

Understanding Engagement of Parents In Online Health Communities for Early Childhood

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ABSTRACT

Online health communities provide a means for parents to engage with each other and seek and offer support. The parents' conversations in online communities also provide a lens into the parenting practices, challenges, and what role technology can play. Previous studies discuss the engagement of parents on online platforms related to specific childcare concerns. To understand the experiences of parents with online health communities, during the initial years of parenting, we conducted a study on the BabyCenter platform. It is a web forum that provides information on different aspects of early childhood development and offers peer-to-peer interaction. In this paper, we investigate the patterns of users' engagement for early childhood queries. Based on qualitative analysis of publicly available data on BabyCenter, 390 posts from January 2019 to June 2019, we find that the users primarily construct their knowledge, and engage in social interactions on the platform. We also find limited multimedia usage for expressing health concerns. We discuss design implications for parenting forums that meet the multi-faceted needs of parents during the early years of parenting.

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1 INTRODUCTION

The pervasiveness of Internet has resulted in several digital platforms that cater to health concerns where individuals facing health issues find support. In recent years, a growing body of research on digital platforms has focused significantly on providing dedicated spaces for the information exchange. Digital platforms have gained increasing attention particularly on topics such as child-care [16], menstrual health [18], pregnancy [9], childbirth [16], postpartum depression [7], cancer [2], among others.

Presently, several online health platforms are available on sites such as Reddit or dedicated platforms such as BabyCenter. These platforms provide online spaces for peer to peer interactions. Existing research on health-related digital platforms has investigated

multiple dimensions of the usage of these platforms, which include information seeking [9], communication [4], social-support [6, 8], among others. Studies have investigated discussions of parents regarding their autistic children on online platforms [20], and also gendered-based online parents' discussion on sensitive parenting topics [3]. Prior work explores parenting concerns related to children of varying ages and specific childcare issues. There is little research on investigating how parents use online platforms for discussing health-related concerns, not only specific health concern or condition, regarding early childhood. Our study contributes to this developing body of research with a focus on understanding how people manage early years of parenting using a digital platform.

Through the study, we inform design recommendations for developing online health platforms that support the parenting needs of users. We aim to address the following research question:

R.Q: How do users use online health communities for parenting during the initial years of childcare?

Our findings reveal the patterns of user engagement on an online health platform - BabyCenter¹. We also discuss how users' reading behaviors can be taken care of on the platform and how the use of images be facilitated for expressing health concerns.

2 RELATED WORK

2.1 Online Health Communities

Online communities have increasingly become influential and pervasive in the personal and professional lives of people from all strata of society. A rich body of research has been carried out about online communities in multiple directions. One such direction of exploration for researchers is the Online Health Communities (OHCs). People search for knowledge online regarding their concerns for seeking advice and emotional support from peers on online health community platforms [9]. Online health communities (OHCs) provide a means where people group together sharing common health concerns [9, 10]. The studies on online health forums focus on information seeking and social support [6]. Seeking information and support from peers on these platforms is very cost-effective, notably when assistance from experts is costly [14]. These platforms allow the individuals to share experiences, and to benefit from the empathy and understanding of others with the same topic of interest [1]. Our study aims to understand how parents use online health communities during the initial years of the development of their child.

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¹www.babycenter.com

Type of questions asked	Definition	Example Post	Number of questions asked
Advice	Users seek information on what to do and how to do.	"... How to stop chewing nipples by my 11th months baby whose teeth is just to come?? Also how to recover my breast?? ..."	229
Reassurance	Users seek confirmation. Phrases such as ' Is this normal? ' and ' Is this an issue? ' are commonly used in posts seeking reassurance.	"... My physiotherapist had said that this is not normal. I want to have a second opinion whether it is normal or not ..."	76
Experiential	Users seek experiences of other users. Users ask fellow users if they faced similar situation to understand their own situation.	" ... Doctor has prescribed ... Any body has taken these medicines and found no side effects in your babies. Please help"	41
Factual	Users seek medical knowledge related to child health. Instead of appropriate actions, as in case of advice, users ask for information on medically approved practices.	"Can malaria infected mother breastfeed her two month old baby"	13
Emotional Support	Users explicitly mention their emotional distress and seek for emotional support from the community members	"... however my daughter seemed frightened and shocked. I am worried about my daughter's reaction ... Worried and on guilt trip."	1

Table 1: Table showing types of information sought related to child

2.2 Parenting

On the topic of parenting, prototypes have been designed and developed to help memory-making, record-keeping, and communication around a child's development [12], continuing the connection between a parent and a child when at a distance [17, 19]. Another project in the same line of understanding presents the primary concerns of parents/caregivers regarding infants and toddlers' sleep by analyzing the publicly available iPhone-based application, "Ask the Expert" for sleep in young children [15]. Another research in the same direction, such as BabySteps [12], developed by Kientz et al. to support the child's initial years, with regards to creating memories, maintaining health records, and using the technology to share this information with family and health care professionals. Through this study, we aim to understand how engagement on online platform plays out for a new parent.

3 METHODOLOGY

We conducted a grounded theory research [5] to understand how parenting users use online health platforms, and what kind of interaction they have with their peers on the platform. We collected posts with their corresponding comments from the BabyCenter website for six months, from Jan 2019 to June 2019, from three groups, related to our research interest - Baby(0-12 months), Breastfeeding, and Toddlers(12-36 months). The reason for choosing BabyCenter as a part of our research setting is because it is one of the most popular online venues for pregnancy and parenting operating at a global level. We scraped the three groups of the website for collecting the data. We gathered a total of 625 posts with their corresponding comments. The inclusion criteria of our study comprise of the posts that were uploaded only from Jan to June 2019. Based on the criteria, we identified a total of 424 posts with their corresponding comments. We coded each post and identified that of the 424 posts, 326 posts related to child-related concerns, and 64 posts related to social

engagement. The remaining posts pertained to maternal health concerns, BabyCenter and Johnson's Baby promotional posts, and were excluded for being out of the scope of the current work. Through the coding process, we identified the types and topics of child concerns discussed via questions and responses and how users socially engage on the platform. Later, we discussed the codes between ourselves to finalize the types and topics of questions and responses. For instance, codes associated with the topics of questions asked, such as 'baby skin color' and 'skin flakiness' contributed to the final topic - 'Child skin'. We further analyzed the multimedia use and users' activity trends for a better understanding of the users' engagement on the platform.

4 FINDINGS

We analyzed 390 posts and associated comments on the platform (see Figure 1 for an instance of a user interaction). We tried to understand how users engage with fellow users on the platform. We observed that users treat the platform as a channel for information exchange and social activities. We also discuss users' activity trends and how they use multimedia on the platform.

4.1 Types and Topics of Questions Asked

To understand the nature of child-related concerns of the users, we identified and categorized the questions asked in the community groups into five categories: Advice, Experiential Knowledge, Factual Knowledge, Reassurance, and Emotional support. Table 1 shows the categorization of the questions asked. The posts overlapped across type of questions asked. A post, for instance, asked for both experience and reassurance. For users, both factual knowledge and experiential knowledge complement each other. Seeking advice is a dominant part of the user activity on the platform. Users also seek reassurance of consultation which shows the horizontal distribution of knowledge construction where knowledge from both doctor and

Topic of questions asked	Example Post	Number of questions asked
Feeding a child	"hi me and my 6month dotty is suffering from viral. Is it safe to breastfeed"	46
Diet of a child	"... Shall I give carrot along with apple? Or any other ideas?"	33
Training	"My baby is 6 months. can I train to sit my baby in this month? which month is able to sit position.?"	29
Child poop	"Hello mommies Today my 5.5 month old baby did 6 times little yellow watery stools. Every day she used to poop one or two time. Is this diarrhoea"	25
Eating Habits	"My one year baby does not eat the food having lumps or is thick ... How can I develop eating habits in him."	20
Medication of child	"When to start zincovit syrup?? ... how much should i give plzz suggest me"	18
Sleeping habits	"... from last 1 weeks she started sleeping from 3-4 am ... but she still not sleeping at night ..."	17
Child skin	"Can I use baby powder and Baby lotion at the same time on my baby skin?"	15

Table 2: Table showing topics of information sought related to child

peers contributes to the understanding of a user. Users did not ask for emotional support explicitly from their peers on the platform. They sought more of informational support. Though users often use phrases like - *"I am worried"*, they tend to seek informational support only. For instance, *"my breastfeeding baby 3 month old baby hasn't pooped for last 8 days what should i do and my baby's behavior is normal please give suggest i am really worried"*.

Table 2 represents the topics of the questions asked. The topics which had less than fifteen posts (For instance, Baby weight issues) or were miscellaneous (For instance, Societal attitude) are excluded from the table considering the space constraints.



Figure 1: Instance of an interaction on the BabyCenter website

4.2 Types of Responses Received

We observed that in response to posts, users share advice, experiences, and home remedies with fellow users.

4.2.1 Experience. Users share their experiences or experiences of others in their social circle to support their peers who are facing a similar situation. They share the experiences either to enlighten other users on a medical issue or to reassure other users. For example, in response to a question asked by a user whose three-month-old baby had not pooped since last eight days, another user replied, *"It has also happened to my daughter ... I can give her little Orange to drink or give her Prune juice."*

4.2.2 Advice. Users guide their peers based on their level of understanding. Users advise fellow users, informing them of possible actions they can take to handle their situation, and also reassure them. For example, a user responded to a fellow user who was seeking reassurance about giving glucose to a ten-month-old baby, *"Why do you want to give. If you are suspecting dehydration give ORS."* Users advise peers to visit their health professionals in situations they consider to be critical and beyond their scope to comment. Users also advise, in some situations, to switch to some other health professional.

4.2.3 Home remedies. Users seek and provide home remedies on the platform. Home remedies are medications administered with or without prescription or professional supervision. For example, *"My 1 month old baby girl suffering cough cold..Can anyone please suggest me home remedies for her?"* Users have diverse opinions about home remedies, even for a particular problem. For example, in response to the post in the previous example, a user suggested avoiding home remedies, *"I think one month baby is too young to give anything else than BM. So just consult your pediatrician ..."*, while another user advised using home remedies, *"Steaming should be helpful for such a small baby..."* To summarize, a user receives a mixture of advice, experience, and home remedies as responses on a particular health concern.

4.3 Social Activities

Users interact with other users not only for seeking information but also for socializing. Of the 64 posts, 30 were chit-chat posts, 13 were photo-contest related posts, nine related to nanny and jobs lookup, six posts included links to books, articles and videos, and through 5 posts, users promoted products and one post related to fundraiser. Users share stories and names of the books they are reading and upload greeting messages. Some users also upload images for greeting. Users also posted to gather votes related to their participation in photo contests held by the platform. Users share references for books, articles, and videos. Users treat the platform as a medium to inquire about nanny and work from home jobs and also to promote products such as medicines and homemade

baby food and sometimes, for raising funds for a child facing a severe health issue. An instance where a user promotes baby food prepared by her family member, *“Hi, my mom-in-law makes this traditional baby food at home ... If you are interested in buying it, please send me a message ...”*

4.4 Multimedia Usage

The platform allows submitting a post and replies via text, images, and links to articles and YouTube videos. Users use English and Hinglish, a blend of Hindi and English, on the platform. Through the posts, we identified that the users asked questions and provide replies primarily using text. Among the posts related to health concerns, only one included a link to an article, and among replies, only 23 included links to articles and the previous post on the platform. There are questions when supported with an image can explain the condition better, but still, users choose to express their problem purely in text. For instance, a question where image can help explain the condition, *“... My baby has rashes on her face when she was 13 days old and it is continuing till now ...”* Users use images and videos for socializing with each other such as for participating in photo contests, greeting fellow users, promoting products and also, sharing links to YouTube videos for entertainment purposes. However, similar is not true for posting questions. We observed minimal usage of images in expressing health concerns through posts and comments.

4.5 Activity Trends

Through the posts, we tried identifying how often users upload, comment, and read posts on the platform. In the span of the study period of six months, users posted 390 posts while a post received, on average, three comments. To identify users' reading patterns, we observed the date on which a post was uploaded and the date on which the post received the latest comment. The posts, collected under our study from Jan 1, 2019, generally continued to receive comments for about a couple of months after the date of posting. However, in the initial phase of data collection, before applying the exclusion criteria, we found 201 posts that were uploaded before Jan 2019 and continued to receive comments until June 2019. For instance, we identified a post uploaded back in April 2012 that received in total 56 comments, with the latest comment in April 2019. Such instances show that users extensively read posts on the platform and try to seek help by posting on the thread where a similar concern is discussed.

5 DISCUSSION

5.1 Catering Users' Reading Behavior

Our findings show that users frequently read the existing posts on the platform. It has been observed that users read posts dated a long time back. Studies suggest that “reading about other patients' experiences has the potential to affect decision making, one's sense of isolation or support, and adjustment to the illness or health condition” [21]. Thus, the users' behavior of frequent reading must be taken care of by the platform. Existing posts and comments on the platform can be utilized to cater to such behavior. Users contribute to the community through their posts and discussions. Information exchanged on such a platform should be indexed and

archived in ways such that posts on a health issue, covering its different aspects, are consolidated. Such indexing will enable users to read about the issue in an integrated manner to make sense of their concerned health issues. A user's search query should be semantically matched up with existing posts to offer relevant results to enhance the reading experience. An integrated availability of health information will not only cater to the users' lookup for existing information but also leverage users' knowledge existing on the platform.

5.2 Facilitating Use of Images

In our study, we observed limited use of images in the posts related to health concerns while similar is not true in social interactions. Users upload photos of their children in photo contests, which shows that users do make use of images on such platforms but might be thoughtful of uploading photos to express health issues. Studies show that “mothers share photos on Facebook to portray their identities as good mothers, conveying attractive children, embracing humor, and showing evidence of milestones-all indicators of a healthy and happy family.” However, they refrain from uploading photos that associate their children with some health issue [13]. Images have been seen to improve the effectiveness of health education materials [11]. Users upload health-related posts, which can be accompanied by photos of their children to explain a health issue or a health remedy. Online health platforms can support built-in tools for easy photo editing to blur the part of the image which the user does not want to reveal. Users can be given the option of setting the image uploaded by them on auto-removal after the desired time period, to limit views of the image. The platform can further suggest similar photos to the users related to health issues faced by them to support them in expressing their concerns without uploading a photo of their child. However, uploading of images needs to be moderated by the platform to ensure that no user uploads irrelevant photos.

6 STUDY LIMITATION

We situate our study in the Indian context. Our findings might vary for the population under different regional contexts. So we do not claim our findings to be the generalized one. We expect that the insights from the paper might facilitate future research to understand other cultures.

7 CONCLUSION

Towards understanding the role of online health communities, we report our findings from a study of the information exchanged among parenting users on the BabyCenter platform. Online health forums have become a place where users can seek advice, experiences, home remedies, or gain reassurance to manage their health situation. We discussed how the platform could cater to the users' reading behaviors to enhance their experience and leverage knowledge of users regarding a health issue, and how the use of images for information seeking can be facilitated. Our research contributes to the field of health informatics and ICTD by proposing guidelines for developing online health communities to address parenting needs.

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