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Pooja Gupta
Assistant Professor, Home Science, C.R.D PG College, Gorakhpur, Uttar Pradesh, India

Corresponding Author:
Pooja Gupta
Assistant Professor, Home Science, C.R.D PG College, Gorakhpur, Uttar Pradesh, India

A study on adolescent girl's knowledge about medical textile in health care product

Pooja Gupta

Abstract
Advanced medical textile are significantly developing area because of their major expansion in such field like wound healing realse, bandaging and pressure garments, implantable devices as well as medical devices and development of new intelligent textile products. Present society is undergoing changes like large population size, need of increasing his life span of every individual, various situations and hazards of human activity and civiationining transport accident, cold, diseases and sports. Such factors increase the demand of medical textiles. So there are several researching works are going on all over the world in medical textile materials and polymers. A total 100 respondent selected from Gorakhpur city. The data collect with the help of questionnaire method to elicit general information & specific information. Analysis was done with the help of percentage method. According to this study mostly girls were knowledge about medical textile product.

Keywords: Adolescent girl's, medical textile, health care

Introduction
Medical textiles also known as Healthcare Textiles. Medical Textiles is one of the most rapidly expanding sectors in the technical textile market. It is one of the major growth areas within technical textiles and the use of textile materials for medical and healthcare products ranges from simple gauze or bandage materials to scaffolds for tissue culturing and a large variety of prostheses for permanent body implants. Textile products are omnipresent in the field of human hygiene and medical practice. Their use is based on a number of typical basic textile properties like softness and lightness, flexibility, absorption, filtering etc.

Nano-technique has acquired tremendous impulse in the last decade. Nano-fibre based products as well as nano-coated materials are present innovations in the field of medical. So in our technical poster we have gone through latest medical textiles, nano-based products due to following features and wide range of application.

Nanofibres are very attracted due to their unique properties, high surface area to volume ratio, film thinness, nano scale fibre diameter porosity of structure, lighter weight. Nanofibres are porous and the distribution of pore size could be of wide range, so they can be considered as engineered scaffolds with broad application in the field of tissue engineering. Some other applications like wound dressings, bone regeneration and nanofibres to be the carrier of various drugs to the specific sites, etc.

Consumption of Different Categories of Medical Textiles

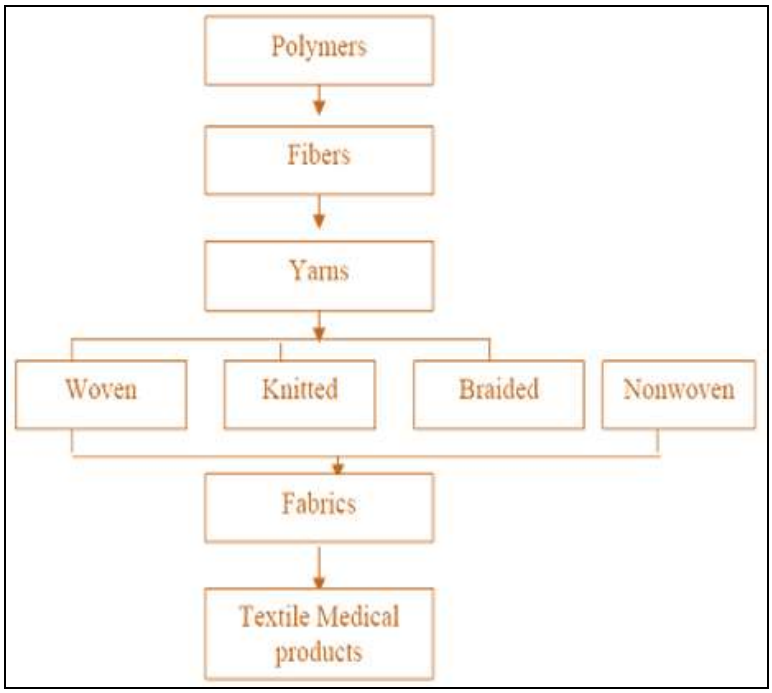
SR	Medical Textile Product	Market potential (Rs Mn)	
		2005	2010
1	Sanitary Napkins	4819	8519
2	Incontinence diapers	605	1070
3	Surgical dressing	5828	10302
4	Health care textiles	1491	2635
5	Sutures	3160	5587
6	Medical devices & Implants	1190	2104

Medical Textiles is a branch of Technical Textiles. Medical textiles are textile products and constructions for medical applications.

They are used for first aid, clinical or hygienic purposes and rehabilitation. Not all the textile fibers can be used here, because their performances depend upon interaction with the cells and different fluids produced by the body. The use of textile materials for medical and healthcare products ranges from simple gauze or bandage materials to scaffolds for tissue culturing and a large variety of prostheses for permanent body implants. The textile materials should have some specific properties to be useful as medical textile. Textiles materials that are used in medical applications include fibres, yarns, fabrics and composites. Depending upon the application, the requirements of textile material for medical applications are: Biocompatible; Good resistance to alkalis, acids and micro-organisms; Good dimensional stability; Elasticity Free from contamination or impurities; Absorption / Repellency; Air permeability.

Combination of textile technology and medical sciences has resulted into a new field called medical textiles. New areas of application for medical textiles have been identified with the development of new fibers and manufacturing technologies for yarns and fabrics. Development in the field of textiles, either natural or manmade textiles, normally aimed at how they enhance the comfort to the users. Development of medical textiles can be considered as one such development, which is really meant for converting the painful days of patients into the comfortable days.

Constituent Element of Medical Textile Products



Characteristics of Materials for Medical Use

The major requirements for biomedical polymers

- Non toxicity
- Nonallergenic response
- The ability to be sterilized
- Mechanical properties
- Strength
- Elasticity
- Durability
- Biocompatibility
- As biomedical materials may be contaminated with bacteria, sterilization is important for biomedical polymers. The sterilization technique can be physical or chemical.

Fibres used for medical and healthcare application

Textiles materials that are used in medical applications include fibres, yarns, fabrics and composites. Depending upon the application, the major requirements of medical textiles are absorbency, tenacity, flexibility, softness and at times biostability or biodegradability.

Fibres used in medical field may vary from natural fibre such as cotton, silk, regenerated wood fluff (absorbent layer), to, manmade fibres like polyester, polyamide, polyethylene, glass etc.

Medical Textile Products-Hollow polyester fiber, hollow viscose

Application: Artificial kidney

Function: -Remove waste products from patients blood **&** Hollow viscose

Application: Artificial liver

Function: Separate and dispose of patients' plasma and supply fresh plasma.

Hollow polypropylene fiber, hollow silicone membrane

Application: Mechanical lung

Function: Remove carbon dioxide from patients' blood and supply fresh oxygen

Table 1: The various applications of different fibre in medical field are shown as follows:

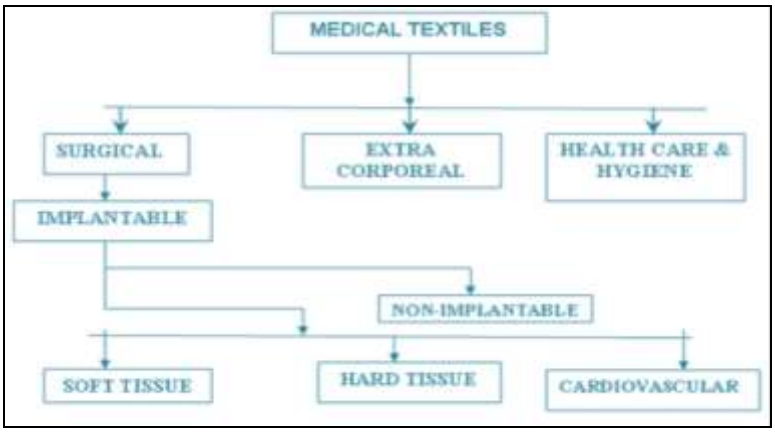
Sr. No.	Fibre	Application in medical field
1	Cotton	Surgical clothing gowns, Beddings, Sheets, Pillow cover, Uniforms, Surgical hosiery
2	Viscose	Caps, Masks, Wipes
3	Polyester	Gowns, Masks, Surgical cover drapes, Blankets, Coverstock
4	Polyamide	Surgical hosiery
5	Polypropylene	Protective clothing
6	Polyethylene	Surgical covers, Drapes
7	Glass	Caps mask
8	Elastomeric	Surgical hosiery

Classification of Medical Textiles-These are the textile products for medical applications include materials as fibres, yarns, woven, knitted, nonwoven, PTFE felts and mesh etc.

Depending upon the usage, they are classified as-

- Healthcare and Hygiene products
- Extracorporeal devices
- Implantable materials
- Non-implantable materials

Medical textiles can be classified as follows



a. Healthcare & hygienic products

An important area of textile is the healthcare and hygiene sector among other medical applications. The range of products available for healthcare and hygiene is vast, but they are typically used either in the operating theatre or in the hospital wards for hygienic, care and safety of the staff and patients. They could be washable or disposable.

Surgical Masks: They should have higher filter capacity, high level of air permeability, lightweight and nonallergic.

Healthcare and Hygiene Products

Product application	Fibre type	Fabric type
Surgical clothing gowns	Cotton, Polyester, Viscose rayon, Polypropylene	Nonwoven, Woven
Caps masks	Viscose rayon, Polyester, Viscose, Glass	Nonwoven Nonwoven
Surgical covers Drapes cloth	Polyester, Polyethylene Polyester, Polyethylene	Nonwoven or Woven Nonwoven or Woven
Beddings, Blankets, Sheets Pillow covers	Cotton, Polyester Cotton Cotton	Woven, Knitted Woven Woven
Clothing uniforms Protective clothing	Cotton, Polyester Polyester, Polypropylene	Woven Nonwoven
Incontinence Diaper sheet Coverstock Absorbent layer Outer layer	Polyester, Polypropylene Wood fluff Superabsorbents Polyethylene fibre	Nonwoven Nonwoven Nonwoven
Cloths/ Wipes	Viscose rayon	Nonwoven
Surgical hosiery	Polyamide, Polyester, Cotton,Elastomeric yarns	Nonwoven Knitted

Surgical Caps: These are made from nonwoven materials based on cellulose.

Surgical Drapes And Cover Cloths -These are used to cover patients or to cover working areas around patients.

Hospital Ward

Completely impermeable to bacterial and also absorbent to body perspiration and secretion from wound. Clothes and wipes. e.g. made from tissue paper or nonwoven bonded fabrics, which may be soaked with an antiseptic finish. In hospital cross infection should be prevented and hence traditional woolen blankets replaced by cotton leno woven blankets.

Super Absorbent Fibers for Healthcare and Hygiene Products-

Extracorporeal Devices

- Artificial kidney
- Artificial liver
- Artificial heart
- Mechanical lung

Surgical Dressing

These are employed as coverings, adsorbent, protective and supports for injured or diseased part. They are different types

- Primary wound dressing
- Absorbent
- Bandages
- Protective
- Adhesive tapes

Primary Wound Dressing

- Placed next to the wound surface
- Nonwovens with a binder content of 60% and made of cellulose fabrics are being Used.

A. Dressing Should Possess the Following Properties

- Healing properties, regulated mainly with the substances which are applied to or added to the dressing.
- Causing no mechanical injury of a granulating wound.
- Decreased adherence surface.
- Eliminating a possibility of loose fibers getting caught in the wound.
- Stable and spatial structure
- Easy penetration of wound secretion to the absorbing dressing.
- Not- interrupted process of wound healing - as only the outer gauze compress is change & Painless changing of the dressing.

Absorbent: Similar to wound pads used in surgery. Manufactured from well bleached, carded and cleaned cotton fabrics. Absorbent lint is cotton of plain weave, warp nap raised on one side, by a process known as linting EPI 36, PPI 32, used as an external absorbent and protective dressing and for the applications of oilments and lotions, as antiseptic adsorbent and protective dressing in first aid treatment.

Surgical and other gauze provide absorbent materials of sufficient tensile strength for surgical dressing. They are made of cotton gauze loosely woven. Now-a days nonwovens are used.

Bandages

These are narrow cotton or linen, plain weave cloth of low texture, either woven or knitted.

There Are Different Types

- Cotton and rubber elastic net bandages- for sprains and strains
- Cotton rubber elastic net bandages- net fabric of lace construction.
- Plaster of Paris bandages- cotton cloth is impregnated with a mixture of calcium sulphate
- Orthopedic cushion bandages.
- Crepe bandage- elastic in nature due to special weave allows it to stretch twice its Length.

Various types of bandages along with their function are mentioned below:

1. Simple Bandage Hold dressings in place.
2. Elasticated Bandage: Impart support and conforming.
3. Light support Bandage: management of sprains or strains.
4. Compression Bandage: Treatment and prevention of deep vein thrombosis, leg ulceration.
5. Orthopedic Bandage: Used under plaster casts, provide padding and prevent discomfort.
6. Gauze: Serves as absorbent material.
7. Lint: Used as protective dressing for use in mild burn applications.
8. Wadding: prevent wound adhesion.

A "sanitary napkin" or sanitary pad means an absorber pad that you wear inside your panties to absorb the menstrual blood during your menstrual cycle. Depending on your monthly secretion and preference, choose a suitable thickness, length and pads with absorption capacity.

It's easy to use a sanitary napkin you must know the following steps

- Remove the papers behind the pad and place the pad in your panty.
- Remove the papers from the wings wrap the wings on both sides of the panties and press it tight.
- Wrap the pad before throwing it is a garbage container.
- Do not put the pad in toilets because it will fade in pad groove.

USE: Suitable for those disease in the bed for a long time, after jam beach incontinence, action or action to make serious levels of inconvenience in people who can not go to the toilet due to traffic.

Product Structure: Frontal tops, soft topsheet, leak guard, PE film.

Size and Weight

- Medium00 x 650 mm, 95 grams, 8 grams of juice, absorb, 800 ml capacity.
- Large, 920x750 mm, 105 grams of juice absorb, 1000 ml capacity.
- X-large, 990 x 810 mm, 115g, 12g, SAP absorb, 1200 ml capacity.

Table 2: Few Popular Company Making Sanitary Napkins Are:

Whisper	
Stayfree	
Carefree	

Sofy	
Kotex	
Always	
Vwash Wow	
Everteen	

Objective

To study the knowledge about the medical textile in health care product among adolescent girls.

Research Methodology: Research methodology is a way to systematically solve the research problem. The various steps that generally adopted by a research in studying his research problems along with the logic behind them.

Research Methods or Techniques

Description: Survey method is chosen for completing the short research work.

Survey method is a method under which the studied it people or the whole population with respect to certain sociological and psychological variables are calculated.

Geographical Area: This Study was conducted to Gorakhpur district of U.P. in C.R.D.M. PG College area which was purposely selected.

Research Method: Research methods may be understood by all those methods and techniques that are used for condition of research. In another words, all those methods which are used by research during the course of studying his research problems, the variable data and unknown aspects of each other to make a solution possible. Survey method questionnaire method used in this project work.

Data Collection: In this research work data are collected through interview method and analysis was done by percentile methods.

Survey Conducted: Survey was conducted on 100 samples (adolescent girl) in C.R.D. P.G. College, Gorakhpur.

Statistical Analysis: In this method research analysis statistical account of data by following methods:

Table Method: In this method three columns are prepared in which on column possess the description of answer (opinion) and the second column posses the number of respondents and this column percentage. The third column possess the number of respondents and this column percentage of other respondents.

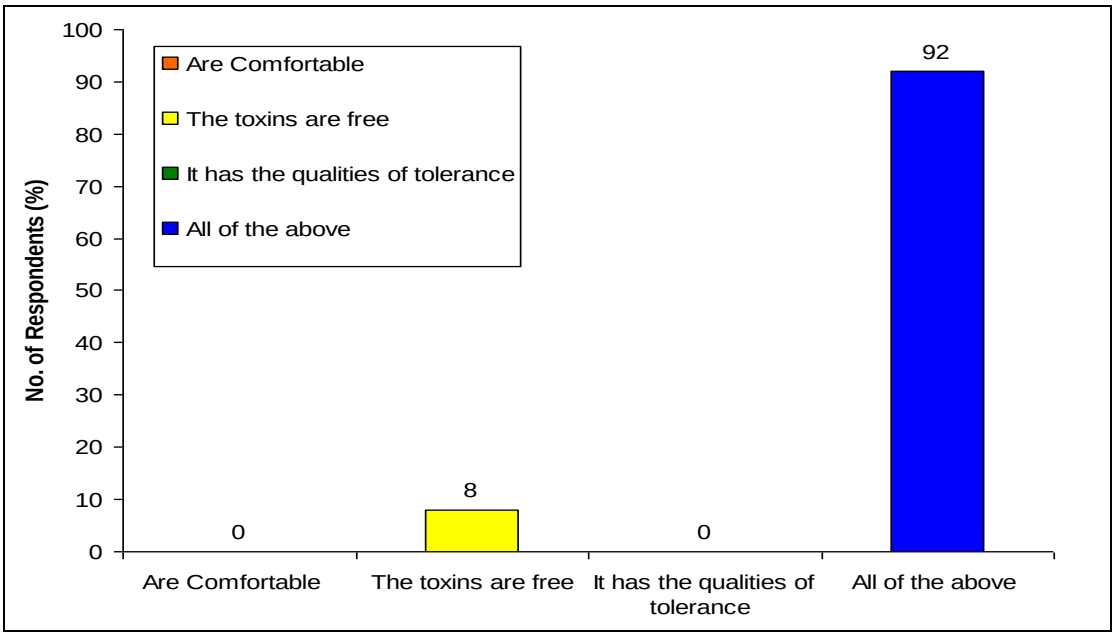
Percentile Method: Percentage of answer were find our Home Science Students views towards Medical Textile.

$$\text{Percentage} = \frac{\text{Specific respondents number}}{\text{Total Number of Respondent}} \text{x } 100$$

Data Analysis

Table 3: On the basis of respondents view about then you see of clothing in hospital

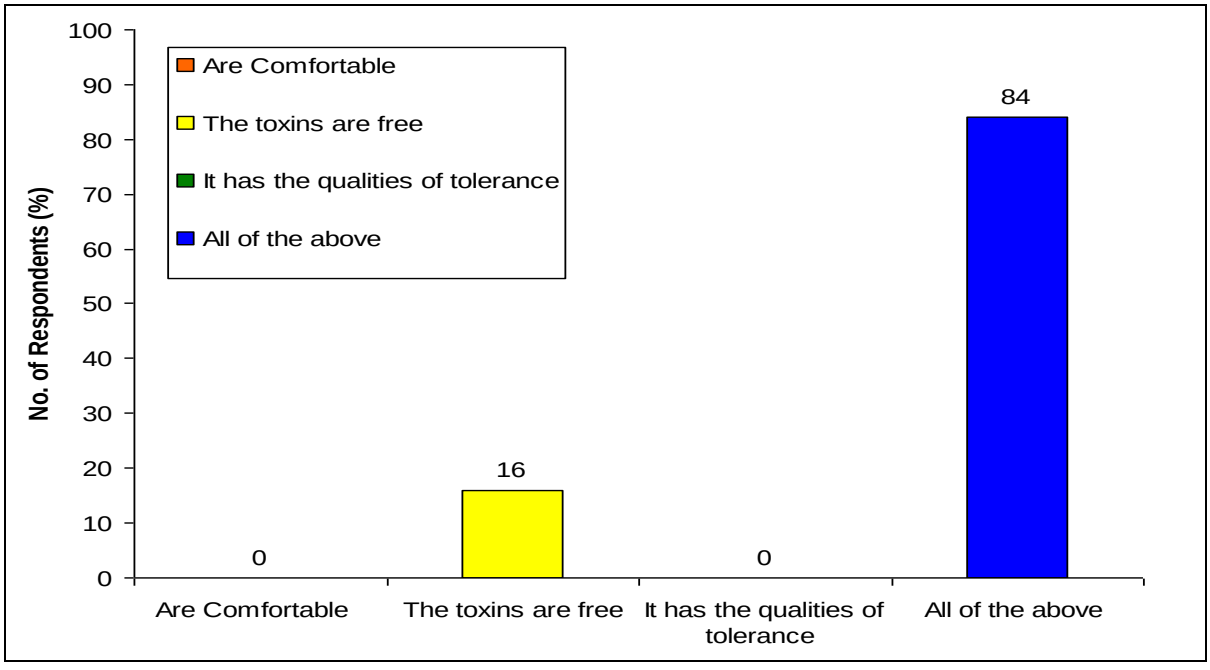
Sr. No.	Option	Frequency	Percentage
1.	Cotton clothing and Doctor's green dress	0	0
2.	Cotton Bandages and bandages	8	8
3.	Other	0	0
4.	All	92	92
	Total	100	100



According to Table and Graph No. 18% respondents said that they have knowledge about clothing seen in hospital is as cotton bandage and bandages and 92% respondents said they have seen above all products in hospital.

Table 4: On the basis of knowledge about the use of suitable products in the field of medicine is because of?

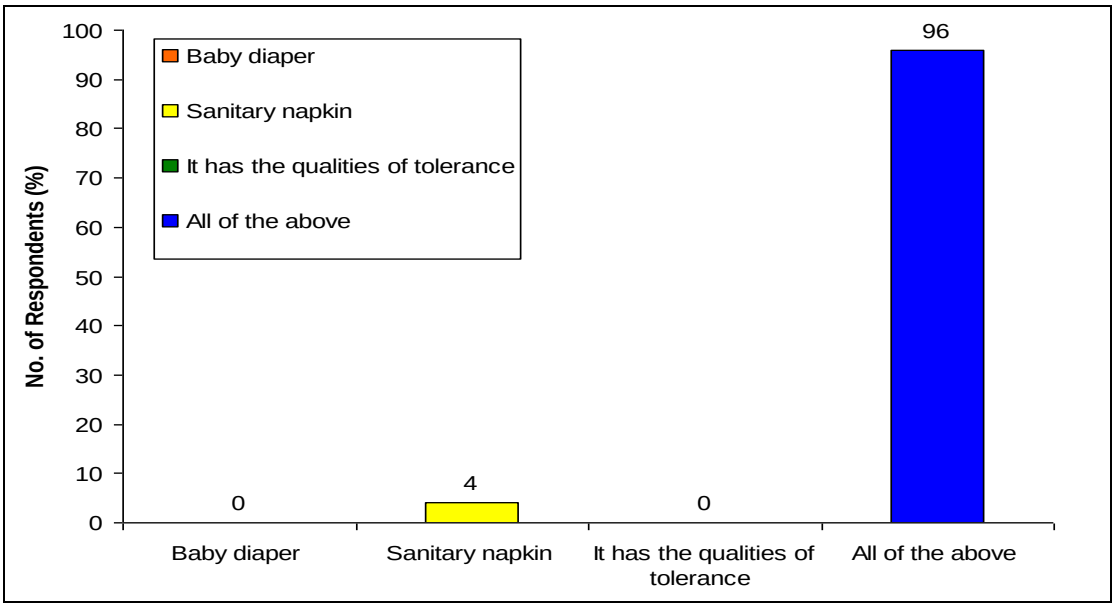
Sr. No.	Option	Frequency	Percentage
1.	Are Comfortable	0	0
2.	The toxins are free	16	16
3.	It has the qualities of tolerance	0	0
4.	All of the above	84	84
	Total	100	100



The and graph 4.2 shows that the table 4 16% respondents said as they are toxins free and 84% respondents said that they have knowledge about the use of suitable products in the field of medicine is because of all of the above options.

Table 5: On the basis of knowledge about which items are used on the basis of ?

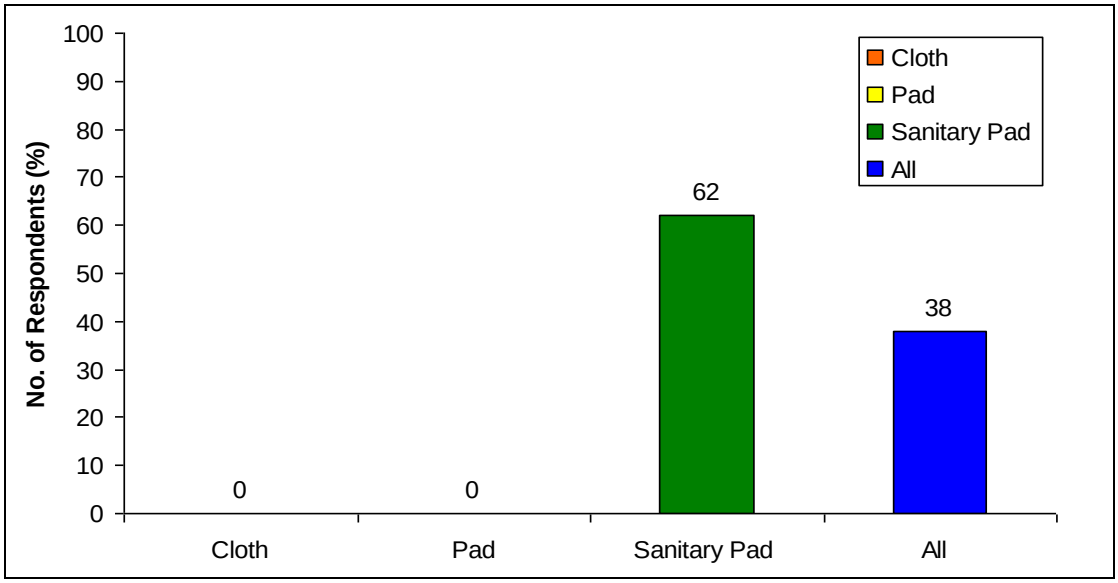
Sr. No.	Option	Frequency	Percentage
1.	Baby diaper	0	0
2.	Sanitary napkin	4	4
3.	It has the qualities of tolerance	0	0
4.	All of the above	96	96
	Total	100	100



About table and graph 3 to above table, 4% respondents said they have knowledge about sanitary napkins and 96% respondents said all of the above items.

Table 6: On the basis of knowledge about what do you use during menstrual period?

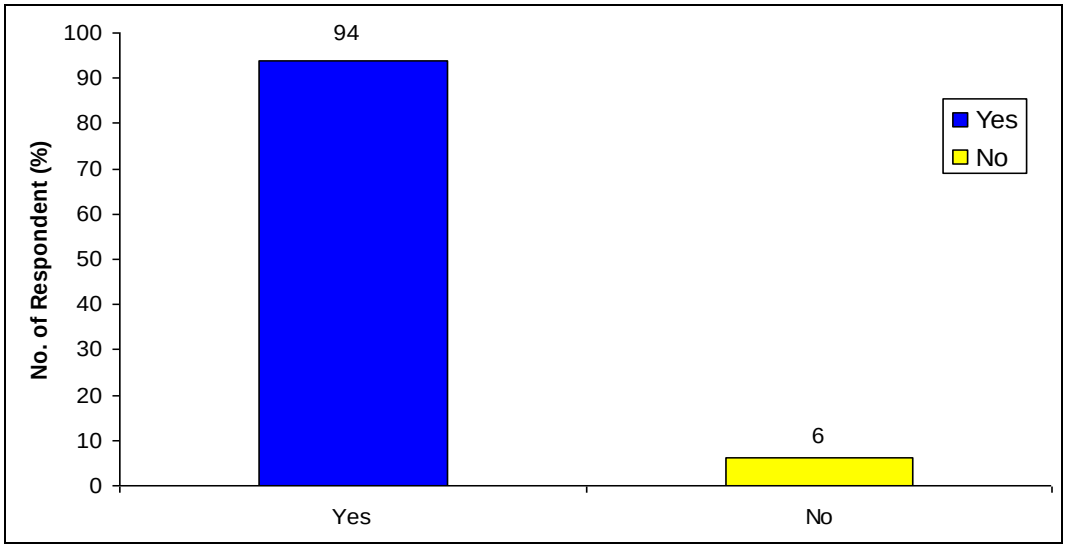
Sr. No.	Option	Frequency	Percentage
1.	Cloth	0	0
2.	Pad	0	0
3.	Sanitary Pad	62	62
4.	All	38	38
	Total	100	100



According to above table, 62% respondents said that they have knowledge that in menstrual period sanitary pad are used, whereas 38% respondents said that they have knowledge about all of the above options.

Table 7: On the basis of knowledge about is sanitary pads more comfortable than cloths?

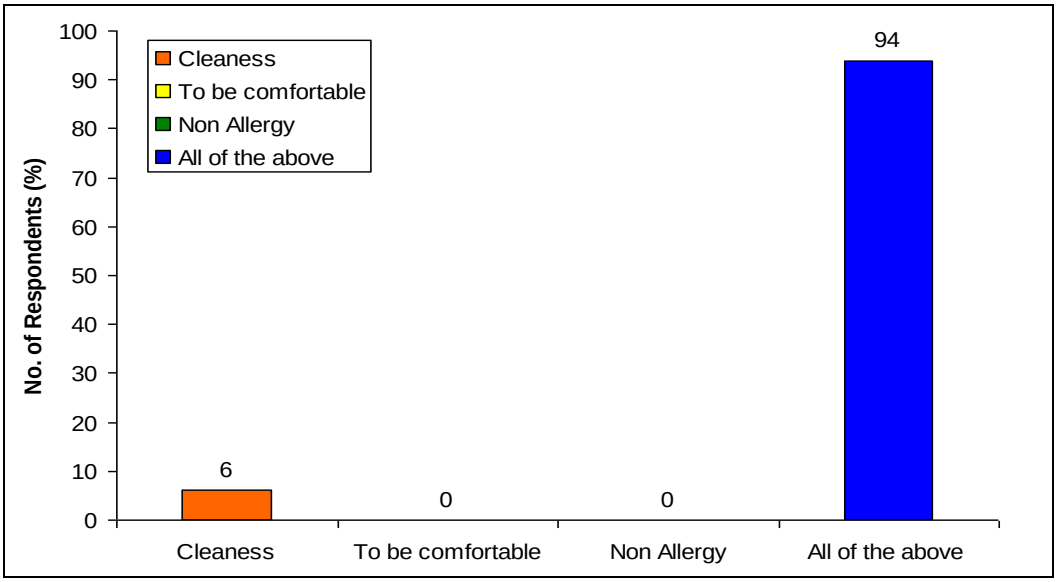
Sr. No.	Option	Frequency	Percentage
1.	Yes	94	94
2.	No.	06	6
	Total	100	100



According to above table, 94% respondents said that sanitary napkins are more comfortable than cloths and 6% respondents said no they don't have knowledge.

Table 8: On the basis of knowledge about the why is sanitary napkin used to be comfortable than clothes?

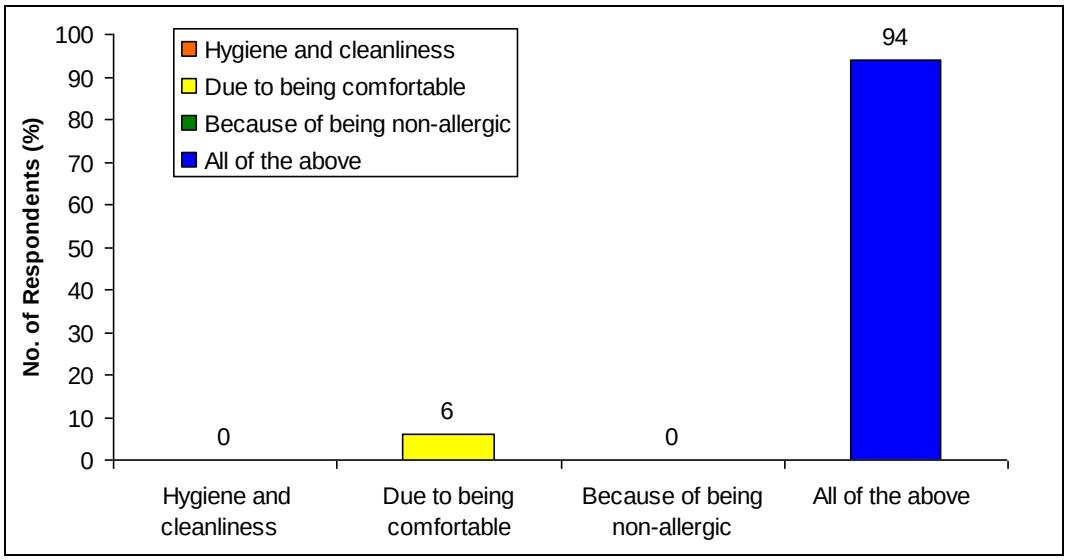
Sr. No.	Option	Frequency	Percentage
1.	Cleaness	06	6
2.	To be comfortable	0	0
3.	Non Allergy	0	0
4.	All of the above	94	94
	Total	100	100



According to above table, 6% respondents said that they use sanitary napkin used to be comfortable than clothes and 94% respondents said due to all of the above reasons.

Table 9: On the basis of knowledge about why use diapers for children?

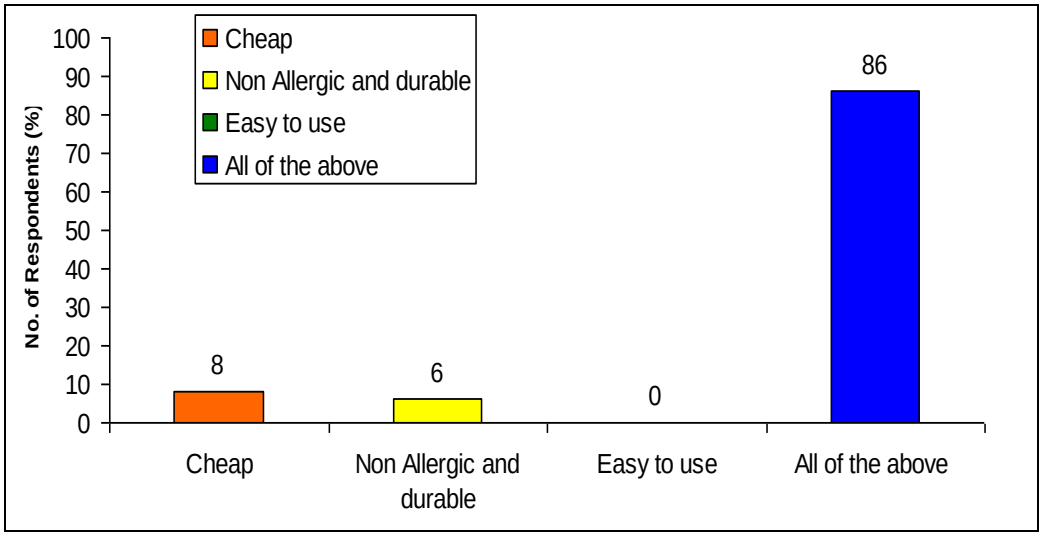
Sr. No.	Option	Frequency	Percentage
1.	Hygiene and cleanliness	0	0
2.	Due to being comfortable	06	6
3.	Because of being non-allergic	0	0
4.	All of the above	94	94
	Total	100	100



According to above table, 6% respondents said due to being comfortable and 94% respondents said due to all of the above reasons.

Table 10: On the basis of use of fabric bandage is suitable because?

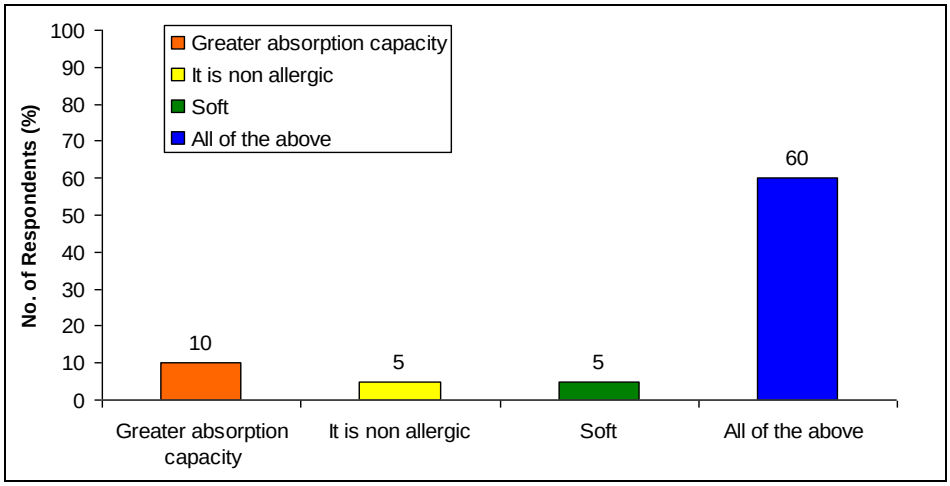
Sr. No.	Option	Frequency	Percentage
1.	Cheap	8	8
2.	Non Allergic and durable	6	6
3.	Easy to use	0	0
4.	All of the above	86	86
	Total	100	100



According to above table, 8% respondents said that they use fabric bandage because they are cheap and 6% respondents said they use due to non allergic and durable and 86% respondents said due to all of the above reasons.

Table 10: On the basis of use of cotton in medicine because?

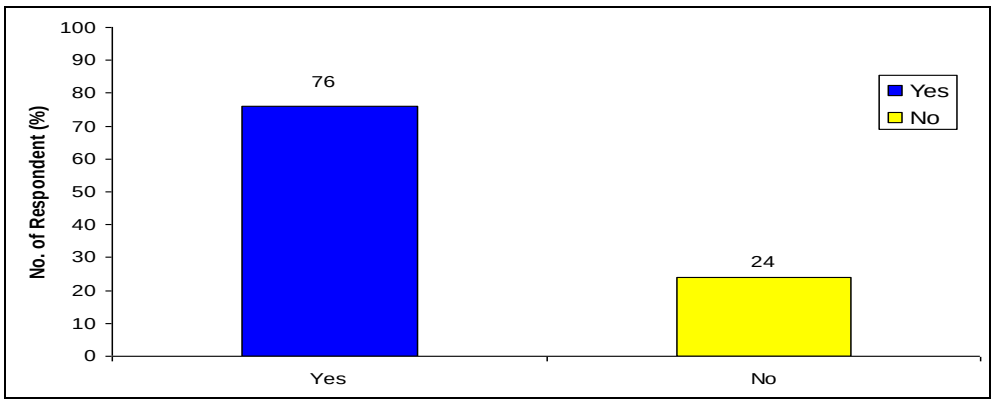
Sr. No.	Option	Frequency	Percentage
1.	Greater absorption capacity	10	10
2.	It is non allergic	15	15
3.	Soft	15	15
4.	All of the above	60	60
	Total	100	100



According to above table, 10% respondents said that they use cotton due to greater absorption capacity, 15% respondents said due to non allergic reasons, 15% respondents said it is soft and 60% respondents said due to all of the above reasons.

Table 11: On the basis of knowledge about the handiplast of the fabric more comfortable than the plastic handiplast?

Sr. No.	Option	Frequency	Percentage
1.	Yes	76	76
2.	No	24	24
	Total	100	100



According to above table, 76% respondents said that yes they have knowledge about fabric of handiplast is more comfortable, whereas 24% respondent said no.

Summary And Conclusion: The silent finding emerging out to the study listed below:-

- 8% respondents said that have knowledge about clothing seen in hospital is as cotton bandage and bandage and 92% respondents said they have seen above all products in hospital.
- 16% respondents said as they are toxins free and 84% respondents said that they have knowledge about the use of suitable products in the field of medicine is because of all of the above options.
- 4% respondents said they have knowledge about sanitary napkins and 96% respondents said all of the above items.
- 62% respondents said that they have knowledge that in menstrual period sanitary pad are used, whereas 38% respondents said that they have knowledge about all of the above options.
- 94% respondents said that sanitary napkins are more comfortable than cloths and 6% respondents said no they don't have knowledge.
- 6% respondents said that they use sanitary napkin used to be comfortable than clothes and 94% respondents said due to all of the above reasons.
- 6% respondents said due to being comfortable and 94% respondents said due to all of the above reasons
- 8% respondents said that they use fabric bandage because they are cheap and 6% respondents said they use due to non-allergic and durable and 86% respondents said due to all of the above reasons.
- 10% respondents said that they use cotton due to greater absorption capacity, 5% respondents said due to non-allergic reasons, 5% respondents said it is soft and 60% respondents said due to all of the above reasons.
- 76% respondents said that yes they have knowledge about fabric of handiplast is more comfortable, whereas 24% respondent said no.

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