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Digital support for expecting parents: Ensuring quality content for pre-pregnancy, pregnancy, and delivery stages

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Abstract

In today's scenario, use of mobile phones is on rise. Pregnant women find it is very easy to get help from digital source for information like mobile applications. Pregnancy is the most crucial time period when expectant mothers need their family around them for guidance and support. But due to changing family patterns now-a-days, sometimes pregnant women have to stay alone during their pregnancy period. So, women generally go for digital guidance in these situations such as pregnancy apps. This study is to analyze the pregnancy apps regarding availability and credibility of information related to pregnancy care. To carry out this study, 40 pregnancy apps were downloaded and installed from Google Play Store in an Android phone which were free to use. All the apps were critically assessed for their quality content using self-structured schedule. Majority of the apps did not provide detailed information for all aspects of pregnancy such as care during pre-pregnancy, pregnancy and at the time of delivery. These apps do not provide source of information due to which users often put them in questionable category for their credibility. On the other hand, if they provided content on any aspect then that was found insufficient according to needs of women. Information available in these apps was available in English language only not in regional languages and lacks credibility also.

Keywords: Pregnancy, apps, analysis, information and delivery

Introduction

Long before a kid is born, a new life begins. The fertilized ovum grows inside the uterus of the woman. Pregnancy is the term used to describe this stage of prenatal development. The prospective mother needs to take good care of herself in order to guarantee the health and welfare of the unborn child. Unfortunately, many important aspects of pregnancy, particularly for first-time mothers, are not well understood by women. The knowledge of young women on conception, fertility, the ovulation cycle, and gestational weight is inadequate, according to Downs *et al.* (2014) ^[4] and Lundsberg *et al.* (2014) ^[8]. Additionally, they lack sufficient knowledge of maternal health-related topics (Mbada *et al.* 2014; Williams *et al.* 2016) ^[10, 17]. Findings of a study by Samanta *et al.* (2024a) ^[13] also showed a clear discrepancy between already available information on digital platform and needs of mothers for guidance.

Inaccurate information leads to bad habits, which negatively impact the health of the mother and the child. These negative effects include growth retardation, low birth weight, infant and maternal mortality, and nutritional deficiencies. Mothers' and their children's health and well-being are enhanced by having a solid grasp of pregnancy (Chan & Chen, 2019) ^[3]. For the sake of both the mother and the unborn child, it is therefore ideal for a mother to have adequate and accurate knowledge about every aspect of pregnancy.

Mothers and mothers-in-law provide young women with a

wealth of common and important information on prenatal care. They unknowingly and casually instruct the next generation of mothers by discussing their pregnancy experiences. The joint family system has been superseded by the nuclear family. Many couples live far away from their family members. This means that the pregnant woman may not always be able to get advice from her mother-in-law. Additionally, modern science and the internet are trusted more by the current generation than conventional wisdom. As a result, young expectant women use digital technology and media to acquire the information they need. Smartphones are essential in the modern world. Our lives are now dominated by internet searches. Young parents are increasingly depending on mobile gadgets and the internet for efficient parenting. Digital media has become a vital source of prenatal information for women since it enables mothers to communicate with one another via apps, social media, the internet, etc. (Lupton, 2017) ^[9]. It is easy to use, responds quickly, saves time, and offers valuable data at a very low cost. As mobile phone usage rises every day, apps have become an important and useful source of information for pregnant mothers (Lee & Moon, 2016) ^[7]. These pregnancy applications help new moms learn about pregnancy, labour, and health information (Wang *et al.* 2019) ^[16].

A large number of apps are already available for users but, Indian women do not find them suitable for them. These apps provide insufficient amount of information on only a

few aspects of pregnancy and delivery. Study conducted by Yadav *et al.* (2023)^[19], also revealed that women felt strong need of knowledge regarding health care during pregnancy. However, previous research conducted by Samanta *et al.* (2024b)^[14] also revealed that majority of currently available apps lacked information indicating that they were failing to meet the demands of their intended users. The only purpose for this study is only to analyze the pregnancy apps so that an appropriate app fulfilling the needs of Indian women can be developed. Therefore, it is very important to create a pregnancy app which can provide valid and reliable information starting from pre-pregnancy period to postpartum period.

Methods

Sample Selection

The sample of the study was digital sample i.e., 40 pregnancy apps available for free download on Google Play Store which were then analyzed for their content and its quality.

Data collection

For data collection of above-mentioned digital sample, total 40 pregnancy apps were downloaded and installed on an Android phone which were available on Google Play Store for free of cost.

Data Analysis

Each app was test used and critically assessed by the researcher for the content relevance and quality using self-structured schedule. The data collected was then classified and tabulated for meaningful results as per the objective of the study. For interpretation of the results, mainly two statistical measures were used viz. Frequency and Percentage.

Results and Discussion

Information on pre-pregnancy, pregnancy and delivery

Table 1: Availability of pre-pregnancy information N=40

Pre-pregnancy aspects	Yes		No	
	F	%	F	%
Menstruation cycle	09	22.5	31	77.5
Preconception health	03	07.5	37	92.5
Fertility	10	25.0	30	75.0
Investigations for infertility	05	12.5	35	87.5
IUI vs. IVF	05	12.5	35	87.5
Pregnancy timing	01	02.5	39	97.5
Healthy conception	05	12.5	35	87.5
Getting pregnant	06	15.0	34	85.0
How to confirm pregnancy	03	07.5	37	92.5
Missed periods but UPT negative	05	12.5	35	87.5
First time pregnancy advice	01	02.5	39	97.5
Becoming a mother	02	05.0	38	95.0
Becoming a father	02	05.0	38	95.0

Table 1 presents the findings from the pre-pregnancy data. Majority of the apps did not cover a some of the pre-pregnancy aspects such as preconception health (92.5%), infertility investigations (87.5%), IUI vs. IVF (87.5%), pregnancy timing (97.5%), healthy conception (87.5%), getting pregnant (85.0%), how to confirm pregnancy

(92.5%), missed periods but UPT negative (87.5%), first-time pregnancy advice (97.5%), becoming a mother (95.0%), and becoming a father (95.0%). Around one-fourth of the applications addressed a few aspects like menstruation cycle (77.5%) and fertility (75.0%) while remaining did not.

Table 2: Availability of information on signs, symptoms and home test of pregnancy N=40

Signs and symptoms of pregnancy	Yes		No	
	F	%	F	%
Signs of pregnancy	12	30.0	28	70.0
Symptoms of pregnancy	13	32.5	27	67.5
Home pregnancy tests	03	07.5	37	92.5
Danger signs during pregnancy, delivery and after birth	05	12.5	35	87.5

The findings of the information on pregnancy symptoms, indicators, and home tests are shown in Table 2. The results above show that the majority of the applications lacked information on danger indications throughout pregnancy, delivery, and after birth (87.5%) and on home pregnancy tests (92.5%). More than two-thirds of the applications did not include information on pregnancy symptoms (67.5%) and signs (70.0%), whereas others provided this information.

Table 3: Availability of information on prenatal development N=40

Prenatal development	Yes		No	
	F	%	F	%
Week by week pregnancy calendar	16	40.0	24	60.0
Weekly baby appearance	01	02.5	39	97.5
Growth and developments in all trimesters	12	30.0	28	70.0

Table 3 displays the findings of data pertaining to fetal development. While the majority of the apps (97.5%) lacked information on weekly infant appearance, 70.0 percent lacked content on growth and development across all trimesters, and 60.0 percent lacked information on a week-by-week pregnancy calendar, the remaining applications did.

Table 4: Availability of information on delivery N=40

Delivery aspects	Yes		No	
	F	%	F	%
Getting ready for birth together	02	05.0	38	95.0
Packing hospital bag	10	25.0	30	75.0
Time for labour pain	14	35.0	26	65.0
Tips for natural labour	06	15.0	34	85.0
Ways to prevent caesarean section	02	05.0	38	95.0
Getting ready for a planned caesarean	06	15.0	34	85.0
Presence of father in delivery room	02	05.0	38	95.0
Birth	06	15.0	34	85.0

Results of the information on delivery have been shown in Table 4. Maximum apps did not offer information for the would-be parents on various aspects of delivery i.e. getting ready for birth together (95.0%), tips for natural labour (85.0%), ways to prevent caesarean section (95.0%), getting ready for a planned caesarean (85.0%), presence of father in delivery room (95.0%) and birth (85.0%). One-fourth of the

apps (75.0%) did not have information on packing hospital bag and two-third of them (65.0%) lacked information on time for labour pain. Rest of the apps provided content on above given aspects.

Discussion

As results of this study concluded that already available apps on Google Play Store do not provide that much quality content on all aspects of pregnancy. Therefore, the present study found a noticeable gap between needs of Indian mothers and the information provided on digital platforms. As per previous researches conducted by Yadav *et al.* (2023)^[19] and Samanta *et al.* (2023)^[15], mothers demand for comprehensive information related to all aspects during pregnancy as well as infant care. Women demand for detailed content because they do not have knowledge about various aspects of pregnancy. Women of young age have poor knowledge regarding conception, fertility and ovulation cycle while older women tend to believe in myths and misconceptions (Lundsberg *et al.* 2014)^[8]. They do not have knowledge on danger signs and symptoms of pregnancy complications (Hoque and Hoque, 2011; Okour *et al.* 2012 and Workineh *et al.* 2014)^[6, 11, 18]. Expecting mothers also lack knowledge on gestational weight gain (Downs *et al.* 2014)^[4]. Bitra *et al.* (2014)^[1] also found that women's level of knowledge about safe and physiological delivery was very low. But on the other hand, study conducted by Yadav *et al.* (2023)^[19] observed that women felt very much need of information on all general aspects such as getting pregnant, signs and symptoms, pregnancy tests, discomforts, danger signs and common myths of pregnancy but majority of the existing analyzed apps did not have content on these aspects. So, these apps are not suitable to fulfill the needs of Indian mothers. Only a small number of pregnancy apps are excellent (Brown *et al.* 2019)^[2]. Pregnancy apps that women can trust are in high demand (Hearn *et al.* 2013; Qing & Weiyang, 2019)^[5, 12]. As a result, there is an urgent need of developing an app for pregnant women in Indian context which cover all these information in English as well as regional languages.

Conclusion

Pregnancy is most crucial time period when expectant mothers need their family around them for guidance and support. But due to changing family patterns now-a-days, sometimes pregnant women have to stay alone during some days of their pregnancy period. So, women generally go for digital guidance in these situations such as pregnancy applications. Thus, the study was conducted to assess these already available apps on Google Play Store and the study found that these apps are not providing quality content on all aspects of pregnancy such as pre-pregnancy care, during pregnancy and at the time of delivery. These apps do not provide source of information due to which users often put them in questionable category for their credibility. Hence, these apps are not suitable to fulfill the needs of Indian mothers. Therefore, there is an utmost need of developing a pregnancy app specially for Indian expectant mothers.

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