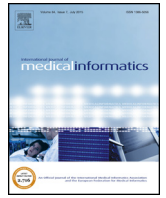




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Information needs of Botswana health care workers and perceptions of wikipedia



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ABSTRACT

Background: Since the UN Human Rights Council's recognition on the subject in 2011, the right to access the Internet and information is now considered one of the most basic human rights of global citizens [1,2]. Despite this, an information gap between developed and resource-limited countries remains, and there is scant research on actual information needs of workers themselves. The Republic of Botswana represents a fertile ground to address existing gaps in research, policy, and practice, due to its demonstrated gap in access to information and specialists among rural health care workers (HCWs), burgeoning mHealth capacity, and a timely offer from Orange Telecommunications to access Wikipedia for free on mobile platforms for Botswana subscribers.

Objectives: In this study, we sought to identify clinical information needs of HCWs of Botswana and their perception of Wikipedia as a clinical tool.

Methods: Twenty-eight facilitated focus groups, consisting of 113 HCWs of various cadres based at district hospitals, clinics, and health posts around Botswana, were employed. Transcription and thematic analysis were performed for those groups.

Results: Access to the Internet is limited at most facilities. Most HCWs placed high importance upon using Botswana Ministry of Health (MoH) resources for obtaining credible clinical information. However, the clinical applicability of these materials was limited due to discrepancies amongst sources, potentially outdated information, and poor optimization for time-sensitive circumstances. As a result, HCWs faced challenges, such as loss of patient trust and compromises in patient care. Potential solutions posed by HCWs to address these issues included: multifaceted improvements in Internet infrastructure, access to up-to-date information, transfer of knowledge from MoH to HCW, and improving content and applicability of currently available information. Topics of clinical information needs were broad and encompassed: HIV, TB (Tuberculosis), OB/GYN (Obstetrics and Gynecology), and Pediatrics. HCW attitudes towards Wikipedia were variable; some trusted Wikipedia as a reliable point of care information resource whereas others thought that its use should be restricted and monitored by the MoH.

Conclusions: There is a demonstrated need for accessible, reliable, and up-to-date information to aid clinical practice in Botswana. Attitudes towards Wikipedia as an open information resource tool are at best, split. Therefore, future studies are necessary to determine the accuracy, currency, and relevancy of Wikipedia articles on the health topics identified by health care workers as areas of information need.

Abbreviations: MoH, Ministry of Health; BUP, Botswana-UPenn Partnership; mHealth, mobile health; HCW, health care worker; HI, health informatics.

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More broadly speaking, future efforts should be dedicated to configure a quality-controlled, readily accessible mobile platform based clinical information application tool fitting for Botswana.

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1. Introduction

In 2011, the UN Human Rights Council recognized the right to access the Internet and information as one of the most basic human rights of global citizens [1,2]. In addition, the HIFA 2015 [Healthcare Information for All 2015] initiative outlined a conceptual framework of HCW needs that encompasses skills, equipment, structural support, medicines, and information needs [3]. Despite this public stance, a clear disparity in seeking, accessing, and integrating health related information between developing countries and developed countries has emerged, often referenced as the “information gap,” [4–6]. One suggested mechanism for the disparity is that the traditional “push paradigm” of pushing information out to health care workers in low and middle income level countries has existed without the “pull,” as in receiving feedback on the information pushed or researching the needs of those receiving the information before pushing [7].

This information gap is evident in the literature. Several studies investigating the knowledge, familiarity and patterns of Internet usage among HCWs in resource-limited settings [6,34,8–45] show that although the majority of HCWs have been trained to use computers and the Internet, systemic barriers such as poor Internet connection, high access costs, and insufficient devices impede access to information. Few articles explicitly and specifically address information needs. Notably, Pakenham-Walsh and colleagues performed a literature search on information and learning needs of healthcare providers across Africa [46] and LeMay and colleagues performed a country-wide information needs assessment in Malawi to make policy level recommendations [47]. Furthermore, it is unclear if proposed solutions to identified information needs have actually impacted practice or knowledge sharing patterns. For example, the percent usage of HINARI [Health Information Network Access to Research Initiative], a partnership between WHO and twenty-eight publishers providing clinical information to institutions of the developing world at free or reduced prices, is quoted as high as 69% in some health facilities, but actual daily use is prevented by unavailability of broadband Internet access, costly fees scaled against GNP for middle level income countries, and the perception of information overload [6,12,16,33,40,48,49]. The Republic of Botswana represents a fertile ground to address existing gaps in research, policy, and practice. Comprised of a decentralized network of referral hospitals, clinics, health posts, and mobile stops distributed over twenty-nine health districts, Botswana’s national health care delivery system has grown to an accessible system with most of the population living within an eight kilometer radius of the nearest health facility [50]. However, faced with one of the highest patient/doctor ratios and a transitioning epidemiology from communicable to noncommunicable disease, rural HCWs are left in a vulnerable position in regards to accessing information and specialists [50]. In fact, a preliminary survey of selected health care workers at local facilities suggested broad clinical information needs across multiple disciplines [Appendix A](#).

Mobile health (mHealth) is a promising solution to bridging the information gap by utilizing mobile devices to support medicine and public health. The growing number of wireless subscribers is over five billion, most of which reside in low and middle income countries [51]. In fact, according to the Information Society Statistical Profiles of 2009, 78% of Botswana residents have mobile cellular

subscriptions, but only 6.2% are registered Internet users, as only 4.5% of households own a computer and bandwidth is relatively slow [810 bits/s/internet user] within this African region [52].

Due to high mobile penetration in Botswana, the Botswana-UPenn Partnership (BUP) Health Informatics (HI) team has conducted various mHealth projects to address this information gap, some of which include txt2MEDLINE, an USSD text messaging system allowing Botswana clinicians to send queries and receive medical information from journal abstracts and Botswana treatment guidelines [53], and “Kgonafalo,” a national mobile telemedicine referral system [53]. In 2013, Orange, one of 3 major telecommunications companies in Botswana, extended free access to Wikipedia under the Wikipedia Zero Initiative by waiving data charges to all customers in the Middle East and Africa, thereby allowing an avenue for free access to online information.

Wikipedia is an online Internet encyclopedia written and edited by volunteers around the globe. Wikipedia often ranks first over other search engines, including Medline Plus, on general Internet searches by clinical keywords [54]. With over 26 million articles; 250 languages; and 500 million monthly readers; Wikipedia is one of the largest and most utilized information databases in the world [55]. In a recent systematic review encompassing 12 years and 110 publications on Wikipedia; the currency of Wikipedia was the best when compared with online and offline sources. In addition; comprehensiveness and reliability were highly rated although variable; depending upon the article topic and the extent of public and expert attention directed towards maintaining the articles. However; usability may be limited by poor readability [55,58–73]. Studies in developed countries have shown that up to 70% of clinicians and trainees have turned to Wikipedia to answer clinical questions; but often without sophisticated information-seeking training or abilities [56,57]; and there is a lack of research on the usage and perceptions of Wikipedia among health care workers in developing countries. While initiatives like WikiProject Medicine; a volunteer group of academics focusing on classifying and assessing the scientific quality of existing Wikipedia articles exists; it is a relatively new coalition and does not operate under the guidance of an independent clinical decision-making body [74].

What is clear is that Botswana has an information gap worthy of investigation. Moreover, given the large number and widespread nature of health districts in Botswana, we sought to capture a spectrum of health care workers’ perspectives on clinical information retrieval and perceived barriers to access to information. At the same time, given high worldwide rates of Wikipedia utilization as well as the potential increase in its usage in Botswana due to the offer of free access, we investigated Botswana health care workers’ awareness, attitudes, and usage of Wikipedia with the intent to apply these findings towards a larger goal of establishing an appropriate, responsible and open clinical information sharing platform for Botswana.

Therefore, we sought to:

1. Identify the information needs and barriers to accessing clinical information as reported by Botswana health care workers themselves in the focus group discussion, based on perceived needs inferred from their clinical practice.
2. Characterize HCWs’ previous experiences with and perceptions of Wikipedia as an open information resource

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