"ASSESSMENT OF NUTRITIONAL HEALTH IN PEDIATRIC BURN PATIENTS AT HOSPITAL"

A PROJECT REPORT
BY

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Submitted to the Department of Nutrition and Food Engineering in the partial fulfillment of B.Sc. in Nutrition and Food Engineering

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APPROVAL

This Project titled "**Assessment of Nutritional Health in Pediatric Burn Patients at Hospital**", submitted by **Sharmin Sultana Shila** to the Department of Nutrition and Food Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Nutrition and Food Engineering and approved as to its style and contents. The presentation has been held on / /2024.

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DECLARATION

I hereby declare that this project has been done by us under the supervision of **Ms. Tasmia Tasnim, Assistant Professor,** Department of Nutrition and Food Engineering**,** Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree.

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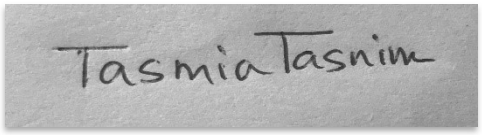

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ABSTRACT

This report serves as a comprehensive guide for both teachers and students embarking on research projects as part of coursework requirements. It offers a detailed discussion on the process of conducting a literature search, emphasizing its significance in informing research endeavors, particularly in engineering fields. The report outlines key steps involved in conducting an efficient and productive literature search, providing practical strategies to facilitate this process effectively.

Through this guide, students may become more proactive in their research assignments by finding pertinent sources and successfully synthesizing material. Students can improve their academic performance and expedite their research process by employing the techniques and resources provided in the study.

Teachers may also use this report as a useful tool to start a conversation with students about what is expected of them for their research assignments. Teachers may help students develop better levels of scholarly inquiry and a greater grasp of research procedures by implementing the recommendations in this study into their lesson plans.

The paper emphasizes the identification of sources and information synthesis as two essential elements in the literature search process. Every stage is covered in detail in its own part, along with helpful hints and methods for navigating the large body of scholarly literature. The paper also emphasizes how crucial it is to comprehend how the literature search functions within the larger research process, highlighting how it shapes research topics and influences study designs.

Overall, this report serves as a valuable resource for individuals embarking on research projects, providing practical strategies, insights, and tools to enhance the efficiency and effectiveness of literature searches. By empowering students to take a proactive approach to their research endeavors and facilitating dialogue between teachers and students, this report aims to contribute to the cultivation of critical research skills and the attainment of academic excellence.

Keywords: SHNIBPS, burn, Z-scores, biochemical, pre-existing malnutrition, risk factors, prevention techniques, healthcare interventions.

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CHAPTER 1
INTRODUCTION

1. Introduction

Pediatric burn injuries present a complex challenge due to their physiological and metabolic impact on the growing bodies of children. Among various aspects of care, assessing and maintaining proper nutritional status is crucial for their recovery and overall well-being. The objective of this study was to assess the nutritional state of pediatric burn patients in a thorough manner, identify the obstacles, and provide approaches for optimal nutritional care. Children who sustain burns are a complex and vulnerable population with specific nutritional needs. For these individuals, proper diet is essential to their healing and recuperation. In order to guarantee that pediatric burn patients receive the right care at the right time to promote their best possible recovery, it is crucial to evaluate their nutritional condition.

It's crucial to determine the etiology of burn injuries as well as their severity, taking into account factors like size and depth. First-degree, or superficial, burns are defined as those that only affect the epidermis; they cause redness on the skin and only last for a brief period of time. Previously known as 2A burns, second-degree, or superficial partial-thickness burns, are painful, weep, require wound care and dressing, and may or may not require surgery. They may also leave scars. Deep partial-thickness (second-degree) burns (formerly known as 2B burns) are less painful, drier, require surgery, and leave scars because of a partial loss of pain receptors.

Due to damage to the nerve endings, a full-thickness (third-degree) burn that penetrates the entire dermis usually does not hurt and only needs to be kept from getting infected (unless it is very small) and managed surgically. Last but not least, a fourth-degree burn is marked by harm to more deeply ingrained tissues, like bone or muscle, typically turns black, and causes the burned area to disappear. Most importantly, burns can be classified as mild or severe. Surface burns are the most common type of small burn, defined as one that covers less than 10% of the total body surface area (TBSA).

On the other hand, the definition of a major burn is not always clear; guidelines for categorizing severe burn injuries are as follows: >10% TBSA in elderly patients, >20% TBSA in adults, and >30% TBSA in children. Burns can result in physical trauma to other organs or smoke inhalation in addition to skin injuries. (Ahmed, S., Alam, A., & Rahman, M. A. 2019).

A patient's food consumption, anthropometric measures, biochemical indicators, and clinical indications of malnutrition are all evaluated as part of the nutritional evaluation process. Pediatric burn patients' nutritional condition has to be evaluated using a multidisciplinary approach comprising medical professionals such as dietitians, nurses, and doctors.

1.2 The Study's Background

Information on the frequency and effects of burns in children, the physiological changes that follow a burn injury, and the significance of nutrition in the healing process are all included in this study on the nutritional condition of pediatric burn patients. Pediatric burn patients may experience substantial physical and psychological side effects, including altered protein metabolism, increased energy demand, and metabolic abnormalities. If these changes are not immediately and properly handled, they may lead to malnourishment, poor wound healing, and an increased risk of infection.

The specific nutritional requirements of these patients, the effects of various feeding strategies on outcomes, and the role of micronutrients in supporting immune function and wound healing are all important to understand in order to optimize outcomes and promote recovery research in this area.

Researchers and medical practitioners can get precise instruments with the help of literature on the assessment of nutritional status of pediatric burn victims. This information must direct the planning, carrying out, and interpreting of investigations on the nutritional status of pediatric burn patients.

1.3 Objective

The purpose of this study is to ensure that patients are receiving adequate nutrition to support their recovery and promote healing. This evaluation aids in figuring out whether the youngster is receiving enough protein, calories, vitamins, and minerals to fulfill their heightened metabolic requirements following a burn injury. In order to maximize recovery and avoid problems, caregivers might modify the kid's diet or offer nutritional assistance based on the nutritional state of the child. Some specific objectives:

1. To assess the nutritional status of pediatric burn patients upon admission.

2. To identify nutritional deficiencies and requirements during the acute phase of burn injury.

3. To evaluate the impact of nutritional interventions on the recovery and outcomes of pediatric burn patients.

4. To propose guidelines for optimized nutritional management in pediatric burn care.

CHAPTER 2
LITERATURE REVIEW

2.1 Literature Review

The project literature evaluation examines the corpus of studies to provide a comprehensive image of pediatric burn patients. An important consideration when assessing the nutritional condition of juvenile burn patients is the impact of burns on metabolism, protein needs, and micronutrient demands. The goal of this evaluation is to find any dietary excesses or deficiencies, as well as problems with nutrient use or absorption, that might be impeding the patient's ability to heal and recover. Healthcare professionals may create customized nutrition regimens for pediatric burn patients based on their nutritional state, which will promote their general health and wellbeing. In addition to discussing the significance of early and routine monitoring to guarantee the best results for these susceptible individuals, I will examine the many techniques and instruments utilized to evaluate the nutritional status of pediatric burn patients. First, studies have demonstrated that burn Patients frequently have impaired immunological function, increased protein catabolism, and hypermetabolism, which, if left untreated, can result in malnutrition.

Second, research has shown how crucial early and intensive nutritional support is for preventing muscle atrophy, accelerating wound healing, and assisting in the general recovery of pediatric burn patients: In order to address these patients' higher needs for protein and calories, enteral and paternal feeding may be necessary.

Furthermore, studies have highlighted the significance of micronutrients such vitamin C, vitamin E, zinc, and selenium in promoting wound healing and immune system performance in pediatric burn patients. Sufficient supplementation of these micronutrients could be required to avoid deficits and get the best possible results. Pediatric burn patients may have signs of child abuse, thus it's critical to evaluate the pattern, location, and consistency of the damage with the patient's history. The majority of patients are from lower socioeconomic strata, where child abuse and neglect are prevalent.

Overcall, the literature **"Assessment of Nutritional Health in Pediatric Burn Patients at Hospital"** underscores the importance of individual nutrition care plans adapted to the specific needs of each patient to support recovery and improve outcomes.

2.2 Overview of Burns

2.2.1 Causes of Burns

Electric current, chemicals, and thermal injury are the main causes of burns. Thermal burns, which result from coming into contact with hot surfaces, open flames, or hot liquids (scalds), account for more than 70% of burn injuries. Scalds account for 50–85% of burn injuries in children, according to the majority of research. Among the liquids used are tea, oatmeal, and hot water. Burns from open flames can occur when human skin comes into contact with them. Flames may arise from the explosion of combustible materials like cooking gas or petroleum products. A child could get contact burns if they come into contact with a hot object, like a hot cooking pot, an iron box, cutlery, etc.

When an electric current flows through tissues, it can cause electrical burns. Voltages between 200 and 1000 volts can cause significant harm. Although clothing can catch fire and cause some burns, most injuries occur to deeper tissues like the heart. Because of how severe these burns are, there is a notable rate of morbidity and death. (Bangladesh Society for Burn Injuries.2020).

Chemical burns can occur from materials that are either alkaline or acidic. Alkali burns are considered higher risk burns because they are more likely to result in deeper tissue penetration and liquefactive necrosis. Acid burns produce coagulative necrosis, which reduces the burn's depth and penetration.

Confined space burns are associated with high rates of morbidity and mortality and are known to induce inhalational harm. They should be suspected in cases of acute respiratory distress, carbon monoxide poisoning, or signs of airway damage such as burned hair in the nostrils.

2.2.2 Depth of Burn

This is divided into groups based on the layer or layers of burned skin and underlying tissues. Burns of partial thickness primarily affect the epidermis and dermis and can be either superficial or severe dermal burns. Full thickness burns can penetrate all the way through the skin to the subcutaneous tissues, affecting underlying structures like tendons, nerves, muscle, or bone.

2.2.3 Burn Surface Area

This number represents the percentage of the body's surface that has been burned. It can be estimated using a variety of techniques, including the Lund and Browder charts, the rule of nines, and the palm method. The latter strategy will be used in this study since it has been shown to have the highest accuracy when estimating burn surface area.

2.3 Conceptual Framework

There are several aspects to the conceptual framework for evaluating the nutritional condition of pediatric burn victims. It entails comprehending how burns affect metabolism, nutrition absorption, and utilization. It takes into account how the degree and severity of the burn damage affect the body's capacity for healing and how much nutrients is needed. It also takes into account variables like age, comorbidities, and adequate nutritional intake both before and after an accident.

Additionally, it acknowledges the significance of multidisciplinary cooperation between medical experts, such as nurses, doctors, and dieticians, in customizing dietary therapies. The framework underscores the importance of continuous monitoring and adjustment of nutritional support strategies to optimize recovery and mitigate complications in pediatric burn patients.

- **Economic and Social Factors**

  The nutritional condition of pediatric burn victims is significantly influenced by social and economic variables. The general well-being of these individuals is influenced by their socioeconomic situation, family support networks, cultural beliefs, and accessibility to healthcare services. Financial difficulties and restricted access to medical facilities may also make it difficult to receive prompt medical treatments, such as nutritional assistance, which would lengthen the healing process and raise the possibility of problems.

- **Burn Patients Nutritional Status**

  The nutritional status of pediatric burn patients is a critical determinant of their overall health outcomes and recovery trajectory. Burn injuries impose a significant metabolic demand on the body and depletion of essential nutrients. Consequently, maintaining optimal nutritional status is essential to support wound healing, prevent infections, and minimize complications in these vulnerable patients.

CHAPTER 3
METHODS AND MATERIALS

3.1 Essential Elements

1. Patient Information:

- Age: The age of the patient plays a significant role in understanding nutritional needs, metabolic rates, and healing processes.

- Gender: Gender-related differences may influence nutritional requirements, response to treatment, and recovery trajectories.

- Residence: The geographical location of the patient's residence can impact access to healthcare, availability of nutritional resources, and socioeconomic factors affecting recovery.

2. Parents/Caregiver Details:

- Occupation: The occupation of parents or caregivers provides insights into socioeconomic status, time availability for caregiving, and potential stressors impacting nutritional support.

- Education Level: Education level correlates with health literacy, understanding of nutritional needs, and adherence to treatment regimens.

- Income: Monthly income reflects financial resources available for healthcare, nutrition, and supportive services, influencing the quality of care and recovery outcomes.

3. Nutritional Status at Admission:

Assessing the patient's nutritional status upon admission provides a baseline for interventions and monitoring. Variables to consider include weight, biochemical markers, and any pre-existing malnutrition.

4. Burn Details:

- Causes of Burn: Understanding the cause of the burn (scalding, flame, electrical) helps tailor prevention strategies and anticipate specific nutritional needs.

- Agent of Burn: Identification of the agent causing the burn (hot liquids, chemicals) informs wound management and nutritional support.

- Depth and Percentage of Burn: Assessing the depth and extent of burn injury guides treatment decisions, including fluid resuscitation, nutritional support, and surgical interventions.

- Location of Burn: The anatomical site of the burn influences functional impairment, nutritional requirements for tissue repair, and long-term rehabilitation strategies.

3.2 Design of the Research

3.2.1 The Study's Design

A cross-sectional approach was used in the study to evaluate the nutritional health of burn victims in children. This methodology allowed data to be collected at a certain point in time, providing a summary of the participants' nutritional status.

3.2.2 Study Area

The study was conducted at SHNIBPS Hospital, which specializes in the treatment of pediatric burn patients. The institution has the burn units, nutritional support services, and specialist medical staff needed to handle burn injuries in children.

3.2.3 Population under Study

The research population consisted of pediatric patients with confirmed burn injuries (ages 1 to 17) admitted to the burn care unit of the SHNIBPS Hospital.

3.2.4 Study Duration

The study was conducted over a period of three months, allowing for the recruitment of participants, data collection, and analysis.

3.2.5 Study Procedure

A repeated sample was used to choose patients once they were admitted to the burn care unit. During the research period, this strategy guaranteed the inclusion of all eligible patients. Finding and enlisting children who qualify to be admitted to the burn care center after suffering burns. Informed consent obtained from parents or guardians of the participants. Collection of demographic data, medical history, and burn injury details from medical records. Assessment of nutritional status using anthropometric measurements, biochemical markers, dietary intake evaluation, and clinical indicators. Data analysis to

determine the prevalence of malnutrition and associated factors among pediatric burn patients. Interpretation of findings and recommendations for nutritional interventions and management strategies.

3.2.6 Sample Size

The sample size was total of 100 pediatric burn patients were included in the study.

3.3 Requirements for Sampling Data

- **Gender:** To guarantee representation from both genders, the sample will contain both male and female pediatric burn victims.

- **Age:** To concentrate on the pediatric population, a subset of pediatric patients (0 to 17 years old) will be included in the sample.

- **Residence:** In order to guarantee a representative sample, patients will be included from a variety of geographic locations or regions.

- **Parents Details:** Information regarding parents or caregivers, including demographics (age, education level, occupation), socio-economic status, and family support system, will be collected to understand the socio-economic context and support available to the pediatric burn patients during their recovery process.

- **Nutritional Status at Admission:** The patients' nutritional state at admission will be recorded in order to create a baseline and assess the impact of burn injuries on nutritional status.

- **Burn Specifics:** To understand the clinical profile of pediatric burn patients and its implications for nutritional management, detailed information on burn injuries will be gathered, including the cause of the injury, the extent and severity of the burns (percentage of total body surface area burned, depth of burns), the location of the burns, and any associated complications.

Before pediatric patients are included in the trial, their parents or legal guardians will be asked for their informed permission. Patients' confidentiality will be upheld, and their desire to participate will be honored.

3.4 Analysis of Data

Excel and Google Forms will be used in collaboration to effectively organize and evaluate the data gathered for the evaluation of the nutritional status of pediatric burn victims. The analysis will involve the following steps:

- Data collected from participants through surveys or direct measurements will be entered into both Excel and Google Form. This form will be designed to capture all relevant information.

- Responses collected through the Google Form will be automatically populated into a Google Sheets spreadsheet, ensuring real-time data entry and centralization.

- In Excel, data cleaning procedures such as removing duplicates, correcting formatting errors, and validating data ranges will be performed to ensure the integrity of the dataset.

- Frequency distributions and percentages will be computed for categorical variables such as gender, residence, burn severity, and nutritional status categories.

- Graphical representations, such as bar charts, pie charts, and table will be created using Excel and Google Sheets to visually depict the distribution and relationships of variables.

- The results of the data analysis will be interpreted in the context of the research objectives and hypotheses. Key findings, trends, and associations will be summarized and discussed.

3.5 Sampling Calculation

- **Mean weight for all ages:**

$$\text{Mean} = \frac{\sum \text{Weight}}{\text{Number of data points}} = \frac{10+8+\ldots\ldots\ldots+14}{100} = 19.629 \text{ kg}$$

- **Standard deviation of weight for all ages:**

$$\text{Standard deviation} = \frac{\sqrt{(\sum(\text{Weight}-\text{Mean})^2)}}{\sqrt{(\text{Number of data points})}} = \frac{\sqrt{\{(10-19.629)^2+\ldots+(14-19.629)^2\}}}{\sqrt{100}}$$

So, Standard deviation ≈ 3.296kg

- **Z-scores for each data point (Altman, D. G., 1991):**

$$Z = \frac{Observed\ weight - Mea\ \ weight\ for\ all\ ages}{Standard\ deviation\ of\ weight\ for\ all\ ages};\ Z_1 \approx -2.909;\ \ldots\ldots;\ Z_{100} \approx -0.069$$

- **Identify underweight and normal weight children:**

1. Underweight: Children with a Z-score below -2 standard deviations from the mean. Number of underweight children: 21

2. Normal weight: Children with a Z-score within -2 to +2 standard deviations from the mean. Number of normal weight children: 79
   (11. Z-Score: Formula)

3.6 Limitations on the Collection of Sample Data

Ethical standards and laws pertaining to human subject's research shall be followed in the collection of sample data. The rights, privacy, and confidentiality of patients shall all be upheld during the data gathering procedure. Among the potential restrictions on data acquisition might be:

- Patients that fit the inclusion criteria are available throughout the duration of the trial.

- Variability in patients' burn injuries' degree and extent.

- Difficulties in getting precise data on nutritional consumption, particularly for patients who are young.

- Possible biases in anthropometric measures or self-reported data.

CHAPTER 4
RESULT AND DISCUSSION

4. Analysis

4.1 Social and Demographic Characteristics

Table-1 displays the characteristics of children who were hospitalized to SHNIBPS with burns.

Table-1: Details about kids that were hospitalized to SHNIBPS with burn injuries

Variable	Category	Frequency	Percent
Gender	Male	51	51
	Female	49	49
Age	1 to 11 months	17	17
	12 to 47 months	39	39
	48 to 83 months	19	19
	84 to 119 months	07	07
	120 months or above	18	18
Weight	<10kg	23	23
	<20kg	45	45
	<30kg	14	14
	<40kg	06	06
	41 or above	12	12
Location	Urban	42	42
	Rural	58	58

Table 1 provides a comprehensive overview of the characteristics of children admitted with burn injuries at SHNIBPS. The table outlines key variables including gender, age, weight, and location, presenting data in terms of frequency and percentage for each category.

Gender distribution among admitted children indicates a nearly equal representation, with 51% male and 49% female patients. This balance suggests that burn injuries affect both genders without significant discrepancy.

Regarding age distribution, the majority of admissions fall within the age range of 12 to 47 months, constituting 39% of the cases. This age group is followed by children aged 1 to 11 months, 48 to 83 months, 120 months or above, and 84 to 119 months, comprising 17%, 19%, 18%, and 7% of admissions respectively. This distribution highlights the vulnerability of younger children to burn injuries, likely due to their increased exploration of their environment and limited understanding of safety measures.

Weight distribution reveals that the majority of admitted children weigh less than 20kg, with 45% falling into this category. A significant portion (23%) weighs less than 10kg,

indicating a subgroup of particularly vulnerable infants. A smaller percentage falls into the weight categories of less than 30kg, less than 40kg, and 41kg or above, at 14%, 6%, and 12% respectively.

Geographically, there is a relatively balanced representation between urban and rural areas, with 58% of admissions coming from rural regions and 42% from urban areas. This distribution suggests that burn injuries occur across diverse socio-economic contexts, highlighting the need for broad-based prevention and intervention strategies.

In summary, the data presented in Table 1 underscores the importance of considering various demographic and contextual factors in understanding the epidemiology of pediatric burn injuries. This understanding is crucial for designing targeted prevention efforts, improving access to care, and optimizing treatment outcomes for affected children. The characteristics caregivers of children are shown in Table-2:

Table-2: Characteristics of parents of children hospitalized with burns

Variable	Category	Father (N=100)	Mother (N=100)	Total (N=200)
Occupation	Unemployed	23	12	35
	Housewife	-	46	46
	Casual	22	-	22
	Employee	26	31	57
	Professional	29	11	40
Education level	None	23	31	54
	Primary	38	39	77
	Secondary	12	19	31
	Tertiary	27	11	38
Income	<5000	33	48	81
	6000-10000	16	12	28
	20000-40000	26	33	59
	50000<	25	7	32

Table 2 presents the characteristics of parents of children hospitalized with burns at SHNIBPS. The data is categorized based on the caregiver's relationship to the child (father or mother) and further classified according to their occupation, education level, and income.

In terms of occupation, the majority of fathers (26%) are categorized as employees, followed closely by professionals (29%) and those employed in casual work (22%). A notable proportion (23%) of fathers are unemployed. Among mothers, the largest group consists of housewives, representing 46% of the total, highlighting the significant role of maternal caregivers in the household. Employees comprise the second largest group among mothers, accounting for 31% of cases, while 11% are classified as professionals. Interestingly, 12% of mothers are unemployed, indicating a diverse range of occupational statuses among female caregivers.

Education levels vary among caregivers, with the highest percentage of both fathers and mothers having completed primary education (38% and 39% respectively). This is followed by those with tertiary education, representing 27% of fathers and 11% of mothers. A significant proportion of mothers (31%) have secondary education, while 23% of fathers and 31% of mothers have no formal education, emphasizing the need for tailored communication and support strategies to accommodate varying levels of health literacy and understanding of medical interventions.

Income distribution among caregivers reveals a diverse range of financial backgrounds. The majority of caregivers earn less than 5000 units of currency, with 33% of fathers and 48% of mothers falling into this category. Additionally, 26% of fathers and 33% of mothers earn between 20000 and 40000 units, while 16% of fathers and 12% of mothers fall into the 6000 - 10000 units income bracket. A smaller percentage of caregivers (25% of fathers and 7% of mothers) earn above 50000 units, indicating a relative minority with higher financial resources.

In summary, Table 2 provides valuable insights into the demographic and socio-economic profiles of caregivers of pediatric burn patients at SHNIBPS. Understanding these characteristics is essential for tailoring support services, communication strategies, and financial assistance programs to meet the diverse needs of families facing the challenges of pediatric burn injuries.

4.2 Burn Details

Table-3 presents the burn details of children admitted with burns at SHNIBPS. The data is categorized into two main variables: causes of burn and depth/percentage of the burn.

In terms of the causes of burn, thermal sources account for the majority of cases, with 78% of children experiencing burns due to heat-related factors. This includes incidents involving hot liquids, flames, or other high-temperature substances. Electrical burns represent 12% of cases, indicating incidents involving electrical currents, while chemical burns account for 8% of cases, involving exposure to corrosive substances. Ash burns and psychiatric causes each represent 1% of cases, highlighting the diversity of factors contributing to pediatric burn injuries.

Regarding the depth and percentage of the burn, the majority of cases (49%) involve burns covering 1% to 15% of the body surface area. A significant proportion of cases (42%) involve burns covering 16% to 30% of the body surface area, indicating moderate to severe injuries. A smaller percentage of cases involve burns covering 31% to 45% of the body surface area (8%), while only 1% of cases have burns covering 46% or more of the body surface area, representing the most severe injuries. Overall, this distribution provides insights into the severity and extent of burns among pediatric patients, guiding treatment decisions and rehabilitation efforts at SHNIBPS.

Table-3: Burn details of children admitted with burns at SHNIBPS		
Variable	**Category**	**Frequency (N=100)**
Causes of burn	Chemical	08
	Electrical	12
	Thermal	78
	Ash burn	01
	Psychiatric	01
Depth and percentage of the burn	1% to 15%	49
	16% to 30%	42
	31% to 45%	08
	46 % or above	01

Column chart 1 illustrates the distribution of burn injury locations among pediatric patients admitted to SHNIBPS. The majority of burn injuries (88%) occur at home, indicating that the domestic environment poses the highest risk for pediatric burn incidents. A smaller proportion of cases originate from factory settings (6%), workplaces (3%), playgrounds (2%), and hostels (1%). This distribution underscores the importance of home safety measures and parental supervision in preventing pediatric burn injuries, while also highlighting the need for awareness and prevention efforts in other environments where children spend time.

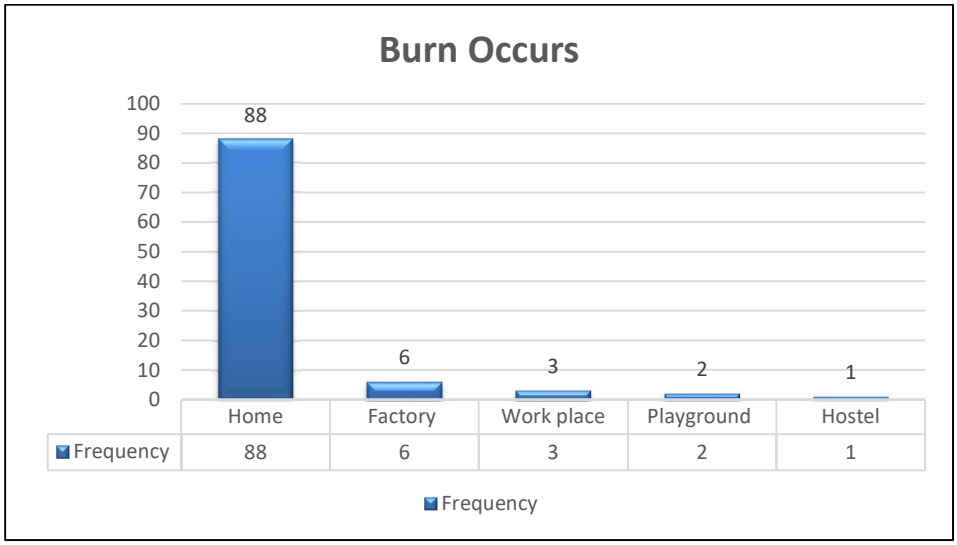

Figure 01: Burn occurs of the children.

4.3 Clinical information

Table-4 outlines the clinical information of pediatric burn patients admitted at SHNIBPS, focusing on two variables: presence of chronic illness and whether the child was weighed in the previous two weeks.

Regarding chronic illness, the vast majority of patients (96%) do not have any pre-existing chronic conditions, while only 4% of patients have a chronic illness. This 4% are Epilepsy, Rickets and mild cerebral palsy. This suggests that burn injuries among pediatric patients at SHNIBPS are predominantly acute in nature, with few cases complicated by underlying health issues.

In terms of weight monitoring, a notable proportion (86%) of pediatric burn patients were not weighed in the two weeks preceding admission. This lack of recent weight data may pose challenges in accurately assessing nutritional status and guiding appropriate interventions for these patients. It underscores the importance of implementing regular weight monitoring protocols to better manage pediatric burn cases and optimize patient care outcomes.

Table-4: Clinical information of pediatric burn patients admitted at SHNIBPS

Variable	Category	Frequency (N=100)
Chronic illness	Yes	04
	No	96
Child's weight for the past two weeks	Yes	14
	No	86

4.4 Nutritional Status at Admission

A comprehensive summary of the dietary habits and nutritional condition of pediatric burn patients admitted to SHNIBPS is given in Table 5. The first column highlights the timing of the first feed given after admission. All pediatric burn patients received their first feed within 24 hours of admission, indicating prompt initiation of nutritional support following hospitalization. None of the patients received their first feed between 24 to 72 hours or beyond 72 hours after admission, emphasizing the institution's commitment to early nutritional intervention. The subsequent columns delineate the routes of feeding utilized for pediatric burn patients. The vast majority (96%) of patients received enteral feeding, indicating that nutrition was primarily administered through the gastrointestinal tract. A smaller percentage of patients (2%) received parenteral nutrition, while an additional 2% received both enteral and parenteral feeding, likely indicating a tailored approach to meet individual patient needs. Furthermore, all patients had feeding charts established, ensuring systematic monitoring and documentation of nutritional intake throughout their hospitalization. The involvement of caregivers in feeding their children was also prevalent, with 78% of caregivers actively assisting in the feeding process, highlighting the collaborative nature of patient care at SHNIBPS.

Additionally, all patients received ten feeds per day, indicating a consistent and frequent feeding schedule to meet the nutritional demands of pediatric burn patients during the acute phase of recovery. Among children below three years of age, a significant majority (84.4%) were still breastfeeding, underscoring the importance of continued breastfeeding as a valuable source of nutrition and immunological support for young burn patients.

Finally, the table addresses the quality of food preparation within the ward. The majority of respondents (76%) indicated that the food provided in the ward was well-prepared, ensuring that pediatric burn patients receive adequate and nutritious meals during their hospital stay.

Table-5 highlights the comprehensive approach to nutritional support and feeding practices employed at SHNIBPS for pediatric burn patients. From early initiation of feeds to active caregiver involvement and maintenance of breastfeeding, these practices aim to optimize nutritional intake and support the recovery of pediatric burn patients during their hospitalization.

Table-5: Child burn victims' nutritional condition upon admission to SHNIBPS

Variable	Category	Percent (%)
First feed given after admission	<24 hours	100%
	24 to 72 hours	0
	>72 hours	0
Route(s) of feeding	Enteral	96%
	Parenteral	02%
	Both	02%
Feeding chart (N=100)	Yes	100%
	No	0
Caregiver helping to feed their child (N=100)	Yes	78%
	No	22%
Feeds gave to the child in a day?	10	100%
Children below 3 years is still breastfeeding (N=45)	Yes	84.4%
	No	15.6%
The ward's meal was expertly prepared.	Yes	76%
	No	24%

4.5 Discussion

The data presented across the five tables offers valuable insights into various aspects of pediatric burn patient care at SHNIBPS.

Firstly, Tables 1 and 2's demographic data emphasize the variety of patient and caregiver backgrounds. Comprehending these demographics is crucial in order to customize treatment programs that cater to the individual requirements of the patient and their family. For example, knowing the patient's age, gender, and place of residence enables medical professionals to predict risk factors and offer the right kind of assistance.

Turning now to Table 3, which lists the causes and degrees of burns, we see that burns from heat are the most prevalent type, followed by burns from electricity and chemicals. This emphasizes the necessity of implementing focused preventative methods that target thermal threats, such fires and scalds, and make sure safety precautions are taken to avoid chemical and electrical mishaps. Furthermore, a significant percentage of moderate to severe injuries are indicated by the distribution of burn depths, underscoring the vital need of providing these patients with timely and thorough medical care.

Table 4 offers important information about how juvenile burn victims should be managed nutritionally. It is in line with best practices in burn treatment to start feeding as soon as possible after admission, as this is when nutritional support is most critical for maximizing healing and minimizing problems. The hospital's preference for enteral feeding is indicative of its dedication to using the gastrointestinal tract whenever feasible, and the active participation of caregivers in feeding emphasizes the significance of family-centered care.

The clinical information table indicates that the majority of pediatric burn patients had acute cases, with a low frequency of chronic disease. Unfortunately, it is difficult to adequately measure nutritional status and choose relevant therapies due to the absence of recent weight monitoring.

The nutritional status table, which shows that all patients get their first feed within 24 hours of arrival, further emphasizes the hospital's dedication to early feed initiation. A significant portion of the complete nutritional support given to pediatric burn patients comes from the widespread use of enteral feeding and the active engagement of caregivers in feeding procedures.

The information displayed in the tables highlights the complexity of pediatric burn care, including demographics, burn features, caregiver participation, and nutritional support strategies. The development of customized therapies targeted at improving outcomes for pediatric burn patients at SHNIBPS and elsewhere can be informed by these findings.

CHAPTER 5
CONCLUSION

5.1 Recommendations

The study paper's findings provide important light on the nutritional condition and treatment methods used by young burn victims at SHNIBPS. Healthcare professionals may improve the quality of care given to pediatric burn patients by putting the aforementioned guidelines into practice, which will eventually improve the patients' general health and long-term results. Furthermore, in the realm of pediatric burn treatment, these suggestions can act as a starting point for additional research and the creation of evidence-based therapies, several recommendations can be made:

- **Early Nutritional Intervention:** It is critical to keep putting early nutritional intervention for pediatric burn patients at the top of the priority list, as evidenced by the study's findings that feeds should be started within 24 hours of arrival. Given its substantial positive impact on patient outcomes and recuperation, this technique needs to be maintained and encouraged.
- **Regular Weight Monitoring:** The necessity of establishing routine weight monitoring techniques is highlighted by the low incidence of recent weight monitoring among pediatric burn patients. Regular weight checks can help guide suitable actions, evaluate treatment response, and provide correct nutritional status evaluation.
- **Communication and Support Services:** Tailored communication techniques and support services are necessary, given the wide range of caregiver vocations and educational levels found in the study. Giving caregivers easy access to clear and understandable information on wound care, nutrition, and rehabilitation can enable them to take an active role in the treatment of young burn patients.
- **Prevention and Safety Education:** It is imperative to develop preventative techniques and safety education programs targeted at minimizing the incidence of burn injuries in the home setting, given the prevalence of burns produced by thermal sources. Safe procedures around hot liquids, fires, and other possible causes of thermal harm should be emphasized in these programs.
- **Comprehensive Burn Care:** The study emphasizes how crucial it is to give young burn patients all-encompassing treatment that includes wound care, rehabilitation, and psychosocial assistance in addition to nutritional support. To optimize results and promote a whole recovery, a multidisciplinary approach including dietitians, physiotherapists, psychologists, and burn specialists is necessary.

5.2 Cultural Factors

Cultural values and customs have a big impact on how well pediatric burn victims are fed and cared for. Cultural considerations must be taken into account while developing treatments and delivering care. Cultural dietary preferences, for instance, could influence whether particular foods or feeding techniques are accepted, and cultural conceptions of health and disease might influence how caregivers see nutrition and care. Respecting and understanding cultural diversity may improve patient outcomes, foster trust, and improve communication.

5.3 Lack of Access to Information

Providing juvenile burn patients with efficient treatment might be hampered by a lack of knowledge on diet, wound care, and preventative measures. Many factors, such as socioeconomic inequality, insufficient health literacy, and inadequate healthcare infrastructure, may contribute to this lack of access. Improving access to healthcare facilities, especially in underserved populations, raising knowledge of burn prevention and management, and strengthening health education are all necessary to meet this problem. It takes coordinated efforts by legislators, community organizations, and healthcare professionals to close the knowledge gap and enable parents to offer their children the best treatment possible.

5.4 Study Limitations

The study was conducted at a single institution, it's possible that the results cannot be applied to other contexts. The results may not apply to various institutions due to differences in patient demographics, healthcare procedures, and resources. Because the data is retroactive in nature, it may be prone to recall bias or poor record keeping. The accuracy and comprehensiveness of the results might be impacted by mistakes or omissions in the patient records. The study's sample size of pediatric burn patients may be limited, which might have an impact on the analyses' statistical power and accuracy. An enhanced comprehension of the nutritional status and treatment methods of this patient population would be possible with a bigger sample size.

The study may be susceptible to selection bias, as it only includes patients admitted to SHNIBPS. An insufficient representation of the whole population of pediatric burn patients may result from the exclusion of kids with less severe burns or those receiving treatment at other sites. In order to give a more thorough knowledge of pediatric burn care, future research should take a wider variety of factors into account. Cause and temporal correlations between variables cannot be established because of the study's cross-sectional nature. In order to evaluate how changes in treatment methods and nutritional status affect patient outcomes over time, longitudinal studies are required.

5.5 Conclusion

The evaluation of the nutritional state of pediatric burn patients at SHNIBPS has provided insight into a number of important areas of therapy. The study revealed a predominance of thermal burns among young children, emphasizing the importance of preventive measures in the home environment. Despite diverse caregiver backgrounds, the prompt initiation of feeds within 24 hours of admission reflects the institution's commitment to early nutritional intervention. However, the lack of regular weight monitoring poses challenges in accurately assessing nutritional status and guiding interventions. Moving forward, tailored communication strategies, prevention programs, and multidisciplinary care approaches are recommended to optimize outcomes for pediatric burn patients. By addressing these recommendations, healthcare providers can enhance the quality of care and support provided to pediatric burn patients, ensuring comprehensive rehabilitation and improved long-term outcomes.

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APPENDICES

Appendix 1

Consent Letter

Dear Participant,

I, Sharmin Sultana Shila, am writing to seek your consent for participation in a research project titled **"Assessment of Nutritional Health in Pediatric Burn Patients at Hospital"** conducted as part of my academic pursuit. I am a student at Daffodil International University and this research project aims to investigate various aspects of the nutritional status and care practices among pediatric burn patients at SHNIBPS.

It is entirely voluntary for you to take part in this study, and the breadth and depth of the results would be substantially enhanced by your knowledge and experiences. Providing demographic data, talking about your experiences treating young burn victims, and sharing your knowledge of nutritional support techniques are a few ways you may be involved. You can be sure that any information you submit will be kept completely private and used only for research. Your identity will remain anonymous in any papers or reports that come out of this research.

Thank you for considering participation in this research project. Your contribution is immensely valued and will significantly contribute to advancing knowledge in the field of pediatric burn care.

Sincerely,

Sharmin Sultana Shila

Consent Form

Title of the Study: "Assessment of Nutritional Health in Pediatric Burn Patients at Hospital"

Investigator: Sharmin Sultana Shila

Introduction: The purpose of this study is to assess the nutritional status of pediatric burn patients to better understand their dietary needs and optimize their care and treatment.

Procedure: Your participation in this study will involve answering questions about the nutritional intake and feeding practices of pediatric burn patients. Your responses will be used for research purposes only.

Benefits and Risks: Participating in this study will contribute to the advancement of knowledge in the field of pediatric burn care, potentially leading to improved nutritional interventions and outcomes for patients. There are no anticipated risks associated with participating in this study.

Confidentiality: Rest assured that all data gathered for this study will be treated with the utmost confidentiality. Your answers will be combined and anonymised for analysis, and nobody outside the study team will have access to your personally identifying data.

Date: _____

Appendix 2: Questionnaire

- **Patient's Details**

  1.Age(years/months): ……...

  2.Gender: a. male b. female

  3.Where do you live: ……

- **Parents/Caregiver Details**
  Father:

  1. What is your occupation?

  a) Unemployed b) Casual c) Employee d) Professional

  2. What is your education level?

  a) None b) Primary c) Secondary d) Tertiary

  3. Per month Income (In Tk)

  a) <5000 b) 6000-10000 c) 20000-40000 d) >50000

  Mother:

  1. What is your occupation?

  a) Housewife b) Casual c) Employee d) Professional

  2. What is your education level?

  a) None b) Primary c) Secondary d) Tertiary

  3.Per month Income (In Tk)

  a) <5000 b) 6000-10000 c) 20000-40000 d) >50000

- **Nutritional Status at Admission**

  1. Has the last two weeks seen your child's weight?

  a) Yes b) No

  if yes, please indicate the weight in kg: ……

  2. Is there any chronic ailment affecting your child?

  a) Yes b) No

  if yes, then specify……

- **Burn Details**

  1. What was the causes of burn?

  ……

  2. What was the burn's agent?

  ……

  3. How deep is the burn, and what is its percentage?

  ……

  4. Where did the burn occur?

  ……

- **Nutrition Details**

  1. After admittance, when was the first meal served?

  a) <24hr b) 24-72hr c) >72hr

  2. What feeding route(s) are used?

  a) Enteral b) Parenteral c) Both

  3. Is a feeding chart available?

  a) Yes b) No

  4. Does the child's caretaker assist with feeding him or her?

  a) Yes b) No

  5.How many feeds gave your child in a day?

  …….

  6. For Children below 3 years: Is your child still breastfeeding?

  a) Yes b) No

  7. Is the ward's food properly prepared?

  a) Yes b) No

Appendix 3: Synopsis

Daffodil International University
Department of Nutrition and Food Engineering (NFE)
Faculty of Health and Life Sciences
Daffodil International University
Daffodil Smart City, Birulia, Savar, Dhaka – 1216, Bangladesh

1. Name: Sharmin Sultana Shila

2. Id: 201-34-1026

3. Title: "Assessment of Nutritional Health in Pediatric Burn Patients at Hospital"

4. Introduction: The purpose of this study is to evaluate the nutritional health of young burn patients in order to improve their healing and treatment.

- **Background:** Pediatric burn injuries represent a significant public health concern globally, often resulting in long-term physical and psychological consequences for affected children. In Bangladesh, where the incidence of burn injuries among children is notable, understanding the nutritional status of pediatric burn patients is crucial for optimizing their care and outcomes.

- **Rationale:** Nutritional status plays a pivotal role in the recovery process of pediatric burn patients, influencing wound healing, immune function, and overall rehabilitation. However, there is a paucity of research focusing specifically on the nutritional needs and practices among pediatric burn patients in Bangladesh.

- **Research Question or Hypothesis:** The primary research question guiding this study, I hypothesize that pediatric burn patients will exhibit varying degrees of malnutrition, which may impact their clinical outcomes and necessitate tailored nutritional interventions.

5. Objectives: To evaluate nutritional intake, monitor weight changes, and analyze feeding practices among pediatric burn patients.

6. Methodology: A cross-sectional study involving data collection through interviews, medical records review, and nutritional assessments.

- Design of the Study
- Data Collection Techniques
- Statistical Analysis
- Ethical Issues

7. Expected Outcomes: Identification of nutritional deficiencies, development of tailored interventions, and improvement in patient outcomes.

8. Socio-economic Impact: Enhancing nutritional support can potentially reduce healthcare costs and improve long-term quality of life for pediatric burn patients and their families.

9. Place of the Study: Conducted at SHNIBPS (Sheikh Hasina National Institute of Burn and Plastic Surgery)

10. Time Schedule of Activities: I started my project work on September, 2023. So, the project work commenced in September 2023 and is expected to conclude by March 2024.

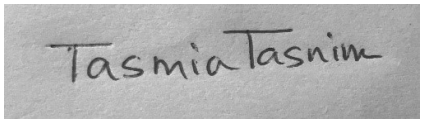
11. References

- Bangladesh National Nutrition Council. (2017). National Plan of Action for Nutrition 2016-2025. Ministry of Health and Family Welfare, Government of the People's Republic of Bangladesh.
  http://www.mohfw.gov.bd/

- Sheikh Hasina National Institute of Burn and Plastic Surgery
  https://www.shnibps.gov.bd

12. Signature

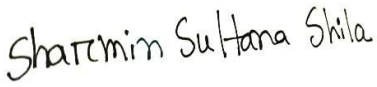
- **Supervisor's Signature**

  .....

  Ms. Tasmia Tasnim
  Assistant Professor
  Department of Nutrition and Food Engineering
  Faculty of Health and Life Sciences
  Daffodil International University

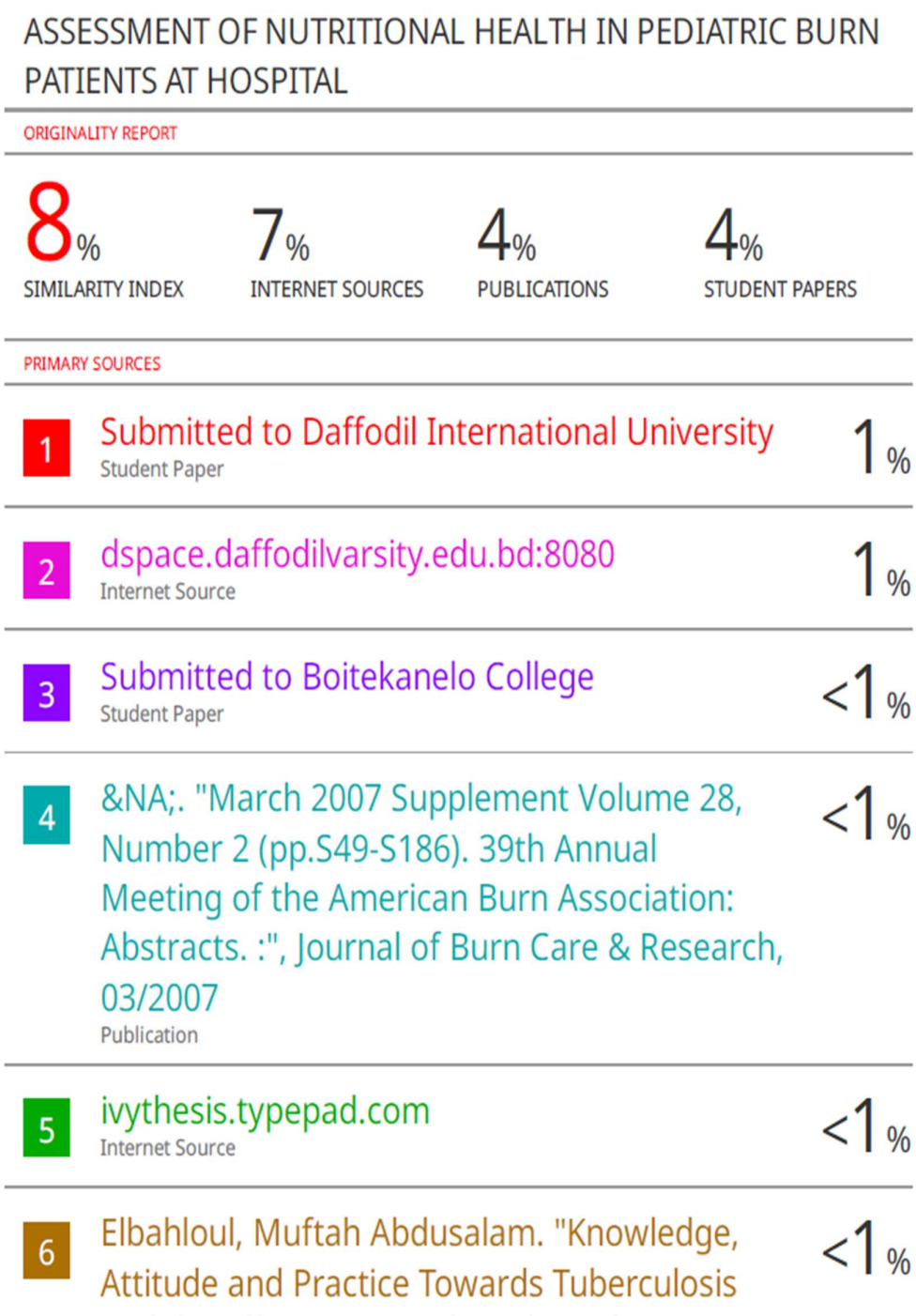
- **Student's Signature**

  .....

  Sharmin Sultana Shila
  ID: 201-34-1026
  Department of Nutrition and Food Engineering
  Faculty of Health and Life Sciences
  Daffodil International University

Appendix 4: Plagiarism Report



ASSESSMENT OF NUTRITIONAL HEALTH IN PEDIATRIC BURN PATIENTS AT HOSPITAL

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