

Development of Bus Seat Design for Breast Feeding

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ABSTRACT

This paper proposes a canopy attachment and an ergonomically oriented seating plan for public transport which will help and supports mothers to breastfeed their babies without discomfort. This design also speaks of the improvement of public transport in India, where it allows a mother to breastfeed her baby without hesitation and in a more comfortable place without having to move too much or be subject to horror. The workstation for this project is designed according to the standard dimensions of the passenger seats, incorporating it into an original 3D model.

Keywords: *Breastfeeding, Comfort, Secure, Public transport, Privacy*

1. Introduction

Busses are one of the most common and most used public transport. Busses can have a capacity as high as 300 passengers with multi-purpose such as public transport, school transport, and private transport etc. Majorly of people in the city normal travelled through busses, which is mostly used public transport. The design of bus has not been changed from the past 20 years. The bus seat plays a major role in the bus which defines comfort in while traveling in bus. Though anthropometry and ergonomics used while designing the bus seat according to the region, one of the major issues for the population is breastfeeding. Breastfeeding in public transit has not received any interest from manufacturers. Previous researcher such as [1-3] have reported that most women feel uncomfortable using public transport when carrying an infant. This is due to the lack of privacy in public transports for them to feed their babies. Although the focus of a bus seat design is majorly on anthropometry and biomechanics of both males and females, this issue should be taken into consideration while designing. However, several ergonomic oriented designs have been proposed for bus seats, this design intends to effectively recommend design guidelines for bus seat by conducting an initial evaluation of the current seat design from a particular surrounding [1-3]. Approximately, 58% of the people claimed not to prefer public transport while carrying an infant as they feel delicate breastfeeding in public areas and 36% are not

sure as they prefer to breastfeed in case of emergency. The major reason pointed out was that they have no privacy.

Prior researchers have explored women's infant feeding practices and experiences within the general childbearing population [4-7]. This research explores the concept of designing a women-friendly bus seat design that gives them a private space and help them to breastfeed their babies with no hesitation or discomfort.

2. Methods

An online questionnaire with eleven questions (including personal details) was framed. Fifty (50) people in which 9 males and 42 females between ages 17 to 35 both married and unmarried were randomly selected for the online survey analysis. Prior to the survey, the title of the survey, objective and explanation of survey was given. The survey questionnaires were then sent to the concerned people and were asked to answer the questions to the best of their knowledge. The questionnaire is attached in appendix 1. The results of survey are shown in figure 1 below.

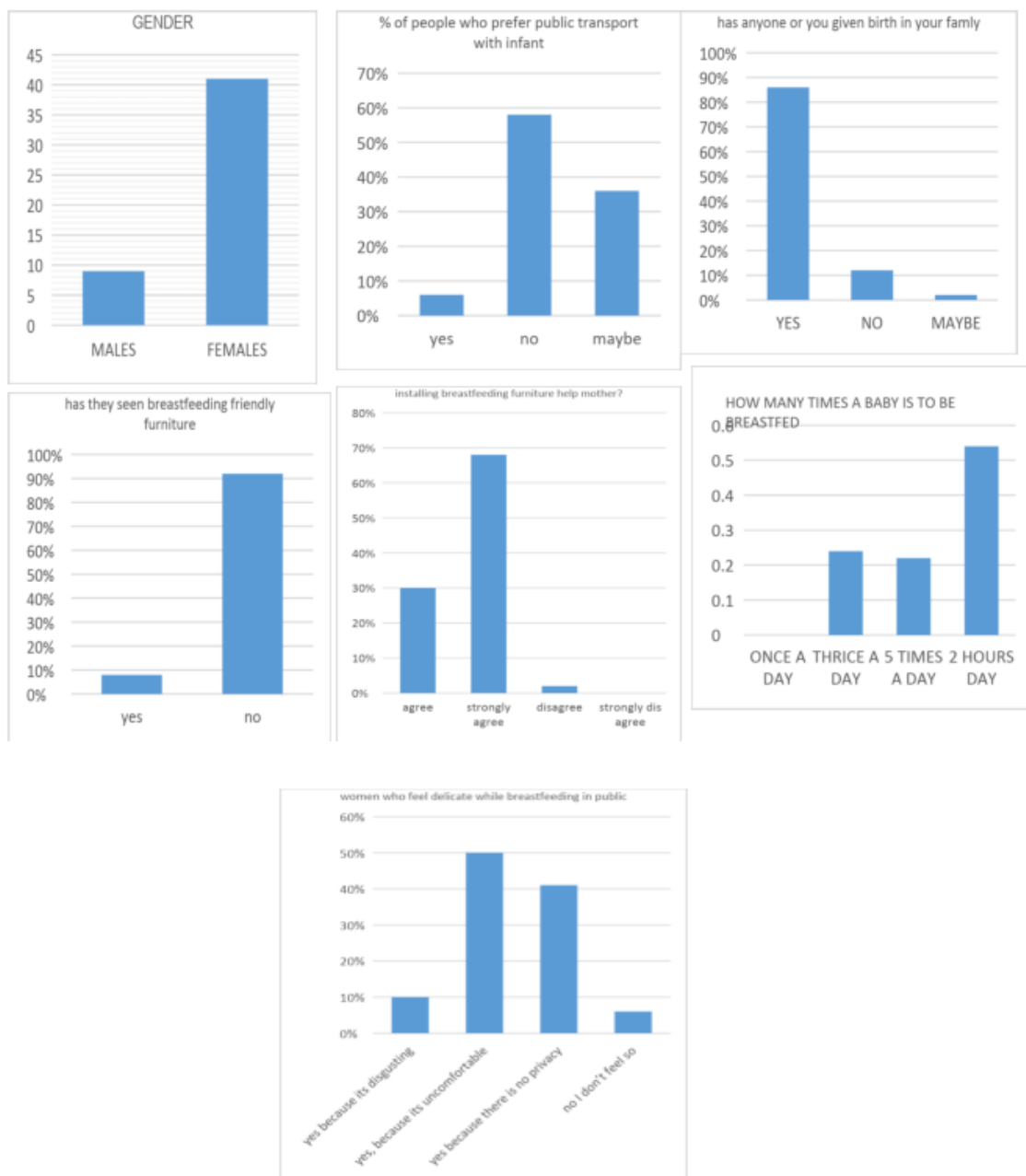


Figure 1: Result of online survey.

3. Design

Prior researches such as [4-6] investigated that women feel uncomfortable using public transport when carrying an infant as same were result of our survey also. This is largely due to the lack of privacy in public transports when feeding their infants or babies. From the analysis of the above typology and several iterations, a model with 2 major different purposes is proposed. It may be unrealistic to attempt to develop a bus seat that fits all purposes since women may or may not prefer public transports. This research intends to propose guidelines

and parameters for the design of ergonomic-oriented bus seats which would accommodate at least 90 percentile of women who breastfeed across India. This design intends to propose parameters for the design of ergonomic-oriented public transport seat design that would help women breastfeed their babies without any discomfort. Also, it tends to accommodate at least 90 percentile of Indian women. The first step of this design was started with a brainstorming session. Among a bunch of ideas, this idea of designing a public bus seat design was chosen with having the privacy and comfort of women in mind. Later, this design was discussed and developed more adding more features to it. Once the design was developed, an online questionnaire was made to get the problems and the purpose of this design clarified. 50 people randomly chose to take up the questions. The online survey questionnaire was taken up by people of age (0-18), (18-30), (30-50), 50 and above. Among those (82%) were women and (18%) of them were men. A set of 10 questions were asked regarding the problems faced when a woman breastfeeds in public and also how people feel when they see someone breastfeeding in public. Once the responses were there, a rough 2d hand sketch was made. Later, an AutoCAD 2d sketch was made to get a clear view of the dimensions. The 3d view of the seat was then made to show people the exact concept of the proposed design. To ensure the value of the design, the discussion also explained the description and the 3D views of the design. The first concept was then taken out for an evaluative survey and received some more interesting responses and needs according to the target population perspective. After that, the survey has been evaluated by listing out and making two changes in the first design, and a second prototype is made. The concept sketch are shown in figure 2, AutoCAD prototype in figure 3 and 4.

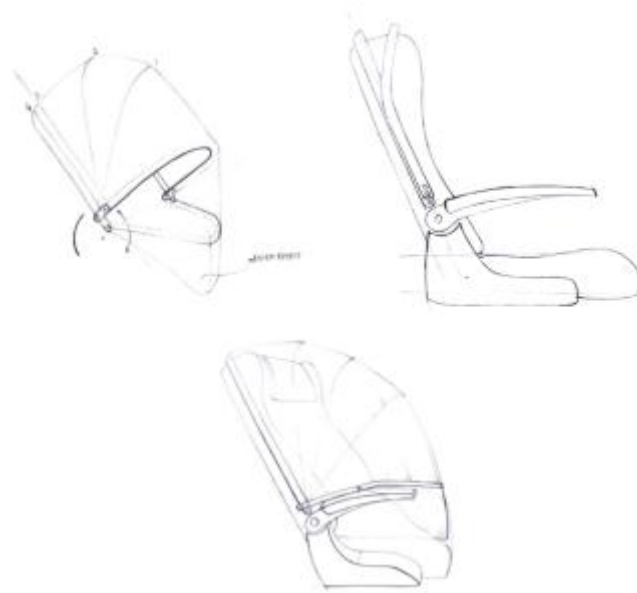


Figure 2: Concepts design sketches.



Figure 3: CAD drawing of prototype.



Figure 4: Final CAD drawing of seat

4. Discussion

The main aim of this proposal is to give women the utmost comfort and privacy when they are breastfeeding their kids as breastfeeding is the most primary nutrition for an infant and women when on travel suffer a lot because of less or no privacy. Different ideas of installing the seats with a cover that will give privacy were discussed. One among those was the idea of installing a cover that is permanently fixed to the sides of the seats. After analysing the pros and cons of it, the design was chosen to be changed because if the cover is permanent not all can book that particular seat. It can be used only by women with babies and even they will feel suffocated when they aren't breastfeeding. The other idea though was to fix a fabric canopy that can be pulled out from the sides of the seat. It was then decided to be fixed at the backrest of the seat and pulled from back to front as it worked easier than pulling from sides.

References

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Appendix 1

1.Name

2.Age

3.Gender a)Male b)Female c)Other

4.How many kids do you have?

a) One b) Two c) More than two d)None

5. Have you or anyone in your family given birth to a child before? *

a) Yes b) No c)Maybe

6.How often or how many times in a day should an infant be breastfed?

a)Once in a day b)Thrice in a day c)Five times in a day d)Every two hours once

7.Would you prefer public transportations (bus or train) to carry an infant? (considering the baby has to be breastfed) *

a)Yes b)No

8.Do you feel delicate breastfeeding in public or seeing someone breastfeeding in public? If yes, why? *

a)Yes, because it is disgusting b)Yes, because it is uncomfortable

c)Yes, because there is no privacy d) No, I don't feel so

9. In case of an emergency to breastfeed in public transports and if the person feels uncomfortable, what immediate measures would you take or suggests?

10.Have you ever seen or used breastfeeding-friendly furniture or seats? *

a)Yes b)No

11. Installing breastfeeding-friendly seats in public transports - will encourage lactating mothers to use public transports more often *

a)Agree b) Disagree c) Strongly agree d)strongly disagree