study design, administrative arrangements; setting of the study, the population and sample of the study, instrument construction, methods of data collection, pilot study and data analysis.

**Administrative Arrangement:** An official permission is obtained from the Ministry of Planning Central Council of Statistics for the acceptance of the draft of the instrument, Another approval is issued from the Ministry of Health Baghdad city non Teaching Hospital and initial agreement of one non Teaching Hospital in Baghdad city in order to carry out the study and finally subject agreement is also obtained from the nursing staff, in burn units and, him/her self to participant The participant were asked to answer within takes approximately (25-35) minutes the questionnaire and finally participant agreement is granted

**Design of the Study:** A quasi-experimental design evaluation of the study is conducted at Baghdad non Teaching Hospitals. The study is carried out to determine the nurses knowledge toward children with burns injuries in burn units and centers in Baghdad City non Teaching Hospitals from June 1<sup>th</sup> 2016 to the 30<sup>th</sup> June 2017.

**Setting of the Study:** The study is carried out at Baghdad city non Teaching Hospitals as being divided into one hospital according to the Ministry of Health. A total of (2) burn units is selected for the purpose of the study. This hospital had included the prince Specialist Burns Hospital were in the AL- Russafa side this hospital non Teaching Hospital in Baghdad city,

**Instruments:** Through an extensive review of literature, instruments is constructed for the purpose of study. By the researcher according to the burn units and nursing care to measure the underlying concepts in the present study the questionnaire. It is composed of parts and overall items, which are included in these, are (40) items

All these items have been measured, scored and rated two levels liker scale which are indicated by score (2) for right answer, score (1) for the wrong answer.

**Data Collection:** Data are collected by utilization of the developed questionnaire tool. The investigator collected the subject's responses through the questionnaire sheet self-administrated self-report and structured interview technique are used for nurses'. The participant was asked to answer within takes approximately (25-35) minutes. The data collection is carried out from June 1<sup>th</sup> 2016 to the 30<sup>th</sup> June 2017.

In order to achieve the early stated objectives, the data of the study were analyzed through the use of statistical package of social sciences (SPSS) version 18 through descriptive and inferential statistical analysis

**Table (1) Assessment of study Group Nurses' Knowledge (pre-test, post-test one)**

Items	Pre-test			Post-test one		
	M.S	S.D	Assessment	M.S	S.D	Assessment
1. Burns defined as	1.70	0.47	Pass	1.83	0.39	Pass
2. The most important functions of the skin :	1.26	0.45	Fail	1.87	0.34	Pass
3. The skin is made of several layers :	1.39	0.50	Fail	1.70	0.47	Pass
4. Located of the sweat glands and hair follicles in the skin layer	1.13	0.34	Fail	1.74	0.45	Pass
5. Be spirometry (regularity, depth) by stethoscope)	1.39	0.50	Fail	1.83	0.39	Pass
6. The suffering caused by burns in children after healing	1.22	0.42	Fail	1.91	0.29	Pass
7. To controls the infection (Infection) and prevents infections through	1.39	0.50	Fail	1.74	0.45	Pass
8. Important tests for children burns	1.17	0.39	Fail	1.96	0.21	Pass
9. The burns are classified into	1.87	0.34	Pass	1.52	0.51	Pass
10. The necessary things of which are taken into consideration in feeding children suffering from burns, accidents include	1.09	0.29	Fail	1.83	0.39	Pass
11. be liquids account for children with burns according to the following equation	1.22	0.42	Fail	1.57	0.51	Pass
12. The signs of chemical burns that occur on the respiratory system are	1.30	0.47	Fail	1.83	0.39	Pass
13. Divides given of fluids during the first 24 hours for children with burns as	1.13	0.34	Fail	1.70	0.47	Pass
14. The types of ionizing radiation that causes burns are	1.61	0.50	Pass	1.87	0.34	Pass
15. The initial evaluation of the child with burns by observing the following	1.35	0.49	Fail	1.43	0.51	Pass
16. The initial assessment is the circulatory system during the period of	1.13	0.34	Fail	1.87	0.34	Pass
17. Be a preliminary assessment of the severity of the burn for the children to use	1.17	0.39	Fail	1.57	0.51	Pass
18. Increase the seriousness of the burns in the event of delay in the processing	1.22	0.42	Fail	1.91	0.29	Pass
19. Criteria of the admission in to the burns units and centers include	1.35	0.49	Fail	1.87	0.34	Pass

20. Be evaluated case by burning intensity (Severity) include	1.30	0.47	Fail	1.78	0.42	Pass
21. Be evaluated superficial burns singe as	1.22	0.42	Fail	1.87	0.34	Pass
22. Be evaluated partial thickness burn fish (thickness) and includes	1.04	0.21	Fail	1.83	0.39	Pass
23. Be evaluating the entire thickness burn (Full thickness) include	1.09	0.29	Fail	1.74	0.45	Pass
24. The signs and symptoms of inhalation burns are	1.43	0.51	Fail	1.57	0.51	Pass
25. The organs members that fall under the third layer of the skin	1.30	0.47	Fail	1.78	0.42	Pass
26. The shock occur in cases of burns because	1.26	0.45	Fail	1.91	0.29	Pass
27. Thermal burn occurs when the skin is exposed to the extent that the amount of heat	1.78	0.42	Pass	1.74	0.45	Pass
28. The burns severity depends on several factors such as	1.39	0.50	Fail	1.83	0.39	Pass
29. Ways of feeding the child with burns would be through	1.35	0.49	Fail	1.83	0.39	Pass
30. Be changing of the position of child each	1.30	0.47	Fail	1.87	0.34	Pass
31. Be measuring vital signs for children with burns include: - Blood pressure, pulse respiration Temperature and every	1.26	0.45	Fail	1.96	0.21	Pass
32. Types of burns are	1.91	0.29	Pass	1.65	0.49	Pass
33. Comprising a second layer of skin (dermis) the following	1.17	0.39	Fail	1.61	0.50	Pass
34. Be room temperature for children with burns at a temperature	1.17	0.39	Fail	1.83	0.39	Pass
35. Be the temperature of the water used to wash the burns	1.22	0.42	Fail	1.78	0.42	Pass
36. Be dependence in the evaluation of burns on the	1.22	0.42	Fail	1.83	0.39	Pass
37. The implementation of the (CPR) CPR for children with burns when needed and include the following action	1.17	0.39	Fail	1.83	0.39	Pass
38. Tips that provide for the child and the parents to relieve itching due to burns	1.30	0.47	Fail	1.74	0.45	Pass
39. The injuries associated with electrical burns	1.13	0.34	Fail	1.83	0.39	Pass
40. The pain evaluated for children with burns injuries	1.43	0.51	Fail	1.85	041	Pass

n (23), SD. (standard deviation), pass (mean equal or more than 1.5), fail (mean less than 1.5)

This table shows that the nurses' knowledge at the pre-test is fail, while at the post-test one and their knowledge is pass.

**Table (2): Correlation between study group post-test knowledge their demographic data**

Main Domains	Statistical Parameters	Age/years	Gender	Levels of Education	Years of Experience	Monthly income	Number of training sessions	Place of training sessions
Knowledge	Pearson Correlation	.187	.215	-.172-	.112	.033	.357	.168
	p-value	.394	.325	.433	.611	.882	.094	.442
*. Correlation Is Significant At The 0.05 Level (2-Tailed).								

This table shows that there is a significant relationship between the nurses' Knowledge and their monthly income, number of training sessions, and place of training sessions at p-value 0.05, while there is a non-significant relationship between the nurses' knowledge and Knowledge and the remaining variables at p-value more than 0.05.

**Table (3): Assessment of Overall Study Group Nurses’ Knowledge (pre-test, post-test one)**

Overall study group nurses’ Knowledge	Responses	Pre-test				Post-test One			
		F	%	Mean	Assessment	F	%	Mean	Assessment
	Fail	21	91.3	1.31	Fail	0	0.0	1.78	Pass
	Pass	2	8.7			23	100		
	Total	23	100			23	100		

**n (23), f (frequency), % (percentage), pass (mean equal or more than 1.5), fail (mean less than 1.5)**

This table shows that the overall assessment of the nurses' knowledge at pre-test is fail, while at the post-test one and post-test two the overall assessment is pass.

## II. DISCUSSION

### Discussion of Nursing Knowledge Scores about Care to the Child's with Burns Injuries.

The study indicated that low grades in knowledge are fore items questionnaire for standard care at pre-test ;definition of burn ,function of skin, layers of skin, types of burns, classification of burns, initial assessment of burns assessment of severity, signs of chemicals burns ,criteria of admissions ,evaluate superficial burns, evaluate entire burns, evaluate partial thickness of burns, benefits of the prepare a sterile surgical instruments for changing the dressing of child with burn ,the benefits of using disinfection to sterilize the bathroom wasting between child burn and another and check the temperature degree of water used to wash the burns' child and all items of knowledge nurses knowledge at the pre-test is fail , while at the post-test one and post-test two their knowledge is pass( 1).

A study mention that the avoiding infection remains a primary goal in wound care. In the acute burn units, patient is

treated daily in a tank room. On the burn unit, patient have a private room, bathroom, and shower. This is an important component of care be causes it minimizes the possibility of cross-contamination. Once in rehabilitation, child's in wound care begins with the shower. The occupational therapist participant on the first day to evaluate the need for adaptive equipment (10).

The result mention that the surface infection can occur at any stage in healing process. Common causes include gram-negative and gram-positive bacteria. Although infection surface infection is a setback, it often is easily treated, and responds well to topical antimicrobial ,bacteriostatic , and/ or bactericidal therapies, including those that contain silver. It is extremely important to prevent surface area infection; daily cleansing of the patient's skin with a solution of any mild , perfume-free soap and water is acceptable for daily showering and cleansing .Removing sloughing skin cells, dried ointment ,and/or drainage helps prevent bacteria from invading fragile sites. It is essential to wear gloves during burn wound care and any time there is contact with

open skin . Hand washing , head cup and mask is essential for caregivers, patients, family and relative (11).

The study which found that the majority of staff working in the studied severe burns injury unit, did not experience for burn care. In addition ,claimed that burns nurses experience lower levels of depersonalization compared with critical care nurses in which rationale was related to the patient (12).

Mention that the interesting to note that found that burns nurses in their study experienced low levels of burnout and stress, and high levels of hardiness, Therefore it is evident that a correlation exists between burnout and hardiness among nurses (13).

The result study shows that there is no significant association between nurses of age and their knowledge. This result agrees with result done by which indicated that there was no significant difference between nurses' age and their knowledge (table 2) (14).

The study shows that there is no significant association between nurses' knowledge and gender (table 2) this result agreed with obtained from study by which indicated that, there is no relationship between gender and nurses' knowledge (15).

The result show that there is no significant association between monthly income and nurses' practices. This result agree with result done by their study show no statistical significant association between nurses Knowledge and at their monthly income (table 2) (16).

The finding indicated that there was no significant association between nurses' knowledge and number of training sessions (table, 3). This result was supported by study which revealed no statistical significant association between nurses knowledge and number of training sessions. The researcher reported that this may be result which lack in planning of Training sessions to achieve the Ministry of Health goals (17).

The finding indicated that there was no significant association between nurses' Knowledge and their years of experience (table2) supported this results. There finding show no difference in knowledge and practices, between staff members with difference level of experience, qualification and seniority (18).

The finding indicated that there was no significant association between nurses' knowledge and place of training sessions (table 3).This result might be due to the insufficient training sessions related to nurses' Knowledge toward child with burns injury at burn units with the training inside or outside Iraq. The researcher reported that all nurses' working in burn units learning from each to other ,there is no guide or international program to support their Knowledge and help them to improve them and their nursing care provided to the children. . The finding of the study shows there was significant association with level education and nurses' knowledge about child's with burns since higher percentage of nurse's knowledge was found among nurse's primary school graduate (table 3). These results are in line with this study revealed that positive relationship between nurses' knowledge and their level of education (4).

This result agreed with study who showed that there is relationship between nurse's knowledge and level of education (19).

This result disagree with obtain from study by their study although is widely used for the prevention of infection of

superficial and mid dermal burns, there is currently little evidence supporting its use .The evidence is inconsistent and of limited quality. One un blinded found that there was a wider variety of bacterial flora and a larger amount of bacterial growth with the use of a silicone mesh dressing compared with used a sterile technique according to nurses knowledge for this types of injuries . However, this study found no differences in the signs of infection or the amount of wound drainage in both groups. Another study comparing the same products also found no significant difference in the number of infection (20).

### III. CONCLUSIONS

1. There is no significant relationship between level of nurses' education level and their knowledge for child with burn injury.
2. There was no statistical significant association between nurses' knowledge and their general information.
3. Nursing knowledge shows high grade at post test one and post test two of nurses about children with burns Injury.
4. The study found more than half of the nurses are female (52.2%) for both groups.

### IV. RECOMMENDATION

- a. Policy should be initiated to proving a special educational sessions for burns care units nurses'.
  - b. Applying global educational standards to promote nurses' knowledge and Knowledge.
  - c. Providing financial status of nurses' are working on the burns care units to encouragement of them nurses'.
  - d. Great emphasis should be directed toward the educational aspects at burns care units by providing educational posters ,guidelines, pamphlets and manuals.
  - e. Modern educational facilitate for nursing team at burns units should be provided to enhances nurses ' knowledge and Knowledge.
  - f. It is necessary to initiate a burns care specialty after the graduate from nursing college and medical institutes.
- j-Providing training and professional development learning opportunities through Tele health support for nurses and allied health professionals in rural and remote areas.

### REFERENCES

- [1] Gore, M. & Akolekar, D. , Evaluation of banana leaf dressing for partial thickness burn wounds, in Burns, 2003, Vol 29, pp487-492.
- [2] Foundation Burns and Trauma, Arizona Burn Center ,2004, Available from www.azburn center. Access 21.12.2011.
- [3] Tortora , Gerard, J.; Principles of Human Anatomy,9th ed., John Wiley and Sons, Inc., Toronto, 2002 .P.P.32-45
- [4] World Health Organization. (2010). Overview of child health in Arab countries. geneva: WHO.
- [5] Greenfield, D. and Hungler, B.: Nursing Research:: Principle and Method, 6th ed.; Philadelphia: Lippincott Company, 1999, P.P.416 – 417.
- [6] Siamange ,H. ;Annals of Burns and Fire Disasters, Burn Patients Prior to Admission to the Emergency Department,2002, Vol.15,No.2,P.P.2-23.
- [7] Wood, Fiona, Department of Health New South Wales, NSW Severe Burn Injury Service Model of Care, In. 2004,P.P.34 -54.

- [8] Issac, Dorthy. A qualitative descriptive study of nurses' and hospital play specialists' experiences on a children's burn ward ,Unpublished thesis , Auckland University of Technology, New Zealand..2006
- [9] Doan and HallThe Ohio State University Medical Center, 410 W. 10th Avenue, N748 Doan H, Columbus, OH. , USA Date of web 12-sep-publication 2011, P. 3.
- [10] World Health Organization (WHO): Management of Burns in Children, CPR ., 2004,P.P.3.4.
- [11] John , Bailliere's, F.; Nurses' dictionary for nurses' and health care worker , 25th ed., edited by Barbara ,2009,P.78 .2012.
- [12] Helving , E.; Managing thermal injuries within WOCN , KnowledgeJournal of WOCN .,2002,Vol.29, P.P.76-82
- [13] Heimbach ,D., Engrav ,L. ,and Gibran ,N., Burn Pearls. Seattle, WA: University of Washington Burn Center at Harborvie Medical Center,2003,P.329-334.
- [14] Roman, D. and Mulderrig, W.: System-wide Surveillance for Clinical Encounters by Patients Previously Identified with MRSA and VRE,Medinfo, 2007;2007: P.P. 16 - 21.
- [15] Mank, A. and van der Lelie, H.: Is there still an indication for nursing patients with prolonged neutropenia in protective isolation? An evidence-based nursing and medical study of 4 years experience for nursing patients with neutropenia without isolation European Journal of Oncology Nursing, 7, 2003, P.P. 17–23..
- [16] Murji, A, Gomez,M., Knighton, J., and Fish, Emotional Implications for Working in Burn Care and Rehabilitation,2006,Vol.27,No2,P.P.8-13
- [17] Anne, D., R.: The Lived Experience of Nursing Sever Burn Injury Patient , Unpublished Thesis, University of Adelaid , South Australia,2009.
- [18] Robert, Wood, Michelle Larkin, RN.,JD., Charting Nursing Future , Improving Retention of Older and Experienced Nurses in the Workforce ,2008,P.6.
- [19] Halfen,R.,Clark,M.,Langer,G.,Jackson,P.; Evaluation of the dissemination and implementation of nutritional guideline for pressure ulcer care ,Journal of wound care,vol.16, Iss,5,2007.P.P.201-205.
- [20] Edwards,Jones, V., Green ,wood, JE., What's new in burn microbiology: James Laing memorial prize essay. Burns 2003,Vol.29No.1,P.P.15-24.

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