

Burn Injury Advocacy: The Role Of Plastic Surgeons In Burn Prevention In South-South Nigeria.

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Abstract

Burns incidence has increased during periodic incidence of fuel scarcity in the country. Illegal petrol sellers lined the streets of Calabar in Cross River State hawking all types of petroleum products especially gasoline. Some people bought fuel and stored in their homes which was within the reach of children and other occupants of the house. Accidental explosion occurred as naked flame was brought in contact with petrol.

Aim: The study was aimed at finding out the knowledge, attitude and practice of petrol hawkers concerning flame burns prevention during fuel scarcity in Nigeria and the role of plastic surgeons in burn wound prevention.

Materials and method: A prospective study of 41 petrol hawkers in Calabar were interviewed within 12 days of fuel scarcity. Two declined to our interview and were excluded.

Result: Out of the 41 petrol hawkers, 28 of them attributed hawking petrol to fuel scarcity and unemployment. All participants were aware of the potential danger of flame burns and recognized that health workers could educate the public on the menace. They observed that health workers should intimate the government to make policies that would prevent fuel scarcity in the country while curbing unemployment.

Conclusion: The researchers observed that unemployment in the face of fuel scarcity were the main reasons for hawking and storing gasoline at homes. Thus, the recommendation of burn injury advocacy became apt through legislation and enforcement.

Keywords: Burn injury, Burns prevention, Burn injury advocacy, the role of plastic surgeons.

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I. Introduction

Burn injury has increased in alarming proportion in Nigeria especially during fuel scarcity which led Nigerians to hawk petroleum products as a common commodity on the streets. Many youths took advantage of the hike in price as they sold in containers along the roads at exorbitant price to make money. This pushed them to the temptation of storing gasoline in residential buildings which were easily accessible by young children playing with naked flame. Some other house occupants accidentally took flame or fire to the areas where fuel was stored leading to ignition of flame. It was on this basis that we attempted to look at the ways people handled and stored gasoline that led to frequent fire disaster among the people and ways of preventing fire disaster in the community especially during fuel scarcity. The authors also investigate their attitude, knowledge and perception in handling gasoline and other petroleum products in period of scarcity.

Burn injuries occur commonly and fire – related accidents were responsible for 238,000 deaths in 2020, putting burns to be the eighth commonest cause of mortality^{2,3}. Many Nigerians were involved in fire disaster and the incidence has arisen especially during fuel scarcity. In Nigeria, there is scanty records and statistics of fire injuries which negated appropriate planning and government interventions. Community statistics on the incidence, number of fire victims and total mortality rate could not be ascertained.

The available statistical data on burns epidemiology are predominantly hospital – based and community incidence and deaths were not considered in the national records. Burn injuries account for 4.8% of trauma deaths in Nigeria and 6-7% of surgically related deaths.⁴ In south- western Nigeria, flame accounted for 65-71% of burn injuries in Ile-Ife⁵ which called for public health concern.

Fire explosion may occur during transportation of petroleum products following road traffic accidents. Humans have been set ablaze during times of misunderstanding and communal clashes. During cooking, the kerosene may finish but attempt to refill already lit stove or lantern could result in explosion. There were many cases of flame burns due poor storage and contact with naked fire.

II. Method

This was a prospective observational study that was carried out in Calabar. All adult voluntary petrol hawkers along the streets of Calabar and burn victims that had flame injuries due to gasoline or kerosene explosion were included in the study. All petrol road side hawkers and those with flame injuries within the same fuel scarcity period who gave consent were included in the study.

The sample size was calculated for the first objective using the single population formula. We considered the following assumptions: prevalence of flame burns in Nigeria 4.8% considering a 95% level of confidence, a 3% margin of error and a 10% non-response rate gave us 41.

A systematic random sampling technique was used to select study participants who were willing to consent to the study. The number of gasoline hawkers in Calabar that were seen and those that had flame burns within the same period and were admitted in the hospital were included in the study.

The data were collected from participants through face-to-face interview using semi-structured questionnaire. The questionnaire was prepared in simple English Language considering the educational standard of the people. Socio-demographic characteristics, clinical and behavioral factors were collected by using interview.

To ensure quality control, the questionnaire was prepared in simple English language. A pretest was done on 5% of the study population which was 4 of the voluntary sample size on the major streets of Calabar. The clarity, understandability, flow of question and the time to fill the questionnaire were assessed and found satisfactory. Two data collectors, having medical record background and knowledge of the study were recruited and trained for the research. They got 4 hours of training on the aim of the study and techniques of administering the interview. The supervision was done by the principal researcher. Daily, all the collected data were checked for completeness by the principal researcher.

After the completion of the data collection the questionnaires were checked for the completeness and cleared manually, coded and entered into the SPSS window version 20¹ for analysis. Means and frequencies (%) were used to describe the participant's characteristics. The bivariate logistic regression was used to determine the associated factors of petrol hawkers and the incidence of petrol explosion. Variables with a p-value ≤ 0.005 in the bivariate logistic regression model were said to be significant. The significant level and association of variables were tested by using a 95% confidence interval. P values ≤ 0.005 were taken as statistically significance.

Questionnaires were distributed to 41 road side petrol hawkers along the streets of Calabar in Cross River State, south-south Nigeria within 12 days. The socio-demographic parameters such as sex, age, educational status, occupation, and parentage were taken. The data on financial gain, the knowledge, awareness of fire disaster relating to sale of petroleum products, especially gasoline was also taken. The questionnaire was designed in simple English language considering the educational standard of the sample population.

An ethical approval was obtained from University of Calabar Teaching Hospital one week before the data collection. Then with the letter, the Casual Department was contacted for the inpatients data. Finally, verbal consent was obtained from each respondent before data collection of those patients with burns and the petrol hawkers were also interviewed.

An ethical approval letter was obtained from University of Calabar Teaching Hospital one week before the data collection started. Then with this letter, the Casualty Department was contacted. Finally, verbal consent was obtained from each respondent before data collection of those with flame burns in the hospital.

III. Result

Concerning socio-demographic characteristics of the respondents, 41 patients had participated in the study with a 100% response rate. Among the participants, all of them were males of age group ≥ 22 -- 36year with a mean age of 29years. Regarding the educational status of the respondents about 18(43.9%) completed their secondary school education and above, 16(39.0%) had completed their primary school and the rest 6(14.6%) of them had no formal education. Of the total study participants, all of them resided in the urban area and about 27(65.9%) of them were single. Table 1

The clinical and behavioral characteristics of the study participants were considered. Of total participants of 41, 21(52.2%) drank alcohol while 26(63.4%) took tobacco and marijuana. Table 2.

Storage facility and the possible exposure to naked flame of the population were also considered. Out of 41 in the study population, 11(26.8%) stored petrol in the house, 12(29.3%) stored petrol in the compound but outside the house while the rest 18 (43.9%), stored gasoline in nearby uncompleted building close to residential areas. All participants were aware of the danger of flame burns as a risk and hazard of the sale.

Hospital flame burn incidence among petrol hawkers and others within Calabar during the period of fuel scarcity was studied. The 9 cases of petrol tanker explosion had 16 fire burn victims with a mortality rate of 7(43.8%) in University of Calabar Teaching Hospital. The burns injuries varied between 32% and 65%. some of them were skin grafted with satisfactory outcome.

Table1: Socio -demographic characteristics of gasoline hawkers in Calabar.

Characteristics	Number(n)	Percent(%)
Age in years		
22-30	26	63.4
≥31	15	36.6
Sex		
Male	41	100
Educational status		
Unable to read & write	6	14.6
Primary school complete	16	39.0
Secondary school complete	11	26.8
College and above	8	19.5
Marital status:		
Single	27	65.9
Married	14	34.1

Table 2: Clinical and behavioural characteristics of study participants:

Characteristics	Category	no. Of pts	Percent (%)
Alcohol	Yes	22	53.7
	No	19	46.3
Tobacco	Yes	23	56.1
	No	18	43.9
Marijuana	Yes	21	51.2
	No	20	48.8

The study revealed that all of them had the knowledge and awareness of the dangers of flame burns that is associated with the sales and storage of gasoline in their residential homes. Their reason for embarking on this trade was due to unemployment and the high profit margin in the sales of petrol during fuel scarcity in the country. They agreed that the business was risky but the best way to stop it was employment of the youth while government should try to prevent incessant fuel scarcity in the country by appropriate policy enactment and enforcement.

IV. Discussion

There is increasing incidence of burn injuries in Nigeria, especially during periods of fuel scarcity. The unemployed youths take advantage of the situation to trade on petroleum products, especially gasoline. At times, it led to mixing gasoline with kerosene in the same container. This led to adulterated kerosene with increased level of flammability. Attempt to pour kerosene to an already lit lantern could lead to fire explosion and has become a common occurrence in the communities. The accident of naked flame coming in contact with stored gasoline in residential areas that leads to ignition became common. This pattern was frequently seen during fuel scarcity.

Many youths were engaged in the business of hawking fuel and diesel during periods of scarcity. Some buy from town and carry into the villages for sale as their regular business. The use of alternative power like electricity are not yet found in some remote villages and hamlets. To make matter worse the creeks in the riverine areas can only be reached through boats. These areas require the purchase of gasoline in containers to supply them. The adulteration of fuel therefore carried high risk for these sellers.

The researchers revealed that the habits of the petroleum product hawkers which showed that 53.7% of them drink alcohol while 56.1% take tobacco in one form or the other. Concerning marijuana consumption, 51.2% of the cohort population consumed the substance in different ways. The hawkers gave various reasons why these substances were abused.

The cohort showed that the youths who were mainly men were engaging in the trade. This is because they have the required energy and strength to carry and transport these products to their destinations in big heavy containers. The college and university graduates that were involved showed that unemployment was a significant factor in their decision –making to start the trade.

The study revealed that a lot of them were unmarried men who had finished secondary school and graduates. They were unemployed and found this trade of hawking petroleum products as their work.

Most studies in Nigeria concerning flame burns were hospital-based research. The researchers intended to look at the factors that influence the trade of hawking petroleum products in the communities that result in incessant flame burns despite the massive campaign on burn prevention. The economic gain and self-employment were among the reasons for continuity in the business.

To strengthen the existing effort on burn prevention, there should be periodic workshops organized for petroleum product hawkers and pump attendants in the filling stations. The pump attendants were to be included in the workshop because they sell the products to the jerrican buyers. Legislation on fire safety designs in buildings concerning escape route and the use fire extinguisher. As part of the training of the public, they should conduct regular fire drills and interested public should be trained on basic fire support techniques. The International Society of burn injuries, together with the World Health Organization has created a 10-year plan for burn prevention and care, the goal of which was to develop burn control measures, improve burn care and burn surveillance, and achieve better data collection, research and training.⁶ Researchers have shown that in the oil producing areas in Nigeria, common causes of fire explosion followed stealing of petroleum products from underground pipelines, contamination of kerosene with gasoline and improper storage at homes. also the wrong handling of fuel by filling up lighted kerosene lamps and cooking stoves for cooking.⁷

All participants had knowledge and awareness of the danger associated with the sale of gasoline, such as burn injury, scarring and mortality, yet the trade is gathering more momentum.

Concerning the treatment of burn patients, the hospital- based nature in Nigeria on the determination of the actual incidence in the general population was uncertain as many patients sought treatment from alternative medical practitioners or resort to self- medication because of poverty and ignorance.⁹ However, the study had shown that about 43.8% of those burnt patients suffered mortality. Studies by Jubrum et al¹⁰ and Olusanmi et al,¹¹ had shown the high incidence of flame burns with high mortality in their cohorts.

A new dimension had come up in recent times where petroleum buckery or the illegal refining of petrol has come to stay. This practice if not checked and controlled could put Nigeria at a very high incidence of burn injury globally.

Health advocacy is a combination of individual and social actions designed to gain political commitment, political support, social acceptance and system support for a particular health goal or program¹². The term Public Health Advocacy refers to educating, organizing and mobilizing for system change in the health population. Therefore, burn injury advocacy is the combination of individuals and social actions designed to gain political commitment, support, social acceptance and system support for burn injury prevention through educating, organizing, and mobilizing for system change in the health population.^{13, 14}

Plastic surgeons have identified the current and future threats to the health of the population and have worked to inform, create, and influence legislation in order to change the environment so that a fire disaster prone society could be curtailed. Burn injury advocacy could be carried out through media, legislation and grass-root mobilization. The importance of individual health information for patients and clients could be practiced, and it should be stressed that burn injury advocacy should be undertaken to enhanced health of communities through improved health policies and programs.¹⁵ Communities should be involved and should show active participation in training, and fire preventive measures.

The burn and plastic surgeon, as the head of the team, increases awareness of flame burns by educating the public on the danger through radio and television programs. They also provide advice and support to the populace. They inform and educate the people on the dangers as well as building networks and ready reach of fire extinguisher in a building. Fund raising to help fire victims in form of charitable service appeared not to be yielding the desired result in most Nigerian hospitals. Burns and plastic surgeons also embarked on National awareness campaigns, professional conferences and releasing communiqué to the public. The plastic surgeon had made attempt to network with civil societies to carry this message of burn prevention down to all nooks and crannies of the country, but the result needed much to be desired.

The role of plastic surgeons in burn injury advocacy is fundamental to burn injury prevention and management as well as research in Nigeria. Therefore, Burns surgeons should identify both individual and societal factors that promote burn injury prevention.

CONCLUSION

Burn injury prevention is a fundamental focus of Burns and Plastic Surgeons in Nigeria. In the phase of fuel scarcity and the consequent effect of flame burns from storing petroleum products in the homes needs dedicated approach to stop it. The understanding of the concept, processes, planning, monitoring and evaluation of burn prevention by using advocacy would go a long way in preventing burn injuries from hoarding and storing gasoline in residential buildings as well providing enabling laws to prevent petroleum scarcity in the country. The study would help in defining public enlightenment and intervention as well as formulate policies on prevention of fire disaster.

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