

Producing Indigenous Orthopaedic Splints: The Nigerian Initiative

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Abstract

Concerned Nigerian medical scientists from the University of Calabar, having been challenged by the out-of-stock syndrome and the embarrassment of using fairly-used orthocare products over the years have designed and manufactured some orthocare wares including standard orthopaedic splints, slings and traction kits which are now in high demand within the region.^{1,2} The aim of this project is to sensitized other scientists and researchers within and outside the region to bring their expertise to bear in this regard. Presently over ten items manufactured by this group are being used in major hospitals in the region. Their major setback is finance and research environment. Government and interested groups are free to identify themselves with this noble and novel initiative. This is one way of making healthcare not only available but also affordable to the poor. ³ In this series three types of orthopaedic splints are presented for use and evaluation.

INTRODUCTION

In Nigeria the commonest orthopaedic splints used for temporary support of broken limbs in our hospitals are wooden and malleable splints. Few standard plastic and malleable splints are also used in some centres but these are usually imported at very high costs. Numerous efforts have been made to equip our hospitals with modern orthopaedic consumables, but these are hindered by lack of sustainability because of cost and maintenance. One very embarrassing situation is the importation of used variants of these products to our country. This ugly phenomenon and its attendant frustration has stimulated interest among some medical scientists in the University of Calabar to initiate the design and manufacturing of some orthocare wares including standard orthopaedic splints which are now in high demand within the region.^{2,4}

AIM

The aim of this script is to introduced to the Nigerian community and the wider world the usefulness of this variant of splints which are important in the management of limb fractures and dislocations. It is also aimed at stimulating interest in the area of designing and producing indigenous health care products as well as promoting research along this line in Africa.

MATERIALS/METHODS

The medical scientists comprising of orthopaedic surgeons, physiotherapists with inputs from Engineers have been working together under the name of Practical Medical research laboratories (PRACTIMED) since 2001. Locally sourced materials were used and required tools and machines were purchased. The materials used included Metal joints, Polyvinyl compound, Velcro, cotton clothing and bands, Tapoline, Gum, Lining, Foam and cotton thread, Hard paper and cellophane plaster for packaging. Documentation and labeling is done by the partners with some inputs from digital draftsman. Personnel such as tailors, artist and other needed labour were locally sourced and trained on the job. Presently these products are designed, develop and produce manually using our homes as production site.

RESULTS

Through this original work, the authors have designed and produced these high quality Orthocare products that are made purely in Calabar, Nigeria. These splints are effective, easy-to-use, affordable and readily available. In this paper we present:

Lower limb splints of various sizes and designed

Upper limb splints including wrist support and cock-up splint.

Other products developed by the group include spinal traction kit, lumbar corset, toe raise device, hand slings and cervical collars. Their uses has brought succor to thousands of patients and job satisfaction to some health-care practitioners throughout Nigeria.^{2,4,5}

SAMPLES OF UPPER LIMB SPLINTS

THE PRACTIMED WRIST SUPPORT

The wrist support has among other good qualities an exceptional cosmetic design that is attractive to lovers of fashion and aesthetics. It is useful in the pre and post operative management of ailments around the wrist. Other uses include sports injuries, after treatment for ganglion, carpal tunnel syndromes, tenosynovitis, trigger fingers, rheumatoid wrist/hand and nonspecific pains.

Figure 1

Figure 1ab: The Practimed Wrist Support



Figure 2

Figure 2ab: The Practimed Cock-Up Splint



LOWER LIMB SPLINTS

These are splint of various shapes and sizes used in immobilizing injured lower limbs. They are not cumbersome, water and body fluid resistant, easily washable, reusable, heat resistant, skin friendly and durable. They are useful in immobilization of all forms of lower limb injuries including trochanteric fractures. It includes the ankle support, below and above knee splints and the trochanteric splints.

THE PRACTIMED COCK-UP SPLINT

Hand cock-up splints have similar profile as the lower limb splint.

They are used in hand, phalangeal, wrist and forearm injuries as well as pre and postoperative immobilization of the forearm and wrist. Apart from limb immobilization it also provides compression bandaging system.

Figure 3

Figure 3ab: Sample of the PRACTIMED lower limb splints



DISCUSSION

This is a novel idea in Nigeria.^{1,4,5} The researchers are fascinated by the ever increasing innovations stemming out of this humble initiative. Our goal is to sensitize Nigeria and Nigerians that they have the potential of leading the world if we can harness the existing resources and manpower. The country is abundantly blessed with natural resources such as rubber, gum Arabic, forest and mineral such as tin, iron ore etc.⁵

Our products are competing favorably with foreign ones. These products are comfortable, durable and reusable. By this initiative we also produce customized wares for patients with peculiar clinical presentations.⁴

The costs of these items are ridiculously low (about 60% lower) when compared with the foreign ones. We draw our inspiration from the frustrations encountered when faced

with lack of standard gadgets to use on patients for maximum results and from the encouraging reports from colleagues and patients.

The major handicap is lack of funds. Government support as well as interest and encouragement from our fellow health professionals and counterpart in engineering would be of immense importance.

RECOMMENDATION

We recommend this high quality, safe but inexpensive products to our hospitals, institutions, the Federal Government and the society in general. We encourage other scientist to bring their expertise to bear in this regard. The government in Africa should provide the enabling environment for indigenous Scientist and researchers as seen in India, China, and Malaysia and other parts of the world.^{6,7}

For the above to thrive there must be efforts to reduce poverty and ignorance in our society.

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