Content analysis of mobile health applications on pregnancy yoga

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Abstract

Background: The awareness of yoga has improved its utilisation for health benefits across the globe. This work analysed the contents of the available mobile apps on Android and iPhone operating system (iOS) platforms. Understanding the existing apps will form a base to develop a better app to encourage and mentor the pregnant women while performing yoga for health benefits.

Aim: The aim of this study is to analyse the contents of the available mobile apps on Android and iOS platforms on 'Pregnancy Yoga'.

Methods: Both the researchers independently searched online and analysed the contents present in the mobile health apps (mhealth apps) related to pregnancy yogas that were available in two platforms – The Apple and Google Play stores. A search for pregnancy yoga apps in both these platforms yielded a total of 100 and 200 apps, respectively. A cross-sectional study was performed on this sample of 300 available mobile apps.

Results: Out of the 300 mhealth apps identified, it was found that five pregnancy yoga apps from iOS and 45 from Google Play stores were relevant to pregnancy yoga and the other apps focused either on pregnancy-related health tips or common yoga apps. Therefore, only 50 (16.6%) mhealth apps could be included as per the criteria. The mobile apps that met the inclusion criteria were 5 (1.6%) from iOS and 45 (15%) from Google play stores.

Conclusion: The study shows that the content of a number of apps is not sufficient and evidences the presence of apps that include videos to track yoga poses, their benefits for each trimester, especially videos, and also the apps that enable one to set-up reminders. Pranayama techniques such as bhamari, sithagiri and yoga nithra (relaxation) require information to improve the well-being of pregnant women. These data are not included in the pregnancy mobile apps. Hence, there is a need for well-designed applications to promote yoga in every stage of pregnancy. The available apps should be able to track the yoga practice and provide immediate feedback and consultation by experts.

Keywords: Content analysis, health information, mobile application, mobile health apps, pregnancy, pregnancy yoga

Access this article online	
Quick Response Code:	**Website:** www.phmj.org
	DOI: 10.4103/phmj.phmj_1_19

How to cite this article: Anbu V, Swaminathan N. Content analysis of mobile health applications on pregnancy yoga. Port Harcourt Med J 2019;13:63-6.

INTRODUCTION

Pregnancy is a unique state of physiologic stress which necessitates physical, mental and social adaptation. Pregnant women with high stress and anxiety levels are at risk for spontaneous abortion, preterm labour, malformations and asymmetric growth retardation.[1]

Yoga when practiced by pregnant women, trains their mind and body for labour and childbirth, as it helps them to be focused and healthy. The yogic postures being supple minimise the common pregnancy symptoms such as nausea, morning sickness and constipation. Since the tension around the cervix, birth canal and the opening of pelvic is relieved by the practice of yoga, easier labour and smooth delivery can be achieved. Moreover, it enables the restoration of body shape, uterus, abdomen and pelvic floor as well as relieves the tension in the upper back and the breast discomfort after childbirth.[2]

The availability of mobile phones has initiated the concept of mobile health (mHealth). mHealth is defined as 'mobile computing, medical sensor and communications technologies for healthcare'.[3] mHealth can play a vital role in the monitoring and improvement of the health status of a person. mHealth is used to create awareness and in remote monitoring in developing countries. Increased accessibility of smartphones has resulted in the creation of various apps. Many smartphone apps are available on almost any topic and consumers can locate and subsequently download them onto their device. Every week, new apps are being developed and made available to consumers via their smart iPhone operating system (iOS) app store (i.e., iTunes, Google Play). Reaching the urban population

through mobile apps might be easier owing to the lifestyle and availability of digital infrastructure.

More number of yoga-based apps as an adjunct to pregnancy are available in Android and iOS platforms.[4] However, the information available through apps should be accurate and evidence based. A better app should provide utmost importance to safety concerns; the content should focuses on the psychological well-being and should improve the well-being of pregnant women. No set standards with respect to what has to be included in the app are in place in the app stores. Hence, the consumers are left to decide for themselves to select and download the right ones.[5]

The objective of this study is to analyse the contents of the available mobile apps on Android and iOS platforms pertaining to pregnancy-related yoga. Understanding the existing apps will form a base to develop a better app to encourage and mentor the pregnant women while performing yoga for health benefits.

METHODS

Both the researchers independently searched and analysed the contents using a predetermined checklist based on selected areas of comparison for pregnancy yoga mHealth apps in the two available platforms, Apple and Google Play stores. An iPhone 6 for iOS, Lenovo vibe and Samsung J5 for Android, respectively, were used. Mobile apps developed for pregnancy-related yoga, which enable the user to view and practice the asanas were included for further analysis.

The inclusion criteria for the study are: (i) number of apps, (ii) size of application <50 MB, (iii) number of review, (iv) star rating, (v) age rating, (vi) last update and (vii) Presence of web. The available data for the following criteria are very minimal. Hence, these following criteria were excluded from this study. The exclusion criteria are: (i) Free/Paid (ii) no subscription requirement, (iii) signup/log-in criteria and (iv) version.

A cross-sectional study was performed on a sample of 300 available mobile apps on pregnancy yoga in two

Table 1: Features of mobile applications available in iPhone operating system and Google Play

Number of apps	iOS	Play store
Size of application <10 MB	2	34
Number of reviews <49	5	39
Star rating up to 4 stars	0	41
Age rating up to 12+	4	45
Updating of mobile apps within 3 years	1	43
Presence of web URL	0	1

URL: Uniform resource locator, iOS: iPhone operating system

Table 2: Mobile health apps in Apple iPhone operating system and their features

n	Mobile apps name and name of developer	Features						Total score
		Size <10 MB	Reviews <49	Up to 4 stars	Age rating up to 12+	Updating within 3 years	Presence of web URL	
1	Pregnancy Yoga Guide by Nipon phuhoi	√	-	-	-	-	-	1
2	Pregnancy yoga with Tara Lee by Andrew Smith	√	-	-	√	√	-	3
3	Mamata Yoga by Clare Newman	-	-	-	√	-	-	1
4	Easy Pregnant Yoga Exercise Video Guide by Anarie Mape	-	-	-	√	-	-	1
5	Prenatal Yoga for Beginner Mama guide and Tips by Xin Tan	-	-	-	-	-	-	0

URL: Uniform resource locator, √: Yes

Table 3: Mobile health Apps in Google Android and their features

n	Mobile apps name and name of developer	Features						Total score
		Size <10 MB	Reviews <49	Up to 4 stars	Age rating up to 12+	Updated in 3 years	Presence of web URL	
1	Pregnancy yoga Exercises by Ahmed	√	√	√	√	√	–	5
2	Pregnancy yoga by AngeCode	√	√	√	√	√	–	5
3	Prenatal Yoga - A guide to pregnancy yoga By Mendanta Apps	√	√	√	√	√	–	5
4	Prenatal Yoga Classes by Daniwey	√	√	√	√	√	–	5
5	Pregnancy Yoga by bagasdroids	√	√	√	√	√	–	5
6	Yoga for Pregnant Women by funappsnew	√	√	√	√	√	–	5
7	Yoga for Pregnancy by Anna White	√	√	√	–	–	–	4
8	Yoga pregnant women by dream pedia	√	√	√	√	√	–	5
9	Prenatal yoga pilate by Kristin appscessionllc	√	√	√	–	–	–	3
10	Pregnancy yoga work out by bigg king	√	–	–	√	√	–	3
11	Pregnancy yoga by heru technology	√	–	–	√	√	–	3
12	East pregnancy yoga step by step by meteor studio	–	–	–	√	√	–	2
13	Pregnancy yoga by slay in vogue apps	√	–	–	√	√	–	3
14	Pregnancy yoga lesson by martial art apps	–	√	√	√	√	–	4
15	Pregnancy yoga by we love free apps	√	√	√	√	√	–	5
16	Prenatal yoga by slay in vogue apps	√	√	√	√	√	–	5
17	Yoga for pregnancy by butterfly king	–	–	–	√	√	–	2
18	Daily yoga workout for pregnancy by omysoft	√	–	–	√	√	–	3
19	Pregnancy yoga exe (New) by sigma dev	√	√	√	√	√	–	5
20	Easy prenancy yoga step by step by dwarf apps	–	–	–	√	√	–	2
21	Prenatal yoga pro by daily yoga software technology	–	√	√	√	√	–	4
22	Best yoga preganancy exercises by suliwa apps	√	–	–	√	√	–	3
23	Pregnancy yoga steps gallery by whiteclouds	√	√	√	√	√	–	4
24	Best yoga pregnacy exercises by suliva app	√	–	–	√	√	–	3
25	Pregnancy yoga by yandaaps	√	√	√	√	√	–	5
26	Best prenatal yoga ideas by the cozmo sports	√	–	–	√	√	–	3
27	Yoga billies for pregnancy by yoga bellies health and fitness	–	√	√	√	√	–	4
28	Pregnancy yoga by bagasdroids	√	√	√	√	√	–	5
29	Yoga pregnant women by dream pedia	√	√	√	√	√	–	5
30	Best yoga pregnancy exercise by suliwaapps	√	–	–	√	√	–	3
31	Pregnancy yoga lessons by martial art apps	–	–	–	√	√	–	2
32	Prana prenatal yoga by mind body branded apps	√	√	√	√	√	–	5
33	Yoga pregnant mom by putriapps	√	√	√	√	√	–	5
34	Pregnancy yoga exercises by henasy	√	–	–	√	√	–	3
35	Pregnant yoga by isabel martos	√	–	–	√	√	–	3
36	Tutorial yoga pregnant women by tspedia	√	√	√	√	√	–	5
37	Pregnant yoga (subscribe) by guru inc	–	√	√	√	√	√	5
38	Yoga pregnant mom by kanda apps	√	–	–	√	–	–	2
39	Ice queen and BFF pregnant yoga by Buggames.net-girls games	–	√	√	√	√	–	4
40	Prenatal yoga by the hobby app	√	√	√	√	√	–	5
41	Yoga for Pregnant Women by funentertainmentapps	√	–	–	√	√	–	3
42	Yoga for pregnancy by healthcare centre	√	√	√	√	√	–	5
43	Yoga poses pregnant women by seemala	√	–	–	√	√	–	3
44	Yoga for pregnancy by zabuza	–	–	–	√	√	–	2
45	Prenatal yoga tips by pyjama819	–	–	–	√	√	–	2

URL: Uniform resource locator, √: Yes

platforms – Apple and Google Play stores. The study was conducted for a period of about 5 months from January 2018 to May 2018.

First, the search keyword 'pregnancy yoga' was used to search for the relevant mobile apps. The assessment of the mobile apps that fulfilled all the criteria was carried out. Ten areas were identified for the purpose of comparison of the mobile apps in accordance to the literature review and the discussions with two senior yoga therapists and two medical specialists with more than 10 years of experience in clinically managing pregnant women. The selected areas for comparison were: (i) number of apps, (ii) size of application <50 MB, (iii) number of review, (iv) star rating, (v) age rating, (vi) last update and (vii) presence of web.

RESULTS

Out of the 300 mhealth apps identified, it was found that five pregnancy yoga apps from iOS and 45 from Google play stores were relevant to pregnancy yoga and the other apps focused either on pregnancy-related health tips or common yoga apps. Therefore, only 50 (16.6%) mhealth apps could be included as per the criteria. The mobile apps that met the inclusion criteria

were 5 (1.6%) from iOS and 45 (15%) from Google Play stores.

Table 1 shows the features of mobile applications in iPhone operating system and Google Play store while Table 2 shows the mobile health applications in Apple iPhone operating system and their features. The mobile health applications in Google Android phones and their features are shown in Table 3.

DISCUSSION

Rapid and widespread use of smartphones has led to the development of various app-based programmes.[6] Many yoga-related apps are available for various health disorders. The present study documents the presence and variety of yoga related to mobile apps designed for pregnant mothers. A structured search through Android and iOS apps identified the availability of yoga-based apps for pregnant women. Majority of the identified apps provided details of the benefits and contraindication of asanas and specific asanas for the trimesters. For the purpose of this stud, the apps were rated based on the selected areas. The areas for comparison were: (i) number of apps, (ii) size of application <50 MB, (iii) number of reviews, (iv) star rating (v) age rating, (vi) last update and (vii) Presence of web. Success of mobile apps was determined by availability, usability and cost.[7] The checklist of the content analysis considered these criteria.

The content analysis also considered the size of the mobile app since it would affect the decision of the user. Out of 45 apps identified, 11 apps were >10 MB size, which indicated that the app developers provided much importance to the size considering the users need. Nineteen apps that were identified, did not have a single review by the users.[8] Although many of the apps developed were attractive to the users, most of the applications have been updated within the last 3 years, which also met the criteria of ideal apps. The study confirms the availability of apps that track asanas, especially videos that enable one to set-up reminders, thereby enhancing positive mental health for pregnant women. Integration of self-care education in mobile apps provides easy access to it which motivates the user and maintains a positive environment. Nonetheless, it is necessary to guarantee the mechanism of integration and relevancy of mobile apps in assisting the practice of yoga for pregnant women.[2] Research into the delivery of pregnant women-centred mobile apps with reliable and useful information in areas such as reporting and reminder setting, enabling personalised education or therapeutic support, content related to pranayama and yoga nidra, clear objectives, asanas related to trimesters, signup option with yoga resource person and medical professionals, without jeopardising user safety and privacy, is required to facilitate the practice of yoga for pregnant women.[9]

Limitation
The limitation of the cross-sectional study is the difficulty encountered to retrieve of information from web source and the non-availability of instruments to assess the content in pregnancy yoga apps. However, self-report measurements have been recognised as useful in collecting the data for content analysis of pregnancy yoga apps.

CONCLUSION

There is a need for well-designed applications to promote yoga in every stage of pregnancy. The available apps should be able to track the yoga practice and provide immediate feedback and consultation by experts.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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