Breastfeeding app updates and recommendations

Actualización y recomendación de apps sobre lactancia materna

Dear Editor:

The coronavirus disease 2019 (COVID-19) pandemic evinced the critical role of information and communication technologies in the different spheres of life.[1] Digital tools were essential in ameliorating the deleterious impact of the health crisis caused by the pandemic and allowing access to various health care services, including breastfeeding (BF) support.

The increase in the past few years in the use of mobile devices and the online access capabilities of these devices have given rise to an important mobile health application (app) market. According to *The State of Mobile in 2022* report of the App Annie mobile data and analytics platform,[2] in 2021, there were 230 000 new app downloads, with a 5% increase compared to 2020, with global consumers downloading an average of 435 000 apps per minute. In 2018, we conducted a descriptive study of the BF apps available online, which was published in this journal.[3] Four years after the initial study, on the other side of the pandemic, we undertook another study with the aim of analysing the evolution of BF apps, the number of downloads and the contents of these apps to assess their usefulness as health care tools for BF promotion in circumstances in which it was not possible to provide lactating women in-person services at health care facilities.

We carried out a mixed-methods study, searching the main app marketplaces using the search term ''lactancia materna'' (breastfeeding), applying the following inclusion criteria: Spanish language and availability through 31/12/2021.

Then, we classified the apps based on the following variables: operating system, developer, type, country of origin, target population, indications or purposes of the app, feedback (possibility to interact with the platform) and whether the app was free or paid.

Last of all, we made a qualitative analysis of the content of the app for the ''indication'' variable based on the description of the developer of the app, creating 3 subcategories for a more detailed analysis of the app content: information, tracking and other BF content (books/magazines, entertainment [games], events, maps [BF resources, professionals, leisure], professional websites and BF support associations) (Table 1).

The search yielded 340 apps, of which 213 met the inclusion criteria. The main findings were that in the past few years, the development of BF apps has doubled and the mean number of downloads of these apps, overall, was 231 812, triple compared to the initial study. Another interesting finding was the increase in the proportion with professional developers, from 3.4% to 13.15%. Fig. 1 presents the growth

Table 1 Descriptive analysis of breastfeeding apps in Spanish, 2009-2021 period.

	n	%
Operating system		
iOS	69	32.39
Android	143	67.14
Windows	1	0.47
Creator/developer		
Non-professional (mothers, software companies, other)	185	86.85
Professional	28	13.15
Physician/paediatrician/nurse	12	5.63
Professional association	6	2.82
Medical student	4	1.88
Lactation consultants (IBCLC)	6	2.82
Region where app was developed		
Europe	123	57.74
Spain	75	35.21
North America	40	18.78
South America	29	13.62
Asia	20	9.39
Oceania	1	0.47
Target population		
Mothers/fathers	100	46.95
Mothers	76	35.68
Parents/professionals/support groups/caregivers	24	11.27
Professionals	10	4.69
Minors aged >12 years	3	1.41
Purposes of the app (analysis categories)		
Facilitate tracking of:	93	43.66
Breastfeeding	59	27.70
Infant habits	73	34.27
Infant development	59	27.70
Other	46	21.60
Utility software	36	16.90
Breastfeeding and formula feeding	63	29.58
Complementary feeding	45	21.13
Provide information on:	90	42.25
Breastfeeding	51	23.94
Infant development	40	18.78
Other	37	17.37
Complementary feeding	25	11.74
Care of mother	34	15.96
Breastfeeding and formula feeding	13	6.10
Other BF content:	17	7.98
Books/magazines	8	3.76
Entertainment (Games)	7	3.29
Events	4	1.88
Resource maps (breastfeeding, professionals, leisure)	6	2.82
Professional websites	1	0.47
Breastfeeding organizations	1	0.47
Information and monitoring	13	6.10
Feedback	43	20.19
Free app	190	89.20

Source: developed in house.

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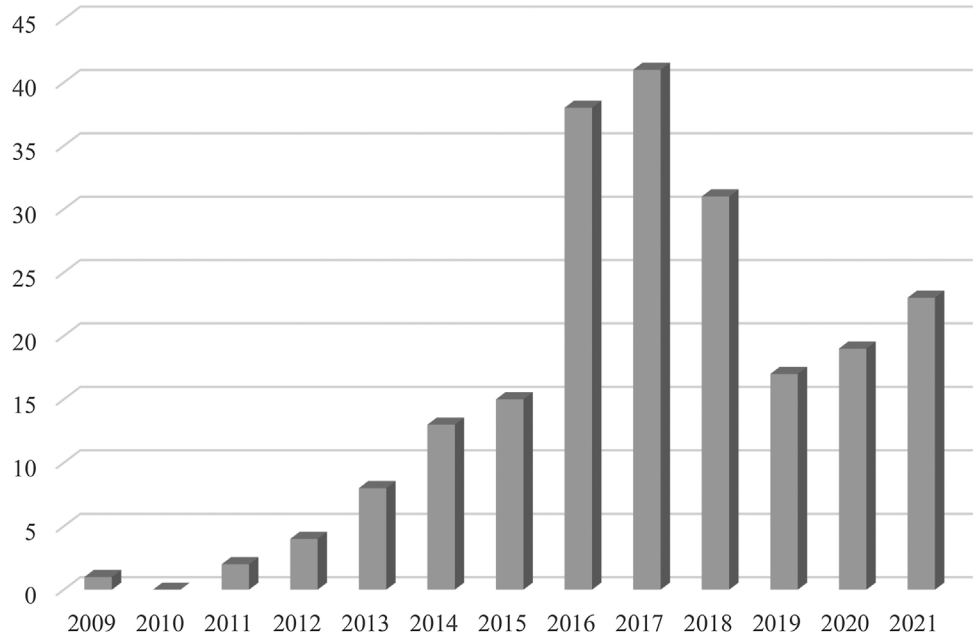

Figure 1 Newly launched of breastfeeding apps in Spanish, 2009-2021 period.
Source: developed in house.

in terms of new launches (number of apps per year), in which we can discern a growing trend since 2019.

Most of the apps were designed for parents (46.95%). A majority were free (89.90%), and the mean price of paid apps increased to €11.65. In terms of the purpose of the app, the majority were apps for tracking BF (43.66%), followed by apps with BF information (42.25%) and other types of BF content (7.98%). When it came to feedback, the proportion of apps for which it was available increased from 14.40% to 20.19%, which could be due to the need for social interaction elicited by lockdown measures and the exponential growth of our online lives.

The restricted access to in-person health care services on account of COVID-19 brought on an increase in telemedicine services[4] and downloads of digital content or software related to BF, as described in the breastfeeding report for year 2020 published by the LactApp team.[5] However, the recommendation of these apps by health care professionals is limited and growing slowly, and requires generating a shared knowledge base to guarantee the safety of users, chiefly due to the current lack of evaluation and accreditation.[6] This poses a challenge to professionals, as we need to find out the sources of the content offered by apps, which should be based on scientific evidence. In our study, we did not identify any apps with any form of certification guaranteeing their quality or safety.

In a world inexorably moving towards the increasing digitalization of all of its dimensions, the recommendation of mobile health apps should be supported by competent organizations so that professionals can feel confident in doing so. The fact that there is no list of mobile applications, guidelines for their use or accreditation system complicates it further.

We believe that the development and recommendation of apps for BF mothers by health care professionals is here to stay, and these apps could become another useful resource for BF promotion.

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Trichorhinophalangeal syndrome: A diagnosis accessible to the pediatrician at first sight☆

Síndrome tricorrinofalángico: un diagnóstico de visu al alcance del pediatra

Dear Editor:

Trichorhinophalangeal syndrome (TRPS) is an infrequent autosomal dominant syndrome with a high penetrance and variable expressivity caused by a change in the *TRPS1* gene. Its clinical presentation is characterised by abnormalities of the hair (sparse scalp hair, lateral thinning of the brows) and nails (ungual dystrophy), mild facial dysmorphism (bulbous tip of the nose, long and flat philtrum, thin upper lip and protruding ears) and skeletal abnormalities (short stature, brachydactyly, phalangeal deviation, cone-shaped epiphyses at the phalanges, hip dysplasia and osteopenia). It is classified into two types: TRPS I (OMIM # 190350), caused by pathogenic variants of the *TRPS1* gene; and TRPS II (OMIM # 150230), caused by the deletion of contiguous genes in chromosome 8 (including *TRPS1* and *EXT1*), which is also associated with osteochondroma and intellectual disability.[1–3]

In this article, we present the cases of several members of a family who received a diagnosis of TRPS stemming from the evaluation of a boy aged 6 years for growth delay and certain dysmorphic features. In the index case, the main findings of the physical examination were a height of 108.8 cm (height z score, −2.68), a body mass index (BMI) of 13.52 kg/m^2 (10th percentile), with normal body proportions and a height velocity 5.1 cm/year. He had fair, thin and sparse hair, thinning of the tail of the eyebrows and brittle nails. Other salient features were the triangular shape of the face, bulging forehead, long and flat philtrum, thin upper lip and large and retroverted ears. In the extremities, there was clinodactyly of the fifth toe and abnormally proximal position of the first toe joints. The patient also exhibited joint hypermobility, with flexible flatfoot and a scoliotic posture in the absence of abnormal vertebral rotation. He had been born to term with a birth weight of 2690 g (7th percentile) and a birth length of 49 cm (28th percentile) and had a personal history of mild global developmental delay and adenoidectomy for treatment of adenoid hypertrophy.

There was no history of consanguinity in the family. The salient findings of the family history were maternal short stature (147.2 cm; <1st percentile; height z score, −2.83) associated with a phenotype similar to that of the patient. The father's height was normal (175 cm; 36th percentile). On interviewing the mother, she reported that there were several members of her family with short stature and similar facial features.

Hormone levels (IGF1, IGFBP3 and thyroid hormones) were normal, and the patient tested negative for markers of coeliac disease. His bone age was delayed by 3 years and the epiphyses of several phalanges were cone-shaped (Fig. 1). Genetic testing with next generation sequencing (NGS) panel of genes involved in bone dysplasias detected a heterozygous pathogenic variant in the *TRPS1* gene (c.333delC, p.Ser112Profs*7, NM_014112), confirming the diagnosis of TRPS type I.

We performed cascade testing in the mother's family, with participation of the mother and 3 male uncles (Fig. 1). Table 1 presents the findings of the history-taking, examination and genetic testing of the family. Both the mother and two of the uncles had a compatible phenotype, and all were found to have the same pathogenic variant of the *TRPS1* gene as the boy, which was not present in the uncle with few compatible features. We observed phenotypic variability within the family (previously reported in the literature[2]), although they shared, to a varying extent, hair and nail abnormalities, the characteristic facial features and the skeletal changes.

Thus, the diagnosis of TRPS is feasible for paediatricians, as it can be reached with the information obtained in the history-taking and physical examination and supported by plain radiography, which allows visualization of the cone-shaped phalangeal epiphyses characteristic of this disease, after which targeted gene sequencing can confirm the presence of changes in the *TRPS1* gene.

Most of the morbidity in these patients is determined by osteoarticular changes, in the form of osteoarthritis with an early onset (chiefly involving the hips, but also other large joints and the hands), abnormalities in joint mobility, articular pain and phalangeal deviation, so early diagnosis of the syndrome makes it possible to manage these complications from an earlier stage. The syndrome is not usually associated with intellectual disability and, when the latter is present,

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