

## Essential Criteria for Designing Healthy Maternity Wear: A Narrative Review

### Abstract

**Background:** During pregnancy, because of unique changes in the body, pregnant women need access to clothes that meet their biological needs and inspire a positive attitude toward the body. Accordingly, the aim of this study was to investigate the essential criteria for healthy designing maternity clothing. **Materials and Methods:** The present study was conducted as a narrative review. Searches were performed in MEDLINE, ISI Web of Science, Scopus, PubMed, EMBASE, ERIC, and ProQuest databases for the documents written between 2000 and 2021 regardless of the research methodology and the employed tools. **Results:** The results of this study were presented in three areas including women's expectations of maternity dress design, psycho-social effects of maternity wear, and maternal clothing designs. **Conclusions:** The results of this study expand the knowledge of healthy maternity wear designers and, consequently, show that maternity clothing should hold three characteristics, adaptability, comfort, and stylishness, and meanwhile minimize the protrusion of enlarged areas of the body.

**Keywords:** Clothing, maternity, pregnancy, review

### Background

Pregnancy, in a limited period, is associated with unique changes that may negatively affect a pregnant woman's satisfaction with her body shape.<sup>[1]</sup> Increasing the size and shape of breasts and the lower body, along with lordosis, changes the body posture and limits the use of garments with the ordinary design. Therefore, designing maternity clothes is required to meet physiological needs and provide the conditions for resuming an active and quality lifestyle.

Women in this period need a garment that can accommodate the rapid changes in the body during pregnancy and bridge the gap between the new body shape and the criteria of beauty according to the culture and social values. An increase in body size creates an exaggerated image of obesity for women<sup>[2]</sup> because there is increasing emphasis on the importance of a slim and nimble body in different societies.<sup>[3]</sup> The maternity garments should also modify the movement restrictions resulting from the physical changes during pregnancy because of the effects of an enlarged abdomen and the pain caused by the increased movement of the pelvic joints.<sup>[4,5]</sup>

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The common pregnancy problems and increased sweating during pregnancy increase the acceptability of such garments that, besides reducing the feeling of an inappropriate body figure, has good ventilation and is adaptable to body changes during pregnancy. In addition, the flexibility of clothing to accommodate changes in the body shape provides continuity of consuming maternity clothing.

In addition, it is believed that maternity clothing design should not be restricted to size and shape, and attention should be paid to lifestyle and thermal and tactile comfort. While resting and moving, there should be ease of wearing and unclothing; consequently, it should not restrict the pregnant women's social presence and activities during pregnancy. Therefore, one of the main requirements of modern maternity clothing is designing stylish and modern garments that guarantee women's daily need for an active and quality lifestyle. Clothing can reduce negative feelings about body shape during pregnancy and boost women's confidence for active social participation.<sup>[6]</sup> Hence, it is necessary to design a document-based maternity garment

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that meets the needs of the pregnancy and post-pregnancy. Accordingly, the present narrative review was conducted to determine the essential criteria for designing healthy maternity clothing.

## Materials and Methods

This narrative review was conducted on published and available documents including all original and review articles, books, and dissertation toward maternity cloth that were collected and analyzed. To determine the time period and compile the keywords, first, an extensive search was performed, and based on it, the period from 2000 to 2021 was selected for the search.

The keywords were maternity, clothing, dressing, fashion, body image, body conception, pregnancy, color, and pattern. Inclusion criteria were studies on clothing and humans and studies on pregnancy and breast feeding and peer-reviewed. Electronic literature searches were conducted in databases including MEDLINE, ISI Web of Science, Scopus, PubMed, EMBASE, ERIC, and ProQuest.

The emerged references from the database searches were evaluated, and abstracts of the relevant references were evaluated by two researchers according to the inclusion criteria and the eligible documents were selected. To strengthen the obtained information, the references of the extracted documents were reviewed. Extracted documents and relevant references were found through electronic search and reviewed manually. Duplicated documents and presented articles at symposia and seminars were excluded.

To check the quality of the articles, after preparing their full text, the STROBE checklists were used and the minimum obtainable score was considered to be 15.5. Eligible and available full texts were reviewed and evaluated by the first author, and a second researcher performed the revision. In the case of any disagreement, the opinion of a more experienced person or third person was considered. A total of 42 documents were imported for title and abstract screening, and after removing duplicates, 19 documents in English language were retained. The information of the documents including authors, title, year of publication, type of study, and target population was examined, and documents with insufficient information were excluded.

## Ethical considerations

This study approved by the Ethics Committee of Isfahan University of Medical Sciences in Isfahan, Iran (IIR.MUI.RESEARCH.REC.1399.453).

## Results

In this study, 19 documents were selected and analyzed. Documents reviewed were on women's expectations of maternity dress, the psycho-social impacts of maternity clothing, and the presentation of maternity wear designs.

## Women's expectations of maternity dress design

The results of the study by Weigle and McAndrews reveal the concerns of generation Z (21<sup>st</sup>-century generation) about the physical changes of pregnancy. These researchers reported that the Z generation's anticipation of pregnancy changes and size increase is accentuated, and they expect maternity wear to be comfortable, loose, and stylish.<sup>[2]</sup>

In evaluating the most appropriate maternity wear according to the preferences of age groups of pregnant women, Hee-Kyoung showed that younger women are more concerned about the cost and modern design than older women. From their point of view, comfort and the possibility of social activities were central properties of maternity wear. However, for older women, providing safety for themselves and the fetus was of particular importance.<sup>[7]</sup>

Rodriguez *et al.* investigated pregnant women's needs in designing maternity wear. This study showed that most women, regardless of body mass index, prefer maternity garments without embellishments and an extra layer on the abdomen, with stylish, functional, and minimalistic designs.<sup>[8]</sup> They also preferred their maternity wear to look non-maternity but still adaptable to pregnancy changes. Sohn's study likewise emphasizes the need for clothing to accommodate changes in the body during pregnancy.<sup>[9]</sup> Shaft has suggested the use of cotton cloth in maternity wear. He believes that these types of clothing are fluffy, create a feeling of comfort for the user, and effectively balance heat and humidity. Furthermore, the permeability of cotton clothes eliminates the need for proper ventilation because of the increased perspiration in pregnancy. The use of woolen cloth for preparing the loose-fitting garment for winter clothing has also been suggested because such clothes keep the body temperature constant and help maintain the body temperature by absorbing light.<sup>[10]</sup>

Diverse designs have been proposed for maternity clothing based on women's needs and expectations. One of the proposed designs named 'durable' clothes has been suggested to continue consuming maternity clothes after pregnancy. In this design, stretch fabric is used so that the garment accommodates the body changes during pregnancy, and the body is exposed to the minimum pressure.

## Psycho-social impact of maternity wear

The results of a review of sociological and historical literature on fashion likewise show that the history of maternity wear in Western societies has endured constant fluctuations between concealing and exposing the pregnant abdomen. Researchers believe that women have been allowed to display their pregnant abdomen without fear and with pride during various periods of social history and gender perspective changes. Freitas and Kaiser similarly believe that pregnancy is not just a physical condition; rather, it has a symbolic connotation representing fertility and life continuation.<sup>[11]</sup>

In the field of psycho-social effects of maternity wear, Ogle and Tyner, by conducting a qualitative study on women's experiences in choosing and consuming clothing, reported that pregnant women's choice and consumption of clothes create a new mental image of themselves. This study confirms that maternity wear is associated with the identity of pregnant women as mothers, an identity that is different from their common identity. This researcher believes that maternity clothing helps women to develop maternal identity.<sup>[12]</sup>

### Presentation of maternity wear designs

Hwang *et al.*, based on the results of their qualitative research with focus group interviews, designed a user-centered gown for hospitalized pregnant women. This two-piece gown was created with an adjustable waist that contributed to comfortable movement and overall fit. A survey of consumers of this gown revealed their satisfaction during and after childbirth.<sup>[13]</sup>

Another proposed design for maternity clothing is the use of Godet, in which a triangular wedge is placed between the seams of the dress, and its size can be adjusted using a zipper, strap, or button. In order to adapt maternity clothes to pregnant women's needs, in addition to designs based on fabric cutting, the use of color is also functional.<sup>[14]</sup> Recognizing the impact of color on individuals' mental and emotional states can guide clothing designers in designing maternal wear according to the optimal emotional state. Assessing the emotions created by seeing colors shows that black color evokes negative emotions such as sadness, depression, and fear.<sup>[15]</sup> Therefore, because of the fact that pregnant women are prone to negative psychological changes, the use of these colors is not recommended.

Over the past years, the color red has been associated with fire, energy, enthusiasm, love, war, and rage; however, in the study by Abd *et al.*, it was stated that red increases blood pressure, respiration, and heart rate by affecting the sympathetic nervous system.<sup>[16]</sup> Wen *et al.* believe that the color red increases the feeling of sexual attractiveness.<sup>[17]</sup>

The color yellow similarly increases blood pressure, respiration, and heart rate. This color can activate nerve cells and increases the mind power, the ability to reason, and consciousness, yet it can increase anxiety and stress. Purple induces a sense of relaxation and drowsiness. It also reduces the body temperature and sensitivity to pain. Orange is a symbol of energy, increases appetite, and reduces depression and lethargy. Using blue and green simultaneously leads to happiness, calms nerves, and relieves mental exhaustion.<sup>[18]</sup>

### Discussion

A review of the literature shows that maternity clothing should hold three characteristics, adaptability, comfort, and stylishness, and meanwhile minimize the protrusion of enlarged areas of the body. It is also necessary to design a garment with a suitable color and design to induce a

positive body image in a pregnant woman so that wearing it can help strengthen the maternal identity.

It is believed that the positive body image during pregnancy by wearing appropriate maternal clothing reinforces mother-fetal bond and effectively transmits maternal identity. To create a positive body image during pregnancy, paying attention to value criteria based on beliefs is essential. In this regard, Krisjanous *et al.* reported that designing clothes that conform to pregnant women's religious beliefs can induce a positive pregnancy image.<sup>[19]</sup>

Williams *et al.* designed a costume called 'Baby wearing' and investigated its impact as a means for adapting to parental roles. The study found that the clothing, which facilitated the baby carriage, helped mothers experience attachment, peace, and convenience. This study showed that mothers who did not use this clothing experienced more attachment-related problems.<sup>[20]</sup> A study showed that body changes during pregnancy not only affect physical health and cause movement limitations but also change women's mental body image and reduce body satisfaction.<sup>[19]</sup> Therefore, it is recommended that maternity wear be designed to induce a sense of comfort in movement and activity and create a positive body image and a sense of maternity.

These reports suggest that colors can be selected in designing maternity clothing according to pregnant women's conditions. In addition to color, the psychological effects of harmonious background appear larger than a black square of the same size on a white background. Large patterns with bright colors evoke a feeling of obesity. As a result, this formula can be used in designing maternity clothing to camouflage the size of the abdomen; that is, black square and white square patterns can be used on the abdomen and the sides, respectively.<sup>[21]</sup>

Moreover, in a floral pattern, the smaller the size of flowers and plants, the closer the colors will be to each other regarding tonality, thus causing the consumer to look slimmer and more elongated. The design of small flowers distanced from each other displays the person thin, whereas if the density of flowers is high, the person will appear heavier, especially if the size of flowers is large.<sup>[21]</sup>

Polka dot fabrics with small dots close to each other display the person short and heavy; however, huge and spaced dots illustrate a slimmer, taller, and more elongated image of the person. Furthermore, checkered fabrics in different sizes and colors (contrasting or harmonious) represent the consumer heavier. However, if the colors used in the checkered pattern are harmonious, they carry a lesser obesity-inducing effect. Vertical lines in the costume design lead the eye upward and induce a sense of stability, balance, and equilibrium in the viewer.<sup>[22]</sup>

Research conducted on women's expectations of maternity wear design showed the significance of clothing features such as stylishness, safety, comfort, the ability to create a

positive body image during pregnancy, durability, and the adaptability to changes in the body figure during pregnancy.

To ensure the comfort of the clothes, it is crucial to take into account their features. Comfort properties of clothing include thermal, tactile, and psychological comfort. Thermal comfort is related to the heat transfer between the body, clothing, and the environment through heat exchange and ensuring the body heat balance. Tactile comfort refers to the sensation perceived when the garment is worn, such as smoothness or being scratched. Psychological comfort is an adaptation to one's mental state, style, the purpose of wearing, and body changes.

Also, the review of the history of maternity clothing shows that the design of maternity wear has been influenced by values, moral and religious principles, and social taboos associated with pregnancy. In a qualitative study on pregnant women's mental image in Iran, embarrassment and an attempt to camouflage the abdomen from the view of others using loose-fitting clothing were reported to be one of the dimensions of the body image during pregnancy.<sup>[23]</sup> However, Sohn and Bye reported that comfort, not camouflage, was pregnant women's criterion for choosing maternity clothing.<sup>[9]</sup>

## Conclusion

The results of this review showed that maternity clothing should hold three characteristics, adaptability, comfort, and stylishness, and meanwhile minimize the protrusion of enlarged areas of the body. It is also necessary to design a garment with a suitable color and design to induce a positive body image in a pregnant woman so that wearing it can help strengthen the maternal identity. Also, this study expands the knowledge of healthy maternity wear designers; consequently, they can improve pregnant women's satisfaction and comfort by designing appropriate maternity clothes and inducing positive feelings about pregnancy.

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## Conflicts of interest

Nothing to declare.

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