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Impact of Mobile Devices on Clinical Laboratory Data

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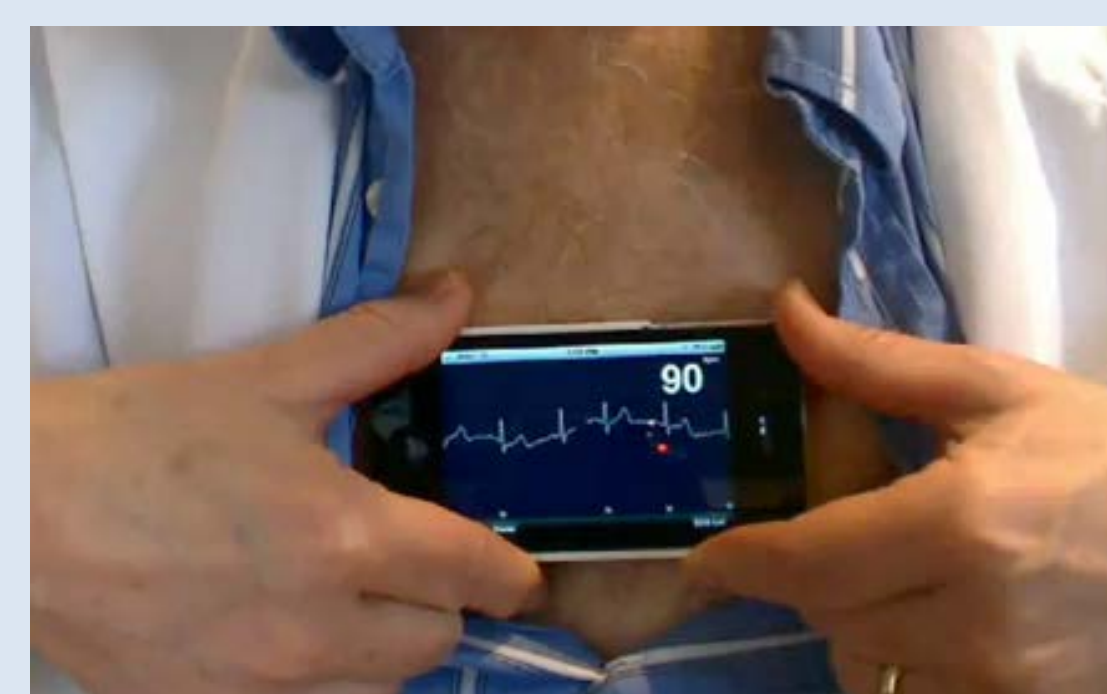
ABSTRACT

Recent advancements in mobile wireless devices (smart phones and tablets) have given these products the potential to drastically alter the practice of healthcare. The project described determined how these devices would assist in improving diagnosis, treatment and therapeutic outcomes in the delivery of healthcare. Also, it seeks to determine if the healthcare community feels these devices will make healthcare more cost effective and affordable. To cover multiple aspects of healthcare, several groups have been targeted: clinical laboratory; emergency, dental, rehabilitation, and surgical medicine; hospital administration; diagnostic imaging technology; public health; and veterinary medicine. This presentation will focus on our current results pertaining to the clinical laboratory. A questionnaire was distributed to clinical laboratory personnel both domestic and international. Questionnaire data was analyzed. The overall response rate was significant. The respondents concluded the use of mobile wireless devices have and will improve the dissemination of laboratory data in the coming years. The devices will assist in direct clinical assessment of reported test results even directly to the patient. Additionally responders noted such devices should allow greater and improved access to medical literature that is web-based such as test procedures, treatment protocols and guidelines. Also, responders reported these devices should improve laboratory work productivity and efficiency; In the future, the project will to continue monitor the impact of mobile devices in these areas of health care in order to help define the effect of mobile wireless devices to improve future healthcare delivery and practice. The Clemson University undergraduate Creative Inquiry Program supported this project.

INTRODUCTION

Use of mobile technology continues to expand dramatically around the world. Projections have indicated that there will be 10 billion mobile devices in use by the end of 2016¹. In addition to improving a plethora of services, mobile technology has significantly impacted health care. The future of mobile health may save as much as \$197 billion over the next 25 years in the United States by reducing the amount of office visits and hospital tests³. Furthermore, mobile devices have the potential to reduce errors in the workplace. A study assessing nurses utilizing handheld devices indicated that these devices aided in error avoidance⁴.

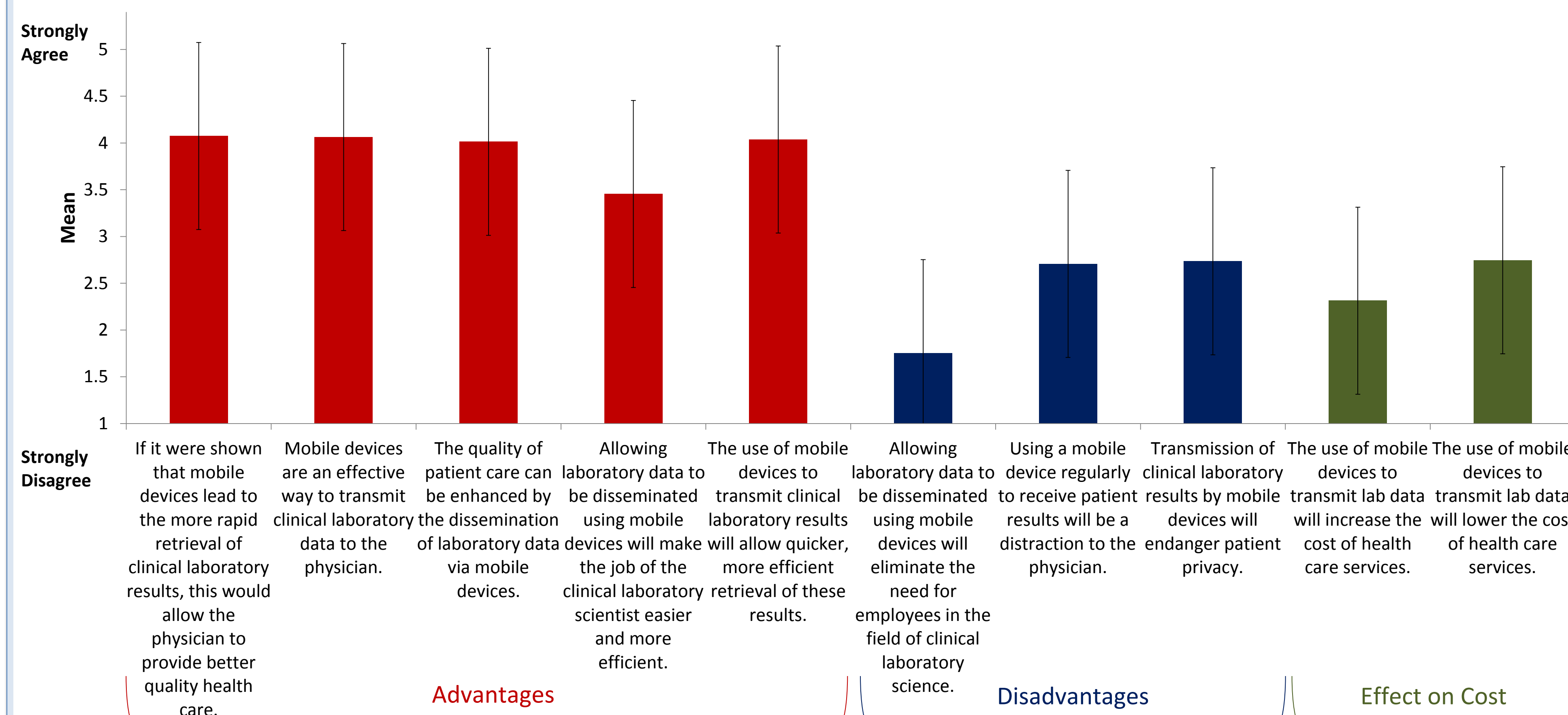
Developments in mobile health technology have shown impacts on personal health from medication reminders to ECGs.



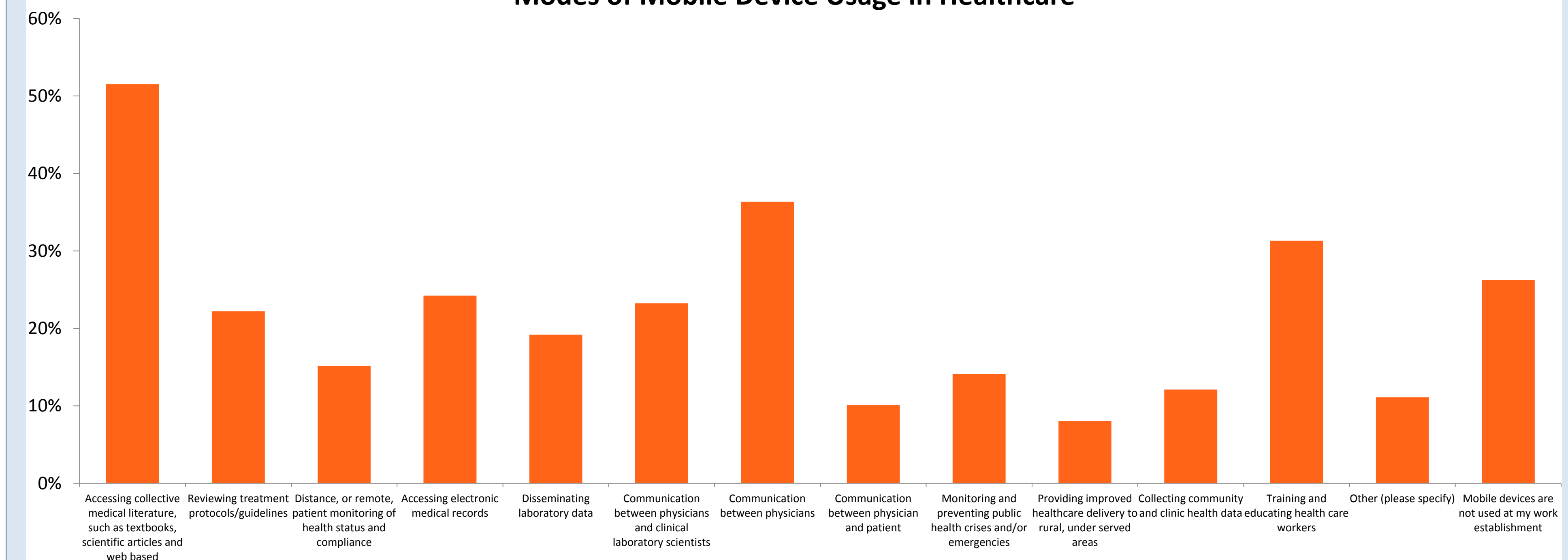
Our group investigated the efficacy of mobile technology in various fields of medicine. We administered a survey pertaining to our research question to those involved in clinical laboratory work as well as several other fields. The overall purpose of this research inquiry is to compile the current literature and survey data to define the potential for mobile technology in the practice of modern healthcare.

RESULTS

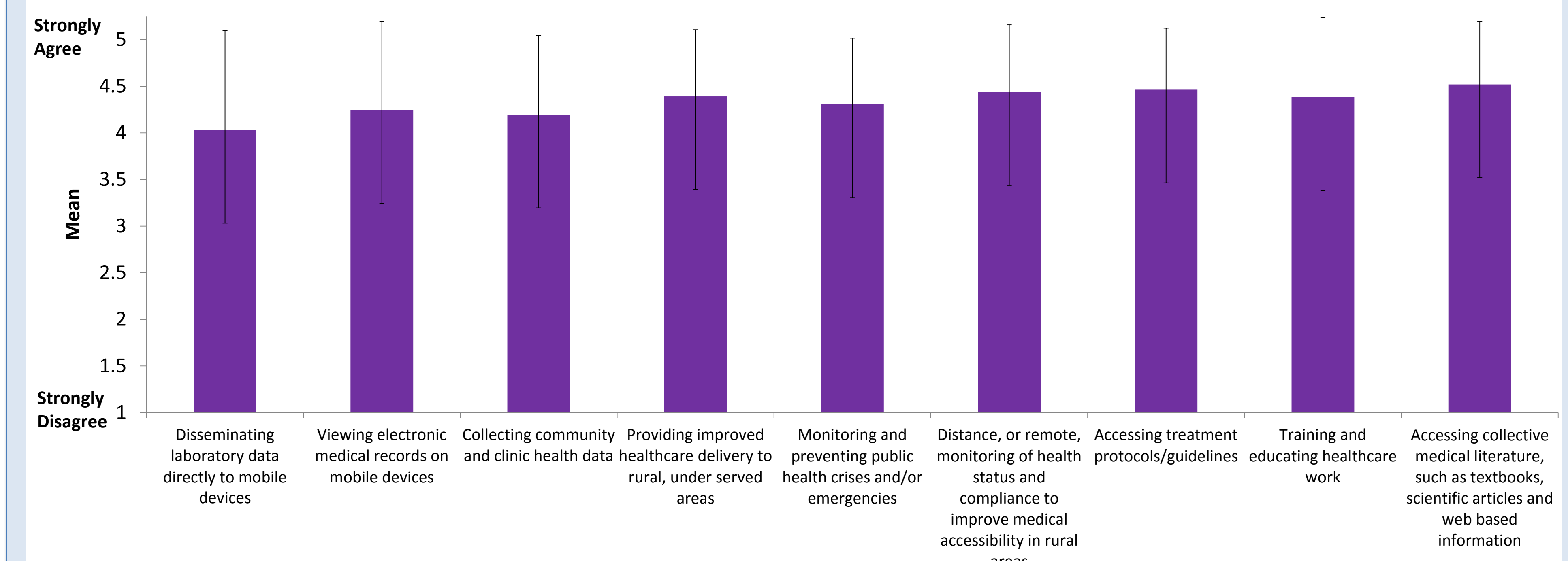
Views on Mobile Device Use in the Clinical Laboratory



Modes of Mobile Device Usage in Healthcare



Views on the Use of Mobile Devices to Disseminate Clinical Laboratory Data



METHODS

Participants:

Participants in this study included 100 individuals in healthcare positions related to the clinical laboratory. The questionnaires were created using Qualtrics and distributed to participants electronically.

Analysis:

A rating of strongly agree was given a score of 5, and scaled to a low of strongly disagree with a score of 1. These ratings were used to qualitatively analyze views and uses of mobile devices in healthcare among respondents. The mean and standard deviation of each response were generated and used for analysis.

CONCLUSIONS

This data shows that there an overall approval of the usage of mobile devices in all suggests fields – ranging from disseminating laboratory data directly to mobile devices to viewing electronic medical records on mobile devices.

Current usage of mobile devices is greatest in accessing medical literature and articles (52%), communicating between physicians (36%), and training and educating healthcare workers (31%). This suggests that current usage is primarily in methods without direct patient interaction. Of those using mobile devices, they believed that it enhanced the quality of patient care, and would encourage use of mobile devices for the same purposes at other institutions.

Of those not using mobile devices in their workplace (26%), this was commonly due to financial limitations, lack of data security, or for a perceived potential of carrying infections on them.

According to those surveyed, mobile devices have the potential to improve the quality of care for patients without being a distraction to the physician or threatening patient privacy. There was no clear opinion as to if mobile devices would increase or decrease the cost of healthcare.

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