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ORIGINAL PAPER

Leaving Paper Behind: Improving Healthcare Navigation by Latino Immigrant Parents Through Video-Based Education

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Abstract
System barriers to effective healthcare engagement and navigation contribute to healthcare disparities among Latino children with immigrant parents in the US. We evaluated a nine-minute educational video supporting healthcare navigation and engagement skills of Spanish-speaking Latino parents of infants. Participants viewed the video at their child's 2-month well-visit, completed a pre-and post-video knowledge evaluation, and answered open-ended questions on video style. A paired *t* test was used to examine differences in knowledge and open-ended responses were coded using an iterative, consensus-based process. Of the 79 participants, 63.3% had an education level below high school diploma/GED and 84.8% were at risk for limited health literacy. There was a significant gain in healthcare navigation and engagement knowledge after watching the video ($p < 0.001$). Parents expressed that the video was interesting and provided useful information. Parents valued the knowledge gained and preferred videos over written materials for receiving culturally and linguistically tailored health education.

Keywords Limited English proficiency · Latino · Healthcare engagement · Immigrant · Child health

Background

Latinos are the largest US minority and comprise the majority of the 25 million people in the US with limited English proficiency (LEP) [1, 2]. Healthcare disparities among Latino children include disparities in both healthcare access and quality. Compared with non-Latino white children, Latino children are less likely to be insured even when eligible for public health insurance programs, less likely to have visited a physician in the past year and gotten all needed prescription medications, and more likely to have had an emergency department (ED) visit [3–5]. Disparities in healthcare access, quality, and safety are even greater for Latino children in LEP immigrant families. Compared with non-immigrant Latino children, Latino children with immigrant parents are less likely to have a medical home and timely medical care, are more likely to have non-urgent ED visits and compromised medication safety, and their parents report worse communication with providers and greater dissatisfaction with healthcare [6–9]. In qualitative studies, immigrant Latino families provide rich descriptions of repeated frustrating experiences using the healthcare system, some referring to obtaining healthcare for their child as a "battle" [10–13]. Providing support to immigrant Latino families to help them understand and navigate the US healthcare system may reduce healthcare disparities. Evidence-based interventions to support continuous access and effective use of healthcare are lacking, particularly among populations with language barriers and limited health literacy. The goal of this study was to evaluate a Spanish-language educational video to provide immigrant Latino families with information about the US healthcare system and advice for more effective healthcare system navigation. The aims of this study were to: (1) examine healthcare system knowledge gained from viewing the video and (2) explore parents' views on video content, style, length, and cultural appropriateness.

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Methods

Participants

This cross-sectional study was nested within a RCT (ClinicalTrials.gov, NCT02647814) evaluating a multi-modal intervention to support healthcare navigation by immigrant Latino parents of infants. Our study was conducted at an urban, academic general pediatrics clinic in the US that averages approximately 11,000 visits annually. The clinic serves a racially and ethnically diverse patient population of immigrant and non-immigrant families. The clinic's majority patient population is publicly-insured Latino children with LEP immigrant parents. Clinic providers include board-certified pediatricians, resident physicians, and a pediatric nurse practitioner.

Participants recruited were parents/legal guardians (referred to as parents) of Medicaid-insured, singleton US-born infants under 2 months of age. Additional inclusion criteria were: minimum respondent age of 18 years, self-identification of Latino/a, preferred healthcare language of Spanish, and at least one working household cellular phone. Parents of potentially eligible infants were recruited in person at the clinic or via a letter and follow-up phone call. All recruitment and study materials were available in Spanish and were pilot tested for adequate literacy level by native Spanish speakers. Participants completed an enrollment survey, which included a pre-assessment of healthcare system knowledge relevant to parents of infants, in person before the infant was 2 months old (typically during a newborn or 1 month well visit). After enrollment survey completion, allocation to the intervention or usual care arm of the RCT was unmasked to participants to allow for orientation to subsequent intervention components. Randomization was performed by computer random number generation in blocks of ten to balance allocation over time. At the child's 2 month well child visit, intervention group participants viewed the educational video on a tablet computer, completed a post-video assessment of healthcare system knowledge, and responded to open-ended questions about video style and content. Parents viewed the educational video at the 2 month well child visit, rather than after the enrollment survey, because pairing viewing with the baseline survey and orientation to intervention would have negatively affected clinic flow. Members of the Latino family advisory council that partnered with the research team on study design recommended that all initial study activities should be completed in clinic, as they believed this would increase willingness to participate in the study. There was no contact with control participants at the 2 month well child visit, thus participants in this study comprised only the intervention group of the parent RCT.

Enrollment surveys were conducted from February–October 2016. The intervention visits, which included viewing of the video, post-video knowledge assessment, and qualitative video feedback, were completed between March–November 2016. All surveys were orally administered by bilingual research assistants with a written copy available for use by participants if desired. Survey responses were captured simultaneously with survey administration via recording of responses onto a touch-screen tablet computer using research electronic database capture (REDCap) software [14, 15]. Audio recordings of participant video feedback were digitally recorded.

The Institutional Review Board at Johns Hopkins Medicine approved this study. All participants provided informed consent after the consent form was orally read to them and understanding ascertained. Parents received $30 remuneration for the parent RCT enrollment survey and $20 for the video intervention visit.

Video design and production were completed in partnership with a design fellow from the Maryland Institute College of Art (MICA) and the Latino patient/family advisory council for the clinic in which the RCT was conducted. Advisory council members met with the design fellow for three one-hour sessions to inform video design and content. Topics discussed at sessions included desired video content, length, script, character appearances, background music, and cultural appropriateness. The final video was a culturally and linguistically tailored nine-minute Spanish language animated video on healthcare navigation topics prioritized by members of the family advisory council (See video stills for frames, Figs. 1, 2, 3, 4, 5, and 6).

Fig. 1 Opening video frame, official study logo professionally designed in collaboration with community members

Fig. 2 Guiding parents of newborns through answers to most common concerns

Fig. 3 Focusing on healthcare navigation components such as interpretation services and yearly maintenance of insurance

Fig. 4 Encouraging parents to feel comfortable and seek help when needed from any of the clinic providers

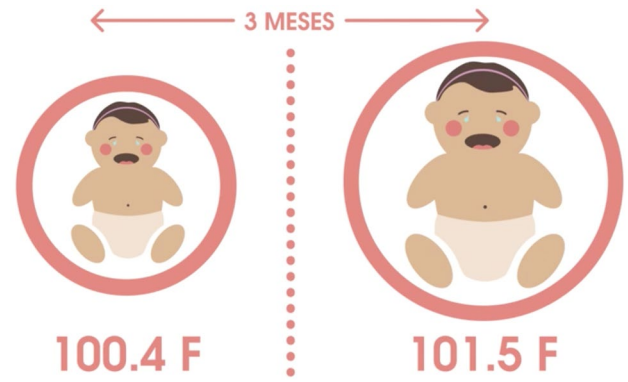

Fig. 5 Guiding parents through fever criteria by infant age

Fig. 6 Summary of resources available discussed in the video

Measures

Participant information obtained during RCT enrollment surveys included: parent age, gender, race/ethnicity, educational attainment, country of origin, length of stay in the US, and English language proficiency. English proficiency was assessed using the US Census Bureau question, "How well do you speak English?" [16]. Family information included number of children in the household and language(s) spoken at home. Parents were asked to report their prior experience using the healthcare system for a US-born child.

We measured respondent health literacy using the Spanish-language version of the Newest Vital Sign (NVS), a valid and reliable tool developed by Pfizer Corporation to screen for low health literacy in clinical settings. Scores on the NVS correspond to three categories of health literacy based on the number of correct answers: Limited (0–1), Marginal (2–3), and Adequate (4–6).

Pre-and post-knowledge assessment questions were a combination of five multiple-choice and true and false questions on (1) fever criteria; (2) public health insurance renewal; (3) right to interpretation during medical

encounters; (4) obtaining an outside care report; and (5) availability of after-hours clinic resources. These topics were ones highlighted in the educational video, and were prioritized for inclusion and assessment by family council members. Spanish-language questions in the survey came from three sources: (1) Spanish-language questions from national surveys including the National Survey of Children's Health and National Health and Nutrition Examination Survey, (2) prior verified translations of questions from other studies by members of the study team or (3) new questions developed by the study team in Spanish for which an independent translator verified accuracy of the Spanish-language. Study team members included native Spanish speakers and bilingual non-native speakers. The survey was pilot-tested with members of the family advisory council.

After knowledge assessment questions, parents were asked open-ended questions regarding their opinions of the video. Question topics included: video style, length, character appearance, cultural appropriateness and relatability, perceived main knowledge gains, whether they planned to use this information in their child's care, and desire to share the information with others. Parents were also asked about their willingness to view similar videos in the future and their preferred method (video, text, paper, email) for receiving health information. Responses to the questions were audio recorded to allow for narrative qualitative analysis.

Analysis

Parent and child characteristics were assessed using means and percentages. A paired *t* test was used to examine differences in mean knowledge score in the pre-and post-video assessments. All statistical analyses were conducted using STATA/SE Version 15.1 (StataCorp LP, College Station, TX).

Narrative qualitative data analysis was completed using Dedoose, an online qualitative and mixed-methods analytics program [17]. An inductive process was used to identify preliminary themes in the narratives regarding video opinions. The coding team (DVA, KQ, LRD) developed a codebook based on these themes and used an iterative consensus process to determine a clear definition of codes and consistent application by all coders. During initial development and use of the codebook, five transcripts were coded by all three coders to ensure consistent use of codes. The remaining transcripts had one primary coder and one secondary verification coder. We used established methods for addressing differences in coding by addressing all coding discrepancies and reconciling them with discussion and consensus [18, 19].

Results

Of the 157 low-income parent/child dyads enrolled in the parent RCT, 79 parent/child dyads participated in this study. As shown in Table 1, the mean age for parents was 30.1 years (SD 6.05y) and a mean number of 7.5 years in the U.S. 97.5% of parents reported limited English proficiency and 63.3% had an education level below high school diploma or GED. 84.8% of parents were at risk for limited health literacy based on the Newest Vital Sign (Score < 3/6). Knowledge scores significantly improved after viewing the educational video (Table 2). The mean pre-video score for the five-question evaluation was 2.9, which was not statistically different than the knowledge scores for the control group of the parent RCT ($p = 0.51$). The mean post-video score was 4.3 ($p < 0.001$). Performance on all individual questions improved after viewing the video, with knowing appropriate fever criteria based on child age having the greatest improvement (46.8–96.2% correct).

Video Style and Design

Parents had positive comments regarding the animated style of the video, stating that animation was preferred to real

Table 1 Parent characteristics

Characteristic	*n* = 79
Parent age	
Mean (SD)	30.1 (6.05)
Parent education	
8th grade or less	27 (34.18%)
Some high school	23 (29.11%)
High school or above	29 (36.71%)
Parent country of origin	
Mexico	18 (22.78%)
El Salvador	22 (27.85%)
Honduras	22 (27.85%)
All other Latin American countries	17 (21.52%)
Parent years in US	
Mean (SD)	7.5 (5.1)
Parent English proficiency	
Limited English proficiency	77 (97.47%)
Birth history	
Primigravida	19 (24.05%)
Multigravida, first US born child	14 (17.72%)
Multigravida, prior US born children	46 (58.23%)
Parent health literacy (newest vital sign)	
High likelihood of limited literacy (0–1)	36 (45.57%)
Possible limited literacy (2–3)	31 (39.24%)
Adequate literacy (4–6)	12 (15.19%)

Table 2 Knowledge assessment performance pre and post video

	Pre-video $n=79$	Post-video $n=79$	p value
Knowledge assessment evaluation question			
When do you need to renew your child's health insurance?	31.7%	79.8%	<0.001
Do patients and their family have a right to an interpreter even if the doctor or nurses do not have one?	88.6%	100%	0.002
Does the clinic offer help and advice during the nighttime and weekends?	39.2%	74.7%	<0.001
For a child that is younger than 3 months old, at what temperature would you consider that he/she has a fever?	46.8%	96.2%	<0.001
If your child is seen at an emergency room, can you ask for a visit summary report to bring to your regular pediatrician?	88.6%	100%	0.002
Overall performance			
Mean (SD)	2.9 (0.9)	4.3 (1. 1)	<0.001
Median (range)	3 (1, 5)	5 (0, 5)	

people for a video delivering health information regarding their child. The cultural appropriateness of the video was deemed very important by parents, often stating that they appreciated the relatable character appearances, inclusion of extended family members as characters (e.g. grandma), and attention to detail including the baby's hair, skin tone, and clothing (Table 3, Quotes 1–3). Parents stated that nine minutes was appropriate and that they would view a longer video if it provided additional useful information. Parents commented that their willingness to watch a longer video often stemmed from their desire to be a better parent and fulfill a sense of parental duty.

Table 3 Parent quotes on opinions of video

Spanish	English translation
Video style and design	
Quote 1: "Los colores llaman la atención… nos gustó la animación, estaba divertido"	Quote 1: "The colors grab your attention, we liked the animation, it was entertaining"
Quote 2: "Me gustaron los personajes del video, todo era muy… como muy Latino"	Quote 2: "I liked the characters in the video, everything was very… very Latino"
Quote 3: "Todo estaba muy bonito y curioso, me gusto que incluso los personajes eran de un color que se parece a los Hispanos…"	Quote 3: "Everything was very pretty and cute, I liked that the characters were even a color that looked like they were Hispanic"
Knowledge gained	
Quote 4: "Yo no sabía que podía llamar a la enfermera, eso es algo muy importante porque a veces uno espera a tener cita en la clínica para venir para saber algo o uno busca cosas en internet y eso en veces no es la mejor opción. Entonces esto me parece genial"	Quote 4: "I didn't know you could call the nurse line. That is really important because sometimes one waits to have an appointment at the clinic to know what to do or one looks up things on the internet and that isn't the best option sometimes. So this is really great"
Quote 5: "Aprendí acerca de la temperatura. Casi siempre toda mi vida, yo tengo cuatro hijos y siempre he estado no muy segura de cuanto es fiebre"	Quote 5: "I learned about fevers. Almost all my life, I have 4 kids and I have never really been sure what temperature is a fever"
Importance of video content	
Quote 6: "Siento que aprendí como mama- es importante para mi **saber** esto para poder cuidar de mis hijos"	Quote 6: "I feel like I learned more as a mom- it's important for me to know this so I can take care of my kids and their care"
Quote 7: "Es bueno saber que uno no está solo…. con esta información sé que hacer y como pedir ayuda"	Quote 7: "It's good to know you're not alone… with the information here, now I know what to do and how to ask for help"
Preferred education delivery method	
Quote 8: "No me gustan los papeles. Últimamente hasta los pierdo, tengo así de papeles y luego este ya no sirve, pasan los meses y digo ya no debe de servir entonces los tiro todos… demasiados papeles… me aburren"	Quote 8: "I don't like papers. Lately, I lose them. I have this many papers and then one isn't good anymore and then more months go by and I think this one must not be good now so I throw them out… too many papers… they're boring"
Quote 9: "**Sí** me gustan los folletos pero es más practico leer por el internet que en los folletos porque uno pasa más tiempo pegado en el teléfono verdad. Luego se nos olvidan los folletos"	Quote 9: "Papers are okay, but it's more practical to read [information] through the internet or something instead of through papers, since we're always glued to our phones anyway, right? And we forget the papers"

Knowledge Gained

When asked about knowledge gained, parents most often mentioned learning about the availability of a nurse phone line, child fever criteria, rights to interpretation, and yearly renewal of child's insurance (Quotes 4–5). Comments centered on the importance of knowing what to do when their child is sick and first people to call (Quote 4). Parents mentioned they were most likely to share the knowledge gained from the video with their partner and family members.

Importance of Video Content

A common initial comment on the general impression of the video was the importance of the content included (Quote 6). Parents discussed the difficulty of receiving resources in a foreign language and the meaningfulness of having resources tailored to their community. The video contributed to parents' feelings of confidence when navigating the healthcare system, and reinforced the idea that they are not alone in the care of their children (Quote 7).

Preferred Education Delivery Method

Parents commented on their preference for receiving health education through a method other than paper materials. Comments centered on being provided too many papers and often not taking the time to read them due to the overwhelming amount, lack of time, and documents often being in English (Quote 8). Parents found video education to be more practical, engaging, and often easier to understand than reading a piece of paper (Quote 9). Furthermore, animated videos were considered entertaining for both the parents and older children.

Discussion

A culturally and linguistically tailored educational video increased healthcare system and navigation knowledge among Spanish-speaking immigrant Latino parents who also had positive opinions of video content and style. Significant knowledge was gained in all five domains of healthcare system information and navigation covered by the video: insurance renewal, patient rights to language access, nurse phone line availability, assessing a sick child, and seeking urgent care. Parents valued the knowledge gained, expressed a willingness to share the knowledge with others, and emphasized the importance of delivering healthcare information in their preferred healthcare language in a way that is easy to understand. Parents preferred videos over paper documents as a medium for receiving tailored health information and expressed a need for additional similar educational resources.

The cultural appropriateness of our video was achieved through a partnership with community members whose feedback was integral in every step of video design. Without the input of community members during the formative phase of the intervention, vital feedback on feasibility of video implementation would have been missed. Interventions developed in partnership with the community have the potential to play an important role in advancing healthcare equity for disadvantaged populations [20]. Health communication efforts with Latino families should consider cultural traditions, acculturation, country of origin and language [21]. Our study design of using previously established community relationships via a clinic advisory council provides an example model for ensuring a strong partnership with community members that results in a product that is relevant to the target population.

Our participants' gain in healthcare system and navigation knowledge is notable given that navigating the US healthcare system remains challenging for Latino immigrant parents [22]. Previous studies have developed culturally-tailored technology-based interventions aimed at increasing knowledge in specific medical conditions among diverse populations [23], but there is limited research on healthcare navigation interventions. More research is needed on how to best support an improved understanding of the US healthcare system by immigrant Latino parents and how to remove barriers to effective health system navigation. Meaningfully engaging immigrant Latino families in improvement work could result in patient-centered care improvements that reduce healthcare disparities for Latino children, thereby decreasing both the preventable harms and increased costs that may result from these disparities.

Projections that the Latino child population will be 35% of the total population in 2050 [24] highlight the need for additional research on developing a systematic process to disseminate culturally tailored healthcare navigation education to immigrant Latino parents that is incorporated into standard healthcare clinic workflow. This educational video provides one option, as it is short, generalizable, and easily tailored to a specific practice. The length of the video allows for potential viewing on a clinic computer or mobile device during clinic downtime before being roomed or while waiting for the physician. A shareable link could allow parents to view the video on their own device in clinic or at home.

Advances in health information technology bring promise for helping eliminate health disparities by improving access and quality of healthcare for diverse populations [25]. Many root causes of health disparities can be feasibly targeted through health information technology, such as not having access to culturally and linguistically tailored

education materials, lack of interpretation services, and difficulties navigating the complexities of the healthcare system [3, 22]. The success of health information technology in reducing health disparities is contingent on acknowledging the presence of a digital divide for technology-based education [25]. Immigrant patients, for example, have traditionally had lower rates of internet access at home making it difficult for them to access healthcare communication and educational resources that require the use of a computer [26, 27]. Although computer usage has been lower among Latinos, recent data from 2015 has found that more Latinos report using mobile internet on a regular basis when compared to whites, 94% vs 87% [27]. The rise in mobile internet usage by Latino patients provides an opportunity to successfully deliver healthcare information on a large scale. The desire to move beyond traditional paper education and have access to more educational videos combined with increased mobile internet access can help mainstream patient education and improve ease of access to reliable health information.

Limitations

This study is not without certain limitations. First, our study population consists of a small sample from a single site that may not be representative of other pediatric outpatient settings. Our sample included parents from a wide range of ages and countries of origin, however, which supports generalizability to a wider Latino population. Second, although parents completed a baseline knowledge assessment, they may have been exposed to information contained in the video in other venues between the time of baseline knowledge assessment and viewing the video. Although this possibility exists, parents often referenced the part of the video where that specific information was addressed when answering the post-video knowledge questions. Additionally, parents commented on the information in the video not being available anywhere else in their healthcare experience, in particular when discussing fever criteria. Of note, this information is routinely included in written Spanish-language newborn discharge instructions provided by the health system where this study took place. Third, we did not assess knowledge retention over time or healthcare utilization and outcomes in this study. This will be a focus of future study. Fourth, there was no contact with the control group of the parent RCT when the intervention group viewed the video, limiting our ability to compare knowledge between the groups. Finally, there were limited negative comments about the video. Parents may have felt uncomfortable providing constructive feedback with a member of the study team and/or while being recorded.

New Contribution to the Literature

The knowledge gained through the video in this study, positive parent response to video content, and desire for additional similar educational resources supports the promise of culturally tailored video education as a means to deliver healthcare knowledge to low-income immigrant Latino families. Our sample was primarily immigrant parents with limited health literacy, yet there were significant gains in short-term knowledge in core areas related to effective healthcare system navigation and use during infancy. Though health and healthcare disparities are "pervasive and persistent" our study suggests that it is possible to overcome language, cultural, and health literacy barriers and provide immigrant Latino parents with useful and effective video-based education. As interest in video-based patient education and the capacity of electronic health records to incorporate this information for patient distribution increase, it is critical that particular attention is paid to developing education for populations at risk of health and healthcare disparities. A lack of attention to patient-centered education that meets their needs and preferences may result in a widening of the emerging healthcare digital divide and exacerbate disparities.

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References

1. US Census Bureau. 2010 Census briefs: the Hispanic population 2010. https://www.census.gov/prod/cen2010/briefs/c2010br-04.pdf. Accessed 31 Oct 2018.
2. U.S. Census Bureau. Language spoken at home: 2010 American Community Survey 1-year estimates. https://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_10_1YR_S1601&prodType=table. Accessed 31 Oct 2018.
3. Flores G. Committee on pediatric research. Technical report—racial and ethnic disparities in the health and health care of children. Pediatrics. 2010;125:e979–e1020.
4. Flores G, Olson L, Tomany-Korman SC. Racial and ethnic disparities in early childhood health and health care. Pediatrics. 2005;115:e183–e193193.
5. Flores G, Tomany-Korman SC. Racial and ethnic disparities in medical and dental health, access to care, and use of services in US children. Pediatrics. 2009;121:e286–e298298.
6. Flores G, Tomany-Korman SC. The language spoken at home and disparities in medical and dental health, access to care, and use of services in US children. Pediatrics. 2008;121:e1703–e17141714.
7. DeCamp LR, Choi H, Davis MM. Medical home disparities for Latino children by parental language of interview. J Health Care Poor Underserved. 2011;22:1151–66.
8. Kubicek K, Liu D, Beaudin C, et al. A profile of nonurgent emergency department use in an urban pediatric hospital. Pediatr Emerg Care. 2012;28:977–84.

9. Ngui EM, Flores G. Satisfaction with care and ease of using health care services among parents of children with special health care needs: the roles of race/ethnicity, insurance, language, and adequacy of family-centered care. Pediatrics. 2006;117:1184–96.
10. Flores G, Abreu M, Brown V, Tomany-Korman SC. How Medicaid and the State Children's Health Insurance Program can do a better job of insuring uninsured children: the perspectives of parents of uninsured Latino children. Ambul Pediatr. 2005;5:332–40.
11. Clark L, Redman RW. Mexican immigrant mothers' expectations for children's health services. West J Nurs Res. 2007;29:670–90.
12. Clark L. Mexican-origin mothers' experiences using children's health care services. West J Nurs Res. 2002;24:159–79.
13. Decamp LR, Kieffer E, Zickafoose JS, et al. The voices of limited English proficiency Latina mothers on pediatric primary care: lessons for the medical home. Matern Child Health J. 2013;17:95–109.
14. Yu SM, Huang ZJ, Schwalberg RH, et al. Parental English proficiency and children's health services access. Am J Public Health. 2006;96:1449–555.
15. Flores G, Ngui E. Racial/ethnic disparities and patient safety. Pediatr Clin N Am. 2006;53:1197–215.
16. Flores G, Abreu M, Barone CP, Bachur R, Lin H. Errors of medical interpretation and their potential clinical consequences: a comparison of professional versus ad hoc versus no interpreters. Ann Emerg Med. 2012;60:545–53.
17. Dedoose Version 7.0.23, web application for managing, analyzing, and presenting qualitative and mixed method research data. Los Angeles, CA: SocioCultural Research Consultants, LLC; 2016. www.dedoose.com.
18. Patton M. Qualitative evaluation and research methods. 3rd ed. Thousand Oaks, CA: Sage; 2002.
19. Barbour RS. Checklists for improving rigour in qualitative research: a case of the tail wagging the dog? BMJ. 2001;322:1115–7.
20. O'Mara-Eves A, Brunton G, Oliver S, Kavanagh J, Jamal F, Thomas J. The effectiveness of community engagement in public health interventions for disadvantaged groups: a meta-analysis. BMC Public Health. 2015;15(1):129.
21. Elder JP, Ayala GX, Parra-Medina D, Talavera GA. Health communication in the Latino community: issues and approaches. Annu Rev Public Health. 2009;30:227–51.
22. Steinberg EM, Valenzuela-Araujo D, Zickafoose JS, Kieffer E, DeCamp LR. The "Battle" of managing language barriers in health care. Clin Pediatr (Phila). 2016;55(14):1318–27.
23. Jacobs JR, Caballero J, Ownby RL, et al. Development of a culturally appropriate computer-delivered tailored internet-based health literacy intervention for Spanish-dominant Hispanics living with HIV. BMC Med Inform Decis Mak. 2014;14:103.
24. Passel JS, Cohn DV, Lopez MH. Census 2010, 50 million Latinos: Hispanics account for more than half of nation's growth in past decade. Washington, DC: Pew Research Center; 2011. https://www.pewresearch.org/wp-content/uploads/sites/5/reports/140.pdf. Accessed 1 Nov 2018.
25. López L, Green AR, Tan-McGrory A, et al. Bridging the digital divide in health care: the role of health information technology in addressing racial and ethnic disparities. Jt Comm J Qual Patient Saf. 2011;37:437–45.
26. Fox S, Livingston G. Latinos online: Hispanics with lower levels of education and English proficiency remain largely disconnected from the internet. Washington, DC: Pew Research Center; 2007. https://www.pewhispanic.org/files/reports/73.pdf. Accessed 1 Nov 2018.
27. Brown A, Lopez G, Lopez MH. Digital divide narrows for latinos as more spanish speakers and immigrants go online. Washington, DC: Pew Research Center; 2016. https://www.pewhispanic.org/2016/07/20/3-hispanics-and-mobile-access-to-the-internet/. Accessed 31 Oct 2018.