

Effect of a Nurse-Led Transitional Burns Rehabilitation Program on Comprehensive Health Status of Patients with Burn.

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Abstract

Background: Burned patients faced multiple challenges, complications, and adverse effects, a transitional burns rehabilitation program guided by nurses was developed to enhance the overall health status of burn patients by improving their psychological well-being and quality of life.. **Aim:** Evaluate the effect of nurse-led transitional burn rehabilitation program on a comprehensive health status for patients with burn. **Design:** The research design was quasi-experimental. **Subjects:** Fifty burned patients in a purposeful sampling. **Setting:** The study was carried out in Mansoura University Burn Center & Mansoura Governmental International Hospital's outpatient burn clinic. **Data collection tools:** five tools utilized in this study; **Tool I:** structured interviewing questionnaire of demographic characteristics and clinical data of studied patients, **tool II:** Burn Specific Health Scale-B (BSHS-B), **tool III:** The Burn Depression Checklist, **tool VI:** The Burns Anxiety Checklist, and tool V: Pittsburgh Sleep Quality Index (PSQI). **Results:** majority of burned patients (94%) had good quality of health at follow up phase in contrast to the pre-intervention program. It revealed additionally, that differences were statistically significant ($\chi^2 = 136.893$, $P=0.000$). Additionally, It illustrated improvement in BSHS-B after the post and follow-up interventions with Estimated marginal means (69.92, 102.88) respectively compared to pre-intervention (38.92). **Conclusion:** The transient The brief rehabilitation program has a positive clinical influence on the participants' life quality and enhances comprehensive health status of burn patients. **Recommendations:** An extension of this research with a larger probability sample from other regions to help make the conclusions more broadly applicable.

Key words: Nurse-Led, Transient Burn Rehabilitation Program, Comprehensive Health Status.

Introduction:

Burns are one of the most dangerous types of injuries that predominantly damage the skin. Depending on the amount of the injury, a burned patient may require critical care to address physiological alterations. Concurrent rehabilitation can help with recovery during the emergent/acute phase of care (Jeschke et al., 2020). By enhancing functional abilities, elevating psychological well-being, facilitating an earlier return to work or school, and enhancing quality of life, rehabilitation mitigates the negative consequences of a burn. The burn sufferer will be able to perform activities that are significant to them and restore as much of their pre-injury abilities as feasible as their rehabilitation progresses (Bayuo, 2022).

Burns and associated injuries continue to be the leading cause of death and disability

worldwide, resulting in financial, psychological, and physical harm in various communities. For these reasons, it regarded as one of the most serious health issues (Martz et al., 2023). Approximately 2.4 million burn injury cases occur worldwide each year, of which 650,000 require medical attention, 75,000 result in hospitalization, and 8000–12000 people pass away from burn injuries (Seliman et al., 2022). An estimated 500,000 people in the US receive burn treatment annually, with 40,000 of them being admitted to hospitals (Kruger et al., 2020).

Transitional care is a patient-centered, time-limited service designed to minimize the risk of readmission for at-risk populations, maintain continuity of care, and enable safe and efficient transfers between different healthcare settings (Joo & Liu, 2021). Transitional care supervised by doctors, social workers, registered nurses

(RNs), and chemists has been used in numerous research. Few published studies have used the clinical knowledge of nurse practitioners (NPs) to minimize hospital readmissions, despite the fact that Naylor and colleagues developed the Transitional Care Model (TCM), which uses APNs as providers (*Bodenheimer et al., 2022*).

Only recently has the rehabilitation of burn patients been recognized as an essential component of the burn care system; in several regions, the notion of burn rehabilitation is new. When data are available, it has been noted that there are noteworthy obstacles, such as a lack of hospital support and the absence of standardized rehabilitation guidelines, a lack of knowledge about rehabilitation among practitioners, a shortage of human resources, a lack of funding, and a financial burden on burn patients (*Bayuo et al., 2021*).

When rehabilitation regimens are available, they typically concentrate on the physical components of the damage, leaving little opportunity to address the psychological issues that burn patients may have (*Katsu et al., 2023*). As a result, burn patients may receive subpar rehabilitation treatment while they are inpatients and may receive little assistance after being released from the hospital, which negatively impacts their ability to heal. In order to improve patient outcomes and bridge the gap between immediate pre-discharge and early post-discharge, a nurse-led transitional burns rehabilitation program has been developed in compliance with the Medical Research Council (MRC) Framework (*Mutanho, 2022*).

For burn patients, the biggest physical and psychological decrease that might occur after discharge is related to pain, anxiety, and doubts about going back to the community or workplace (*Mohammadzadeh et al., 2023*). Additionally, a number of physical, psychological, social, and economic issues that arise following In general health and quality of life have been demonstrated to be negatively impacted by discharge—such as skin conditions, scarring, pain, itching, stress, low self-esteem, anxiety, depression, and posttraumatic stress disorder—as well as by a

lack of support from friends and family and insufficient financial resources (*Heidari et al., 2023*).

Nurses play a crucial role in assisting patients who have suffered burns to adjust and deal with their new body image. They also educate patients on burn care and potential complications. Through rehabilitation instruction, psychological support, and discharge counseling, comprehensive rehabilitation nursing promotes the healing of burn patients. Improving the quality of life and general health of people who have suffered burn injuries is imperative (*Wardhan & Fahy, 2023*).

It is now more crucial than ever for severely burned patients to undergo a protracted course of transitory burn rehabilitation that starts in an acute care hospital, moves to an inpatient rehabilitation center, and is finished as an outpatient. Rehabilitation increased functional capacity, psychological well-being, permits an early return to work or school, and enhances quality of life, all of which mitigate the burn's harmful effects. As their recovery advances, burned individuals are able to return as close to their pre-injury abilities as feasible through rehabilitation and are able to perform activities that they find enjoyable (*Edger-Lacoursière et al., 2023*).

Significance of the study:

Burns and associated injuries continue to be the leading cause of mortality and disability worldwide, causing harm to many communities on a financial, psychological, and physical level. These factors make them one of the most dangerous health issues. Burns are linked to a high rate of morbidity and mortality and are regarded as a serious health concern (*Elsherbiny et al., 2018*). Based on information from the Central Agency for Public Mobilization and Statistics in Egypt's Statistical Records, estimated that up to 250,000 burn patients were being treated at Egyptian government hospitals. This number has increased between 2008 and 2011 (*Raza et al., 2022*).

The recovery phase that follows a burn patient's departure from the hospital is made complex and challenging by the process of transferring primary care from medical experts to patients and their families. Patients worry and feel stressed when they go home because they are unsure of their ability to take care of their physical, psychological, and medicinal needs (*Wang et al.,2023*). As a result, it is crucial that burn patients adhere to the rehabilitation plan that has been established for them and that they receive the proper instruction and follow-up care from all members of the medical staff. So that a current study has been conducted to evaluate the effects of a nurse-led transitional rehabilitation program on comprehensive health status of patients with burn

Aim of the Study

This study was conducted to evaluate the impact of nurse-led transitional rehabilitation program on comprehensive health status of patients with burn.

Operational Definitions

Comprehensive health status: it is a biological-psychological-social medical paradigm that takes into account the needs of burned patients in areas such as physical, psychological, and social rehabilitation. The transitory rehabilitation program sought to improve burned patients' integrated health condition and facilitate their speedy and easy return to society (*Shin, et al.,2022*).

Research hypothesis:

A burned patient's comprehensive health status and their quality of life outcomes will be improved after application of ANurse-Led Transitional Burns Rehabilitation program after they have been discharged

Subjects and Method:

Study Design:

A quasi-experimental research approach was adopted to investigate the current study (The effect of a nurse-led transitional rehabilitation program on the comprehensive health of burn patients). It was decided to use a quasi-experimental design for its practical applicability in the context burn unit and outpatient clinic units at Mansoura Governmental International Hospital, Mansoura University Burn Center, and inpatient Burn Unit at emergency unit, at Mansoura University, where

random assignment of participants on a single group.

Study Setting:

The burn unit and outpatient clinic units at Mansoura Governmental International Hospital, Mansoura University Burn Centre, and the inpatient Burn Unit at the emergency unit at Mansoura University in Egypt were used for this study. A healthcare setting devoted to the specialized care of people in need of medical attention. Given the unique challenges and considerations connected with rehabilitation care, the choice of this environment was deliberate. The environment allowed for a concentrated study of the intervention's impact on nursing practices and, by extension, patients' comprehensive health status.

Subjects:

A purposive sample of 50 burned patients, aged 6 to 18 years, of both sexes, admitted to the previously mentioned setting and who met the following inclusion criteria: all patients were recruited within the burn unit and outpatient clinic units during the study period; all patients had deep 2nd and 3rd degree burns with a total body surface area (TBSA) of 10-50%; and all patients suffered from recently burns. Patients with major issues involving the heart, brain, or lungs are excluded, as are those with any documented psychological condition or mental retardation. A patient was also excluded from the study if they died before they could be discharged from the hospital. Assuring a thorough portrayal of the medical specialists who are actively concerned with the comprehensive health status of the patients.

Data collection tools:

The study comprised five tools to gather data, which are as follows:

Tool 1: The Questionnaire for Structured Interviews was meticulously developed by the researcher following a thorough review of significant literature. This tool, presented in obviously Arabic and utilized as an instrument, consists of two parts:

Part 1. Studied patients characteristics included age, gender, marital status, degree of education, occupation, family income, and so on. etc.,

Part 2: Clinical Data of studied patients included the duration of the burn, the degree of the burn, the cause of the burn, the location of

the burn, and the percentage of the burn.

Tool II: Burn Specific Health Scale-B (BSHS-B):

The Burn Particular Health Scale is the exclusive measure of specific burn outcomes. **Kildal et al. (2001)** produced the most recent shortened version (BSHS-B), which was initially developed by **Blades et al. in 1982**. In order to evaluate the physical and psychological functioning of burn patients as well as their HRQoL, this scale is frequently and extensively utilized in the burn field. With forty items spanning nine distinct domains, the BBSHS-B is divided into four physical state domains (simple ability, hand functions, heat sensitivity, and treatment regimen) and five psychosocial domains (affect, body image, interpersonal connection, sexuality, and work).

Scoring system:

responses comprised of the 40 items, a score on a five-point Likert scale, with zero representing "very" and four representing "not at all." The mean score for each domain is calculated. There was a maximum score of 160 points and a minimum score of 0. The patient's quality of life has changed, as indicated by this final score. A higher mean score indicates both a higher quality of life about health and a more positive appraisal of function.

Tool III: The Burn Depression Checklist:

It was adapted from **David (1984)**. This measure comprises 15 items that describe the most common symptoms of depression in burned individuals. Calculate The overall total for the 15 symptoms' scores. In each of the 15 categories, the response ranged from 0 (if you answered "not at all") to 45 (if you answered "a lot" for each).

Scoring system:

The major score was described as follows:(0 - 4) for minimal or no depression, (5 - 10) for borderline depression, (11 - 20) for mild depression, (21 - 30) for moderate depression, and (31 - 45) for severe depression.

Tool VI: The Burns Anxiety Checklist:

Adopted from **David (1984)**. This test contains 33 items that characterize the most common symptoms of anxiety in burned individuals. Calculate the total score for each of the 33 symptoms. It was somewhere between 0 (if you replied "not at all" on all 33 symptoms) and 99 (if you answered "a lot" on all 33 symptoms).

Scoring system:

The principal score was described according to the following scale: 0–4 = No anxiety, 5–10 = Borderline anxiety, 11–20 = Mild anxiety, 21–30 = Moderate anxiety, 31–50 = Severe anxiety, and 51–99 = Extreme anxiety or panic.

Tool V: Pittsburgh Sleep Quality Index (PSQI):

It was adapted from **Buysse et al. (1989)**, PSQI is composed of seven component scores, 0 represents no difficulty and 3 represents great difficulty for each. The global score, which ranges from 0 to 21, is produced by adding the component scores. Higher scores indicate lower-quality sleep.

Content validity and reliability

The study's validity was thoroughly scrutinized, and the practicality of the existing study methods was tested by an expert team of five specialists in the fields of burn care, and medical-surgical nursing meticulously evaluated the tools. This evaluation focused on aspects such as clarity, relevance, applicability, comprehensiveness, and overall understanding. The insights from this expert jury led to minor adjustments in the tools to enhance their precision and effectiveness. This meticulous validation process ensured that the study instruments were well-designed and aligned with the objectives of the research. an appraisal of the tool's reliability. The internal consistency of the instruments was evaluated using the Cronbach alpha coefficient, which produced nurses score of 0.781. This strong coefficient demonstrated a high level of internal consistency and reliability within the instruments, boosting trust in their capacity to produce accurate and consistent outcomes.

Pilot study

Before the data collection phase began, pilot research was done on 10% of the total number of nurses in the indicated settings. This pilot project served several aims, including assessing the precision, applicability, and practicability of the research instruments, establishing the time necessary for tool completion, and identifying prospective data collection issues. The pilot study's findings facilitated essential revisions to the research tools, assuring their maximum performance. Importantly, pilot research participants were excluded from the final study population, ensuring the integrity of the future data collecting and analysis phases. Overall, the rigorous processes in the preliminary, validation, and pilot stages contributed to the robustness and reliability of the study process.

The fieldwork

During the fieldwork, the researcher established initial contact with every study location, spoke with the participating patients in introductory interviews, and obtained their informed consent. Then, baseline data were gathered regarding the transient rehabilitation program for burned patients at the burn unit and outpatient clinic units, Mansoura University Burn Centre, and the inpatient burn unit at the emergency unit at Mansoura University. The program will run three days a week from September 1, 2021, to May 30, 2022. Three phases of evaluation were conducted on each study participant to assess the efficacy of the recommended short-term burn rehabilitation program within 72 hours of discharge, the pre-test phase was conducted as baseline data; the post-test phase was conducted after three months; and the follow-up phase was conducted after six months. Using the proper statistical analysis, data were collected and examined to evaluate the impact of the short-term burn rehabilitation program on general health status. The program for transitory rehabilitation consists of two phases.

In the first phase, a comprehensive patient assessment including Environmental, physiological, psychological, and health-related behavior domains were investigated. Then, a package of interventions based on the identified burn patient's needs, including environmental (health education to improve sanitation and environmental hygiene within

the residence); physiological (pain management, itch management, comprehensive scar management, range of motion activities, management of heat sensitivity, skin care, nutritional assessment/support, infection prevention, and control measures); and psychosocial (social skills training, counseling c It was completed in five sessions, each lasting 30 to 45 minutes. It was completed in five sessions, each lasting approximately 30 to 45 minutes. Lectures, role-playing exercises, group discussions, and real-life demonstrations were among the educational strategies used by the researcher. Among the audiovisual materials were a Microsoft PowerPoint presentation (PPT), informative images, movies, and a burn recovery leaflet (handout). Before each session, burned patients were asked questions about the previous meeting's topic to measure their level of comprehension, and the researcher highlighted any forgotten or confusing aspects. The pre-session was then summarized to assist the patients in refreshing their memories. The researcher employed simple, concise, and straightforward language to implement the training strategies for patients during each session. At the end of each session, each patient received a succinct overview of the major subjects. In addition, each patient in the study group received an instructional pamphlet to capture his or her interest, inspire him or her, and promote home teaching and practice.

The second phase (Follow-up Phase): This phase includes an organized Whats-app group and a structured telephone follow-up service, which respondents used after they were discharged. The application featured an evaluation element, which comprised numerous questionnaires that the burned patient had to answer during the previously described post-test time. Their responses were recorded and made available to the researcher as well as healthcare providers. The researcher could potentially reach out to patients via phone and the Internet. Patients were also directed to the burn clinic if they needed to see a doctor

Ethical considerations:

Throughout the study, ethical considerations were crucial. Following a thorough description of the study's goal, patients were approached to acquire their voluntary participation and

explicit consent. In addition to individual consents, official approval was obtained from hospital administrative authorities in the described context, guaranteeing respect for institutional regulations and ethical standards. The ethical committee's approval confirmed the study's ethical soundness even further. Considering the importance of secrecy and privacy, the data collection process was handled with extreme care. The researcher emphasized the patients' voluntary and anonymous engagement, ensuring that individuals may freely contribute without fear of repercussions. Each patient who took part in the trial provided informed permission, confirming their comprehension of the study's objectives and their role in it. The study protocols were created with the participant's safety in mind, emphasizing the importance of their well-being. Furthermore, the ethical framework included the provision of professional support and counseling to participants as needed.

Statistical design

Emphasizing that patient participation was anonymous and voluntary, the researcher allowed people to participate freely without worrying about the consequences. By confirming their knowledge of the study's goals and their own involvement within it, each patient who took part gave their informed consent. The study protocols were created to protect the subjects from any injury, emphasizing how important it is to ensure their well-being. The ethical guidelines also included making available to participants any time professional counseling and support services. Mean and standard deviation were used to provide a concise summary of the quantitative data in descriptive analysis, providing a thorough understanding of the dataset's central tendency and variability. Conversely, categorical data were displayed as percentages and frequencies, which gave a clear picture of the variables distribution. The test of Chi-Square was used to evaluate the descriptive characteristics of the individuals, allowing an investigation of any correlations or discrepancies between categorical data.

Assessing the educational program's influence on participants' a comprehensive health status was a crucial component of the statistical design. A comparison of the scores before,

after, and follow up the program's phases was made possible by using an independent samples t-test. Through a systematic analysis of the mean score differences made possible by this statistical test, the efficacy of the educational intervention could be determined. The study's particular objectives served as a guidance for the selection of statistical techniques and procedures. Intended to elucidate both the descriptive features of the participants and the quantitative improvements from the rehabilitation program. The study aims to provide significant insights through this systematic statistical methodology, adding to an evidence-based of a nurse-led transitional rehabilitation program and its influence of educational interventions on the comprehensive health status for burned patients.

Results:

Table 1 Summarizes the personal characteristics of the studied burn patients, it revealed that the average age of the studied patients was (31.427.85). In terms of gender, over two-thirds of the studied female patients were (64%). The majority of them (80%) were married. In terms of education, nearly half of the patients (48%) were illiterate. More than half of the studied patients (58%) were housewives. The majority of the patients evaluated had jobs that required muscular exertion, and following the burn, they returned to work (80% and 84%, respectively). The majority of the patients evaluated were from rural areas and did not have enough family income (84%). In terms of health insurance, 90% of the patients evaluated did not have it.

Table 2 indicates the medical histories of the studied burn patients. In terms of burn duration, the majority of patients (82%) suffered burns for less than a year. In terms of burn kind and degree, more than half of the patients investigated had third-degree thermal burns (56% and 60%, respectively). In terms of burn area percentages, almost half of the patients (44%) had 30 to 39% burn area.

Table 3 reveals the mean score of studied patients regarding their BSHS, PSQI, BDC and BAI through program phases. Regarding their BSHS, the overall mean score of studied burn patients BSHS at follow up (102.88 ± 10.74) was higher than pre (38.92 ± 5.85) and post

(69.92±6.71). Repeated measurement These variations were shown to be statistically significant by the ANOVA test ($F=3540.31$, $P=0.000$).

Table 4 illustrates the comparison between the levels of BSHS, PSQI, BDC and BAI through program phases. Regarding BSHS, the majority studied burn patients had poor quality of health at both pre and three months post intervention while about most of patients (94%) had good quality of health at follow up phase (6-month post intervention). Using chi square test revealed that these differences were statistically significant ($\chi^2 =136.893$, $P=0.000$).

Figure 1 reports the Estimated marginal means of Burn Specific Health Scale-B (BSHS-B) through program phases . It illustrated improvement in BSHS-B after the post and follow-up interventions with Estimated marginal means (69.92, 102.88) respectively compared to pre-intervention (38.92).

Figure 2 represents the estimated marginal means of the Pittsburgh Sleep Quality Index throughout program phases. This graph showed that sleep issues decreased following the intervention, with the mean in the pre-intervention decreasing from 31.54 to 11.02 and 2.22 in the post and follow-up, respectively.

Figure 3 displays the estimated marginal means of the Burn Depression Checklist throughout program phases. This graph shows that following the intervention, the mean for Burn reported Depression reduced from 34.84 in pre intervention to 26.48 and 14.54 in the post and follow-up, respectively.

Figure 4 depicts the estimated marginal means of the Burn Anxiety Checklist as it proceed through the program phases. This figure indicated that Burned patients experienced less anxiety after the intervention, as it demonstrated a decrease in the mean in the pre from 53.88 to 235.52 and 11.98 in the post and follow-up respectively.

Table 1. Frequency distribution of personal characteristics for studied burn patients. (N=50)

Personal characteristics	No.	%
Age		
– 18 < 30 yrs	23	46
– 30 < 40 yrs	22	44
– 40 < 50 yrs	4	8
– 50 < 60 yrs	1	2
Mean±SD	31.42±7.85	
Gender		
– Male	18	36
– Female	32	64
Marital status		
– Single	6	12
– Married	40	80
– Divorced	2	4
– Widowed	2	4
Education		
– Illiterate	24	48
– Read and write	11	22
– Primary	10	20
– University	5	10
Job		
– Employee	5	10
– Farmer	4	8
– Housewife	29	58
– Worker	9	18
– Not working	3	6
Job condition		
– Need mild effort	5	10
– Need muscular effort	42	84
– Not working	3	6
Job condition after burn		
– Work as before	40	80
– Not working	7	14
– Change work	3	6
Residence		
– Rural	42	84
– Urban	8	16
Family income		
– Enough	8	16
– Not enough	42	84
Health insurance		
– Yes	5	10
– No	45	90
Type of health insurance		
– Health insurance full	3	6
– Health insurance half	2	4
– No health insurance	45	90

Table 2. Frequency distribution of medical history for studied burn patients ((N=50).

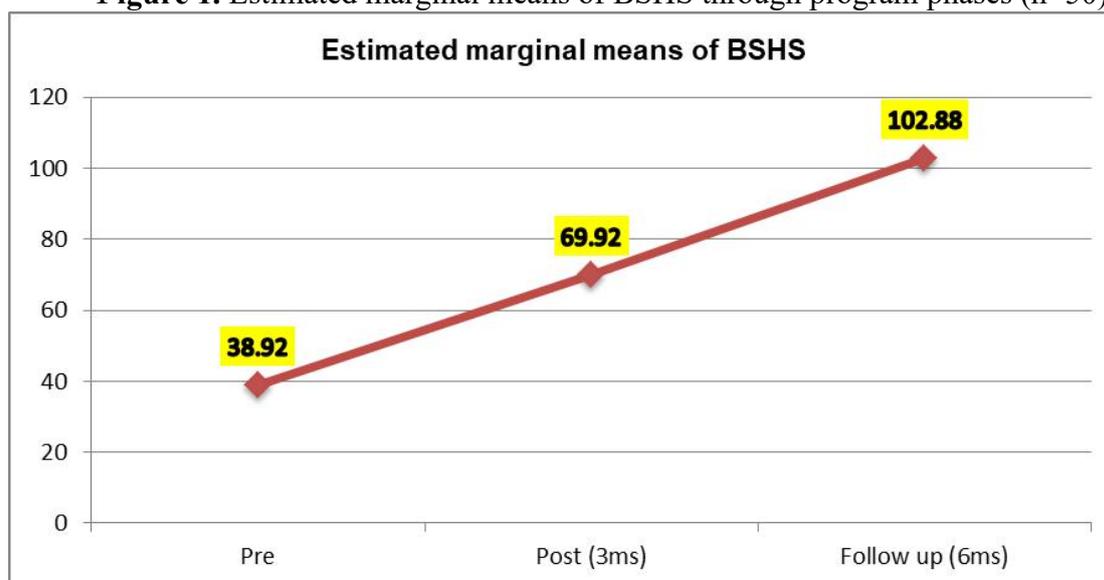
Medical History	No.	%
Duration of burn		
– Less than one year	41	82
– One year and more	9	18
Degree of burn		
– Second degree	16	32
– Third degree	30	60
– Second and third degrees	4	8
Cause of burn		
– Thermal	28	56
– Chemical	15	30
– Electrical	7	14
Percentage of burn		
– 10-19%	1	2
– 20-29%	16	32
– 30-39%	22	44
– 40-45%	11	22

Table 3. Mean score of studied patients regarding their BSHS, PSQI, BDC and BAI through program phases (n=50)

Variables	Min- Max	Pre	Post (3ms)	Follow up (6ms)	F (p)	t_1 (p)	t_2 (p)	t_3 (p)
		Mean±SD	Mean±SD	Mean±SD				
Heat sensitivity	0 – 20	1.68±1.30	5.02±2.09	12.16±2.05	593.63 (0.000**)	-12.08 (0.000**)	-33.59 (0.000**)	-20.97 (0.000**)
Affect	0 – 28	10.42±2.28	13.34±2.83	20.28±1.75	403.50 (0.000**)	-8.73 (0.000**)	-29.06 (0.000**)	-17.64 (0.000**)
Hand function	0 – 20	4.94±1.54	8.28±3.83	13.10±2.49	152.58 (0.000**)	-7.41 (0.000**)	-14.20 (0.000**)	-13.43 (0.000**)
Treatment regimen	0 – 20	0.74±0.44	10.16±1.59	17.38±1.69	4025.08 (0.000**)	-43.52 (0.000**)	-151.59 (0.000**)	-34.92 (0.000**)
Work	0 – 16	2.84±1.62	6.34±1.50	8.94±1.26	284.02 (0.000**)	-17.70 (0.000**)	-17.61 (0.000**)	-11.94 (0.000**)
Sexuality	0 – 12	0.75±0.23	1.70±1.20	3.34±1.09	152.28 (0.000**)	-9.88 (0.000**)	-21.48 (0.000**)	-6.92 (0.000**)
Interpersonal Relationship	0 – 16	11.50±1.83	12.10±1.23	12.48±1.83	65.53 (0.000**)	-5.61 (0.000**)	-49.00 (0.000**)	-3.70 (0.001**)
Simple Abilities	0 – 12	8.04±1.19	8.98±1.11	9.64±1.72	54.60 (0.000**)	-6.06 (0.000**)	-8.96 (0.000**)	-5.35 (0.000**)
Body Image	0 – 16	0.65±0.12	4.10±1.27	5.56±1.97	494.19 (0.000**)	-22.13 (0.000**)	-39.59 (0.000**)	-7.15 (0.000**)
BSHS (Overall)	0 – 160	38.92±5.85	69.92±6.71	102.88±10.74	3540.31 (0.000**)	-48.57 (0.000**)	-78.70 (0.000**)	-40.38 (0.000**)
PSQI	0 – 54	31.54±2.32	11.02±2.11	2.22±0.64	3283.65 (0.000**)	44.69 (0.000**)	85.68 (0.000**)	30.05 (0.000**)
BDC	0 – 45	34.84±1.33	26.48±1.58	14.54±1.37	2757.78 (0.000**)	29.00 (0.000**)	72.80 (0.000**)	46.60 (0.000**)
BAI								
Anxious feelings	0 – 18	14.76±1.23	12.52±1.61	3.01±0.94	1653.11 (0.000**)	14.93 (0.000**)	52.46 (0.000**)	36.30 (0.000**)
Anxious thoughts	0 – 33	19.92±1.02	14.38±1.51	7.98±1.97	1730.73 (0.000**)	24.19 (0.000**)	67.43 (0.000**)	32.00 (0.000**)
Physical symptoms	0 – 48	19.20±1.56	8.62±1.17	2.03±1.21	3055.13 (0.000**)	35.78 (0.000**)	82.23 (0.000**)	45.81 (0.000**)
BAI (Overall)	0 – 99	53.88±2.15	35.52±1.96	11.98±1.46	6468.95 (0.000**)	46.77 (0.000**)	108.33 (0.000**)	72.48 (0.000**)
		t_1 : between pre and post (3ms)	t_2 : between pre and follow up (6ms)		t_3 : between post (3ms) and follow up (6ms)			
BSHS: Burn Specific Health Scale	PSQI: Pittsburgh Sleep Quality Index	BDC: Burn Depression Checklist		BAI: Burn Anxiety Inventory	DASH: Disabilities Of The Arm, Shoulder And Hand			

Table 4. Comparing the levels of BSHS, PSQI, BDC and BAI through program phases (n=50)

Variable Levels	Pre		Post (3ms)		Follow up (6ms)		χ^2	P-value
	No.	%	No.	%	No.	%		
BSHS								
– Good	0	0	0	0	47	94	136.893	0.000**
– Poor	50	100	50	100	3	6		
PSQI								
– Good	9	18	50	100	50	100	19.149	0.000**
– Poor	41	82	0	0	0	0		
BDC								
– Mild	0	0	0	0	50	100	300.00	0.000**
– Moderate	0	0	50	100	0	0		
– Severe	50	100	0	0	0	0		
BAI								
– Borderline	0	0	0	0	9	18	277.811	0.000**
– Mild	0	0	0	0	41	82		
– Moderate	0	0	1	2	0	0		
– Severe	4	8	49	98	0	0		
– Extreme	46	92	0	0	0	0		

Figure 1. Estimated marginal means of BSHS through program phases (n=50).**Figure 2.** Estimated marginal means of PSQI through program phases (n=50)

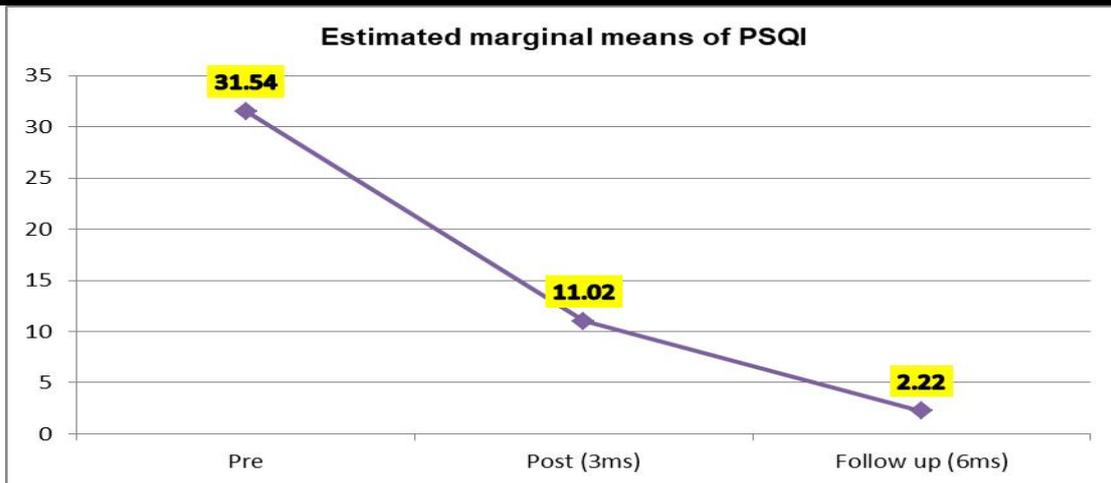


Figure 3. Estimated marginal means of BDC through program phases (n=50).

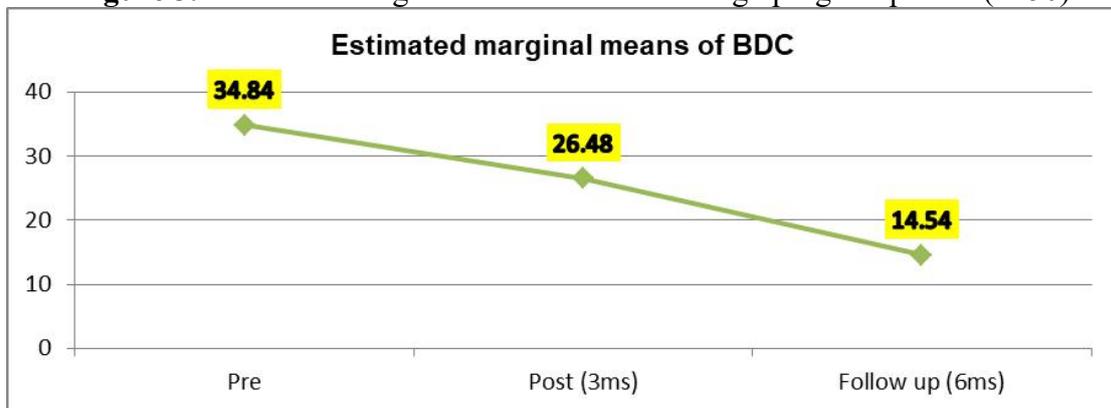
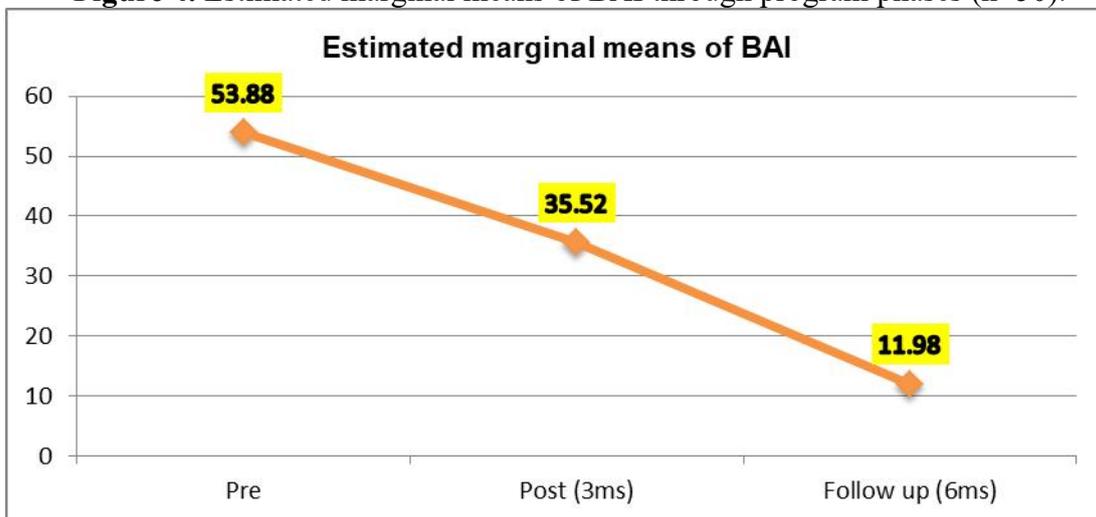


Figure 4. Estimated marginal means of BAI through program phases (n=50).



Discussion

Burn rehabilitation is a demanding operation with a wide range of biopsychosocial-environmental needs, and rehabilitative treatment that meets those needs is crucial to

achieving the best possible recovery for burn survivors (Bayuo et al., 2020). Recent studies have equated burn recovery to living with a chronic illness, emphasising that burn survivors and their families require a flexible but structured long-term follow-up plan (Barrett et al.,2019& Litchfield et al.,2019).

The transfer from the Burn Unit to the home/community is typically difficult, with burn survivors and their families receiving minimal professional help. A crucial gap exists due to a lack of ongoing and comprehensive help in the immediate post-discharge phase of patient satisfaction (**Litchfield et al., 2019; Van den Heede et al., 2019**). The concept of rehabilitation is still in its infancy in most parts of Egypt. Because of the rising prevalence of chronic diseases and the aging population, there aren't enough resources for burn rehabilitation. Thus, the purpose of this study was to assess the influence of a nurse-led transitional rehabilitation program on the overall health condition of burn patients.

According to the current study's findings, There was a statistically significant difference in health status between the pre- and post-care applications across all areas. These findings were congruent with those of **Abd Elalem et al. (2018)**, who discovered that while the total mean score increased significantly (p.001) after the intervention, the mean QOL score was significantly lower before the intervention. **Li et al. (2016)** discovered the same results during their study. **Seyedoshohadaee et al. (2019)** discovered a significant difference in mean QOL and body image scores before and after interventions in the same environment. This is consistent with the findings of **Shabana et al., 2021**, who discovered a significant relationship between patients' QOL and body image, as evidenced by an increase in patients reporting a high level of QOL following intervention as opposed to prior to program implementation, as well as a significant improvement in the mean overall QOL score among the study group compared to the control group following the intervention.

Another study found that offering physiotherapy, education, and occupational therapy to patients and their families, as well as multimedia self-care instruction, improved the health of burn sufferers. Patients' quality of life has also been observed to increase with the continuous care paradigm (**Ardebili et al., 2017**). Furthermore, the findings of the current study were consistent with those of **Lotfi et al. (2018)**, who discovered that the experimental

group receiving pre-discharge training had significantly higher QOL than the control group.

Considering, the outcomes of this study are consistent with prior studies, indicating the good influence of self-care behaviors on enhancing quality of life in burn patients. According to **Abd Elalem et al. (2018)**, the mean QOL score was considerably lower before the intervention but increased subsequently. Furthermore, **Heydarikhayat et al. (2018)** discovered that the intervention enhanced the health of burned patients.

The current study's findings revealed a substantial association between patients' PSQI, BDC, BAI, and QOL, as evidenced by an increase in the number of patients with a high level of QOL following intervention when compared to their number before to program implementation. This is consistent with data from China, where **Tang et al., 2015** found that while intervention decreased depression levels, the anxiety sub-scale remained a problem. Patients were evaluated 1.5 and 3 months following intervention in both studies, which may have altered their degree of anxiety. Three to six months after a burn injury, post-traumatic stress disorder may affect 21% to 33% of burn patients. Following a burn injury, mood and anxiety disorders, altered body image, and sleep disturbances are common. Burn scars can induce irreversible changes in appearance and social behavior, which can contribute to sadness over time (**Wiechman et al., 2017**).

Finally, the current study's strength is that the post-discharge follow-up improved health status, psychological state, and burn management. However, burn patients required continued care for pain, psychological health, and itching difficulties, which is consistent with the findings of **Echevarra-Guanilo et al., (2016)**, who discovered an improvement in health-related quality of life after the first year. According to **Ozdemir & Saritas (2018)**, patients who offer health care are responsible for maximizing their quality of life. **Shahid et al. (2018)** stated that rehabilitation programs should be used in acute care and long-term follow-up treatment to improve

functional results to obtain optimal outcomes for burn-sustained patients' health care system. Furthermore, **Spronk et al. (2018)** advised that both physical and psychological effects should be addressed months to years following the burn trauma.

Conclusion

Based on the current findings, the efficacy of a nurse-led transitional burns rehabilitation program application was successfully demonstrated, and the comprehensive health condition of burned patients following discharge was improved. As a result, the life quality outcomes for burned patients improved. The data revealed that there were improvements in PSQI, BDC, and BAI levels during the post and follow-up phases, which improved comprehensive health status as well as psychological state and burn management. This is explained by the fact that the present inquiry has discovered a substantial association between the patients' PSQI, BDC, BAI, and QOL, resulting in an increase in the number of patients with a high level of QOL following intervention compared to their baseline.

Recommendations:

The following recommendations have been proposed to improve the nurse-led transitional rehabilitation program and the comprehensive health status of burned patients :

1. **Multidisciplinary Collaboration:** Encourage collaboration between medical department nurses and other healthcare workers involved in burn departments. This interdisciplinary approach can improve communication, share best practices, and work cooperatively to improve nurse-led transitional rehabilitation programs.
2. **Ongoing Instruction:** Establishing regular, customized instruction centered on nurse-led transitional rehabilitation is something that institutions should do. For nurses to stay current on the most recent developments in treating burned patients in burn units, these program should include both theoretical knowledge and practical skills.
3. **Continuous Quality Improvement**

Initiatives Should Be Implemented by Hospitals and Burn Departments: Protocols for Nurse-led Transitional Rehabilitation should be routinely reviewed and improved. Frontline healthcare providers should provide feedback on these initiatives to ensure their viability and usefulness.

4. **Long-term result research:** Upcoming studies should examine how educational initiatives, such as continuous nurse-led transitional rehabilitation for burned patients, affect the overall health condition of these patients over the long run. Studies of a longer duration can shed light on how long information retention lasts and how best practices are implemented .
5. **Best Practices Integration:** Burn center policies and procedures should include evidence-based guidelines for nurse-led transitional rehabilitation. These guidelines should be easily accessible to nurses, easing their application in burn patients' everyday care.
6. **An extension of this research with a larger probability sample from other regions to help make the conclusions more broadly applicable.**

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