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The Effect of Fabrics and Designs on the Physical Comfort of Children Clothes in the Accra Metropolis

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Abstract
Safety and comfort are considered as top priority when selecting fabrics for manufacturing children's apparels. Delicate skin of children reacts to certain fabrics which make them less comfortable to wear. The study aimed at examining the effects of fabrics and designs on the physical comfort of children clothes. The study adopted a descriptive study design. A total of 100 respondents, 30 fashion designers and 70 parents and guardians, were sampled for the study. Simple random sampling was used for the fashion designers, whereas accidental sampling was used for the parents and guardians. Descriptive statistics such as frequencies and percentages were used to analyse the data. Crosstabulations were also used to examine the relationship between variables. The study found that more parents considered the appearance of their children before other factors such as safety and comfortability. However, majority preferred cotton fabrics to be used for their children's apparels. A majority of the fashion designers did not know that children's skin reacts to certain fabrics. The main factors considered by the fashion designers in the selection of fabrics for constructing children's apparels were colour, design, and purpose of apparels. The majority of the fashion designers adopted a number of safety measures, such as linen of apparel, light-weighted zippers and use of few buttons, to enhance the comfortability of children's apparel. The study recommends that the NVTI, and the Ghana Fashion Designers Association should educate fashion designers on the reaction of children's skin to fabrics from certain sources. The NVTI in collaboration with the Fashion Designers Association of Ghana should sensitise or train fashion designers on safety measures in apparel making through improved finishes.
Keywords: fabrics, designs, safety, comfort, children, clothes, apparels

1. Introduction

Manufacturing children's clothes calls for a wide variety of textiles, including specially treated material, thread, zippers and other fasteners, and decorations. Forsberg and Mansdorf (2007) indicated that the selection of fabrics for children apparel should be selected very carefully as the skin of children is usually very delicate and can get affected by allergies easily. In addition to that, children are very playful and their clothes should be durable and suitable for their activities. Thus, the fabrics that should be selected must not be too hard and not too mild. Fabrics such as silk, woollen, polyester, cotton and linen could be used for children's clothes. Although synthetic fabrics have advantages such as strength, less likely to shrink and low cost there are doubts regarding the suitability of these materials for children's garments.

Garment manufacturers consider the sales, finishing, aesthetics and profitability to be derived from the use of particular types of fabrics before using them to construct children's apparel (Injoo & Mikyung, 2002). Parents and guardians, on the other hand, generally consider fabric manufacturing, printing designs, quality of printing, cost of fabric, ease of care of fabrics and fitness to particular occasions to select fabrics for their wards' apparel (Jones, 2001).

Ghana has a typically tropical climate because of its proximity to the equator and low elevations – the entire country lies below 1,000m (3300ft). Daytime temperatures are high throughout the year, approaching or surpassing 30°C (86°F) on most days, and humidity is also very high, especially along the coast (Shah, Zarske & Carlson, 2006). These climatic conditions demand that light and loose dresses are worn in such a humid tropical climate. Usually, light trousers or skirts made of a natural fabric such as cotton, combined with a stash of cotton T-shirts, and plenty of socks and underwear, also ideally must be made from natural fabrics to prevent fungal infections. These conditions also apply to children in order to ensure their comfortability. However, most children's are not made under such conditions. This study thus aimed at assessing the effects of fabrics and designs on the comfortability of children in the Accra Metropolis by identifying the types of fabrics preferred by parents and guardians for children, examining factors influencing fashion designers' decisions in the selection of fabrics for children apparel manufacturing, and evaluating safety measures considered by manufacturers when constructing children's apparel.

2. Factors to consider when selecting fabrics for children

There are many different types of children clothing and they come in many different styles and colours. When shopping for children, it is important to know the suitable fabrics from which the children's clothes are made.

The choice of fabrics for making apparel for children demands that certain factors are considered (Forsberg & Mansdorf, 2007).

The weave is one of the important factors to consider in making children apparel. Hollander (1993) advised that when a close look at a weave of the fabric indicates light between the fibres then the fabric is loosely woven, the odds are that it will not hold up to the riggers a child will put clothing through. When the fibres are tightly woven they cannot shift as easily and dirt cannot easily work its way in between the fibres and this can lead to the fibres being destroyed.

Wrinkle factors are also important in making children apparel. If a fabric wrinkles and do not relax when it is squeezed in one's hand and smoothen out, then it implies that the fabric will stay wrinkled in the finished garment as a child wears the garment (Injoo & Mikyung, 2002). For example, Injoo and Mikyung cited that all-cotton knits may look large when new, but they can shrink as much as 10 percent with repeated washing. The authors indicated that polyester or cotton blends are less expensive than pure cotton or organic cotton and more resistant to wrinkles and shrinking.

According to Ross (2008), a good fabric for making children apparel should not fade. This is because clothing for children needs to be laundered and after many washings, one will not want all of the colour in the fabric to be washed out. It is important to look at the print on the fabric, to check whether the dye goes through the fibres or is it just rolled on and barely saturating the fibres. Finnane (2008) suggested that if the dye is not embedded in the fabric, it will probably fade out after a couple of washings. A solid colour fabric which is the same colour on the front and back because the fibres are dyed are preferred to a print which is rolled on to a plain white muslin so the dye is not totally embedded in the fibres and is more apt to fade after repeated washings. To add details to children's clothing, it is common to combine two or more fabrics within the same garment. However, Forsberg and Mansdorf (2007) cautioned that the colourfastness of the fabrics should be checked before combining them.

3. Fabrics to consider in children apparel production

When choosing a fabric to sew clothing for children, one needs to be mindful of the selection of the ideal fabric (Gavin, 2003). Lightweight fabrics are the best but not all fabrics are the same. Tochihara and Ohnaka (2005) proposed that fabrics should "breathe" so that body moisture can evaporate, especially when the weather is hot. Fabrics for children apparel should be washable, soft and durable.

Cotton is a natural fibre which is soft and comfortable, and it resists stains well. According to Ross (2008), cotton fabric allows for better air circulation, which helps remove and absorb body moisture, drawing heat away from the skin. As a natural fibre, cotton 'breathes' which makes it comfortable to wear. Since cotton 'breathes', it is the best choice for children apparel (Tochihara & Ohnaka, 2005). It holds up to repeated washing and it comes in a variety of styles. For quilters, cotton is the fabric of choice as it handles and sews easily. It is non-allergenic, making it the best choice of material for children who suffer from asthma or allergies, or those who have sensitive skin prone to irritation (Gavin, 2003). The fabric is durable, versatile and easy to care for. It can be washed in the washing machine and either hung to dry or put in the tumble dryer. It is the ideal wash-and-wear fabric which is perfect for children. According to Polhemus (2005), cotton fabric is super soft against the skin and therefore very comfortable to wear, making it ideal for children. Cotton and cotton blends are often the best choices. A good choice in cotton is cotton knits. They retain their shape well, do not need ironing, and generally do not shrink.

Linen comes from flax (plant). Real linen wrinkles easily, but is cool, and like cotton, linen 'breathes', thus making it a good choice apparels worm in warm climates (Barthes, 1983). Linen is a great affordable option for children's clothes and it retains colour well. It is also easier to remove stains from linen and linen blends.

Silk comes from silk worms. The collection process is intricate and explains why silk is often expensive. Wool comes from animal coats known for its warmth. Wool is often blended with man-made fibres. Good for apparel, especially outer wear.

Polyester is easy to care for and keeps its shape and colour well. The disadvantage of polyester is that, it does not 'breathe', which means it retains body heat and moisture and it is not as comfortable as some of the natural fibres (Montain et al., 1994). Polyester may be offered in the form of knits, jerseys or cotton and silk-like fabrics. Polyesters are adorable, but it is believed that the child's comfort and the clothing's functionality for style are sacrificed (Gavin, 2003).

Rayons, according to Tochihara and Ohnaka (2005), are most often used for apparel and depending on its construction, it has a soft draping quality, or can be made to look like linen. Polhemus (2005) explained that rayon is more absorbent than polyester and usually is best dry-cleaned.

Nylon is very durable but a soft material that feels good when worn and also comes in a variety of colours and styles for children to look good in (Hayhoe & Chungwen, 2009). Sometimes nylon is mixed with other fibres for apparel. Nylon is often a major fibre in knits, underwear and stretch swim wear.

Lycra is a stretchable material that is often used in children clothing. Children do not like to be

restricted by their clothing. Lycra is a great material that changes and moves with them, giving them more freedom in their clothes.

According to Finnane (2008), a 100 percent cotton feels awesome, but it is more expensive and not as durable as polyester. Most children's clothing will have a mixture of cotton and polyester, or even silk, woollens or linen. These clothes are ideal for kids because they have the comfort of cotton and the durability of a synthetic fabric (Balter, 2009). Elastic waistbands and colourful prints make the best children's clothes.

4. Effects of fabrics and designs on the physical comfort of children

It is very important that when producing apparel, the comfort of the wearer and the protection of the wearer from the elements of the weather are considered (Polhemus, 2005). Comfort is essential in making apparel for children. It is therefore important to choose fabrics which will stretch as the person wearing the garment moves. It is further important to choose a fabric that is not rough or irritating to the skin.

For the comfort of children, it is important to think about the climate in which one lives (Injoo & Mikyung, 2002). For example, if one lives in the hot south, one may not want to put the kids in heavy wool or flannel. On the other hand, if one lives up north, there is a need for something with more weight than a light linen or cotton fabrics. Nylon should be avoided in many cases, as it is not a breathable fabric. One also needs to look at the colour and design of the items whether they evoke happiness, peace, fun or love emotions.

Children's clothes that are rough to the touch whether inside or outside will usually cause the child to whine or cry while wearing them (Forsberg & Mansdorf, 2007). When examining the weight of the clothes, one should think about whether they would be light enough for an active child to run comfortably or not.

For the comfort of children, it is essential to select clothing that is easy for the children to pull down or take off so that they do not soil themselves when they visit the bathroom (Eicher & Sumberg, 1995). Some garments come in one piece, while others come in two or more pieces. Parents should examine these clothing for loose buttons and other objects sewn on that can be easily pulled off.

Hayhoe and Chungwen (2009) advised that children clothing should have a minimal number of seams and these seams should not be bulky. Garment edges should be well finished to eliminate irritation. If garments have collars, they should be small and lay flat. Sleepwear should not be bulky or irritating. Sleepwears with feet should have plenty of room for the feet to move. The feet should not feel restricted within the garment.

Dress fit for children is as important as the fabric used. Snug - fitting sleepwear does not ignite easily and, even if ignited, does not burn readily because there is little oxygen to feed a fire; so flame resistant fabric is not an absolute necessity for children (Hayhoe & Chungwen, 2009). Neck openings should be large and easy to manipulate.

5. Methodology

Non-interventional and descriptive research designs were adopted for the study. A total of 100 respondents were sampled from a population of 98,693 (110 fashion designers and 98,583). This comprised 70 parents and guardians (household heads) and 30 fashion designers in the Accra Metropolis. Simple random sampling technique was used to select fashion designers for the study. Accidental sampling which is a non-probability sampling technique was used to sample parents and guardians for the study. Interview schedules were used to gather data from the fashion designers and parents. Statistical Product for Service Solutions (SPSS) was used to process the data. Descriptive statistics such as frequencies and percentages were used to present the data.

6. Types of fabrics preferred by parents and guardians for children

The type of fabrics preferred by parents and guardians for children apparel manufacturing is essential because they sometimes determine the type of fabrics to be used to manufacture children's apparel for fashion designers. Table 1 shows that a little over half (51.5%) of the sampled parents and guardians admitted to their preference for cotton fabrics for children's apparel to other types of fabric, 27.1% preferred linen, whereas 17.1% and 4.3% preferred polyester and silk, respectively. The results show that parents and guardians had different preferences over the selection of fabrics for children's apparel. The implication is that the parents and guardians may have varied reasons for their selection of fabrics for children's apparel.

Table 1: Educational level of parents and guardians and type of fabrics preferred for children's apparel

Fabrics	None (%)	Basic (%)	SHS (%)	Tertiary (%)	Total (%)
Cotton	2 (5.6)	4 (11.1)	12 (33.3)	18 (50.0)	36 (51.5)
Linen	1 (5.3)	8 (42.1)	8 (42.1)	2 (10.5)	19 (27.1)
Polyester	2 (16.7)	6 (50.0)	3 (25.0)	1 (8.3)	12 (17.1)
Silk	2 (66.7)	1 (33.3)	-	-	3 (4.3)
Total	7 (10.0)	19 (27.1)	23 (32.9)	21 (30.0)	70 (100.0)

Source: Field survey, 2014

Table 1 further shows that half (50%) of the respondents who preferred cotton fabrics for children's apparel had attained tertiary education, 33.3% had SHS as their highest level of education, while 5.6% had not received any formal education. The results show that the preference for cotton fabrics for children's apparel increased as parents and guardians attained higher levels of education. This could be due to increased knowledge about the properties, functions and performances of the various types or sources of fibre.

From Table 1, 42.1% each of the parents and guardians who preferred linen fabrics for children apparel had basic and SHS as their highest levels of educational attainment, while 10.5% and 5.3% had tertiary educational qualification and no formal education, respectively. Half (50%) of the respondents who preferred polyester for children's apparel had attained basic education, whereas a quarter had attained SHS education. The majority (66.7%) of the respondents who preferred silk for children's apparel had not received any formal education, whereas 33.3% had attained basic level education.

The results from the Table shows that, as more respondents with tertiary and SHS levels of educational qualification preferred cotton for children's apparel, those with basic level of education preferred linen. However, majority of those without any formal educational qualification preferred silk for children's apparel. Considering the assertion from Tochihara & Ohnaka (2005) that cotton is the best choice for children, keeping them cool in summer and dry in winter implies that parents and guardians with high levels of education preferred the best choice of fabrics for their children's apparel. The implication is that differences in the educational levels of parents and guardians influence their selection of the type of fabrics for children's apparel.

The study found that 47.1% of the parents and guardians select fabrics for children's apparel based on aesthetics, 27.2% was based on ease of care, whereas 25.7% based their selection on the sweat absorbing capacity of the fabrics. The implication is that more parents considered the appearance of their children before other factors in the selection of fabrics for children's apparel. This corroborates the assertion of Ross (2008) that parents and guardians are mostly concerned about the outlooks of their wards in the selection of fabrics for apparel.

The majority (62.8%) of the parents and guardians considered the cost of fabrics in the selection of fabrics for their wards' apparel. The implication is that the cost of fabrics could deter parents and guardians from selecting their preferred fabrics for their wards' apparel. Thus, the cost element could defeat all other purposes or elements parents and guardians consider in the selection of fabrics for children's apparel as indicated by Worrell in 1980. This is because when parents and guardians are unable to afford the cost of their preferred fabric type, they may settle on other types they could meet the cost.

Table 2 shows that the majority (72.9%) of the parents and guardians considered the sources of fibre in selecting fabrics for children's apparel. The implication is that majority of parents and guardians had clear purpose or functions for fabrics to perform on their children. This agrees with the assertion of Forsberg and Mansdorf (2007) that the selection of fabrics for apparel making should purely be based on the functions of apparel.

Table 2: Sex and consideration of sources of fibre in selecting fabrics for children

Response	Male (%)	Female (%)	Total (%)
Strongly agree	2 (10.5)	17 (89.5)	19 (27.2)
Agree	5 (15.6)	27 (84.4)	32 (45.7)
Disagree	8 (72.7)	3 (27.3)	11 (15.7)
Strongly disagree	6 (75.0)	2 (25.0)	8 (11.4)
Total	21 (30.0)	49 (70.0)	70 (100.0)

Source: Field survey, 2014

Table 2 further shows that more females than males considered the sources of fibre in the selection of fabrics for children's apparel. The implication is that female parents and guardians were more knowledgeable about the functions of various sources of fibre than males. The results further imply that male parents and guardians require education on the properties and functions of fibres from various sources.

The study further found that all the sampled parents and guardians considered fabric designs in the selection of fabrics for their children. One respondent added that it is the design that attracts parents and guardians to consider purchasing a particular fabric for a child.

The majority (54.3%) of the parents and guardians did not consider the brand of fabrics in their selection of fabrics for children's apparel. Furthermore, the majority (60%) of the respondents who agreed to have considered fabric brand in their selection had attained tertiary education qualification, whereas 30% and 10% had SHS and basic school respectively as their highest level of educational attainment. The results show that the respondents with high levels of education considered the brand of fabrics in their selection of fabrics for children more than those with low levels of education. The implication is that there is close association between the consideration of fabric brand in selecting fabrics for children's apparel and levels of education of parents and guardians. This could be attributed to the fact that people with high levels of education are more exposed to brand names of fabrics and would want to be associated with such brands than those with low levels of education. The consideration of fabric brand in the selection of fabrics for children's apparel could be due to the fact that people mostly associate quality or durability with particular brands which influence their choices or selection of fabrics for children.

7. Factors influencing fashion designers' decisions in the selection of fabrics for children apparel making

From the study, 43.3% of the fashion designers stated cotton as their most preferred fabric for the manufacturing of children's apparel, 26.7% preferred satin, whereas 16.7% and 10% respectively preferred polyester and linen. The results show that different types of fabric are used by fashion designers to manufacture children's apparel. This could be due to the different roles and purposes of different apparel types for children. Thus, the purpose of a particular apparel may determine the type of fabrics to be used. This agrees with the assertion of Yutaka and Tadakatsu (2005) that the choice of fabrics for constructing particular apparel for kids should be determined by the function of the apparel. This implies that fashion designers should indicate in their apparels the functions of particular apparels based on the fabric types used. Injoo and Mikyung (2002) argue that the functions of an apparel determine the type, where or how different types of fabrics could be combined to produce a particular apparel for children. Yutaka and Tadakatsu (2005) further indicate that the ultimate aim of producing an apparel should be to ensure the comfortability of children.

Reasons for the preference for cotton fabrics for children's apparel manufacturing included easy to handle during sewing, ability to use it to make more styles, very common with colourful designs, most preferred by parents, and easy to care for. Some of the reasons for the preference of fashion designers for linen fabrics were easy to shape into many styles, look good on children, and easy to handle. Furthermore, reasons for the preference for polyester fabric included maintaining its shape and colour for a long time, and easy to care for. Some of the reasons for the preference for satin fabric in the making of children's apparel were children looking unique in satin dresses, making special dresses, and easy to handle. In addition, the reason for the preference for wool fabric was to make unique and uncommon apparels for children during cold weather.

The majority (56.7%) of the fashion designers did not know that children's skin react some fabrics. The implication is that majority of the fashion designers did not consider such reactions in the selection of fabrics for the manufacturing of children's apparel. This is likely to affect the comfortability of apparels from such fashion designers as described by Forsberg and Mansdorf (2007) that the non-consideration of the delicate skin of children in the selection of fabrics for the manufacturing of children's apparel reduces the functionality of apparels by making children less comfortable.

About 63.3% of the fashion designers admitted to considering fabric designs in their selection of fabrics for children's apparel manufacturing, 86.7% considered the colour of fabrics, while 46.7% and 73.3% considered price and purpose of the apparel, respectively. Thus, the fashion designers considered multiple elements in the selection of fabrics for manufacturing children's apparel. This is likely to enhance the functionality of the apparels produced by the fashion designers because the consideration of more factors would enhance the appearance of kids in such apparels, fit the purpose for which such apparels are manufactured for, and meet the cost expectation of parents and guardians.

The functionality of apparels was ranked first in the factors considered by fashion designers in selecting fabrics for children apparel making, cost and profit was ranked second, aesthetics was ranked third, comfortability was ranked fourth, durability was ranked fifth, ease of care was ranked sixth, whereas climate was ranked last. The ranking of functionality as first implies that fashion designers first consider the appropriateness of an apparel for a particular occasion or function before all other factors. The ranking of cost and profit at the second position shows that the fashion designers were also very much concerned about the profitability of their operations. This agrees with Hayhoe and Chungwen's (2009) rationality principle that the ultimate aim for fashion designers is to maximise profits to ensure the sustainability of their activities. However, Balter (2009) argues that the profitability element is likely to cloud the judgment of fashion designers from quality and safety elements in making children's apparels. The least attention given to climate is likely to reduce the comfortability and functionality of children's apparels. This is because the climatic conditions, especially in the tropical region of Ghana where temperatures are generally high, are critical in ensuring the comfortability of apparels. In addition, the little consideration given to ease of care is likely to affect the profitability of the fashion designers

because the study found that the majority of parents and guardians considered the ease of care in the selection of apparels for their children.

8. Safety measures considered by manufacturers when constructing children's apparel

The study found that the majority (80%) of the fashion designers considered safety in the construction of children's apparel. This is likely to enhance the safety of children's apparel produced by the majority of the fashion designers. About 96.7% of the sampled fashion designers reported that they used linen of apparel as a safety measure in constructing children apparel, 90% used light-weighted zippers, while 63.3% used few buttons to ensure the safety of children's apparel. None of the respondents considered the use of non-flammable fabrics to ensure the safety of children's apparel. The linen of apparels for children, and the uses of light-weighted zippers and fastening by the majority of the fashion designers are likely to make the majority of the apparels produced by the manufacturers to be more comfortable when in use by children. This may increase the level of functionality of apparels produced by such fashion designers. However, the non-use of non-flammable fabrics in children's apparel making by the respondents does not guarantee full protection to children when in use.

From the study, the majority (63.3%) of the fashion designers admitted that their adoption of safety measures in the construction of children's apparel is influenced by cost and profit issues. This is likely to influence the adoption of safety measures in the manufacturing of children's apparel as emphasised by Jones (2001) that apparel manufacturers sometimes compromise on the safety measures for cost and profit reasons.

Half of the fashion designers perceived the level of safety adopted in their construction of children's apparels as above normal. This is likely to increase the level of comfortability of apparels from such fashion designers. Some of the reasons were ensuring the comfortability of children when using apparels, protecting children from physical bruises or injuries from apparels, increasing professionalism in fashion, and setting standards in the local fashion industry. Reasons for low adoption of safety measures in the manufacturing of children's apparel included low prices paid by customers, few fashion equipment to ensure maximum safety of apparels, and poor knowledge in safety measures in children's apparel making.

9. Conclusion

The delicate skin of children demands that special attention is given to the kind of fabrics selected to manufacture their apparels. Thus, the delicate skin of children makes them react to fibres from various sources. Such reactions reduce the comfortability and functionality derived from apparels. The onus, therefore lies on both parents and guardians, and fashion designers to ensure the physical safety and comfort of children in the manufacturing of their apparels. In other words, the contributions of both parties in the selection of fabrics and manufacturing of apparels are critical in guaranteeing the comfortability in children's apparels. The study concludes that knowledge of parents and fashion designers on the properties of fibres and safety measures in apparel manufacturing are crucial in safeguarding the comfortability of children's apparels.

10. Recommendations

1. The study recommends that the Accra Metropolitan Health Directorate should educate male parents and guardians on the properties of fibres and their implications on the skins of children when used to produce apparels. This can be done though public campaigns or media advertisements. The aim should be on sensitising people, especially male parents and guardians, on the types, sources and properties of fibres as well as their general effect or reactions to the skin of children. This would enable male parents and the entire populace to appreciate how certain skin diseases on children could be prevented by avoiding the use certain types of fabrics from different sources. This would help to reduce report cases on certain skin diseases on children.
2. The National Vocation and Training Institute, and the Ghana Fashion Designers Association should educate fashion designers on the reaction of children's skin to fabrics from certain sources. This would enable fashion designers to adopt the use of non-reactive fabrics to manufacture apparels for children.
3. The National Vocational and Technical Institute in collaboration with the Fashion Designers Association of Ghana should create a fashion technological pool where members of the association can obtain fashion equipment on subsidised prices or on hire purchase. This system would help improve fashion technology which would enable more fashion designers to adopt more safety measures such as linen of apparels, knitting of seams, and covering of buttons to enhance the comfortability children's apparels.
4. The National Vocational and Technical Institute in collaboration with the Fashion Designers Association of Ghana should sensitise or train fashion designers on safety measures in apparel making through improved finishes. This would help to improve the quality of apparels produced by local fashion designers and enhance their competitiveness with international apparel manufacturers. Thus, such a training would help to improve the professionalism of the local fashion designers as well as the safety and comfortability of locally produced children's apparels.

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