Avinashilingam Institute for Home Science and Higher Education for Women University

Seek and Ye Shall Find

Certificate

This is to certify that Dr./ ~~Ms.~~/ [illegible] S. Amsa[illegible] [illegible]ofax.......................

Avinashilingam Institute for [illegible] and Higher Education [illegible] [illegible]latore [illegible] National Seminar

as Delegate / ~~Chair~~[illegible] [illegible]ented a paper en[illegible] Existing Scenario in..........

Healthcare.. held on 15th & 16th December 2011.

A. Rajeswari
Dr. A. Rajeswari
Convenor

Malarvizhi .V
Malarvizhi .V
Organising Secretary

Gowri Ramakrishnan
Dr. Gowri Ramakrishnan
Registrar

ISSN - 2249-7315

ASIAN JOURNAL OF Research In Social Science & Humanities

Journal Of :
Asian Research Consortium

A Peer Reviewed International Journal of Asian Research Consortium
AJRSH:
ASIAN JOURNAL OF RESEARCH IN SOCIAL SCIENCE & HUMANITIES

GROWING SCENARIO IN HEALTHCARE TEXTILE

DR. S. AMSAMANI*; MS. B. SANGEETHA PRIYA**

*Associate Professor, Department of Textiles and Clothing,
Avinashilingam Institute for Home Science and Higher Education for Women.
**Ph.D Research Scholar, Department of Textiles and Clothing,
Avinashilingam Institute for Home Science and Higher Education for Women.

ABSTRACT

Health care is the diagnosis, treatment, and prevention of disease, illness, injury, and other physical and mental impairments in humans. Health care is delivered by practitioners in medicine, chiropractic, dentistry, nursing, pharmacy, allied health and other care providers. Healthcare sector is one of largest sectors in India, in terms of revenue and employment. During the 1990s, Indian healthcare grew at a compound annual rate of 16%. Today the total value of this sector is more than $34 billion. This translates to $34 per capita or roughly 6% of GDP. By 2012, India's healthcare sector is projected to grow to nearly $40 billion. The private sector accounts for more than 80% of total healthcare spending in India.

Health care textile is one of the fastest growing segments of the world. Very distinctive feature of health care textiles is that, it can make value addition as to ever application and end users. At the same time, it is a diverse and dynamic one, having wide range of materials, processes, products and application. The last decade has witnessed a rapid increase of interest in new sensing and monitoring devices including wearable wireless devices and sensor networks for several personal applications especially in healthcare, well being, lifestyle, protection and safety. Smart Wearable Systems (SWS) are sensor-based integrated systems on body-worn platforms offering pervasive personalized solutions for continuous, non-invasive monitoring of body and external parameters, including feedback to the user. Today they are available either in the reach and development prototype (the majority) or commercial products. Furthermore, new developments emerging from the miniaturization of electronics and materials processing have being leading to the integration of multiple smart functions into textiles without being a burden.

This paper presents and discusses the main issues involved in the development of the health care textiles, user requirements, technologies, research and development of integrated systems as well as future challenges to be met in order to reach a market with reliable and high value-added products.

INTRODUCTION

TEXTILES INDUSTRY IN INDIA

The textiles industry in India enjoys a distinctive position due to the pivotal role it plays by way of contribution to industrial output, employment generation (second largest after agriculture) and export earnings of the country. The industry is rich and varied, embracing the hand-spun and hand-woven sector at one end and the capital intensive, sophisticated mill sector at the other. Its association with the ancient culture and tradition of the country lends it a unique advantage in comparison with textiles industry of other countries, thus giving it an uncommon edge to cater to a vast variety of products and market segments both domestically and globally.

The Indian health care delivery market is estimated at US$ 18.7 billion and employs over four million people, making it one of the largest service sectors in the economy today. Total national healthcare spending reached 5.2% of GDP, or US $34.9 billion in 2004 and is expected to rise to 5.5% of GDP or US $60.9 billion by 2009. This includes the pharmaceuticals market, government and private spending. Private segment constitutes bulk and growing rapidly, to reach $38 billion by 2012. There are various gaps in the Indian healthcare market, which also present a vast opportunity. Hospitals in India are running at 80-90 per cent occupancy calling for different types of demands. With the increase in this demand far exceeding supply, India's healthcare industry is expected to grow by around 15 per cent a year for the next six years.

There are some economic factors which make India such an exciting market. Since healthcare is dependent on the people served, India's huge population of a billion people represents a big opportunity. The middle income group in this vast base is also a large 300 million. India spends only 1% of its GDP on health, translating into $35 per capita. France spends 10.4% and Japan 8%. A significant portion of the population receives inadequate or no health care, specifically 25.7% living below the poverty line and those who have only the public health system to rely on. National Family Health Survey for 2005-06 estimates 453 deaths per 100,000 women; higher than Cambodia, Bolivia and Botswana. India accounts for 20% of the world's maternal deaths, with a woman dying every five minutes. Twenty percent of deaths of children worldwide under the age of 5 occur in India. The private healthcare sector in India accounts for over 75 percent of total healthcare expenditure in the country and is one of the largest in the world. India's healthcare sector, however, falls well below international benchmarks for physical infrastructure and manpower rather even fall below the standards existing in comparable developing countries.

Given the growing demand, the emergence of reputed private players and the huge investment needs in the healthcare sector, there has been growing interest among foreign players and non resident Indians to enter the Indian healthcare market. There is also growing interest

among domestic and international financial institutions, private equity funds, venture capitalists and banks to explore investment opportunities across a wide range of segments.

The vision statement for the textiles industry for the 11th Five Year Plan (2007-12) sees India securing 7 per cent share in the global textiles trade by 2012. At current prices, the Indian textiles industry is valued at US$ 55 billion, 64 per cent of which caters to domestic demand. The export of textiles and clothing aggregated to US$ 22.42 billion in 2009-10. The Government fixed the target for 2010-11 at US$ 25.48 billion. So far during the period April- September 2010, exports of textiles and clothing have been achieved at US$ 11.26 billion. During February 2011, total cloth production rose by 5.8 per cent year-on-year (y-o-y). During April- February 2011 cloth production increased by 4.5 per cent y-o-y. Total textile exports during April-December 2010 registered an increase of 16.54 per cent in rupee terms at Rs 87,582.83 crore as against Rs 75,149.98 crore during the corresponding period of the previous year, according to the latest data released by DGCI&S, Kolkata. The same were valued at US$ 19,217.12 million as against US$ 15,695.07 million during the corresponding period of the previous year, registering an increase of 22.44 per cent. The share of textile exports in total exports was 11.29 per cent during April-December 2010 as against 12.34 per cent during April- December 2009.

Indian market for Medical Textiles is worth US$ 500 million; global market is worth US$ 8.2 billion. Growth in medical infrastructure will be accompanied by demand for associated products and services. The growing rate is estimated at 10–12%, which shall almost double to a US$ 753 Million (Rs 3,388 Cr) by 2012 from the current US$ 405 Million (Rs 1822 Cr).

INVESTMENT TRENDS

The textile industry plays a significant role in getting the foreign exchange reserves into the country, contributing to approximately 15 per cent of the total exports from the country. Exports in textiles and apparel have registered a strong growth in last few years – 11 per cent CAGR from 2004-05 to 2007-08.

India's liberalization of its foreign investment regulations, buoyant domestic demand for textiles and strong export potential have led to growing foreign investment in the country. The country has become one of the fastest growing destinations for FDI inflows and collaboration. India's Special Economic Zones (SEZs) attract foreign investment by providing tax incentives, assistance with bureaucratic and administrative problems accessing to reliable infrastructure.

Foreign companies have been motivated to enter into collaborations with Indian firms by the increasing profits gains that can be made by producing brands in India and selling them into the Indian market. Indian companies on the other hand, have been motivated by the scope for gaining technical and marketing expertise from foreign partners.

- The textiles industry has attracted FDI worth US$ 956.97 million between April 2000 and March 2011, according to data released by the Department of Industrial Policy and Promotion (DIPP)

- Ahmedabad-based textile company Arvind Ltd. has tied up with another major international brand, Geoffrey Beene, LLC for apparel and non-apparel products. Geoffrey

Beene has licensed Arvind Retail Ltd. to manufacture and market its men's apparel and non-apparel products

- Ahlstrom Corporation has announced investments of EUR 55 million (US$ 79.2 million) in new and expanded manufacturing capacity, including a new Medical Nonwovens Plant to be built in India. The new medical nonwovens plant in India will use spunmelt technology and accounts for EUR 38 million (US$ 54.72 million) of the total investment announced.

SCOPE OF THE MEDICAL TEXTILE INDUSTRY IN INDIA

Healthcare and medical textiles go hand in hand and have to move in tandem. Today, the healthcare industry in India is getting a lot of attention and is at par with international standards. With the ushering in of large private hospitals, there is a great transformation in the mode of treatment offered. When it comes to patient care and personal care products, comfort, safety and hygiene are the criteria. First, medical professionals are recommending high performance products that help in quick healing process. Second, Indians are travelling a lot and are getting exposed to world standards in healthcare. They demand such products at home too. These have culminated into triggering the demand for high quality products. If you look at the per capita spending on healthcare, it has gone up in India and is hovering around four per cent of the GDP. This is a very good sign for the medical textile industry too. The Indian healthcare sector is currently worth Rs 73,000 crore and is expected to grow at 13 per cent for the next six years. Roughly, 15 per cent of the population will have a total income exceeding Rs 80,000,00 crore and they will be primary consumers of the healthcare services, which will basically include high performance products. Again, with the coming of health insurance, medical tourism, the demand for high quality, proven and specific application products in medical textiles is poised to grow. Healthcare can be split into emergency care, routine healthcare and elective healthcare. Elective healthcare will be in focus and high growth area as it will involve life stage treatments and lifestyle treatment, both of which need high value and high performance products.

SIZE OF THE INDUSTRY IN INDIA

Medical textiles, hospital equipments, consumables all put together would however be around Rs.20, 000 crore per annum. Medical textiles are technology-driven and technology is a big bet for the Indian manufacturers. India does not have adequate technology to manufacture high value products. Most of the products manufactured by the domestic industry are low value products like gauzes. Research and development has to be undertaken on a large scale to make the shift from low value to high value products.

In medical textiles, bandages are a big market and most of the innovation happens here. Today, these products are not mere bandages, but they highly aid in the healing process. In the bandage category, 60 per cent is in the organised sector and 40 per cent in the unorganized. In the west, lot of innovation is happening in order to make the healing process quick and comfortable. As comfort is becoming the basis, new innovative products are being rolled out. For example, adult incontinence products are in high demand in western countries but such products are unheard of in India. If you see the Indian market, new products are being developed for use in operation

theatres. The healthcare industry wants to change from linen (used in operation theatres) to nonwovens. The concept of modern wound care is slowly catching up in India with the coming up of multinational companies in this specific area. There are more than 300 types of products for different specific applications. Very few products are used by the healthcare industry and it is only a matter of time for high performance products to come to India. Then, there are various innovative kinds of casts which are used in the healing of fractures. All this is still to make a mark in the Indian market.

Basically, medical textiles require high hygiene standards. These standards are to be maintained right from raw material to finished products. Indian raw material suppliers are not aware of this and often medical textiles manufacturers face a lot of problems in sourcing the right materials without contamination. Lack of the right kind of raw materials forces us to import the same, defying the very purpose of us setting up shop in India. Another problem is lack of customized production. Many suppliers shy away from doing small orders which are unique. They can claim premium for the products if they are innovative. Therefore, it is high time that the Indian raw material suppliers gear up to meet the requirements of the industry.

INDIAN MARKET POTENTIAL

A very good phase change is being observed in India from the durables to the disposables. The potential for nonwovens usage in India is great and there are many reasons why it will form an important sector. The world giants in consumer products have all modified their strategies to suit Indian conditions prior to achieving any success. The market size for hygiene textiles in 2007-08 was of 2362 crores and is growing at the rate of 10% per year. In India, healthcare sector is about US$ 17 billion industry, with annual growth rate at 13% to 17%. By 2012, Indian healthcare sector's estimated growth is around US$ 36 billion.

The hygiene market in India has a great potential because of the low penetration and the sheer size of the market. The entry strategies with feminine hygiene products followed by baby diapers, and eventually adult incontinence, will make it possible for women, children and adults to benefit from new, hygienic and easy-to-use products. The need for single-use surgical products (gowns and drapes) is imminent in Indian hospitals. The market for medical textiles is being driven by a number of factors:

- Population growth rates
- Changes in living standards
- Increased awareness of the risks to health workers from health threats
- To reduce overall healthcare costs by using disposables in order to reduce cross infections
- Non linting
- Saving of time and man power in cutting and preparing the gauze pieces

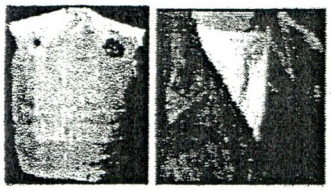
- Ease of use, hygiene and cost effective, by eliminating laundering
- The growing dominance of purchasing which demands increasing value for money
- The increasing share of nonwovens in the medical world market
- Increasing medical tourism in India

These trends will be further fed by the increasing development of the medical textile market and industry.

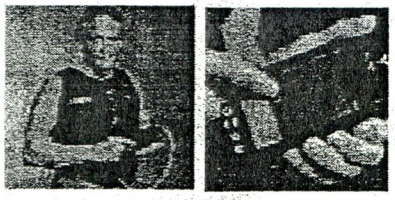
INNOVATIONS IN HEALTHCARE

SMART-SHIRT

Georgia Tech Wearable Motherboard GTWM is currently being manufactured for commercial use under the name "Smart Shirt" by Sensatex. The Smart Shirt System incorporates advances in textile engineering, wearable computing, and wireless data transfer to permit the convenient collection, transmission, and analysis of personal health and lifestyle data. Described as "the shirt that thinks," the Smart Shirt allows the comfortable measuring and/or monitoring of individual biometric data, such as heart rate, respiration rate, body temperature, caloric burn, and provides readouts via a wristwatch, PDA, or voice. Biometric information is wirelessly transmitted to a personal computer and ultimately, the Internet. The "Smart Shirt," a T-shirt wired with optical and conductive fibers, is a garment that functions like a computer. It uses electro-optical fibers embedded in the fabric to collect biomedical information.



Georgia Tech Wearable Motherboard



Life Shirt

LIFE-SHIRT

Developed by Southern California-based health information and monitoring company VivoMetrics, the Life-Shirt is a lightweight, machine washable, comfortable, easy-to-use shirt with embedded sensors and a PDA to monitor and record more than 30 physiological signs and bring standard monitoring technology out of the hospital and into the real-world environment. To measure respiratory function, sensors are woven into the shirt around the patient's chest and abdomen. A single channel ECG measures heart rate, and a two-axis accelerometer records patient posture and activity level. The information is uploaded to a computer via a datacard and sent over the Internet to VivoMetrics, where it is analyzed and then sent to the physician.

MAMAGOOSE BABY PYJAMAS

Smart clothes technologies could help to prevent Sudden Infant Death Syndrome (SIDS) commonly known 'cot death'. The Belgian company Verhaerth Design and Development and the University of Brussels (VUB) have developed a new type of pyjamas to monitor babies during the sleep. The new pyjamas are very aptly called "Mamagoose" and they draw on technology used in two specific applications: The analogue biomechanics recorder experiment and the respiratory inductive plethysmograhph suit. The Mamagoose pyjamas have five special sensors positioned over the chest and stomach, three to monitor the infant's heart beat and two to monitor respiration.

Mamagoose Pyjamas

SMART SOCKS

Every year, more than 50,000 Americans with diabetes must undergo foot or leg amputations. In many of these cases, poor blood circulation is the villain. It's possible to imagine having socks with built-in pressure sensors that would alert the wearer to put his/her feet up for a while. Researchers estimate that about three-quarters of diabetes-related amputations might be avoided with this kind of simple warning system.

CONCLUSION

Medical textiles and Health care textiles are the most dynamically expanding sectors in the technical textile market. Growth rates are above average as a result of increases in consumption in developing countries in Asia and growth rates in the Western market. With greater awareness of the health issues in relation to fabric, end users and designers can make more informed decisions and collectively help move the market by their specifications and purchasing power. With number of Researches in future years, the Health care sector will be globally independent and important one

REFERENCES

- Czajka, R (2005) Development of Medical Textile Market, Fibres & Textiles in Eastern Europe January / March , Vol. 13, No. 1 (49), pp13-15
- Wuagneux, E (2008) Medical Market Maturation, Nonwovens Industry, August, pp. 26-33

- Dharmadhikary, R(2005) Application of Nonwovens in Medical Fabrics & the Indian Market Potential, Proceedings of the seminar on Nonwovens: Technology, Products & Market Potential, IIT Delhi, 14-15 October, pp. 56-62
- Mayekar(2008) Disposable Textiles - Future of India, Proceedings of International Conference on Technical Textiles & Nonwovens, ICTN-2008, IIT Delhi, 11-13 November .
- Zhang, D(2008) The Evolving Roles of Nonwovens in Technical Textiles, Nonwovens Industry, March , pp. 98-113
- Baseline survey of the technical textile industry in India, November 2008, Office of Textile Commissioner, Ministry of Textiles, India
- Engqvist,(2009) The Benefits of Using Nonwovens in Medical Products, Nonwoven Industry, August , pp. 30-34
- http://www.healthybuilding.net/healthcare/FutureOfFabric.pdf
- Gruedemann, B. J., Taking Cover, Infection Control Today, March 2002, pp. 32-34
- Kadirvel, S., Standard Test Methods for Medical Textiles, SITRA, Coimbatore, India
- Russell, S. J., Handbook of Nonwovens, The Textile Institute, Manchester, pp. 1-2, 2007
- INDA Training Workshop on Nonwovens, 12-13 Aug'2010, Coimbatore, India
- http://www.kcprofessional.com/za/healthcare/presentations.htm
- Sahni, A., Seminar on Medical Textiles: Opportunities & Applications, Ministry of Textiles, Sep'2008, Madurai, India
- http://www.researchandmarkets.com/samples/report/226585/Technical%20Textiles%20International%20Sample.pdf
- 'Indian healthcare industry: Rising change in attitude by middle class', Industry News, Medical plastics data service, Vol. 10, No. 2-3, May 2003.
- www.3mhealthcare.co.uk
- 'Standardisation of medical textile', Verma M S & Anil kumar, Standards India, Vol.20, No. 2, May 2006.