

Physical and Psychosocial Burdens of Burn Treatment Experienced by Women Admitted in Nigerian Hospitals

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ABSTRACT

Background: Burn treatment remains a major public health concern despite advances in healthcare delivery. This study aimed to determine the burden experienced by female burn patients admitted into Nigerian hospitals and the modifying variables. **Materials and Methods:** The recruitment criteria of the forty-five women in this mixed-method cross-sectional descriptive study were: >30% total body surface area burnt, ≥2-weeks admission stay, absent co-morbidities and voluntary consent. Using one probing question and validated, structured 'Burden of Burn Treatment Interview Guide', data were collected on physical discomfort, lifestyle changes, altered body image, social function limitations and anxiety/depression. Descriptive analyses yielded frequencies, percentages, means and standard-deviations while *t*-test for independence and linear regression at 95% CI were used for Inferences. Qualitative data were subjected to conventional content analysis. **Results:** Mean age of participants was 30.3 years; seven lived below Nigerian minimum wage of NGN 18,000/month; and average length of hospital stay (LHS) was 40days. Leading burdens were social deprivation, huge financial demands, physical restrictions and unfriendly care-provider attitude. Income, LHS, occupation, parity and age modify respondent's experienced degree of treatment burden ($p < .05$). **Conclusion:** Female burn patients in Nigeria are burdened by separation from home, high treatment cost and poor care-provider attitude. Women with children under their care are more emotionally burdened by prolonged hospitalisation. Quality improvement strategies including zero tolerance for third-delay in initiating care, establishment of burn-care trust fund and/or pay-as-you-earn policy are recommended. Similar studies on male population will provide bases for concretizing the effect size of femininity on the treatment burden.

Key words: Body Image, Burns, Economic Status, Health Personnel, Quality of Health Care, Social Stigma.

Key Messages:

- Burn treatment has overwhelming burden on all women irrespective of their background.
- High cost of treatment, poor provider attitude, social stigma and fear of complications are key burdens.
- Zero third delay in initiating care, burn-care trust-fund, pay-as-you-earn policy, strict triaging will help reduce burden of burn treatment

INTRODUCTION

Burn is one of the overwhelming injuries which poses a major public health concern, with an estimated 180,000 annual deaths globally.¹ It constitutes a major source of morbidity and mortality in many parts of the world, particularly in the low and middle-income countries where more than 95% of fatal fire-related burns occur.^{1,2} Even with advances in burn treatment and care, the management plans imposed on patients and the healthcare system may constitute burden to the patient. Burden of treatment is healthcare workload experienced by a person with long-term health challenges and the impact on his/her self-management function capacity and well-being.³⁻⁷ Burden of burn treatment in this study is, therefore, represented by the problems patients experience as a result of burn and its management and anything

that negatively impacts their vitality, physical and emotional roles. Tran, Barnes, Montori, Falissard and Ravaud⁸ identified three taxonomies of treatment burden which centred on: tasks enforced by disease and healthcare systems; personal, structural, financial and situational factors; and patient's reported consequences of the burden.

Several studies have investigated the physical burden of treatment patients with chronic illnesses experience.⁹⁻¹¹ However, burn and its management may translate to burdens for burn survivors and these may affect their recovery and general health. Length of hospital stay (LHS) for patients with burn injuries in the U.S. is estimated at one day per 1% total body surface area (TBSA) burned;^{12,13} and 1-126 days in

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Nepal.¹⁴ Medical records of Accident and Emergency Department of three selected teaching hospitals in Nigeria showed that about 80% of surviving burn patients usually undergo series of surgeries of varied degrees and have long LHS of about 7 to 180 days, which was positively associated with poor quality of care (QoC) and the need for theatre.¹³ Patients with lifestyle changes due to their illness usually have stigma that is attached to their needing care.³⁻⁵ Comparative studies on gender-specific response to burn indicate that women with burn are more likely to experience psychological distress than men.^{15,16} Ogunmodede, Abiodun, Makanjuola, Olarinoye, Ogunmodede and Buhari¹⁷ conducted a similar study in Nigeria but on caregivers of patients with diabetes mellitus. The study indicated that caregivers, particularly women experience burden and psychological distress. If caregivers without pain of injury, who can freely move around within and outside the hospital and may not even take responsibility for the huge hospital expenses, do have burden, what will be the case of the patients who are directly involved with the treatment? There is dearth of literature on burden of burn treatment experienced by women in Nigerian hospitals with inequities in catastrophic health expenditures¹⁸ complicated by poverty.¹⁹⁻²¹

Objectives

The purpose of this study was to determine the burden experienced by female burn patients admitted into Nigerian hospitals. Burden was categorised as physical discomfort, lifestyle changes, altered body image, social function limitations and anxiety/depression. The specific objectives were to: assess the burden of treatment experienced by the women under the various domains and to determine if severity of burn, length of hospital stay, age, parity, occupation and socio-economic status modify the burden of burn they experienced. Findings of this study will help in better and clearer understanding of patient illness experiences and behaviours and what patients with burn expect from their healthcare providers as a way of ensuring and improving QoC.

MATERIALS AND METHODS

Mixed-method cross-sectional descriptive design was used. This method has been used successfully in similar studies.^{5,8,11} The study was done in burn units of three teaching hospitals in south-eastern Nigeria. Population for the study comprised women with $\geq 30\%$ TBSA, according to the Rule-of-Nines for adults' burn percentage estimation; on admission for at least two weeks; and without co-morbidities. Women with clinically diagnosed co-morbidities were deliberately excluded to avoid the confounding effect. When researchers visited for data collection between 1st September and 31st October 2018, fifty-one female adult patients had been on admission for at least two weeks in the various hospitals. Power analysis use applied for sample size determination. Using the Sample size calculator formula of the Creative Research Systems survey software: $ss = (Z [2] * (p) * (1-p)) / C [2]$; where: $Z = 1.96$, $p =$ proportion of target population (estimated to have $>30\%$ total body surface area burnt) (expressed as 0.5), $C =$ Confidence Interval ($.04 \pm 4$),²² a sample of 45 was estimated, that is 88.2% of the population. Two of the women were unconscious, hence could not communicate. Two were not willing to participate in the study. Forty-five (45) qualified women who gave voluntary consent were consecutively recruited into the study using purposive sampling.

Thirty-three-item structured interview guide was used for data collection. Part A was seven items on participants' personal profile, degree of injury and LHS. Part B was 'Burden of Burn Treatment Interview Guide (BBT-IG)' with twenty-seven items adapted from the Treatment Burden Questionnaire (TBQ)⁸ and grouped under: physical discomfort, lifestyle changes, altered body image, social function limitations and anxiety/depression. Items on BBT-IG were in 5-point Likert-type-scale

weighted: 'None/Not at all' = 0, 'Minimal' = 1, 'Moderate' = 2, 'High' = 3 and 'Extreme' = 4.

One probing question requested participant to say any other burden she might have experienced but not covered in the discussion. A tape recorder was used to capture all discussions during the interview. Face validity of the instrument was done by the Head of Burns and Plastics Unit of National Orthopaedic Hospital, Enugu. Also, two professors in Medical-Surgical Nursing specialty in the Department of Nursing Sciences, University of Nigeria, Nsukka, helped in determining the content validity of the instrument. For reliability, the instrument sample was administered on five burn patients at the Burns and Plastic Ward of the Federal Teaching Hospital (FETHA), Abakaliki, Ebonyi State using test-retest method at seven days interval, after due informed consent was obtained. The two sets of scores were computed using Cronbach Alpha reliability test. Reliability coefficient (r) results of 0.92 for section A and 0.88 for Section B were considered satisfactory.

Ethical approval to conduct the study was obtained following submission of the research proposal summary to the Ethical Review Committee of the Regional Burn Centre, National Orthopaedic Hospital and Enugu (IBR/HEC/RET/313/111). Administrative permission was also sought from Heads of Nursing Services and Burns Units of the respective Hospitals. The objectives of the study were explained to prospective respondents and written informed consent was obtained from them before the data collection. Anonymity and confidentiality were maintained in data collection and use.

Face-to-face interview was conducted with individual patients after the purpose of the study and role of participant were explained. Patients who consented to participate were interviewed on schedule. Patients with <2 weeks LHS were initially kept off, then got enrolled when they had recorded ≥ 2 weeks. To ensure confidentiality, patients were assigned serial numbers 1 to 45 by which each was identified. The researcher-developed interview guide was used to direct the discussion. All interview discussions were tape-recorded for ease of recall during analysis. The interview was held in the ward between 2.00 pm and 4.00 pm each day when the ward was less busy in terms of routine ward procedures. This was to avoid interruption of patient care procedures and to minimize disruption of interview sessions. However, when data collection became unavoidably interrupted (example, when healthcare provider visited to give care), discussion was paused and resumed at latter convenient time while the patient's ward and bed number were indicated on the tape for ease of identification and continuity at next visit. Data collection continued in each ward for eight (8) weeks and three (3) days 3rd September and 31st October 2018.

Data on respondents' socio-demographics and severity of burn were subjected to descriptive statistics of frequencies, percentages, means and standard deviations and presented using contingency tables. At 5-points scale ranging from 0 to 4, items with weighted mean score of ≥ 2 were considered high burden of treatment. Linear regression analysis was used to determine the relationship between the independent variable of age, parity, occupation, income, LHS and the outcome variables of burden of treatment, while t -test for independence was used to compare the burden experienced by women with mixed and full thickness burn. All quantitative statistical analyses were performed using the statistical package for social sciences version 25.0 computer software programme (SPSS Inc., IL: Chicago, USA) at 95% confidence interval. Qualitative data were subjected to conventional content analysis.

RESULTS

Majority of the respondents 37(82.2%) had mixed thickness. The average LHS was 40 days. Respondents with full-thickness burn had longer stay (mean = 46 days) than those with mixed-thickness burn (mean = 39

days). The mean (\pm SD) age of the respondents was 30.3 years (\pm 9.20) with most participants being 21-30 years (42.2%). Majority had at least a child, as only seven were nulliparous. Similarly, majority had some form of job since only six (13.3%) were dependent. Thirteen (28.9%) attained higher education, while five had no formal education. Seven respectively lived below the Nigerian minimum wage of NGN 18,000 per month and earn more than NGN 100,000 per month (Table 1).

Table 2 showed that out of the 27 items, the respondents had high burden level for 16. Hierarchically, limited ability to cope with financial involvement (Mean \pm SD = 3.16 \pm .95), limited ability to have time with family and friends (Mean \pm SD = 3.07 \pm 1.12), forcing self to eat some foods (Mean \pm SD = 3.02 \pm .84) and concern for general appearance (Mean \pm SD = 3.02 \pm 1.03) were the most reported. The grand mean for each of the five domains showed high degree of burden (Mean \geq 2.0).

Table 3 showed significant difference in the burden of treatment reported by patients with mixed- and full-thickness burn in all the domains except for social function limitations ($p = .057$).

Table 4 showed significant difference in the reported lifestyle changes, social function limitations and anxiety/depression according to respondents' income and LHS ($p < .05$). There was significant difference in their social function limitations and anxiety/depression based on their parity and occupation ($p < .05$); while their experiences on altered

body image ($p = .012$) and social function limitations ($p = .000$) differed significantly according to their age.

DISCUSSION

Results showed that the leading burden experienced by the patients were finance involved in treatment, social deprivation as evidenced by limited time with friends, feeling incapacitated, forcing self to eat some foods, inability to undertake activities of daily living unassisted, general appearance following the injury and consequent depression.

Hospitalization deprives patients of their usual social life and freedom. Separation from usual environment, restriction and inadequate care by health personnel typically causes some degree of discomfort, insecurity and regrets. Beside trauma event itself, being dependent on family and caregivers for satisfaction of physical, biological and social needs as a result of lifestyle changes can be embarrassing to the patient. All these may contribute to the sadness and depression experienced by patients with moderate-to-severe burn. She may resort to isolation and this can impair mental recovery which in turn may influence the physical recovery.

LHS appeared to impact the intensity of burden the patients had. Irrespective of the degree of burn, the longer the patient stays away from home, friends and job, the more the costs and cognitive changes such as depression, confusion, disorientation, helplessness, etc. Regular daily

Table 1: Sociodemographic profile of respondents n=45.

Characteristics		N(%)	Mixed-Thickness 37 (82.2%)	Full-Thickness 8 (17.8%)
Length of hospital stay	14 – 27 days	12(26.7%)	10(83.3%)	2(16.7%)
	28 – 51 days	15(33.3%)	14(93.3%)	1(6.7%)
	52 – 65 days	8(17.8%)	6(75.0%)	2(25.0%)
	> 65 days	10(22.2%)	7(70.0%)	3(30.0%)
	Mean	40 days	39 days	46 days
Age	< 21	5(11.1%)	3 (60.0%)	2 (40.0%)
	21-30	19(42.2%)	16 (84.2%)	3 (15.8%)
	31-40	13(28.9%)	12 (92.3%)	1(7.7%)
	> 40	8(17.8%)	6 (75.0%)	2 (25.0%)
	Mean age	30.3 years		
Parity	Nulliparous	7(15.6%)	4(57.1%)	3(42.9%)
	Para 1-2	16(35.6%)	15(93.8%)	1(6.2%)
	Para \geq 3	22(48.9%)	18(81.8%)	4(18.2%)
Occupation	Trading/self-employed	28(62.2%)	23 (82.1%)	5 (17.9%)
	Civil Servant	11(24.4%)	9 (81.8%)	2 (18.2%)
	Dependent	6(13.3%)	5 (83.3%)	1 (16.7%)
	No formal education	5(11.1%)	4 (80.0%)	1(20.0%)
Highest education	Primary	9(20.0%)	7 (77.8%)	2 (22.2%)
	Secondary	18(40.0%)	15 (83.3%)	3 (16.7%)
	Higher	13(28.9%)	11(84.6%)	2 (15.4%)
	< NGN18,000	7(15.6%)	5(71.4%)	2(28.6%)
Estimated household income/Month	NGN18,000-NGN50,000	11(24.4%)	8(72.7%)	3(27.3%)
	NGN51,000-NGN100,000	20(44.4%)	18(90.0%)	2(10.0%)
	> NGN100,000	7(15.6%)	6(85.7%)	1(14.3%)

Table 2: Descriptive statistics of burden of treatment reported by respondents in the various taxonomies.

Burden	0*	1*	2*	3*	4*	Mean±SD
Physical Discomfort						
Following specific treatment precautions	2	6	9	17	11	2.64±1.13
Restricted physical mobility	6	9	10	13	7	2.13±1.29
Frequency of change of old wound dressing	2	8	14	11	10	2.42±1.16
How bad itching from the burn had been	10	8	12	9	6	1.84±1.35
Physical difficult in defecation and urination	6	12	19	4	4	1.73±1.10
Having meals in unusual position	10	9	7	17	2	1.82±1.28
Mean±SD	6	9	11	12	7	2.11±1.283
Lifestyle Changes						
Forced to perform certain lifestyle changes	7	5	13	11	9	2.22±1.33
Change sleep pattern	0	0	13	21	11	2.96±.74
Being restricted by injury and hospital rules	2	3	11	11	18	2.89±1.15
Give up some routing physical activities	8	17	6	6	8	1.76±1.38
Force oneself to eat some foods	0	2	9	20	14	3.02±.84
Mean±SD	3	5	11	14	12	2.60±1.195
Altered Body Image						
Bothered by general appearance	1	4	5	18	17	3.02±1.03
Feeling 'unattractive' to others	3	6	20	9	7	2.24±1.09
Possible visible scars, contracture, loss of limbs	8	7	10	9	11	2.18±1.44
Mean±SD	4	5	12	12	12	2.51±1.254
Social Function Limitations						
Being in hospital makes relationships or activities with friends/family difficult	7	13	14	8	3	1.71±1.14
Restricted from leisure activities	10	8	14	5	8	1.84±1.38
Limited ability to cope with financial demands	1	0	11	12	21	3.16±.95
Has limited ability to have time with family and friends	1	4	8	10	22	3.07±1.12
Being a burden to family and caregivers	3	3	9	11	19	2.89±1.23
Have loss of appetite	12	18	7	6	2	1.29±1.14
Afraid that injury and treatment may lead to loss of sexual function	12	19	5	4	5	1.36±1.28
Mean±SD	7	9	10	8	11	2.16±1.413
Anxiety/Depression						
Fear of death as a result of the injury	6	4	13	12	10	2.36±1.30
Sad since in hospital following burn	3	18	10	10	4	1.87±1.12
Afraid that occupation may be subsequently affect	3	25	6	5	6	1.69±1.18
Feel depressed	1	1	16	8	19	2.96±1.04
Not getting enough information and attention from the healthcare providers	17	12	4	7	5	1.36±1.42
Not sure of competence of the care providers	1	3	22	12	7	2.47±.92
Mean±SD	5	10	12	9	9	2.16±1.296

activities become compromised as demonstrated in Table 3. Personal statements of a woman depict this, thus, "... being in hospital makes me miss my friends; this is October, Christmas is approaching. I have our End of Year meeting to organise as chairperson of our town union association. See me here!" (51-year old Mrs '7').

The parous patients who had children under their care are more emotionally burdened by prolonged hospitalisation. As home-

caretakers saddled with domestic and childcare responsibilities, women, particularly the married ones, have affinity with their homes such that anything that keeps them extensively away from family will like affect them psychosocially. Their lifestyle changes due to hospitalization involves missing out on fulltime working, cooking, showering every day and going out to socialize. In response, they may become depressed or anxious. They may also become aggressive and uncompliant as

Table 3: Independent t-test of difference in burden of treatment reported by the respondents based on severity of the burn *df* = 4.

Domains of Burden	Mixed thickness (N = 37)	Full thickness (N = 8)	Std. Error Mean	95% CI	T	Sig
Physical discomfort	1.95±1.258	2.89±1.053	.040	-1.019 to -.861	-23.650	.000*
Lifestyle changes	2.49±1.185	3.13±1.051	.048	-.736 to -.544	-13.266	.000*
Altered body image	2.45±1.226	2.77±1.294	.055	-.429 to-.211	-5.836	.000*
Social function limitations	2.15±1.344	2.27±1.651	.062	-.244 to-.004	-1.923	.057
Anxiety/depression	2.21±1.217	1.88±1.546	.059	.214to-.446	5.622	.000*

Table 4: Linear regression analysis of respondents’ burden of burn according to their socio-demographics.

	ANOVA results	Physical discomfort	Life-style changes	Altered body image	Social function limitations	Anxiety/Depression
Age	Mean Square	1.114	1.596	.553	4.274	.978
	Df	6	5	3	7	6
	F	1.330	1.970	10.611	17.798	1.129
	Sig.	.264	.118	.012	.000	.364
Parity	Mean Square	.539	.557	.877	2.277	1.753
	Df	6	5	3	7	6
	F	.985	1.023	1.684	10.454	4.941
	Sig.	.457	.407	.185	.000	.001
Occupation	Mean Square	.965	1.493	.056	1.760	5.559
	Df	6	5	3	7	6
	F	1.168	1.958	.062	2.617	54.963
	Sig.	.344	.107	.979	.027	.000
Income	Mean Square	.299	1.258	.799	1.264	1.412
	Df	6	5	3	7	6
	F	.523	2.762	1.571	3.249	3.634
	Sig.	.811	.041	.211	.009	.006
LHS	Mean Square	2.156	7.069	2.193	1.787	7.887
	Df	6	5	3	7	6
	F	1.887	54.173	1.884	3.582	42.883
	Sig.	.132	.000	.147	.017	.000

observed by Rosbach and Andersen.⁶ The older patients are likely to be more affected. At their age, they have more family responsibilities and commitments. Some are their family’s breadwinners, hence impeding their family’s economic life. Their opportunity cost of staying in hospital will therefore be serious burden and loss.

Some appear to be over-conscious of the burn disfigurement to the extent that they felt their physical appearance drew attention of everyone around them. Emotional pain of impairments caused by the distorted general appearance by visible scars, contracture or loss of limbs and loss of natural ‘attractive’ look can result to feeling of dejection and depression. As indicated, 31 out of 37 who had mixed-thickness burn (83.8%) were aged below forty years—the age of youthfulness. This is the age of active social life, particularly for women who would always like to

look beautiful, therefore, if hindered, they feel stigmatized as observed by Gallacher *et al.*³ and Demain *et al.*⁵ Being unable to give handshake, hug or embrace others can be truly demoralizing, especially for a hitherto extrovert. Such person may resort to self-imposed social isolation. In fact, it was very difficult to get some patients accept to participate in the study – they would rather remain in their isolated world than share their problem with others. One respondent said, “... *I am okay staying alone. ...with this terrible change in my look? Ah, no! Is it not better I bear my burden alone?* (30-year old Mrs ‘43’). Another verbalised relief of bottled-up emotional pains at the end of interview as she said. “... *today is first time in two weeks I accepted to engage in deep discussion concerning my problem. I feel better*” (26-year old Miss ‘29’).

As revealed in the study, limited ability to cope with financial demands was a prominent burden. Since poverty is an economic factor in burden of treatment, poor economy will make it difficult for them to pay for their treatment and still meet family responsibilities. A woman lamented, "... my children depend on me. What can a poor widow in hospital bed do? No food at home for my children. I don't have bank account, not to say how much I have there; I do 'buying and selling' and live on the profit. I now live only on what friends and good-spirited persons give me. They have stopped my treatment because I am yet to buy the dressing pack. That is the way they do here" (45-year old Mrs '12').

The huge expenditures on treatment can push the patient and her family into poverty, or a worse state of already existing poverty and its devastating effect as earlier observed by Roberts (21). There is obvious need for subsidizing the cost of care for patients with difficulty in paying the bills, through say, the National Health Insurance Scheme (NHIS). Unfortunately, the services of the NHIS are limited, poor and incomprehensive in Nigeria as observed by Onwujekwe, Hanson and Uzochukwu.¹⁸ Greater percentage of Nigerians are poor and do not have access to the services. In fact, those who need the NHIS the most do not have access to it. This, therefore, can cause great psychosocial burden to the patient.

Regimented lifestyle with precautions related to hospitalisation can be physically discomfiting and burdensome to patients. Findings showed that some patients did not get desired attention from their care providers. In order words, they felt that the health personnel did not use effective interpersonal and therapeutic skills as expected. There is already a record of poor QoC in the study area.¹⁸⁻²⁰ Sick patients need a lot of encouragement and supportive care. Scolding, dishing out instructions and expecting strict adherence, demanding patient to provide medicine and other treatment requirements as soon as needed without considering her financial ability, among others, can constitute distress to patients; hence, some women lamented: "...especially the nurses, they scold me. (Patient's name), you are contaminating your wound the way you are lying on the bed; you are taking your meal late, you should be sleeping by now and things like that. This is disgusting! Trying every time to please hospital staff is added problem for me (35-year old Mrs '18'). I am being controlled as a child by the nurses. They may never have been on sick bed (43-year old Mrs '5').

Clinical biopsychosocial care delivery, de-emphasizing hospital rules and emphasizing individual patient's personal factors should be priority when considering type of care and when and how to give the care to the patients. In this regard, the importance of effective interpersonal and communication skills cannot be over-emphasized. The healthcare provider has a duty to ensure that the client is listened to and his 'real needs', not 'felt needs' addressed. The patient has the right to quality care, the right to be listened to and the right for his due healthcare to be provided.

CONCLUSION

Burn and its treatment has overwhelming burden on all patients irrespective of age, parity, occupation or economic status. Burn patients in Nigeria have high cost of treatment, poor patient: care-provider relationships, social stigma, social isolation and unknown outcome of treatment as their greatest burden of treatment. Delayed and/or poor QoC and stigmatization may further delay healing, prolong hospital stay and increase the direct and indirect costs of treatment.

Based on findings, quality improvement strategies including zero tolerance for third delay in initiating care, establishment of burn-care trust-fund and/or pay-as-you-earn policy, strict application of triaging and zero compromise in standardized burn care are recommended. Psychotherapy should be integrated into the care of burn patients to help

promote their positive body image perception and coping. Care providers can also assist indigent patients by linking them to charity organisations and philanthropists that can assist them to meet the huge financial demands of burn treatment. Similar studies on the male population will provide bases for concretizing the effect size of femininity on the burden of treatment.

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CONFLICT OF INTEREST

This research work, or parts of it, has not been published elsewhere and it is not under consideration at any other journal. The authors declare that they have no competing interests with respect to the research, financial aid, authorship and/or publication of this article.

ABBREVIATIONS

BBT-IG: Burden of Burn Treatment Interview Guide; **LHS:** Length of Hospital Stay; **NHI:** National Health Insurance Scheme; **QoC:** Quality of Care; **TBQ:** Treatment Burden Questionnaire; **TBSA:** Total Body Surface Area.

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