SHORT COMMUNICATION

Médecins Sans Frontières' Clinical Guidance mobile application: analysis of a new electronic health tool

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<http://dx.doi.org/10.5588/pha.15.0057>

Many health care workers lack access to clinical support tools in rural and resource-limited settings. To address this gap, the Médecins Sans Frontières (MSF) Clinical Guidelines manual was converted into a static mobile health reference application (app) entitled MSF Guidance. The app's utility and growth was examined, and within 6 months of its launch 150 countries had downloaded the app, with demonstrated retention among new and existing users. With over 3500 downloads and 36 000 sessions amounting to 250 000 screen views, MSF Guidance is a new mobile health platform with widely demonstrated utility, including potential use as an epidemiological tool, where clinical conditions investigated by app users were found to correlate with geographical outbreaks. These findings show that mobile apps can be used to disseminate health information effectively.

Mobile phones are the most widely used modern technology across the developing world.¹ In 2013 over 6 billion mobile cellular subscriptions were registered, over 5 billion of which were registered in the developing world.² The increased computing power of mobile phones allows health care providers to connect to information, provide clinical decision tools and connect health care workers to portable platforms that provide many health-related applications.^{3,4} This intersection of mobile technology and health care is referred to as mobile health (mHealth).⁵ mHealth applications (apps) are a subset of mHealth and refer to a piece of information access software designed to run on a mobile device.⁶ Globally, health care providers have recognised the value of mHealth as a tool to increase access to medical information and improve patient outcomes.⁷ Accordingly, as mHealth continues to expand, health care providers will be better able to care for their patients in remote, underserved communities.^{5,7}

SITUATION

The Médecins Sans Frontières (MSF) Clinical Guidelines and Essential Drugs manuals are commonly consulted manuals intended for medical professionals involved in curative care at the dispensary and hospital level.^{8,9} The guidelines comprise a comprehensive list of diagnostic, treatment and drug dosage information that addresses best treatment options for the most common diseases encountered globally by MSF staff in

projects. They have been formulated using the accumulated field experience of MSF, and have been available in paper-based format for a number of years. Despite this, many projects have only one or two books available for their medical staff, and in many cases the books are outdated or pages are missing. In some projects the books are locked in an office, which leads to reduced accessibility when health care providers are working off site in mobile clinics.

THE INNOVATION

In keeping with the recent advances of mHealth and the desire to improve health care information access, the Open Medicine Project, South Africa, on behalf of MSF Operational Centre Brussels, converted the MSF Clinical Guidelines and Essential Drugs manuals into a mobile app, entitled MSF Guidance. The app functions as a locally stored mobile reference, which is available offline, meaning no cellular connection is needed once downloaded. It contains all the contents of the MSF Clinical Guidelines and Essential Drugs manuals (Figure 1), and contact information for all MSF offices around the world. MSF Guidance can be downloaded free of charge through the Apple iTunes Store (Apple Inc, Cupertino, CA, USA) and Google Play Stores (Google Inc, Mountain View, CA, USA). In addition, the app can be accessed at any time on a variety of mobile devices, including smart phones and tablets, and has the ability to be updated instantaneously.

To date, there has been very little published research on electronic health applications and their utility across all of MSF's operational centres. As electronic health cross-country collaboration is a topic that has been brought forward by many international humanitarian organisations,⁹ our aim is to share our findings on the utilisation of MSF Guidance and to continue to drive humanitarian innovation toward quality health care provision and advancement.

METHODS

Design

This is a descriptive study involving the use of a mobile health app.

Setting and population

MSF Guidance is available free of charge to all smartphone and tablet users globally through the Apple app store and the android play store, regardless of MSF affiliation.

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KEY WORDS

mHealth; humanitarian; mobile application; clinical education

Conflicts of interest: none declared.

Received 30 September 2015
Accepted 4 November 2015

PHA2015;5(4):205–208
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FIGURE 1 Screen views of the MSF Guidance app: table of contents for common conditions and treatment options. MSF = Médecins Sans Frontières.

Data collection

MSF Guidance was launched on 1 June 2014. Between 1 June 2014 and 28 February 2015, data on the MSF Guidance app were evaluated through Google analytics. App downloads, active app users, app sessions and guidelines accessed were analysed. App downloads are the total number of times the application was downloaded from the two app stores; a session is each episode of an app being opened by a user; and active users are users who had accessed the app in the last 30 days. App users were then categorised according to geographical region, defined

FIGURE 2 Growth of new and existing MSF Guidance users. MSF = Médecins Sans Frontières.

in this study as country of use. The countries with the highest number of sessions were identified. Through convenience sampling, the top three countries using the app from 1 June 2014 to 28 February 2015 were evaluated in terms of the guidelines accessed. To do this, the inclusion criteria were narrowed to retrieve guidelines viewed with a screen time of >10 s. A 10 s timeframe was chosen as a marker to exclude simple screen

MSF Clinical Guidance: 1 June 2014 – 28 February 2015				
	Top 3 countries	Users <i>n</i>	Sessions <i>n</i>	Screen views <i>n</i>
Pakistan	200	3554	26 779
South Sudan	111	2875	18 047
South Africa	293	2785	20 380

FIGURE 3 Countries using MSF Guidance: highlighting the top three user countries. MSF = Médecins Sans Frontières.

FIGURE 4 Primary clinical conditions viewed by the top three user countries from 1 June 2014 to 28 February 2015. **A)** South Africa, **B)** South Sudan, **C)** Pakistan. PTSD = post traumatic stress disorder; MMSP = malignant melanoma of soft parts; Psych = psychological disturbances; PUD = peptic ulcer disease; HTN = hypertension.

views and to obtain conditions actually being viewed by users for purposes of investigation.

Ethical considerations

Because this study contains no identifying data and no patient information was used, ethical approval was not required.

RESULTS

During the period from 1 June 2014 to 28 February 2015, there were 3524 downloads of MSF Guidance by users in 150 countries.

In addition, 3126 people actively used the app, with 259046 screen views and 36549 total sessions. The app also showed sustained growth during this period, with increasing numbers of sessions (Figure 2). Many countries were found to consistently use the app, with over 100 sessions per month. Pakistan, South Sudan and South Africa were the top three countries to use the app during this timeframe (Figure 3). The clinical conditions referenced varied among the top three countries using the app. Figure 4 illustrates a sample of primary clinical conditions referenced by the top three user countries from 1 June 2014 to 28 February 2015.

DISCUSSION

MSF Guidance has demonstrated widespread usage across the globe. The user retention among the 150 countries accessing the app is indicative of its ease of use and accessibility. The peak in new users in August 2014 can be linked to the temporary addition of the Ebola guidelines, and the plateau in usership, which occurred after August 2014, appears to be related to the lack of advertising and marketing for the app (Figure 2). We expect organic growth of MSF Guidance as it becomes more accepted and better known across the various MSF operational centres. Furthermore, we believe that the clinical conditions viewed by top user countries could yield interesting epidemiological findings. For example, users in Pakistan referenced bacterial meningitis with over 30 screen views in February 2015 and pertussis with over 50 screen views in January 2015. With larger data sets, we see future potential and possibility for this information to be used as a surrogate marker for emerging disease outbreaks. The potential exists to capture data where we have never before done so, to possibly document outbreaks through the clinical conditions investigated and partner further with crisis-mapping initiatives.¹⁰ Moreover, the volume and type of clinical conditions viewed could identify educational needs for MSF staff and directly inform local health research and training needs. Finally, opportunities to collaborate with additional MSF-supported electronic health initiatives are promising, particularly MSF's existing telemedicine system.¹¹

Limitations of this study include the lack of variables retrieved on individual app downloads in terms of MSF affiliation and designation as a health care professional.

In conclusion, MSF Guidance is an mHealth tool that has demonstrated consistent and growing usership and shows prom-

ise as an epidemiological tool to monitor geographical outbreaks as they relate to the clinical conditions referenced. Further studies examining the effects of improved access to essential clinical support in resource-limited settings are needed.

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De nombreux travailleurs de santé n'ont pas accès à des outils de soutien clinique dans les zones rurales et celles où les ressources sont limitées. Pour répondre à ce problème, le manuel de directives cliniques de Médecins Sans Frontières (MSF) a été converti en une application mobile de référence en santé, appelée Guidance MSF. L'utilité et la croissance de cette application ont été suivies et, 6 mois après son lancement, 150 pays l'avaient téléchargée, avec une rétention démontrée parmi les usagers récents et anciens. Avec plus

de 3500 téléchargements et 36 000 sessions aboutissant à 250 000 affichages d'écran, MSF Guidance est un nouvel outil de santé dont l'utilité a été largement démontrée, notamment son utilisation potentielle comme outil d'épidémiologie, car les pathologies cliniques pour lesquelles les usagers ont fait des recherches se sont avérées correspondre à des épidémies localisées. Ces résultats montrent que les applications mobiles peuvent être utilisées pour disséminer efficacement des informations sanitaires.

Muchos profesionales de salud carecen de acceso a instrumentos de ayuda clínica en los entornos rurales y de recursos limitados. Con el propósito de subsanar esta deficiencia, el manual impreso de directrices clínicas de Médicos Sin Fronteras (MSF) se convirtió en una aplicación estática de salud móvil de consulta, denominada MSF Guidance. Al examinar la utilidad de la aplicación y su difusión, se observó que 6 meses después de la introducción se había descargado la aplicación en 150 países, y se confirmó una retención efectiva por parte de los usuarios nuevos y los usuarios existentes. Esta aplicación,

con más de 3500 descargas y 36 000 sesiones, equivalentes a 250 000 visualizaciones de pantalla, constituye una nueva plataforma móvil de salud con una utilidad ampliamente demostrada, que incluye la posibilidad de utilizarla como herramienta epidemiológica, pues las afecciones clínicas investigadas por los usuarios de la aplicación se correlacionaron con la localización geográfica de brotes epidémicos. Estas observaciones revelan que las aplicaciones móviles se pueden utilizar eficazmente en la difusión de la información sanitaria.