

Medical Textiles: A case study and its prospects in Pakistan

Muhammad Kamran Iqbal, Senior Research Assistant at Textile Research and Innovation Centre (TRIC), Textile Institute of Pakistan delivered a lecture on case study conducted on the prospects of medical textiles in Pakistan. The excerpts of the presentation are as follows. HRS.

All textiles and nonwoven products used in the operative and post-operative tasks in and around the patient by medical practitioners are termed as Medical Textiles. Research work on Medical Textiles is being carried out at the TRIC and its objectives are medical research and conducting survey of hospitals to evaluate demand and supply scenarios with the aim of providing insight into the specific medical, surgical and health care materials.

Muhammad Kamran Iqbal said over 1.5 million tonnes of textile materials, with a value of US\$5.4 billion, were consumed worldwide in the manufacture of medical and hygiene products in 2000. This is predicted to increase in volume terms by 4.5% per annum to 2010 to reach 2.4 million tonnes with a value of US\$ 8.2 billion. (Source: David Rigby Associates).

There are three main application areas in medical textiles, Implantable, Non-Implantable Materials and Healthcare and Hygiene Products.

Implantable materials have applications in the effective repairs of the body parts, soft tissues, bones etc. Medical Textiles are extensively used for replacement of damaged or blocked arteries in the form of Vascular Grafts and for the treatment of swollen heart. Surgical collar is used to provide neck support to patients.

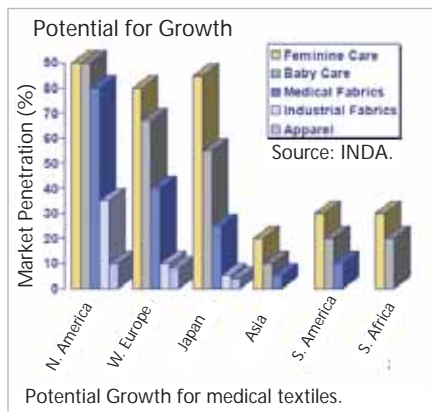
The Non-Implantable materials include compression stockings, long tight socks, automatic cushion bandages for patients suffer-



Healthcare/Hygiene Products.



Non-implantable materials.



ing from ulcer, thrombosis or immobile patients. The results of survey of hospitals are listed below:

Case study

The total number of beds in hospitals in Pakistan is 103285 according to Federal Bureau of Statistics. For the purpose of the research four hospitals were selected as per following criteria.

- ❖ Hospital 1: General hospital with 600 bed capacity.
- ❖ Hospital 2: Heart specialist hospital with 120 Bed capacity.
- ❖ Hospital 3: Kidney specialist with 100 bed capacity.
- ❖ Hospital 4: Urology and Transplantation specialist with 500 bed capacity.

Use of Disposable Textiles is preferred because it saves cost of laundering and later sterilisation, whereas urology and

transplantation based hospitals with 500 beds capacity consume 49% of imported materials. The results show that hospital 3 and 4 consume more conventional textiles than disposable products.

Hospital Acquired Infection (HAI)

According to CDC, about 1.7 million infections impact hospital patients each year, costing hospitals an estimated US \$ 4.5 billion in additional medical costs.

Surgical site infection, one form of an HAI, affects more than 370,000 patients in the U.S each year. In U.S, hospital infections kill 60,000 – 80,000 people a year. In Pakistan, one of the leading causes of death is respiratory infections.

The medical textiles used for protective, health care and hygiene applications serve as barriers between infection source and clinical workers e.g., surgical gowns, caps, face masks and surgical covers to cover the patients are some of the end uses at the hospitals.

The survey of hospitals also revealed that the cost of medical textiles imported in Pakistan was Rs 69 million. The total cost of these materials consumed annually was Rs 100 million. The share of the locally manufactured medical textiles was Rs 31 million per annum. Thus, significant potential and opportunity exists for the textile industry of Pakistan to replace the Rs 69 million annual consumption of imported medical textiles by locally produced products. ♦

| Total Consumption per annum | | | | |
|-----------------------------|-----------------------------------|-------------|------------|------------|
| Disposables | | | | |
| Product | Total value of annual consumption | | | |
| | Hospital 1 | Hospital 2 | Hospital 3 | Hospital 4 |
| Surgical Gown | 3187080 | 8400000 | 18240 | --- |
| Caps | 341291 | 96000 | 33600 | 14400 |
| Masks | 607200 | 42000 | 90000 | 14400 |
| Patient Gown | 3163570 | --- | --- | --- |
| OT Towels | 5261500 | --- | --- | --- |
| Apron | 1695400 | 28800 | --- | --- |
| Surgical Kit | 2420000 | 3300000 | --- | --- |
| Adult Diapers | 3840000 | 144000 | --- | 72000 |
| Dignity Sheets | 5183360 | 60000 | 108000 | --- |
| Drape | --- | 222000 | --- | --- |
| Shoe Cover | --- | 72000 | 72000 | --- |
| Total | Rs. 25699401 | Rs. 1249980 | Rs. 328410 | Rs. 100800 |