

---

# Fathers-to-be in Pregnancy Care in India - What Design does and what it could do?

**Thomson Muriyadan**

Srishti Institute of Art, Design and Technology  
P.O. Box 560064, India  
muriyadanthomson@gmail.com

**Naveen L Bagalkot**

Srishti Institute of Art, Design and Technology  
P.O. Box 560064, India  
naveen@srishti.ac.in

## ABSTRACT

Negligence of maternal health and its de-prioritization in communities with low socio-economic status such as urban slums and rural populations is one of the foremost public health issues in India. This paper looks at how design can respond to the context of the role of fathers-to-be in pregnancy care, examining how any work in this domain requires designers to be sensitive towards the specific ways patriarchy operates, gaps in health knowledge, literacy, and requires more participatory based approaches. Design is used to both probe and understand as well as enhance the role of fathers-to-be in pregnancy care, informed by the principles of Feminist HCI.

---

Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the owner/author(s).

*CHI'19 Extended Abstracts, May 4-9, 2019, Glasgow, Scotland, UK.*

© 2019 Copyright is held by the author/owner(s).

ACM ISBN 978-1-4503-5971-9/19/05.

DOI: <https://doi.org/10.1145/3290607.XXXXXXX>

## KEYWORDS

H.5.m: Participatory design, participation, designing explorative design games, framework.  
H.5.2: User Interfaces

## 4 INTRODUCTION

Pregnancy care in India is a complex activity involving multiple actors including self-care by the pregnant women, support of the husband, direct involvement and influence of the in-laws in the case of joint families and of parents, along with, the advice and support of experienced women who are friends, relatives or influencers in her social group [9]. Studies centred around pregnancy healthcare and the allied infrastructure in developing countries have largely engaged directly with healthcare providers and / or pregnant women to understand how care happens in practice in and across households and healthcare facilities [1,2,4]. Findings from these studies often show that men have considerable influence on how pregnant women navigate the healthcare infrastructure, access digital resources, and on the sexual and reproductive agency of women. For example, men take decisions such as choosing public or private health clinic, how pregnant women get around and travel to these places at various points in the pregnancy journey, and contribute to household responsibilities and care of other children. But getting access to men and involving them in research work related to maternal health has been challenging for a variety of reasons in India and other developing countries [2].

Increasingly digital tools and systems are being designed to address the pregnancy healthcare problems. Some studies focus on

digitizing health and introducing ICTs in lower levels of socio-economic ladder in India and similar developing countries [for e.g 2,3,4,5,6]. A recent study focused on co-designing a digital intervention using the per-poor ICT innovation model which facilitates the poor to innovate for themselves through their interpretation of existing technologies [7]. At the same time, consumer digital technology such as smartphones have become very accessible in most parts of India owing to decreasing costs of owning a device and accessing the internet<sup>1</sup>. Apps on the Android platform have millions of downloads and cater to a global audience including India. Based on our preliminary study of such apps, which we elaborate later in the paper, they primarily cater to pregnant women. Occasionally the apps do formally address the role of fathers-to-be and at times, go as far as offering an option to use the app as a father-to-be, giving access to groups and content tailored for men. However, as far as we know, no previous study focuses on the role of men, particularly fathers-to-be, in the context of designing digital tools for supporting pregnancy care. Given the increasing penetration of smartphones, which is gendered<sup>2</sup>, and their influence on the everyday lives of people, the design implications and future design possibilities for these technologies need to be studied.

This calls for an exploration and a deeper understanding of what is the role of fathers-to-be, how it is being shaped by digital technology, and what could be the future implications for design to respond to in the context of pregnancy care. In this paper we present findings from three preliminary explorations to begin the conversation about role of fathers-to-be. The first is the study of apps on the android platform that cater to pregnancy care, and we present if and how the design of these apps consider and render the role of the father-to-be. Second is our early findings in the form of learnings and challenges from engaging with interview based study with fathers-to-be in semi-urban area of Karnataka state, India. Thirdly, in response to both the first and second exploration, we present a design game, its underlying rationale as a design probe, and findings from an early trial with community health workers.

Our findings point to the need for more research to engage fathers-to-be in design explorations, and challenges to do so. We position the design game as our early speculative suggestion as a means to both, engage fathers-to-be in collaborative design of pregnancy care tools as well as explore if and how digital technology can enhance the role of fathers-to-be in the care.

Towards the broader goal of involving men in pregnancy care, our ongoing work points to how engaging with men needs to be sensitive towards the specific ways patriarchy operates, gaps in health knowledge, literacy, and requires more participatory based approaches.

## 2 WHAT ROLE DOES THE DESIGN OF CONSUMER APPS GIVE TO FATHERS-TO-BE?

For the purposes of reviewing smartphone based apps we have chosen five of the most popular apps in the Google Play Store based on number of downloads and average ratings. Most popular apps for pregnancy healthcare have anywhere between 1 million to more than 10 million downloads and majority of them cater exclusively to the pregnant women. One app meant for

fathers-to-be has been included in the study for the sake of comparison even though it only has a little over 10,000 downloads. Refer to Table 1 for the list.

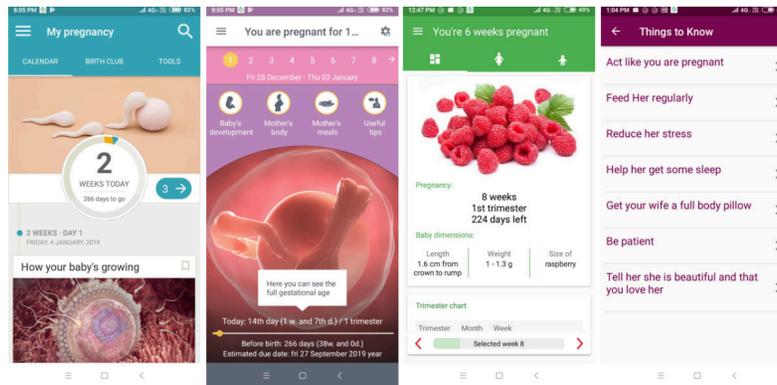
Based on the review of the top 5 apps for pregnancy and the 1 app for fathers-to-be these are certain notions of father-to-be that starts to become apparent -

- Fathers-to-be need to be engaged from time to time but not every day. They can be given a science class or task list once every month and expected to follow it without any reminders.
- Fathers-to-be can manage very well with text based content which means they are mostly literate and don't need image or video based aids to accompany the technical information.
- Fathers-to-be should largely think of their role as something which involves occasional pampering and gratification of their partner rather than a regular and sustained involvement in their care.
- Fathers-to-be are usually in charge of shopping, groceries and transport or rather should step-up to these responsibilities when their partners are expecting. Some even recommend cooking and replace their partner in doing other household responsibilities.
- Fathers-to-be don't need to deal with any mental health issues given that they are not undergoing any biological/hormonal changes like women. Expect for one app (P1), none of the other apps talked about the mental health issues that men can have during pregnancy and how their partners can be involved in caring for them.

**Table 1:** List of Android Apps considered for study

ID	Name of App	Downloads	Avg. Rating
P1	BabyCenter: Pregnancy Tracker & Countdown to Baby Due Date	10M+	4.7 (740,690 ratings)
P2	Pregnancy Tracker and Baby Due Date Calculator	1M+	4.8 (94,382 ratings)
P3	Healofy: Indian Pregnancy and Parenting Tips, The Babycare App	1M+	4.7 (23,931 ratings)
P4	Pregnancy Week By Week	1M+	4.9 (103,578 ratings)
P5	I'm Expecting - Pregnancy App	1M+	4.6 (71,607 ratings)
F1	Being Dad	10,000+	2.8 (34 ratings)

M=Million;



**Figure 1:** Interfaces of Apps (L-R) P1, P3, P4 and F1s

#### 4 THE ROLE OF MALE INVOLVEMENT IN PREGNANCY CARE ACCORDING TO HEALTH SCIENCES

Since 2001 the concept of male involvement in maternal health has been advocated as an essential element of World Health Organization's initiative for making pregnancy safer. Studies in India have largely focused on statistically analyzing National Family Health Surveys to come up with indicators and relationships between involvement of men in pregnancy healthcare and pregnancy outcomes. This data also looks at the role of factors like age, place of residence, husband's education, caste, wealth index, etc. One study used NFHS data to show how the following behaviors/attitudes positively affected pregnancy outcome – 1) Husband accompanying

wife to antenatal visits 2) Husband being knowledgeable about matters related to pregnancy healthcare 3) Husband being a part of a positive relationship with wife (rejected justification of wife beating) 4) wife's participation in household decision making. A major finding in these studies are that male involvement interventions can improve care-seeking for essential MNH services, and home care practices for women and newborns [12]. Engaging men in MNH also affects couple relationship dynamics.

On the other hand, factors that limited the agency and mobility of pregnant women which can directly be correlated to role of men are - not having control of household finances, no access to family vehicle and men not sharing the responsibility of taking care of existing children [1,13]. Role of men in maternal healthcare is limited mainly due to the patriarchal norms of the society where men are responsible only for earning and other matters are decided by the elders in our family [10]. Structural constraints in society range from inequity in women's work opportunities to domestic violence to poor access to (health care) resources [3].

Other related work includes the study of the design and impact of digital technologies to address this problem. Some studies look at the attempts at digitizing health and introducing ICTs in lower levels of socio-economic ladder in India and similar developing countries. [5,7,7,8,9,11]. One paper even looked at co-designing a digital intervention using the per-poor ICT innovation model which facilitates the poor to innovate for themselves through their interpretation of existing technologies [12].

## 1 USING FOR DESIGN TO ADDRESS THE GAP BETWEEN HEALTH SCIENCES AND DIGITAL TECHNOLOGY

### 4.1 Research Plan

The field selected for study was Chanapatna, a semi-urban area around 60 kms from Bangalore, a city in Karnataka, India where an existing scoping and participatory study is being conducted with pregnant women [8]. The plan was to do semi-structured interviews with fathers-to-be which would map their existing role in pregnancy care, use the information to create provocations for two participatory design sessions and arrive at sketches/design ideals [9] and the findings from these would inform the implications for design. The provocations could also include incomplete sketches of digital technology such as apps which would address specific scenarios that would come up in the interviews and the first participatory session, largely borrowing from the methods discussed in *Rehearsing the Future* [10].

### 4.2 Challenges Faced

The husbands of pregnant women who were already interviewed by the HCPC team was chosen as an appropriate pool from which participants were shortlisted based on certain rough criteria like variation in their level of education, job and mention of use of technology in the interview data. Of the 27 women interviewed, 10 husbands were shortlisted and the list was given to the respective Health Navigators (non-government health service providers trained by a partner NGO) who serviced the particular area. However, the following issues were faced -

- The Health Navigators (HNs) themselves filtered out names based on their understanding of how likely the husband would be willing to participate.
- Some of the HNs reported back (after speaking to the wives) that the husband was not willing to participate in the study due to lack of time.
- Some HNs (all of them are women) didn't respond to the call for participants as they did not wish to be involved in matters that involved co-ordinating with husbands.
- Some husbands were willing to engage with us but didn't know English or Hindi which was the language in which the study was to be done.

This ended up reducing the initial set of 10 participants down to 3. Of these 3, only one participant could be interviewed. The other two participants did not turn up on the date and time of their interviews and refused to answer calls. Thus, a participatory design based engagement failed to materialise.

## 4 DESIGN GAME AS AN EARLY SPECULATIVE SUGGESTION

### 4.1 Arriving at Design Game as a response

In Eva Brandt's investigation of Designing Exploratory Design Games as a Framework she illustrates various kinds of design games used in the participatory design context. One such type is

the Scenario Oriented Design Game where a scenario describes a particular interpretation of a use situation, but being deliberately incomplete it is also open for negotiation and change [11]. Given the challenges faced in the field we decided to take a step back and look at the existing patterns from the 27 interviews conducted and the 1 interview of a father-to-be to build these scenarios. In addition to these the game would also incorporate elements of the *Future Workshop* which would use the role of fathers-to-be as envisioned by application designers as a provocation for further appropriation and appreciation in use by the participants.

#### 4.1 Elements of the Design Game

Figure X showcases the game which consists of board with 9 stages based on scenarios (Table 2) borrowed from interview data, findings from related studies and the features of pregnancy care apps. The scenarios aimed to probe collaborative practices at home, the existing couple dynamic, knowledge about pregnancy and influence of external actors in decision making. The scenarios are read out by the participants (one husband and one wife) and they are asked to record their individual responses in cards. While the husband writes his response to the scenario, the wife expresses her expectation from the husband. They are asked to share the responses and if there are one or more commonalities, they are allowed to move their game pieces (Sundar and Sundari) to the next stage. To make things interesting, every step forward is rewarded with a piece to a puzzle which acts as a scoreboard for the game.



Figure 2: (L-R) Game pieces, Stages, Scenario Cards, Puzzle

Table 2: A sample list of scenarios used in the game

Stage theme	Scenario A	Scenario B
<b>Confirming Pregnancy</b>	Sundari missed her periods	Sundari complains of urinating too frequently
<b>Early Health Complication</b>	Sundari is vomiting after meals	Sundari is feeling very weak and tired all the time
<b>Food Practices</b>	Sundari refuses to eat food properly	Sundari forgot which food to eat and not eat
<b>Navigating Health Services</b>	Ultrasound scanning at Government Hospital is not working	Sundari feels that government doctor is not good.

Two sets of scenarios were developed for each stage so there is a backup in case they couple cannot reach a consensus for the first one. The format and game play of the design game has been inspired from Mansi Gupta's gamified format for rich participatory engagement of rural women in reproductive health habits<sup>3</sup>.

#### 4.3 Early Findings and Speculations

The design game was *proxy-tested* by two HNs who played the role of father-to-be and the pregnant wife. The key game playing mechanism was to write down responses in secret and to share and compare it afterwards. However, the HNs who participated didn't feel comfortable writing in the same language and therefore, insisted playing it verbally. In some of the scenarios

the HNs, since they have more than health knowledge than an regular participant, assumed additional details which helped them better imagine a response which tended to look like an ideal rather than practical response to the scenario.

One could also observe notions of patriarchy in the game play. For e.g. in the scenario where a C-section is advised by the Doctor (Scenario 6A) the HNs suggest that Sundari will not be involved in decision making as she is too emotional and already stressed about her condition and the husband alone will decide the plan of action. In Scenario 5A where Sundari wakes up with a high fever, the HNs suggested that husband will go to work as usual despite informing them that Sundari has another baby who she would have to take care. In response to the app design task where I asked what can Sundari do to help Sundar become a better husband, one of the HNs, to my surprise said (only half-jokingly) that Sundar is already doing fine and that she feels obliged to give him a son in return for his love and care.

Some of the scenario responses were interesting to note like the response of Sundar in the scenario where Sundari is not eating food properly - the HNs acted out a response where Sundar would cajole Sundari to drink milk and have some fruit in front of him (when he comes back from work and they sit for dinner) so that she at least has some nutritious food and he wouldn't argue with the truth of whether she ate before or not. In the scenario where the Ultrasound scan machine breaks down at the government clinic, the couple share their concerns and Sundari convinces Sundar to get the scan done at a private clinic even if it means mortgaging her jewelry or borrowing the money.

The HNs also mentioned that the man becomes more caring when he realizes that he is going to be a father. This is something that can be further probed and understood in future sessions.

The scenarios corresponding to the *Future Workshop* which involved app design didn't work at all due to prior inexperience with the idea of designing applications especially for the context at hand. When I finished explaining the game to the Maya coordinators and Health Navigators, both of them, in separate instances, communicated that the game could only be played with a loving and *close* couple. However, this goes against the intention of using the game as a means to open up lines of communication in a couple who are not close. This was an interesting comment and calls for more investigation into understanding the situated politics of married relationships in Chanapatna before deciding to have a game that involves both husband and wife playing together.

## REFERENCES

- [1] Aparajita Chattopadhyay. 2012. MEN IN MATERNAL CARE: EVIDENCE FROM INDIA. *Journal of Biosocial Science* 44, 02: 129–153.
- [2] Reem Talhouk, Sandra Mesmar, Anja Thieme, et al. 2016. Syrian Refugees and Digital Health in Lebanon: Opportunities for Improving Antenatal Health. *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems - CHI '16*, ACM Press, 331–342..
- [3] Kate Hampshire, Gina Porter, Samuel Asiedu Owusu, et al. 2015. Informal m-health: How are young people using mobile phones to bridge healthcare gaps in Sub-Saharan Africa? *Social Science & Medicine* 142: 90–99.
- [4] Neha Kumar and Richard J. Anderson. 2015. Mobile Phones for Maternal Health in Rural India. *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems - CHI '15*, ACM Press, 427–436
- [5] Dr Nirmala Murthy and Dr Gokulakannan Vijayaraman. Role of Mobile phone in female health workers' work routine? 18.
- [6] Divya Ramachandran, John Canny, Prabhu Dutta Das, and Edward Cutrell. 2010. Mobile-izing health workers in rural India. *Proceedings of the 28th international conference on Human factors in computing systems - CHI '10*, ACM Press, 1889.
- [7] Priyamvada Tiwari and Keyur Sorathia. 2014. Visualising and systematizing a per-poor ICT intervention for Rural and Semi-urban Mothers in India. *Proceedings of the 7th International Symposium on Visual Information Communication and Interaction - VINCI '14*, ACM Press, 129–138
- [8] Bagalkot N, Verdezoto N, Lewis M, Griffiths P, Harrington D, Mackintosh N, Noronha JA (2018) Towards Enhancing Everyday Pregnancy Care: Reflections from Community Stakeholders in South India. Accepted in *Proceedings of 9th Indian Conference on Human-Computer Interaction (IndiaHCI 2018)* Bangalore, India, ACM.
- [9] Pelle Ehn. 2008. Participation in Design Things. *Proceedings of the Tenth Anniversary Conference on Participatory Design 2008*, Indiana University, 92–101.
- [10] Joachim Halse, ed. 2010. *Rehearsing the future*. The Danish Design School Press, Copenhagen.
- [11] Eva Brandt. 2006. Designing Exploratory Design Games: A Framework for Participation in Participatory Design? *Proceedings of the Ninth Conference on Participatory Design: Expanding Boundaries in Design - Volume 1*, ACM, 57–66.
- [12] Rana Sarvar and Rekha Sonavane. 2018. Male involvement in antenatal and natal care practices of their partners – a community-based study in rural area of North Karnataka. *Public Health Review: International Journal of Public Health Research* 5, 02.