

# Health Care Practices For Medical Textiles in Government Hospitals

Akubue B.N.

Department of Technology and Vocational Education, Ebonyi State University, Abakaliki, Nigeria

Anikweze G.U.

Department of Home Science and Management, Nasarawa State University Keffi, Nasarawa State, Nigeria

## Abstract

The purpose of this study was to investigate the health care practices for medical textiles in government hospitals Enugu State, Nigeria. Specifically, the study determined the availability and maintenance of medical textiles in government hospitals in Enugu State, Nigeria. A sample of 1200 hospital personnel were studied. One thousand two hundred copies of questionnaire were distributed to the respondents and were filed and collected completely. Data collected were analyzed using frequency and mean. The findings include that medical textiles are not enough and the few medical textiles available in the government hospitals are not properly maintained. The findings of the study will create awareness to the hospital management in the provision and maintenance of medical textiles. Federal government should sponsor and monitor the provision of medical textiles in the hospitals, there should also be regular supervision by medical supervisors to ensure that the medical textiles supplied in the government hospitals are properly cared for.

**Key words:** Medical textile, Availability, Maintenance, Healthcare, Diseases.

## Introduction

Healthcare is the service rendered by health professionals for the benefit of patients and could be inform of prevention, treatment and management of illness, the prevention of mental, problems and promotion of general well-being of man through the services offered by the medical and allied health professionals (Martin, 2010) The institute of Medicine (2012) defined healthcare as the health services provided to individuals and patients to improve desired health outcomes. Merriam (2013) noted that healthcare is the maintenance and restoration of health by professional in medicine, clinical psychology, dentistry and public health. Merriam maintained that the services of healthcare are typically offered to patients through a healthcare system made up of hospitals and health professionals. Healthcare is therefore, the treatment give to invalids in the hospitals and outside hospitals by trained medical personnel.

Bircher (2005) noted that healthcare services are affected through the proper medical textiles technology by medical professionals. The implementation and progress of healthcare depends on the provision of healthcare services, equipment such as medical textiles x-ray clothes (lead suite) oxygen mask rubber and catheter (Health Insurance Portability and Accountability Act, 2013).

Medical textiles according to Impex (2010) are all textiles used in the operative and post operative tasks in and around patients and medical practitioners. Mazharul (2012) noted that medical textile is a branch of technical textiles that are usually made with specific care in collaboration with the hygienic manufacturing procedures. By implication medical textiles are therefore, the textiles that are specially made from both artificial and natural fibres which are used in hospitals and other healthcare sectors. Impex (2013) classified medical textile into five namely: knitted medical textiles, braided medical textiles, woven medical textiles, non-woven medical textiles, healthcare and hygiene product medical textiles. Knitted medical textiles include surgical mesh, hernia repair and urogynecologic slings. They are used for implantable and other applications. Braided medical textiles applications include suture, ligament fixation and component attachment. They are manufactured by a combination of different absorbed and permanent fibres. Woven medical textiles are lightweight strength. The common application include as heart-valves, ligament repair and orthopedic spacers. Non-women medical textiles are regarded as the most effective material for bacteria barriers. The medical textiles can facilitate and enhance infection prevention and control effort in the healthcare setting thus reducing the problem of cross-contamination. Non-woven medical textiles can be used to replace and repair different organs and bones (Atom, 2011). The medical textiles act as an interface between man and treatment in hospitals and other medical centres.

Hospital is a healthcare institution that provides patients treatment by specialized staff and equipment (Santa, 2013). Hospitals are usually built by the public, charity organizations, government and individuals. Hospitals have four major categories, thus, acute care community hospitals, specialty/psychiatric hospitals and teaching hospitals (Glossary of Term, 2014). These hospitals have various departments that use varieties of medical textiles to handle different cases of health conditions and to control and avoid infections in hospitals. One may contract diseases from poorly treated medical textiles. Such nosocomial diseases include scabies, rashes and other pathogenic diseases.

Rodrigue (2012) noted that contaminated medical textiles transfer pathogens to patients and workers in hospitals especially when the textiles are not properly cared for. It is observed that patients particularly, patients that have accidents bleed to death in area of study. Chinta and Veena (2013) opined that medical textiles protect healthcare givers from infections and help in the control of bleeding in time of accidents. The purpose of this study was therefore to investigate the health care practices in government hospitals in Enugu State, specifically to;

1. determine the availability of medical textiles in government hospitals.
2. find the maintenance of medical textiles in government hospitals.

### **Research Questions**

1. What are the medical textiles available in government hospitals
2. How are the medical textiles in government hospitals maintained?

### **Method**

The survey research design was adopted in carrying out the study. A sample of 1200 hospital personnel (300 doctors, 450 nurses, 210 laboratory scientists, 120 orderlies and 120 porters) were randomly drawn from three government hospitals in Enugu state. The hospitals were selected from three senatorial zones (Enugu North, Enugu West and Enugu East) in Enugu state. In each hospital 100 doctors, 150 nurses, 70 laboratory scientists, 40 orderlies and 40 porters were selected using purposeful random sampling technique.

### **Instrument**

The researcher used self-developed questionnaire titled availability and maintenance of medical textiles questionnaire. It consist of 33 items arranged in two tables which contain items on availability and maintenance of medical textiles respectively. Four health professionals from hospitals in Ebonyi State, Nigeria, validated the instrument. The data collected were analyzed using frequency and mean. Any item with mean score value of 2.5 and above is regarded as being enough in the hospital and items with mean score below 2.5 is regarded not enough. Four point rating of not available, moderately available, highly available and available were used in table 1 while strongly agree, agree, disagree and strongly disagree were used in table 2. The data collected were analyzed using frequency and mean.

### **Findings**

The following findings were made by this study;

- (1) Medical textiles are lacking in government hospitals in, Enugu State. Out of twenty three identified medical textiles in the area of study, eighteen are not enough provided by the hospital management.
- (2) The few medical textiles available in government hospitals are not maintained. Out of ten identified ways of caring for medical textiles, only two ways are applicable in the area of study. Eight ways of caring for medical textiles are not used in hospitals in Emugu State.

**Table 1:** Availability of Medical Textiles

S/N	Medical Textiles	F <sub>x</sub>	$\bar{x}$	Decision Rule
1	Surgical mesh	197	1.97	Not enough
2	Hernia repair	211	2.11	Not enough
3	Urogynecological slings	211	2.11	Not enough
4	Prolapsed devices	178	1.78	Not enough
	<b>Braided medical textiles</b>			
5	Sutures	198	1.98	Not enough
6	Ligament fixation	186	1.86	Not enough
7	Component attachment	186	1.86	Not enough
	<b>Woven medical textiles</b>			
8	Cardiovascular grafts	198	1.98	Not enough
9	Heart valves	150	1.50	Not enough
10	Ligament repair	150	1.50	Not enough
11	Orthopedic spaces	214	2.14	Not enough
	<b>Non-woven medical textiles</b>			
12	Absorbent pad	295	2.95	Enough
13	Bandages	297	2.97	Enough
14	Laboratory coats	214	2.14	Not enough
15	Soft tissue implants	188	1.88	Not enough
16	Orthopedic implant	208	2.08	Not enough
	<b>Health care and hygiene products</b>			
17	Bedding	201	2.01	Not enough
18	Blankets	207	2.07	Not enough
19	Surgical gowns	290	2.90	Enough
20	Head and shoe covers	293	2.93	Enough
21	Dressing gowns	213	2.13	Not enough
22	Scrub suit Lead suite	208	2.08	Not enough
23	Bedding	296	2.96	Enough

Table 1 shows that eighteen out of twenty three identified medical textiles obtained mean scores below 2.5 cut-off points set for the study. Only five items have mean score 2.5 and above. This implies that eighteen out of twenty three identified medical textiles are not enough in the area of study.

**Table 2:** Maintenance of Medical Textiles

S/N	Ways of Caring for Medical Textiles	F <sub>x</sub>	$\bar{x}$	Decision Rule
1	There are specified units that care for the medical textiles	295	2.95	Agreed
2	Detergent are always used to wash medical textiles	300	3.00	Agreed
3	Stain removals are appropriately used to remove stains on medical textiles	138	1.38	Disagreed
4	Soiled hospital bedding are changed and washed immediately	120	1.20	Disagreed
5	Medical textiles are always sterilized appropriately	146	1.46	Disagreed
6	Medical textiles are always ironed before use	147	1.47	Disagreed
7	Bedding are changed everyday	131	1.31	Disagreed.
8	Door and window curtains are laundered every week	132	1.32	Disagreed
9	Laboratory coats and aprons are laundered after every use	160	1.60	Disagreed
10	Autoclaves machines are used to sterilize medical textiles.	152	1.52	Disagreed

Table 2 shows that eight items out of ten identified ways of maintaining medical textiles in government hospitals have mean scores below cut-off point of 2.5 set for the study. The respondents disagree with the eight items as way of maintaining medical textiles in the area of study because the mean scores are below 2.5 cut-off point set for the study. They however agree with two items as ways adopted in the maintenance of medical textiles.

## Findings and Discussion

The findings in table 1 showed that the quantity of medical textiles in government hospitals in Enugu State are not enough. The medical textiles include knitted medical textiles such as surgical mesh, urogynecologic slings, prolapsed devices and hernia repair. The findings agreed with Thamocharan (2013) who noted that common medical textiles such as face mask and surgical masks which are used to reduce infectious liquid droplets are lacking in some hospitals. Sufficient supply of medical textiles in hospitals is as essential as the supply of drugs because medical textiles are used for hygiene, protective and other healthcare purposes. Desai (2013) maintained that medical textiles protect medical personnel and patients from contamination of blood and infectious fluids. The study also showed that braided medical textiles such as sutures ligament fixation and component attachment are not enough because the mean scores are not up to cut-off point of 2.5. Thamocharan (2013) noted that suture is one of the bio-medical device that are lacking in most hospitals. He maintained that absorbable sutures are ideal for wounds inside the body as they dissolve and get absorbed into the body after operation. He further stated that sheet intestine and polyglycolic acid are indispensable during surgery in all hospitals. The finding also showed that both woven and non-woven medical textiles are lacking in government hospitals in Enugu State. The medical textiles include cardiovascular grafts, heart-valves, orthopedic spaces, orthopedic implant and soft tissue implant. This finding agrees with Medical Supplies and Equipment Company (2014) report that some hospitals neglect medical textiles while providing for medical equipment. The company maintained that medical textiles have numerous advantages and functions to both patients and medical personnel. Medical textiles have high comfort level, cost effective and protection of care provider, unfortunately, some hospital management disregarded medical textiles as pre requisite for medical treatment. The study identified in Table 2 that medical textiles in government hospitals in Enugu state are poorly maintained. Contaminated medical textiles often contain numbers of micro-organisms from substances like urine, blood, vomits among others. The study revealed that stain removals are not used on medical textiles always and that soiled bedding are not washed immediately. The findings are in consistent of Fijan and Turk (2012), that medical textiles are not well cared for in most hospitals to ensure safety textile usage for patients and medical personnel.

The finding showed that medical textiles are neither effectively sterilized nor ironed at correct temperature before utilization. Otto (2013) noted that medical textiles are not effectively sterilized with good chemicals in hospitals to destroy micro-organisms. He maintained that micro-organisms are common in medical textiles which can be eradicated through proper sterilization and laundering at correct temperature. The field of survival of micro-organisms on medical textiles after laundering is very diverse and perhaps even confusing and contradicting (Product Evaluation Laboratory, 2014). The findings also showed that door and window curtains, laboratory coats, apron among others are not cared for with autoclave machines which are used to sterilized medical equipment. Sorenson (2013) noted that curtains and bedding in most hospitals are contaminated with germ spreading, drug resistant, enterococci and ethcillin resistant staphylococcus aureus but unfortunately autoclave machines are not always used to care for these medical textiles. Traore, Thioune, Benglay, Ndiaye and Dieye (2013) noted that barrier clothing must always be clean for strict control of infections especially in the theatre. Curtis and Robert (2002) noted that effective strategies for control of microbes must be applied on garments, bedding, linen, wipes, surgical fabrics, and scrub suit.

The findings showed that medical textiles for health care and hygiene are not enough in the government hospitals in area of study. The medical textiles include bedding, apron, dressing gown, scrub suit and lead suite. The findings agree with Chinta and Veena (2013) who noted that lack of basic medical textiles such as bedding in hospitals resulted to serious painful conditions to various homes that got infected after admission in hospitals. They maintained that health care and protective medical textiles are not only used to keep bacteria away from wounds but also protects the medical personnel from blood, urine and other fluids during surgical procedure and medical treatment. In other words, without enough medical textiles in hospitals' treatment and protection of both hospital staff and patients may be difficult. Laura (2012) noted that it is discouraging and unfair to observe that patients most of the time buy healthcare products outside hospitals because such essential medical textiles are not available in the hospitals.

## Conclusion

The findings of this study show that medical textiles are not enough in government hospitals in Enugu State. The five identified classes of medical textiles which include knitted medical textiles braided, woven, non-woven and healthcare and hygiene medical textiles are short in quantity in the area of study. The study highlighted that the few medical textiles available in the hospitals are not properly maintained.

Soiled bedding, door and window curtains among others are not properly laundered and changed in the hospitals. The available, medical textiles are not laundered and sterilized with appropriate equipment like

autoclave machines. This condition may encourage transfer of pathogenic organisms very easily to patients and staff in the area of study.

### Recommendations

Based on the findings of this study, the following recommendations are made;

1. The federal and state governments should map out substantial amount of money for medical textiles every year. This provision may be through ministry of health in every state.
2. The medical supervisors responsible for hospital supervision should ensure regular visit to government hospitals in Enugu State and in the entire hospitals in the federation to make sure that the medical textiles supplied by government are in the hospitals.
3. Maintenance equipment especially laundry equipment such as sterilizing materials like autoclave machines should be provided in every government hospitals in the federation.
4. There should be training and re-training of orderlies and porters in hospitals on how to care for medical textiles.

### References

- Bricher, J. T. (2005). A dynamic definition of health and diseases. *Medical Healthcare Philosophy*.
- Chinta, S. K. & Veena K. V. (2013). Impact of textile on medical field. *International Journal of Latest Trends in Engineering and Technology*, 3(2), 142-147.
- Curtis, W., & Robert, A. M. (2002). Antimicrobial performance of medical Textiles. *International latest trends in Engineering art technology*, 142-145.
- Fijan, S. & Turk, S.S. (2012). *Hospital textiles. Are they possible vehicle for healthcare*. United States: Library of Medicine.
- Glossary of Term (2014). *Glossary of term paherts care link*. Accessed on 4 March 2015 from families/understanding-patients-care-linkhospitaldatalGlossary-of terms.copx.
- Health Insurance Portability and Accountability Act (2013). *Health care services*. Accessed on 21 April 2015 from [www.whatishealthcare.org](http://www.whatishealthcare.org)
- Impex, A. R. (2010). *Biomedical structures*. Accessed on 20 May 2015 from <http://www.bmsri.com/industries.Rodriguez>.
- Laura V. R. (2012). "Medical textile and Apparel, chemical and textile Division office of industries. Rodriguez.
- Marriam, W. (2013). *Healthcare services in medical treatment*. Accessed on 13 May 2015 from <http://textilelearner.blogspot.com/2012/02/introduction-of-neducak-textiles.htm>
- Martin, E. A. (2010). *Meaning of health care*. Concise medical. Dictionary Oxford Paperback.
- Mazharul, Ilc. (2012). *Introduction of medical textiles/requirement of medical textiles for medical applications*. Accessed on 21st April (2015) from <http://textilelearner.blogspot.com/2012/02/introductionofmedical-textiles.htm>.
- Medical Supplies and Equipment Company (2013). *Surgical gowns. protection and comfort* Accessed on 28 March 2015 from <http://company.com/pdf/pageIDV19/article.asp>.
- Otto, E. (2013). *How to change bed linens*. Accessed on 22 April 2015 from <http://www.ohow.com/16056-447-changebed-uren>
- Rodrigues L. V. (2012). *Medical textiles and apparel*. Chemical and textile Division office of industries. Router Bridge.
- Santa, J. (2013). *Why linens should be changed in hospital beds*. Accessed on 28 May 2015 from <http://www.ehow.com/1984-lines-hospitalbeds>
- Thamotharan, G. (2013). *An analysis of medical textiles*. Accessed on 28 March 2015 from [www.fibrefashion.com/industry/an-analysis-of-medical-textile-s.asp](http://www.fibrefashion.com/industry/an-analysis-of-medical-textile-s.asp)
- The Institute of medicine (2012). *Healthcare malarial*. Peer Point Medical Education. Institute.
- Trare, A. T, Thioune O., Benqaly. Ndiaye B. & Dieye A. M. (2013). *Process Evaluation of the sterilization of medical devices and surgical textile*. License Biomed Central Ltd.

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:

<http://www.iiste.org>

### CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

**Prospective authors of journals can find the submission instruction on the following page:** <http://www.iiste.org/journals/> All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

### MORE RESOURCES

Book publication information: <http://www.iiste.org/book/>

Academic conference: <http://www.iiste.org/conference/upcoming-conferences-call-for-paper/>

### IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

