

Use of Centralized Electronical Patient Records System in Paediatric Care

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Abstract

Centralized Electronic Medical Record systems (EMR) have potential to provide a variety of benefits to national healthcare systems worldwide. However, their implementation has proven to be challenging and raised several concerns. Although previous work has analyzed the successes and limitations of centralized EMR systems, statistical analysis to quantify user perspective has not yet been conducted. In order to gain a better understanding of the opinions of medical professionals and others in the field regarding their perceived support, benefits, and barriers for a centralized EMR system, a survey was conducted on the participants of the International Paediatrics Association (IPA) 2016 Conference in Vancouver, BC. The survey contained Likert Scale questions, asking participants to rate the importance of listed benefits and barriers, as well as indicate their overall support for centralized EMR systems on a scale of 1 to 5. The data was analyzed using a one-way ANOVA, with a focus on the countries with the greatest number of respondents (USA, Canada, Nigeria, and Mexico). The responses were also categorized and analyzed based on country development. The results indicated that Mexico, as well as other non-developed countries were shown to be most in favour of the EMR system. Fast record access and efficiency were rated as the most significant benefits of a centralized EMR system, while cost and implementation time were perceived as the largest barriers. Implementation time was also rated significantly higher as a barrier by developed countries than non-developed countries. These findings provide useful guidelines for consideration in the implementation of a centralized EMR system, and help in the drive towards improving national healthcare systems worldwide.

Introduction

Centralized Electronic Medical Record systems (EMR) are becoming increasingly more popular in multiple countries regardless of their development level and medical system philosophy. If properly implemented, EMRs can deliver several benefits to the country's healthcare system, for example, improved medical record transfer and accessibility, more complete and accurate patient information, better efficiency, and potentially lower costs. At the same time, the use of EMR systems raises some concerns to the public, mainly around privacy concerns and liability issues. A few countries in the world have fully adopted EMR systems, while several are in the process of implementation.

The purpose of this survey was to probe the opinion of medical professionals and persons associated with this field about the acceptance and support for EMR in their countries. The survey was conducted on the participants of the IPA 2016 Conference in Vancouver, BC, and should therefore be considered a convenience sample rather than a designed experimental random sample. This limitation makes the study more of a synopsis of the opinion rather than a statistical study.

Methods

In order to better understand the opinions of medical professionals and others in the field regarding their perceived support, benefits, and barriers for a centralized EMR system, a survey was conducted on the participants of the International Pediatrics Association (IPA) 2016 Conference in Vancouver, BC. The survey contained Likert Scale questions, asking participants to rate the importance of listed benefits and barriers, as well as indicate their overall support for a centralized EMR system. The data was filtered for completeness and analyzed using a one-way ANOVA, with a focus on the countries with the greatest number of respondents (USA, Canada, Nigeria, and Mexico). The responses were also categorized based on country development using an UN-approved list (see Reference), then analyzed. Statistically significant categories with p-values less than 0.01 were analyzed further in detail.

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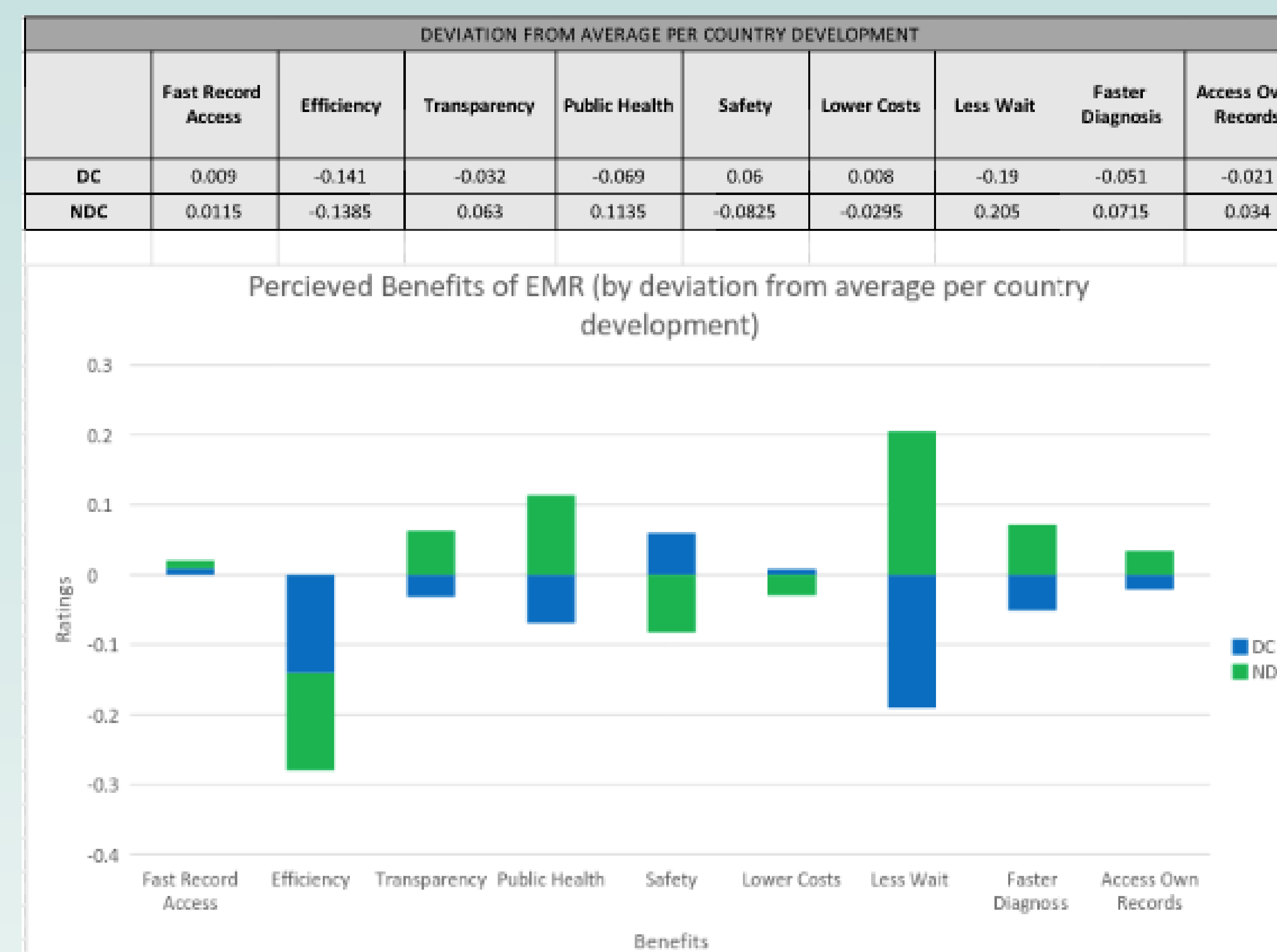
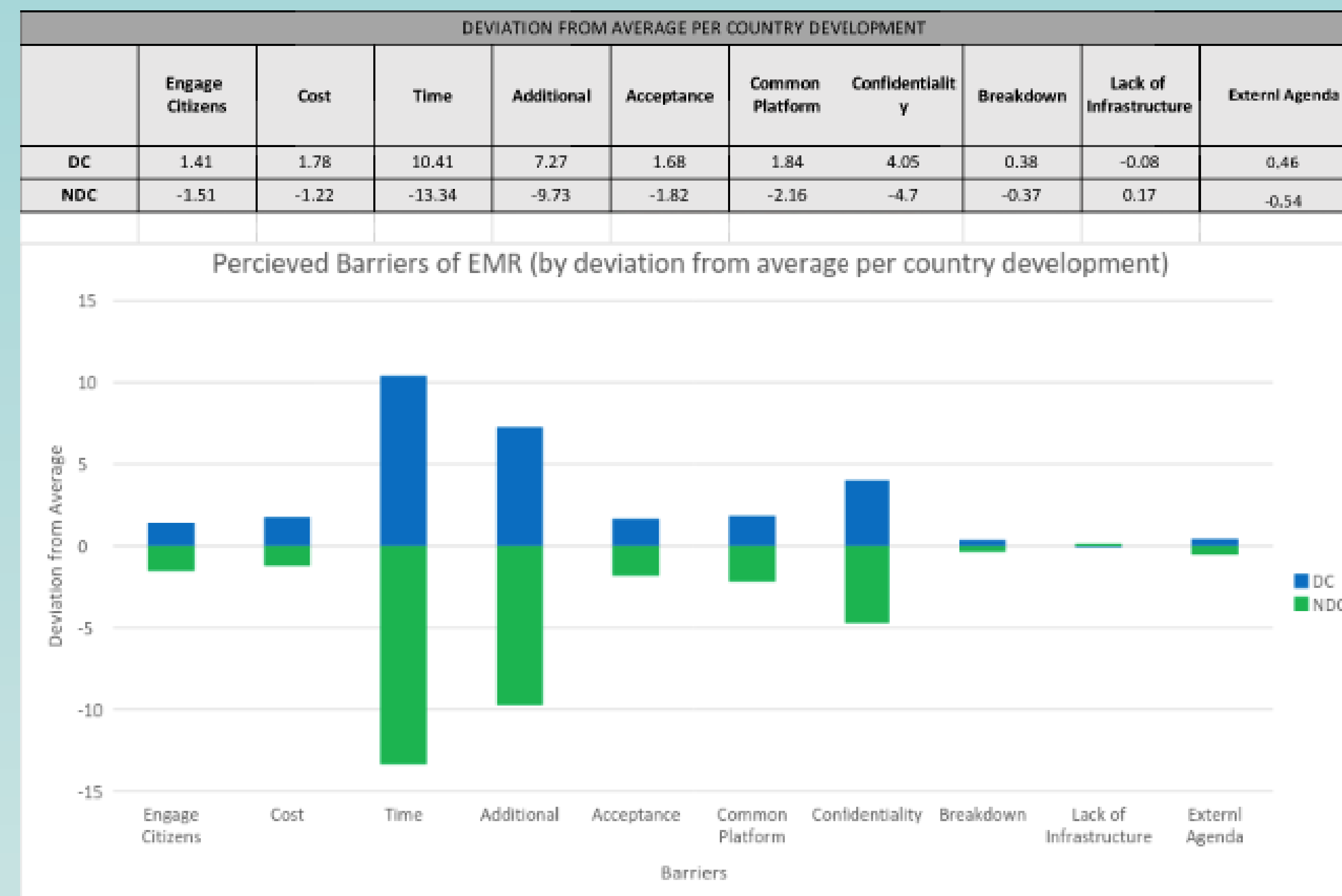
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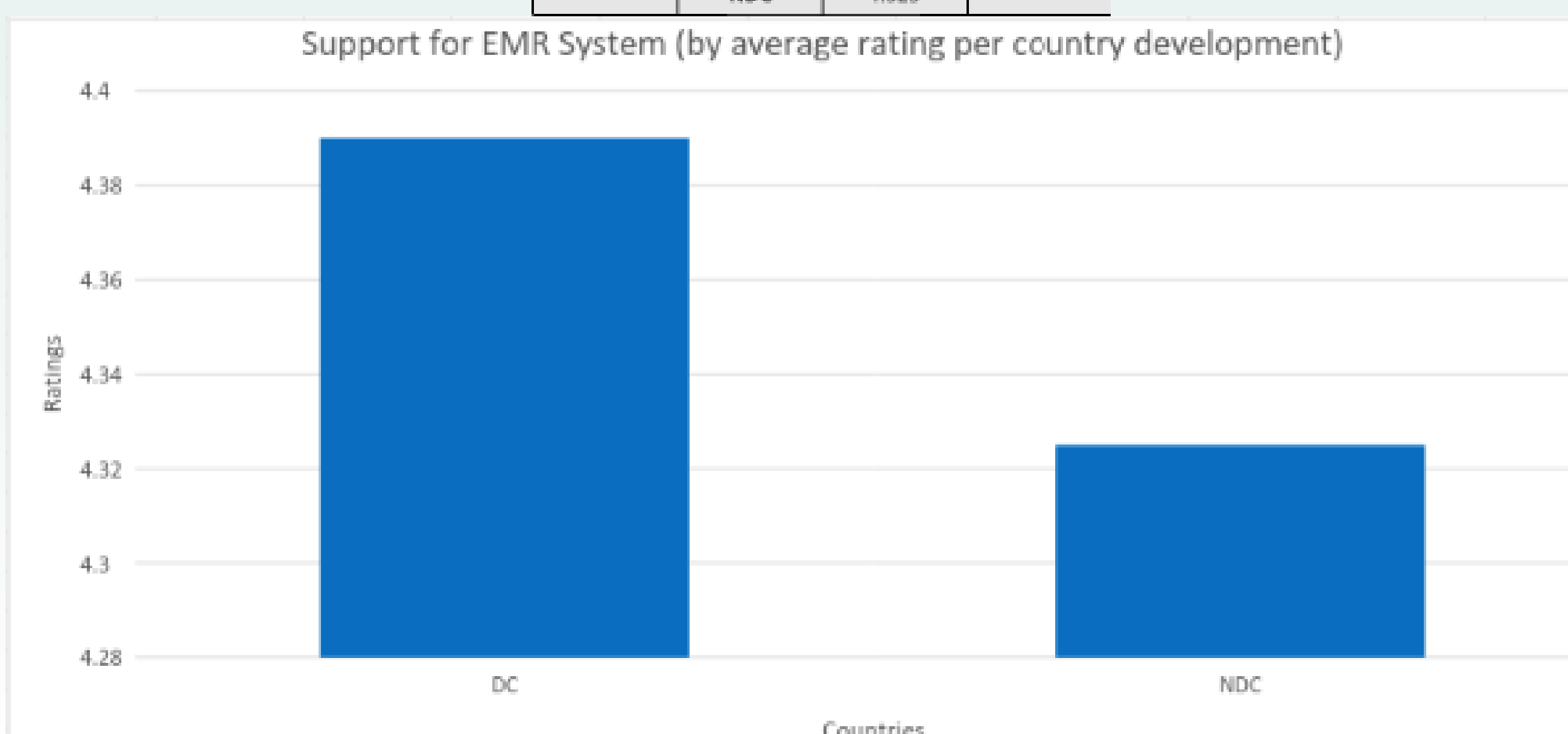
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Results



AVERAGE RATING PER COUNTRY DEVELOPMENT	
	Support for EMR
DC	4.39
NDC	4.325



Results

Support

The following countries are listed in order of greatest to least support for the EMR system: Mexico, Canada, n-DC, HIC, LIC, DC, Nigeria, USA. It is noted that the data trend is approaching significance, although statistical procedures did not find these results significant. Mexico is 100 per cent in favour of an EMR system in their country, whereas Canada and n-DCs follow behind as next in favour of such a system in their respective countries. The USA and LICs are the most not in favour of an EMR system. The USA has the greatest percentage of "Maybe" answers in support for the EMR system, while Nigeria has the greatest percentage of "No" answers against the EMR system.

Benefits

The benefits to healthcare professionals that were rated significantly different between individuals countries were efficiency (p=0.0156) and fast access to patient records (p=0.0232). The benefits to patients that were rated significantly different between individuals countries were patient safety (p=0.0188) and access to own records (p=0.0312). When comparing developed and non-developed countries, less wait time was the only perceived benefit ranked significantly different (p=0.0109), with non-developed countries rating this benefit more positively than developed countries. Overall, the majority of benefits received an average rating of 4.2 (out of a 5 point Likert scale). The exceptions to this were lower cost (average rating of 3.6) and less wait time (average rating 4.07).

Barriers

The three primary barriers to implementation of EMR is engagement of citizens, cost, and time. Of these, cost was identified to be a major barrier for Nigeria, USA, Canada specifically. The 37 responses from USA identified all three factors to be major barriers while 35 Canadian responses identified all but one factor- engagement of citizens, to be major barriers. Time was a considerable barrier to EMR systems in developed countries compared to non developed countries with both Canada and USA rating it as a significant barrier.

Discussion

Benefits

The ratings of benefits varied between countries. Respondents from Mexico and Australia tended to rank benefits much below the average rating. Additionally, Mexico and Australia had the highest proportion of respondents indicating they worked under an EMR system, 53% and 62% respectively. Respondents from these countries thus might have experienced the "true" EMR systems not being as ideal as imagined and from their personal experiences, know that these benefits are not as substantial as those who do not work under an EMR might imagine. Similarly, respondents from Nigeria, Canada and the USA reported lower rates of currently working under an EMR, and ranked benefits more highly overall when there was a significant difference between different countries. Overall, respondents from Canada and the United States tended to rank benefits about average, with the exception of patient safety which was ranked quite highly compared to other countries.

Barriers

Developed countries such as Canada, USA, and Australia identified many more factors to be barriers compared to non developed countries such as Nigeria and Mexico. This may be due to healthcare professionals' recollections of difficulties faced in attempt to implement such programs in the healthcare system. Using Canada as an example, Cenar is an EMR system attempting to centralize patient records and is used in many major Canadian hospitals (Ludwick & Doucette, 2009). However, healthcare professionals report challenges in using Cenar (Paré et al., 2014) which may have influenced these results. As opposed to developed countries where attempts for implementation have been challenging, results from participants in non-developed countries may have derived from an idealized conception of how such systems may ease the challenges they may currently face in their respective countries. In developed countries, with the idea that "money is time," there tends to be increased emphasis on time and its use as a currency of sorts. Comparatively, non developed countries may culturally not perceive time in the same way.

Conclusion

Overall, the results of this survey show that non-developed countries tend to favour an EMR system more than developed countries. It is possible that these differences are due to current rates of EMR use in the surveyed countries, as countries with a lower ranking of benefits tend to have a higher proportion of respondents currently working under an EMR system. These findings highlight the need for further research into perceived benefits and barriers of EMR systems and how they can be managed when implementing new EMR systems. In Canada specifically, participants did not report engagement of citizens as a significant barrier, items such as acceptance, confidentiality, and common platform were identified barriers. These self-reported items align closely with 'engagement of citizens'. This is an interesting finding and may require more research.