



# Indigeneity, diversity, and equity in Internet interventions: Could ISRII contribute to making health care a universal human right?



Ricardo F. Muñoz<sup>a,b,\*</sup>, Blanca S. Pineda<sup>a</sup>, Jazmin A. Llamas<sup>a</sup>

<sup>a</sup> Institute for International Internet Interventions for Health (i4Health), Palo Alto University, Palo Alto, CA, USA

<sup>b</sup> University of California, San Francisco, USA

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## ABSTRACT

This article is a partially revised version of a keynote address presented at the 10th Scientific Meeting of the International Society for Research on Internet Interventions (ISRII) in Auckland, New Zealand. It addresses six points: 1) the meanings of indigeneity, diversity, and equity, 2) the strong emotional reactions elicited by the inequities experienced by indigenous groups throughout the world, 3) the aspirations of members of ISRII in terms of what we would like our field to accomplish to address these inequities, 4) the United Nations goal of making health care a universal human right, 5) the difficulties encountered by other health sciences in attempting to include diverse populations into major studies, and 6) ways in which the Internet interventions and digital health field could include indigeneity, diversity, and equity in our work, and by doing so, contribute to the United Nations goal of making health care a universal human right. The authors suggest that providing access to health care to all people, no matter where they are on the socioeconomic continuum, is a key strategy to pursue. The field of Internet interventions could contribute by creating digital apothecaries that would develop, evaluate, and disseminate evidence-based Massive Open Online Interventions to anyone in the world who needs them.

## 1. Introduction

The 10th scientific meeting of the International Society for Research on Internet Interventions (ISRII) took place in Auckland, New Zealand, February 13–15, 2019. Hosted by the University of Auckland, it was dubbed “ISRII: The Next Generation.” Its first theme was “Indigeneity, diversity & equity in Internet interventions.” The first author was invited to give one of the keynote presentations. This paper is a summary and extension of the main points made in the presentation, and purposefully retains some of the informality of the talk as given.

The purpose of the talk was to delve into the concepts of indigeneity, diversity, and equity and how the field of Internet interventions could incorporate them as it develops. In addition, the authors posed the question of whether by incorporating these concepts into our work, ISRII could contribute to the goal of making health care a universal human right. The talk presented six points: 1) The meanings of indigeneity, diversity, and equity; 2) how grappling with this topic is bound to elicit strong personal emotions that go beyond mere academic engagement; 3) making explicit the aspirations of our organization, that is, what we would like our field to accomplish; 4) the proclamation of

the United Nations setting the goal of health care as a human right; 5) the difficulties encountered by other health sciences in attempting to include diverse populations into their studies; and 6) brainstorming ways in which our field could include indigeneity, diversity, and equity in our work moving forward, and, by doing so, contribute to the United Nations goal of health care as a universal human right.

## 2. Meanings and emotions

### 2.1. Indigeneity

The following three definitions helped us make explicit the concept of indigeneity: Canessa (2007), in an article titled “Who is indigenous?” makes two key points: “...the first is understanding indigenous people primarily in terms of their being descended from pre-Conquest or pre-colonial peoples; and the second is the issue that self-definition is a key component in indigenous identity” (p. 204). Saugestad (2001), in a book titled “The Inconvenient Indigenous”, mentions the most common criteria about indigenous people: first come (they were there before the dominant group); non-dominance (they do not control the

\* Corresponding author at: Institute for International Internet Interventions for Health (i4Health), Palo Alto University, 1791 Arastradero Road, Palo Alto, CA 94304, USA.

E-mail address: [rmunoz@paloaltoou.edu](mailto:rmunoz@paloaltoou.edu) (R.F. Muñoz).

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government); cultural difference; and self-ascription (they perceive themselves as different from the majority) (p. 43). And the [United Nations \(n.d.\)](#) adds that “Indigenous peoples are inheritors and practitioners of unique cultures and ways of relating to people and the environment. They have retained social, cultural, economic and political characteristics that are distinct from those of the dominant societies in which they live” (para. 1). These definitions assume that indigenous people are not dominant in their country. However, there are some countries in which indigenous people have regained control of the government. For example, the Independent State of Samoa, gained its independence from New Zealand in 1962 (“[Permanent Mission of the Independent State of Samoa to the United Nations](#)”, n.d.) and Tonga became a fully independent nation within the Commonwealth in 1970 ([Foster and Latukefu, 2019](#)).

There are approximately 370 million indigenous peoples living in over 90 countries worldwide ([The World Bank, 2018](#)). Unfortunately, “Indigenous peoples remain on the margins of society: they are poorer, less educated, die at a younger age, are much more likely to commit suicide, and are generally in worse health than the rest of the population” ([The International Work Group for Indigenous Affairs, 2006](#), p. 10). The social injustice inherent in this state of affairs elicited emotions in us that go beyond mere intellectual engagement, particularly because all three coauthors have both indigenous ancestors and ancestors who were members of the major colonial powers who took over their lands.

As we experienced these emotions, we found three concepts in [Fukuyama's \(2018\)](#) book “Identity: The demand for dignity and the politics of resentment” that helped us understand the sources of these strong feelings. The first term comes from the Greek word “thymos”, that is “the part of the soul that craves recognition of dignity” (p. xiii). Fukuyama then coins the word “isothymia”, to represent “the demand to be respected on an equal basis with other people” (p. xiii) and “the drive to be seen as ‘just as good’ as everyone else” (p. 22). He also coins the word “megalothymia”, which is “the desire to be recognized as superior” (p. xiii). Isothymia is clearly the goal of every human being who aspires to social justice. Megalothymia is often exhibited by those in power, who believe that their wealth and political ascendancy is proof that their race and culture is superior to that of the indigenous people they have oppressed.

One way our field can address the need of indigenous peoples to be respected and be seen as good as everyone else is to support isothymic trainees from diverse groups who are committed to serving those groups. [Fisher et al. \(2019\)](#) suggests ways in which underrepresented minority and women doctoral students can succeed in STEM (Science, Technology, Engineering, and Math) fields. For example, include organizational interventions at the local level; these include providing a clear structure and expectations to help alleviate the distress that some underrepresented students feel about not being well prepared for graduate level work. “Doctoral programs are often highly unstructured learning and training environments, where individual autonomy and freedom are highly valued. Decisions as to what counts as a good idea, a worthwhile project, or adequate progress are often left to the discretion of professors, and criteria for success can be opaque for students” ([Fisher et al., 2019](#), p. 12). Additionally, providing mentorship to underrepresented students by faculty and staff that identify with underrepresented groups is important to provide guidance through the difficulties of graduate school and provide support to overcome barriers (e.g. systemic, social, personal) these students may face.

## 2.2. Going beyond mere intellectual engagement

The three co-authors are examples of members of underserved populations who have entered doctoral level professional fields. All three of us have a strong commitment to serving Latin American populations in the U.S. We believe this commitment comes from our personal backgrounds. The first author immigrated from Perú to the United States when he was ten, the second author immigrated from Guatemala

when she was 15, and the third author was born in the U.S. from Mexican and Salvadorian parents. The three of us identify as *mestizos*, that is, individuals of mixed indigenous and European ancestry. As in the case of most *mestizos*, after over 500 years of the melding of European and indigenous peoples from the New World, we do not know what proportion of each we have. The first author (RFM) actually engaged in genetic testing and found that his major ancestry (about 40%) is native American, mainly from Cuzco, the area of Perú that was the capital of the Inca Empire. In addition, he has Spanish, English, and Chinese ancestry, as well as smaller proportions of other Asian, African, Arabic, and Jewish ancestors.

Although he is primarily indigenous genetically, the Quechua language and most cultural practices were stripped away from his family by the time he was born. Nevertheless, in order to share a glimmer of their perspective, he shared a song in the form of a video with the audience. To obtain the context of the video, the reader should know that all Peruvian children learn that the Spanish invaded the Inca Empire in 1532 led by Francisco Pizarro. They captured the Inca leader, Atahualpa, and demanded ransom in gold and silver for his freedom. Once they had obtained the ransom, they killed him anyway. Indigeneity is not a foreign concept for most Peruvians, because the indigenous population is the largest ethnic group in the country. Currently, 45% of the nearly 33 million Peruvians are indigenous (vs., for example, only 2% of the U.S. population). There are 51 indigenous peoples in Perú (about 15 million), of whom 8 million identify as Quechua, and 4.5 million speak Quechua. The next largest ethnic group, representing 37% of the population are mestizos. And 15% are of European descent, with 3% being Afro- or Asian-Peruvians.

The song “Cholo Soy (I am a Cholo)” by Luis Alberto Morales ([https://youtu.be/DCBya\\_xLWmk](https://youtu.be/DCBya_xLWmk)) is based on the poem “No me compadezcas (Do not pity me)” by Boris Elkin. It captures the sentiments of oppression and inequality that indigenous people feel in Perú. There are three definitions that can help you understand this song. First, in Perú, indigenous people from the Andes are called “**cholos**” (note that in the U.S., the word “cholo” has taken on other meanings). This word is often used as a term of endearment among Peruvians, but it can also be used as a strong insult. Second, “**puna**” are grasslands in the high Central Andes above 3200–3400 m. And “**quena**” is the traditional flute of the Andes.

After the presentation, several members of the audience mentioned to the speaker how the song elicited powerful emotional reactions in them. One indigenous member from Australia told the speaker: “that song is my life.”

## 2.3. Diversity

Indigeneity, which refers to peoples whose lands were taken over by colonial powers, is but one example of diversity. But diversity also includes people who are different from the predominant groups in any community, including the growing number of immigrants who are new to their adopted countries. Addressing diversity includes finding means to give them access to the same health resources that people in the dominant culture have.

When we talk about diversity in the U.S., we generally refer to people of various genders, races, ethnicities, ages, literacy, sexual orientations, religions/spirituality, political persuasions, social status, and persons with disabilities. In psychology training programs, the ADRE-SSING (A = age and generational influences, D = disability, R = religion, E = ethnicity, S = social status, S = sexual orientation, I = indigenous heritage, N = national origin, G = gender) model of diversity ([Hays, 1996](#)) is often used to help counselors and educators examine their own biases and areas of inexperience when working with individuals who come from minority cultures and groups. The concept of “intersectionality” is being increasingly recognized in the U.S., that is, the fact that people who belong to more than one diverse group may have a hard time feeling accepted by each of them. For example, a

woman who is Latina and bisexual may have to navigate difficult paths in each of these communities, having to be careful when bringing up minority concerns in a women's group in which most members are white, or feminist issues in Latinx groups for fear of being accused of criticizing Latino men, or not feeling fully accepted by either heterosexuals or gay or lesbian groups.

A note on the evolution of the word “Latino” illustrates how we are attempting to respond to the issue of intersectionality. In the U.S., the word “Latino” refers to people of Latin American origin. “Hispanic” refers to people of Spanish cultural heritage, including both people from Latin America and people from Spain. In the 1960's, the word “Latino” (the masculine form, in Spanish) was intended to include both males and females. In support of non-sexist language, we began using the term “Latino/a” to specifically include both males and females. Eventually, the term “Latin@” became common, to include both males and females simultaneously. More recently, the term “Latinx” is being adopted to include individuals who are gender-neutral, gender non-binary, gender fluid, gender non-conforming, transgender, as well as cisgender.

The value of addressing diversity is reflected in the many U.S. studies that include participants from usually underrepresented groups. Estrada et al. (2018) studied the effects of an evidence-based preventive intervention that was adapted as an online intervention called “eHealth Familias Unidas” (Perrino et al., 2018) to help Hispanic youth reduce substance use and sexual risk behaviors. Bansa et al. (2018) studied the implementation of an internet primary care depression prevention intervention for African American and Hispanic youth. Steinwachs et al. (2011) studied how a web-based program could help participants with schizophrenia to effectively use the sessions they had with their therapist (68% of the participants were African American). There is also ongoing research on promoting dissemination and engagement of technologies among underserved populations to address mental health care disparities (Davidson et al., 2019). Efforts such as these to address diversity in the U.S. and other countries around the world should be acknowledged and supported.

#### 2.4. Equity

Marmot (2007), in his article on “Achieving health equity” states that “All societies are stratified along lines of ethnicity, race, gender, education, occupation, income, and class. Health inequities result from unequal distribution of power, prestige, and resources among groups in society... Although at very different stages of economic development, the differentiation of certain groups—be it by gender, caste, education, place, or income—is key to the way health inequity is generated” (p. 1159). Given that there will always be people higher and lower on any economic or educational dimension, is inequity inevitable? If this is indeed the case, the goal of eradicating social inequity seems unreachable. What then should be our goal? It seems to us that a reasonable goal is equity in terms of *access and outcomes*. Our goal should be to provide access to health care to all people regardless of where they fall on any dimension. But equal access alone is not sufficient. We should evaluate whether different cultural groups utilize and respond to treatments at the same rate and adapt these treatments as necessary to meet the needs of diverse populations.

For example, when working with the indigenous people of New Zealand, Reid et al. (2017) “argue for greater engagement with responsiveness to Māori activities as part of our commitments to achieving equitable health outcomes” (p. 96). Reid et al. (2017) also suggests that an equity-based approach about responsiveness to Māori includes four areas; relevance to Māori, Māori as participants, promoting Māori voice, and respecting Māori values regarding human tissue (such as blood and genetic samples). In terms of relevance, the key points are: (A) Consultation - a two-way respectful conversation about what Māori want or need. (B) Dissemination - developing research relationships and review results for further discussion, action,

and dissemination to larger Māori audiences. (C) Relationships - respectful mutual interactions with Māori individuals and communities to share processes and resources. (D) Workforce development - “actively recruit Māori students, researchers and support staff, and ensure that these individuals are supervised and mentored in a culturally safe environment” (p. 98). (E) Theoretical space - researchers who are non-Māori should consider ways to support Māori researchers and their students as they contribute to the advancement of Kaupapa Māori theory and research, which is strongly influenced by Māori culture.

An anonymous reviewer suggested that our field should consider going beyond equity of access and equity of outcomes and the ideal goal ought to encompass the Māori concept of “rangatiratanga”, which connotes independence, sovereignty, self-determination, and self-management (Māori Dictionary, n.d.). We understand this to mean that, ideally, indigenous and diverse populations groups ought not to be forced to accept services imposed by the dominant groups in their location, but rather be free to choose the services that are consonant with their values. We would add that, to be able to choose freely, any group or individual ought to have whatever information is available on health issues, outcome data on preventive and treatment services, and risks and benefits of existing interventions.

The reviewer's suggestion brought up the following issue: members of diverse groups (such as the authors of this article) may have been “acculturated” to the dominant concepts and values of our professions, in this case, western ways of perceiving and measuring reality, such as accepted measures of health, pathology, and quality of life. This brings up a massively complex line of inquiry. We are aware for example, of the irony of Latinx professionals in the U.S. advocating for increases in services in Spanish, which is itself a colonial language.

To avoid becoming immobilized by these valid but intractable dilemmas, we need to develop practical methods to cut the Gordian knot. Our goal is to help people by reducing unnecessary suffering and helping them lead healthy and satisfying lives. The practical reason for advocating for Spanish-language services in the U.S. is because currently there are approximately 59.8 million Latinx individuals living in the United States (U.S. Census Bureau, Population Division, 2019), making the U.S. the country with the second largest number of Latinx individuals after Mexico. Approximately 42 million are Spanish-speaking (Fernández Vítóres, 2018). Limiting services to English effectively deprives this ethnic group from access to care. Similarly, the practical reason we should develop, evaluate, and disseminate digital interventions to help Spanish-speaking people stop smoking is because smoking is the number one preventable cause of death in the world (Centers for Disease Control and Prevention, 2019). The reason we should develop digital interventions to prevent and treat depression in Spanish-speaking populations is because depression is the number one cause of disability worldwide (World Health Organization, 2018c). There are 436 million Spanish-speaking people worldwide (Julian, 2019).

Equity involves providing all peoples an equal opportunity to achieve health. That should be our guiding principle.

#### 3. Aspirations

According to the official ISRII website, our members are “committed to fostering excellence in evidence-based eHealth interventions” (<http://isrii.org/>). One of the advantages of digital interventions is their scalability. There are many projects by ISRII members that have served people from all over the world (e.g., Christensen and Griffiths, 2010; Muñoz et al., 2012; Muñoz et al., 2009, 2006, 2014).

In terms of aspirations for our field, what is it that we would like to accomplish? If we are successful, what would our digital interventions look like? What could we contribute to the world? What would be our outcomes? Would there be an impact on population incidence and prevalence? Whom do we want to reach?

As we proceed, there are many decisions to be made on prioritizing

our efforts.

For example, should we focus on languages with the most speakers? The top ten languages spoken in the world by native speakers include: Mandarin Chinese, Spanish, English, Hindustani, Arabic, Bengali, Portuguese, Russian, Malay, and French (Julian, 2019). There are 3 billion native speakers of these languages. If we include total speakers (adding those who have learned these as second languages) we could reach 4.8 billion people out of 7.7 billion people on earth with these ten languages (Worldometers, 2019). By creating interventions in these languages, we would be able to reach 62% of people worldwide. As an example, Yan Leykin in our i4Health group is currently working on a Mood Screener project (Leykin et al., 2012; Liu et al., 2014; Rutter et al., 2016) that now focuses on five of the top ten languages spoken (Mandarin Chinese, Spanish, English, Arabic, and Russian).

But focusing on only the most common languages would mean ignoring most of the languages spoken by indigenous peoples. Addressing all current languages would be a daunting task. There are over 7000 languages spoken in the world. It is estimated that a third of those languages have fewer than 1000 speakers, and up to 90% of the world's languages may disappear before the year 2100 (timeanddate.com, 2019). While admitting that addressing all possible languages is more than likely an impossible task, we could still set as a goal to recruit and encourage members of minority cultural and linguistic groups, who are committed to serving those groups, to develop digital interventions. For example, Siri Vivek, a doctoral student at Palo Alto University presented a poster at ISRII 2019 on a project to develop a language-based Internet intervention for depression for Kannada speaking adults in India (Vivek and Muñoz, 2019). Kannada is one of the classical languages in India, it is spoken by approximately 45 million people.

#### 4. United Nations proclamations

ISRII could set as one of its explicit goals to support the 1948 U.N. Declaration of Human Rights (United Nations, 1948, <http://www.un.org/en/universal-declaration-human-rights/index.html>). Article 25 stated: "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control" (United Nations, 1948). In 1948, medical care was done primarily by physicians and nurses. In the 21st Century, psychologists and other mental health professionals are considered health care providers also. We, too, can be part of this effort. And Internet and other digital interventions will gradually become a growing element within health care. ISRII members could set as a goal making these evidence-based interventions accessible to all people (Muñoz, 2019).

In 2007, the United Nations issued its Declaration on the Rights of Indigenous Peoples (United Nations, 2007, [https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP\\_E\\_web.pdf](https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf)). Article 24 stated: "1. Indigenous peoples have the right to their traditional medicines and to maintain their health practices, including the conservation of their vital medicinal plants, animals and minerals. *Indigenous individuals also have the right to access, without any discrimination, to all social and health services* [emphasis added]. 2. Indigenous individuals have an equal right to the enjoyment of the highest attainable standard of physical and mental health. States shall take the necessary steps with a view to achieving progressively the full realization of this right" (p. 18).

ISRII members could support this U.N. declaration by committing to ensuring that indigenous communities have the right to access our Internet and other digital interventions, and by reporting rates of utilization as well as outcomes for these communities.

How can ISRII contribute to this goal? By focusing on what we do well, namely, developing, evaluating, and disseminating psychological and other behavioral health interventions that can be administered via

the Web, apps, wearables, and digital tools that are yet to be imagined. We can commit to making these digital interventions available to all.

Health care coverage varies across countries. At least half of the world's population lacks full health coverage. There are large inequalities in basic maternal and child services among low- and lower- middle income countries (World Health Organization, 2018b). "Achieving universal health coverage (UHC) means ensuring that all people receive the essential health services they need without being exposed to financial hardship as a result" (World Health Organization, 2018b, p. 14). *The authors believe that our ultimate goal should be to make available an in-person health care provider for all people who need one, anywhere in the world.* Until that goal is reached, we should provide evidence-based alternatives, including Internet and other digital interventions, so that we can provide health interventions to as many people as possible.

For example, ISRII could launch Massive Open Online Interventions (MOOIs, like MOOCs, or Massive Open Online Courses) freely available to anyone in the world. Our group has proposed such a "novel model for delivering behavioral health services worldwide" (Muñoz et al., 2016).

#### 5. Difficulties including diverse populations in health studies

Inclusion of diverse populations in our studies will not be easy. ISRII can learn from the difficulties documented in other health fields. The lack of diversity in participants in the health science literature of the 20th Century led to the National Institutes of Health (NIH) Revitalization Act, which was signed into law in 1993 (National Institutes of Health Revitalization Act of 1993, 1993). It required that all federally funded clinical research prioritize the inclusion of women and minorities. Recent reports have shown that this requirement failed to accomplish its goal: 20 years later, less than 2% of more than 10,000 cancer clinical trials met NIH's own criteria and goals for inclusion of women or racial/ethnic minorities and less than 5% of respiratory research reported inclusion of racial/ethnic minorities (Chen et al., 2014).

Genomics is a rapidly growing area in research. An article on Genome-Wide Associations Studies (GWAS) by Popejoy and Fullerton (2016) makes the point that research participants in this field are also not diverse enough. For example, in 2009, 96% of study participants were of European descent. Although there has been progress since 2009 (in 2016 the percentage of participants of European descent decreased to 81%), GWAS still includes only a small percent of participants from minority or indigenous groups. For example, only 3% of GWAS focus on participants of African ancestry, 1% of Mixed ancestry, 0.54% of Hispanic & Latin American ancestry, 0.28% of Pacific Islander, 0.08% of Arab & Middle Eastern, and 0.05% of Native Peoples (p. 162).

##### 5.1. How can ISRII increase research that addresses indigenous and diverse populations?

Increasing the diversity of our membership is one potential avenue to meet this goal. The i4Health team at Palo Alto University has a strong commitment to serve the Latinx populations in the U.S. and beyond. We believe this is in large part due to the fact that four of the five senior members of i4Health identify as Latinx (Alinne Barrera, Eduardo Bunge, Ricardo Muñoz, and Blanca Pineda). We have worked on studies about perinatal depression on Spanish-speaking women (Barrera and Nichols, 2015; Carter et al., 2019) and online prevention of postpartum depression (Barrera et al., 2015). We have also worked on studies to reach Spanish-speaking smokers (Muñoz et al., 2006, 2009, 2014), and how to increase recruitment of Spanish- and English-speaking participants (Barrera et al., 2014; Bunge et al., 2019).

It is this kind of commitment that also motivates us to question whether our interventions are having the intended consequences. In response to a paper published by Muñoz (2010) about "Using Evidence-Based Internet Interventions to Reduce Health Disparities Worldwide", some of his colleagues questioned whether internet interventions might



in fact be increasing health disparities. One of the reasons is because people who do not have access to these interventions are being left behind. Another reason is that even those who have access may respond differently depending on their socioeconomic status.

To answer the question of whether we are really reducing disparities, Bravin et al. (2015) looked at the question of whether socioeconomic status (SES) predicts smoking cessation rates in a worldwide online smoking cessation trial. From 2008 to 2011, the study recruited a total of 13,620 smokers from 109 countries and territories, who consented to participate and completed baseline measures. At the individual level, for each year of additional education participants reported, smoking abstinence increased by 3.4%, and an increase of one unit on a 10-point Subjective Socioeconomic Status scale was associated with an increase in abstinence of 8.1%. At the country level, an increase of \$1000 in per capita Gross Domestic Product (which had a range from \$292 to \$106,608) was associated with an increase in abstinence of 1.3%. What this means is that if you are a smoker with higher education and of higher socioeconomic status, your chances of quitting are higher than individuals with less education and lower socioeconomic status. In addition, if you live in a richer country, you are even more likely to quit smoking when using an Internet intervention.

The answer to the question of whether Internet interventions can help reduce health disparities is not straightforward. Note the following: approximately two-thirds of English speakers had used other smoking cessation aids prior to using our Internet smoking cessation site, compared to only one-third of Spanish speakers. So, our site appeared to reduce disparities in terms of providing increased access to Spanish speakers. Moreover, Spanish- and English-speaking study participants quit at approximately the same rates. The combined effect of increasing access and having similar outcomes could be interpreted as reducing health disparities between Spanish and English speakers. But our analysis of socioeconomic factors suggests that, even within a sample of literate people with access to the web, socioeconomic status at both individual and country level resulted in disparities in terms of outcomes. So, our critics are partially correct: within participants who access Internet interventions, those with higher SES appear to benefit more. Our field would do well to analyze other Internet studies' outcome data to determine whether we are producing disparities among the people who use our interventions.

## 6. How can we increase access?

The Association for Behavioral and Cognitive Therapies (ABCT) has begun to host a series of think tanks to help its members determine promising directions for their collective efforts. At the November 2017 ABCT meeting, members of the think tank decided to jointly author an article titled "Digital apothecaries: a vision for making health care interventions accessible worldwide" (Muñoz et al., 2018). Digital apothecaries would be online portals that would make available evidence-based Internet and mobile health interventions, providing transparent information about their effectiveness. Some pioneering examples of this concept are Beacon (Christensen et al., 2010, <https://beacon.anu.edu.au>) and Psyberguide (Neary and Schueller, 2018, <https://psyberguide.org>). Ideally some of these apothecaries would provide Massive Open Online Interventions (MOOIs) (Muñoz et al., 2016) in many languages that would be free to anyone who wanted access to them. Among the many issues discussed in the article, one is particularly relevant to our discussion of indigeneity and diversity: Is it ethical to make our interventions available to populations that have not been tested on members of those groups? The authors state: "The dilemma is whether to withhold interventions from any group on which the intervention has not been tested versus making interventions accessible to all, hoping that, even if there are differential outcomes, enough people will benefit to make universal access the preferable option" (Muñoz et al., 2018, p. 7).

We have found the following quote from Kluckhohn and Murray (1953) to be helpful in confronting this issue:

"Every man is in certain respects  
a. like all other men,  
b. like some other men,  
c. like no other man" (p. 53).

[Nowadays, using non-sexist language, we would say:

"Every person is in certain respects  
a. like all other persons,  
b. like some other persons,  
c. like no other persons".]

This citation reminds us that we are "like all other men" in the sense that there are universals: all of us feel pain, including emotional pain; all of us respond to reinforcers, although specific reinforcers vary for each of us. We are "like some other men" in the sense that subgroups of us are different from others in important ways: If we switched to Spanish now, we would lose most of our readers. And, we are "like no other man" in the sense that, ultimately, we are each unique. We need to test our interventions at all three levels. Interventions that utilize universal elements as the basis for their specific strategies are likely to be useful to most people, even people from groups who were not involved in efficacy trials. Interventions that are developed with specific groups in mind, starting with such obvious elements as language or literacy, but ideally addressing such characteristics as religion, political positions, or sexual orientation, are, in theory, more likely to be accessible and acceptable to those groups, and, by extension, more effective. Finally, interventions that can be individualized are becoming more feasible as technology advances. For example, artificial intelligence and machine learning are being put forward as tools that could help Internet interventions or apps adapt to specific users. Ultimately, the goal is to test whether an intervention works as planned for the person or persons whom it is intended to help.

The digital apothecaries article (Muñoz et al., 2018) presents a taxonomy of interventions that may be helpful in conceptualizing a continuum of digital interventions. Four types of interventions are listed (see Table 1); the first two types, Type 1 and Type 2, refer to therapeutic interventions involving a therapeutic contract between a provider and a patient or client. Type 1 is face-to-face traditional therapy with no digital interventions. Type 2 refers to face-to-face therapies with technology adjuncts where the therapist is either a professional, licensed therapist or a lay health worker who has been trained to provide evidence-based interventions. Type 3 and Type 4 are self-help interventions. Type 3 is guided interventions where there is a helper or a coach who helps the person using the self-help intervention adhere to the interventions. Type 4 is fully automated self-help interventions. Meta-analyses done thus far suggest that Type 3, guided-interventions, are more effective than totally automated interventions (Andersson and Cuijpers, 2009). However, effectiveness may vary for specific health problems, contexts, and individual users. It is theoretically possible, for example, that a Type 4 intervention (fully automated) could be more effective than Type 1, 2, or 3 interventions for a specific condition and user group. It is important to note that the first three types of interventions are consumable: administering the intervention involves using a health provider's time (e.g., a therapist, coach, trained lay person, or other helper). Thus, the reach of these guided interventions is limited by the time available from the individuals who provide the intervention. Type 4 interventions are not consumable in the sense that, being fully automated, they do not require human interaction to administer the intervention. Type 4 interventions are developed, tested, and disseminated as fully automated interventions, which can then be made available to as many people as choose to access them, anywhere in the world.

Digital apothecaries would be useful in providing training for therapists in the use of evidence-based face-to-face interventions, that

**Table 1**  
Four types of intervention supported by digital apothecaries, ideally in many languages.

Type	Description of evidence-based resources provided	Consumable?
<i>Interventions that include a therapeutic contract between a therapist and a patient or client</i>		
Type 1		
Traditional face-to-face therapy	Prevention and treatment manuals and online training resources to increase access to traditional face-to-face mental health interventions.	Yes
Type 2		
Traditional therapy + digital adjuncts	Digital tools for use by therapists to enhance effectiveness of face-to-face interventions. (e.g. teletherapy tools, self-monitoring devices, recordings of information covered in session).	Yes
<i>Self-help interventions that do not include a therapeutic contract (similar to a self-help book)</i>		
Type 3		
Guided digital interventions	Websites, apps, other digital tools for self-help, with the addition of helpers or coaches to increase adherence to the interventions.	Yes
Type 4		
Fully automated self-help digital interventions	Websites, apps, other self-help digital tools, intended to be used autonomously, and evaluated in that context.	No

Note. Consumable interventions require human interaction. Thus, access to them is limited by the availability of health care providers for Type 1 and Type 2 interventions or helpers/coaches for Type 3 interventions. Fully automated self-help interventions (Type 4) are not consumable in that they are not dependent on the availability of human time. Therefore, non-consumable interventions are accessible by large numbers of people in multiple locations simultaneously. In addition, the marginal cost (the cost of administering them to one additional person) continually decreases as more people use them.

is, Type 1 interventions. For example, Kobak et al. (2017) have shown that their online website is effective in teaching their anxiety interventions to therapists. i4Health also provides online materials to teach therapists how to use our cognitive-behavioral depression treatment manuals (see <https://i4health.paloalto.edu/manuals/bright-courses.html>). We provide manuals and materials at no charge, hoping to expand the reach of these face-to-face evidence-based interventions as widely as possible. Therapists from as far away as Singapore and Greece have contacted us to obtain permission to translate and adapt our manuals, which we are happy to provide. Healthcare professionals from 36 countries, including some as far away as India and South Africa have also downloaded our manuals,

Digital apothecaries would be most useful as online portals of Type 2, Type 3, or Type 4 digital interventions accessible to anyone who wants to use them. However, many people in the world are unlikely to have access to the Internet or to digital devices for the foreseeable future. Our field needs to consider how to reach them as well. For example, most hospitals and clinics have a pharmacy in or near their premises where medications can be obtained. We should work toward the goal that, in 10 to 20 years, all hospitals and clinics will also provide facilities to allow their patients to access digital apothecaries. Just as pharmacies provide medications, digital apothecaries could provide patients access to evidence-based digital interventions on smartphones, tablets, laptops, or work stations for those who have no access at home.

This idea originated many years ago, upon coming across a website from Jauja Molinos, a small town of 2000 people in the Peruvian Andes, which had created its own "Internet Cabin." Using a satellite downlink to access the Internet and a small number of workstations, they had begun to teach their young people how to use computers and the Web. If small communities such as this one high up on the Andes could do this, perhaps public health clinics throughout the world could eventually develop Internet health resource rooms to provide access to digital apothecaries. With a number of Internet-connected workstations and mobile devices, they would provide their patients with screening instruments to identify common disorders and evidence-based digital interventions to address these disorders, either as adjuncts to medical treatments, or as stand-alone interventions.

To be accessible to those most in need, Internet interventions should be developed in their own languages, ideally with audio and video versions that do not require reading. Health care providers would be able to "prescribe" specific digital interventions to their patients based on their local digital "formularies". These could be adjuncts to routine treatment, such as "prescriptions" to a CBT site for patients being treated with antidepressants (Type 2 interventions). Helpers/Guides/

Coaches staffing the Digital Apothecaries could assist patients unfamiliar with digital devices to access their self-help digital "prescriptions" (Type 3 interventions). Patients could screen themselves for common conditions and choose available self-help interventions independently (Type 4 interventions).

But, there are still many places with neither hospitals nor clinics, nor health care providers. Combining the power of digital interventions with the power of indigenous helpers could help us reach even very remote locations. Recent randomized controlled trials from India and Africa have shown that lay health workers are able to effectively treat depression once trained to provide CBT (Chibanda et al., 2016; Patel et al., 2017). The study in Africa by Chibanda et al. (2016) used "The Friendship Bench," a bench in a town square. These studies provide proof of concept that, for example, older women in Zimbabwe could be trained to deliver problem solving therapy to treat depression and anxiety effectively.

Imagine if we made available tablets or laptops so that lay health workers could make accessible to their neighbors who may not have access or may not know how to use digital devices, digital interventions for a number of disorders (not just depression). Lay health workers would be able to adapt these interventions to make them appropriate for the local context. Behavioral activation methods, for example, would focus on very different behaviors in a small town in the mountains of Perú than in San Francisco.

A practical concern that many of us have is whether people lower in the socioeconomic scale might get systematically and differentially shunted to digital interventions simply because they are less costly. Eventually, they might lose access to face-to-face interventions, even when they are in need of them. We need to be very vigilant that people lower in the socioeconomic ladder are not limited to less effective treatments simply because they are less costly. Ideally, every person should have access to a face-to-face health care provider if that is the most effective source of help, but we are very far from reaching that goal.

If we are going to espouse the development and dissemination of digital interventions as one way of contributing to the goal of making health care a universal human right, the issue of whether digital interventions are effective and whether they are necessarily inferior to face-to-face interventions needs to be examined.

### 6.1. Evaluating Internet interventions for two health problems that contribute the most to the global burden of disease: depression and smoking

Depression is the number one cause of disability worldwide (Murray

**Table 2**  
Taking action: supporting indigeneity, diversity, and equity in digital health interventions.

Action item	Description
Identify indigenous groups in our countries as well as other diverse groups, such as immigrants, the poor, those unable to read and write.	Find information regarding health inequities, such as disparities in terms of prevalence of disorders, access to care (such as the proportion who have health insurance or are otherwise eligible for health care), the proportion who receive evidence-based interventions, and the proportion who respond to available health interventions. Develop, evaluate, and disseminate digital interventions for those with the greatest disparities.
Disseminate existing evidence-based digital interventions in various languages and evaluate their effectiveness across groups	Encourage collaboration between established and underrepresented groups to develop and study digital health interventions with indigenous and other diverse groups.  Apply novel methods, such as artificial intelligence (AI) and machine learning, to develop customized and individualized interventions that include groups that have not been part of such studies.
Encourage and support local health care providers to design interventions that originate from their cultures of origin	Encourage members of minority cultural and linguistic groups to develop and evaluate digital health interventions.  Acknowledge that indigenous and local knowledge can contribute to effective prevention and treatment interventions, and thus deserve to be included in outcome studies. Dominant groups are not the only ones who can create effective interventions.
Increase access to both established interventions and interventions originating in indigenous and other diverse settings	Create “digital apothecaries” (online portals) to make evidence-based Internet and mobile health interventions in many languages.  Create Massive Open Online Interventions (MOOIs) free to anyone in many languages.  Work with hospitals, clinics, and community centers around the world to host digital apothecaries that would provide designated areas with computer equipment (such as cyber cafes) to facilitate access to online interventions for those with no access to the Internet.  Digital apothecaries could provide evidence-based digital interventions for various mental health conditions just as pharmacies provide pharmaceutical interventions.  Work with lay health workers and indigenous leaders to adapt interventions to make them appropriate for the local context and share them with their communities. Using laptops, tablets, and smartphones, lay health workers could disseminate evidence-based digital interventions to remote areas that lack health care facilities.  Ensure that interventions originating in indigenous and local settings are given support to be tested so they can join the evidence-based lists.
Increase research	Increase research that includes participants from indigenous and diverse populations, so outcomes can be generalizable to these groups.  Promote diversity and inclusion of ISRII's membership: Invite ISRII members to recruit indigenous and other local professionals to attend conferences. Provide travel scholarships for underrepresented groups to join our conferences and to visit our labs.  Support research addressing health issues specific to underrepresented and underserved populations. Publish special issues devoted to research with indigenous and other diverse groups that are underrepresented in our literature.
Recruitment & training	Train and recruit trainees from unrepresented groups who are committed to serving those groups using digital tools.  Provide scholarships and fellowships to help support trainees from underrepresented groups obtain the education and training needed to serve their communities.  Provide clear structure and expectations of graduate level work to increase the chances that underrepresented students can succeed once they are accepted.  Provide career mentorship by staff and faculty who identify with underrepresented groups.

and Lopez, 1996), affecting over 300 million people, and a much larger number at risk (World Health Organization, 2018c). Computerized cognitive-behavioral therapy has been shown to be effective in randomized controlled trials (RCTs) (Karyotaki et al., 2017). However, RCTs are very strictly managed. What happens when these interventions are offered as part of routine health care? England's National Health Services provides reports on the routine use of psychological therapies. In a recent report (Community and Mental Health Team and Health and Social Care Information Centre, 2015), they looked at 1,267,193

referrals during a period of one year. From those referred, 468,881 actually completed treatment, from which approximately 44% recovered. The authors examined the recovery rates of different modalities of psychological interventions. To their surprise, Computerized Cognitive Behavioral Therapy (cCBT) came out first with a 58% recovery rate compared to lower rates by some of the standard face-to-face treatments such as interpersonal psychotherapy, brief psychodynamic, behavioral activation, and CBT. It is important to note that the rates are based on the last therapy used. Thus, it may be that people

with more severe cases of depression were referred to face-to-face therapy, and those with mild to moderate major depression were more likely to receive computerized CBT. Nevertheless, these were all people who met criteria for depression when they were referred. If 58% can recover using computerized CBT (even if most of those might have been in the mild to moderate range), it makes sense to make this resource available to everyone who wants to use them.

Smoking is the number one cause of preventable death worldwide (Centers for Disease Control and Prevention, 2019). There are approximately 1.1 billion smokers worldwide (World Health Organization, 2018a). In our own work, we have found that smoking cessation Internet interventions can “match the patch”—that is, yield quit rates comparable to those reported for the nicotine patch (Muñoz et al., 2006; Muñoz et al., 2009). When we began this work in 1997, we wanted to find out if a web-based smoking cessation intervention could match the outcomes of using a nicotine patch. Quit rates were between 14 and 22% for the patch and 24–27% for smoking cessation groups. Would an internet intervention yield comparable results? The answer was “yes.” The best condition we tested yielded a 26% quit rate at 6-months for Spanish speakers (Muñoz et al., 2006) and 12-month quit rates of 20% for Spanish speakers and 21% for English speakers (Muñoz et al., 2009). These Internet interventions are not only as effective, but they are considerably less costly.

Let's be specific: In the Muñoz et al. (2009) study, 18,154 people entered the study and 19% of them (3479 smokers) gave us data indicating that they had quit. To help this many people quit using nicotine patches it would have cost \$3,652,950 or 70 years of a smoking cessation counselor working full-time. We were able to achieve this in two-and-a-half years for approximately \$200,000 by keeping the research website open after the end of the grant which funded the creation of the site and the randomized controlled trial testing the site. Here is how we calculated the cost of \$3,652,950: Nicotine patches cost \$3 to \$4 each, that is at least \$21 per week. In ten weeks, which is the number of weeks that patches are usually used, that adds up to \$210 per person. Patches yield quit rates of 14% to 22%. Using 20% as the estimate, one out of five people using the patch would be expected to quit. To have 3479 smokers quit, patches would need to be given to five times that many or a total of 17,395 smokers. Multiplying 17,395 times \$210, we arrived at the sum of \$3,652,950. Consumable interventions are very expensive. That is one of the reasons health care is often considered prohibitively expensive. By providing Massive Open Online Interventions at no charge or very low cost, ISRII could contribute to making behavioral elements of health care accessible and affordable.

## 7. Conclusion

Could ISRII contribute to making health care a universal human right? We believe the answer is “Yes!” Our members could create **Digital Apothecaries** in many languages. Each digital apothecary would provide numerous evidence-based **Massive Open Online Interventions (MOOIs)**. Type 1 interventions would help train therapists to deliver standard face-to-face interventions. Type 2 interventions could be used by therapists (professionals or trained lay health workers) as adjuncts to enhance treatment. Type 3 self-help interventions could be supported by guides/coaches to enhance adherence to these interventions. And Type 4 interventions could be used by people on their own, either because they choose to or because they have no access to therapists or lay guides.

But, would people use these interventions if we made them available? The answer from our experience is a clear “Yes!” Since we began our first Internet intervention study in 1998, we have had people from all over the world come to our websites. Over a period of fifteen years for which we have Google Analytics data, we have had 233 countries and territories represented with over 1.8 million visitors. Our experience provides proof of concept that Internet interventions delivered as Massive Open Online Interventions have the potential to address

indigeneity, diversity, and increase equity of access to as many people around the world as possible. ISRII could certainly contribute to the United Nations' goal of making health care a universal human right.

Table 2 presents a list of action items for consideration by the ISRII membership, which provide specific steps implied by the ideas presented in this article. Let's get started!

## Declaration of competing interest

None.

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