

Project Title

Evaluation of an mHealth Intervention to Disseminate Laboratory-Related Information Among Health Professionals

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Organisation(s) Involved

Ng Teng Fong General Hospital, Doctor Anywhere Private Limited, Eurofins Clinical Diagnostics Private Limited, Parkway Laboratory Services Limited

Healthcare Family Group Involved in this Project

Healthcare Administration, Medical

Specialty or Discipline (if applicable)

General Practice, Medical & Laboratory Technology, Laboratory Medicine

Aims

The aim of this study was to determine the effectiveness of an intervention to

provide laboratory-related information to end-users through an mHealth app at a tertiary-care hospital in Singapore.

Background

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Methods

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Results

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Conclusion

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Additional Information

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Project Category

Technology, Digital Health, Mobile Health, Digital Apps, Applied Research, Mixed-Methods

Keywords

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Evaluation of an mHealth Intervention to Disseminate Laboratory-Related Information Among Health Professionals: Quasi-Experimental Pre/Post-Intervention Study

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Introduction

Acceptance of interventions based on mobile health applications (mHealth apps) could vary among health professionals (end-users) [1]. This directly affects the effectiveness of interventions. Understanding the level of acceptance and effectiveness of mHealth interventions is therefore critical for its meaningful utility.

In our hospital, laboratory-related information was disseminated among its end-users primarily through Laboratory Service Manual (LSM) on the intranet. Despite the use of LSM, recurrent telephone queries regarding laboratory tests contributed towards a considerable non-value-added workload [2]. A plausible intervention to improve dissemination of laboratory-related information amongst its end-users - an mHealth app - was suggested by the end-users themselves, responding to a survey conducted by the laboratory (unpublished data). Therefore, an mHealth app - "NTFGH LabMed App" - was developed and launched (Figure 1) [3].

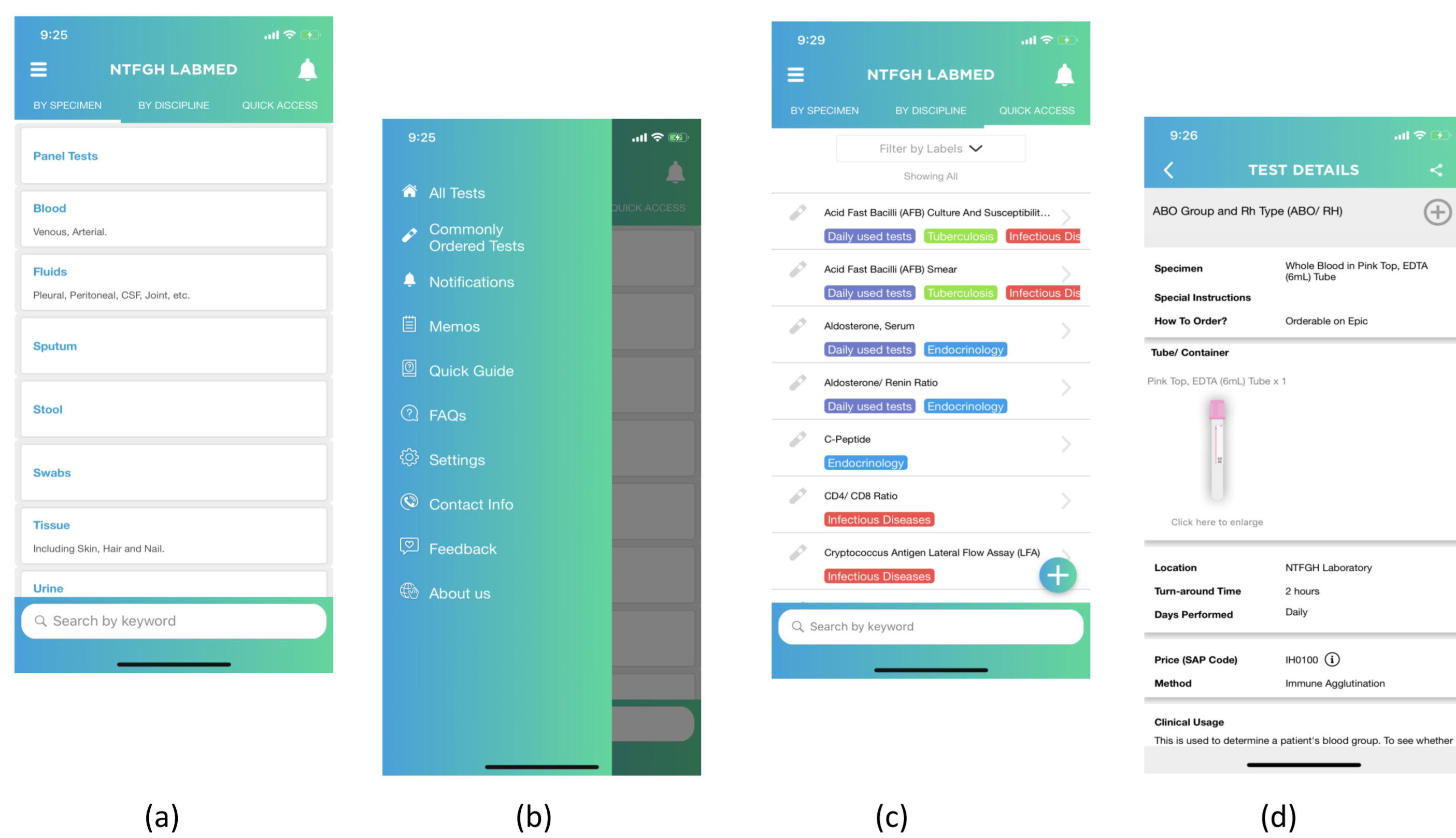


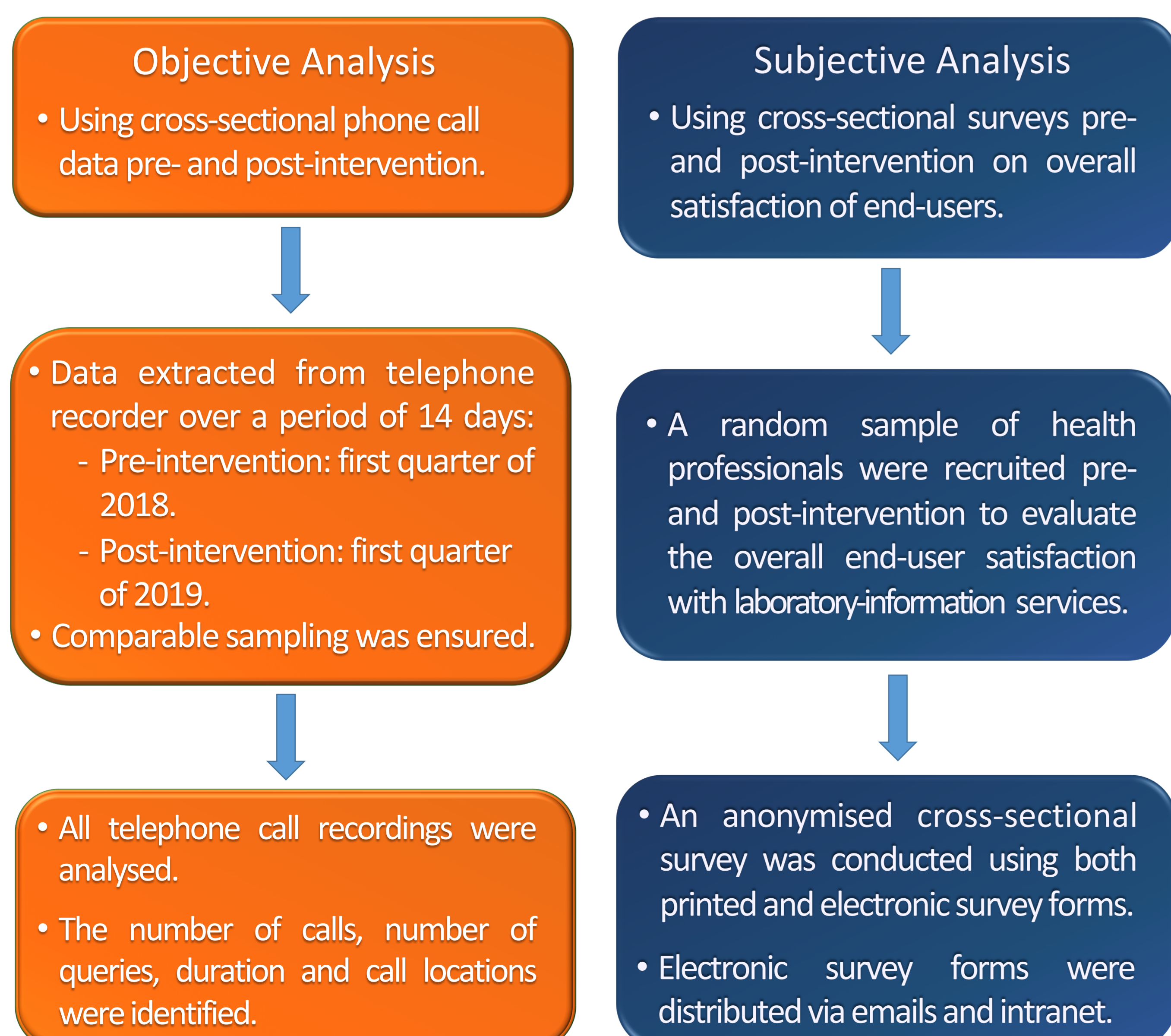
Figure 1: User interface design of the NTFGH LabMed app: (a) Home page, (b) Hamburger menu, (c) 'Quick access' page, and (d) 'Test details' page.

Aim

The aim of this study was to determine the effectiveness of an intervention to provide laboratory-related information to end-users through an mHealth app at a tertiary-care hospital in Singapore.

Methodology

A quasi-experimental pre-/post-intervention design utilising two independent methods:



Results

Pre-Intervention		Post-Intervention	
Number	Percentage	Number	Percentage
1,454		634	
Total Number of Queries Identified			
Distribution of Queries According to Domain			
894	61.5%	245	38.6%
172	11.8%	149	23.5%
132	9.1%	56	8.8%
118	8.1%	24	3.8%
102	7.0%	63	9.9%
36	2.5%	97	15.3%

Table 1: Phone call queries received pre- and post-intervention.

Phone calls were categorised into six domains: information needs, Electronic Medical Records related, test cancellations and rejections, internal/external stakeholders, tracing results and specimens, and others. Furthermore, the number of queries in each call was identified. There was no statistically significant reduction of phone call volume and call duration; however, a significant post-intervention reduction of calls in the 'Information needs' domain ($p < 0.001$) and a reduction in the total number of queries (58%) was observed (Table 1).

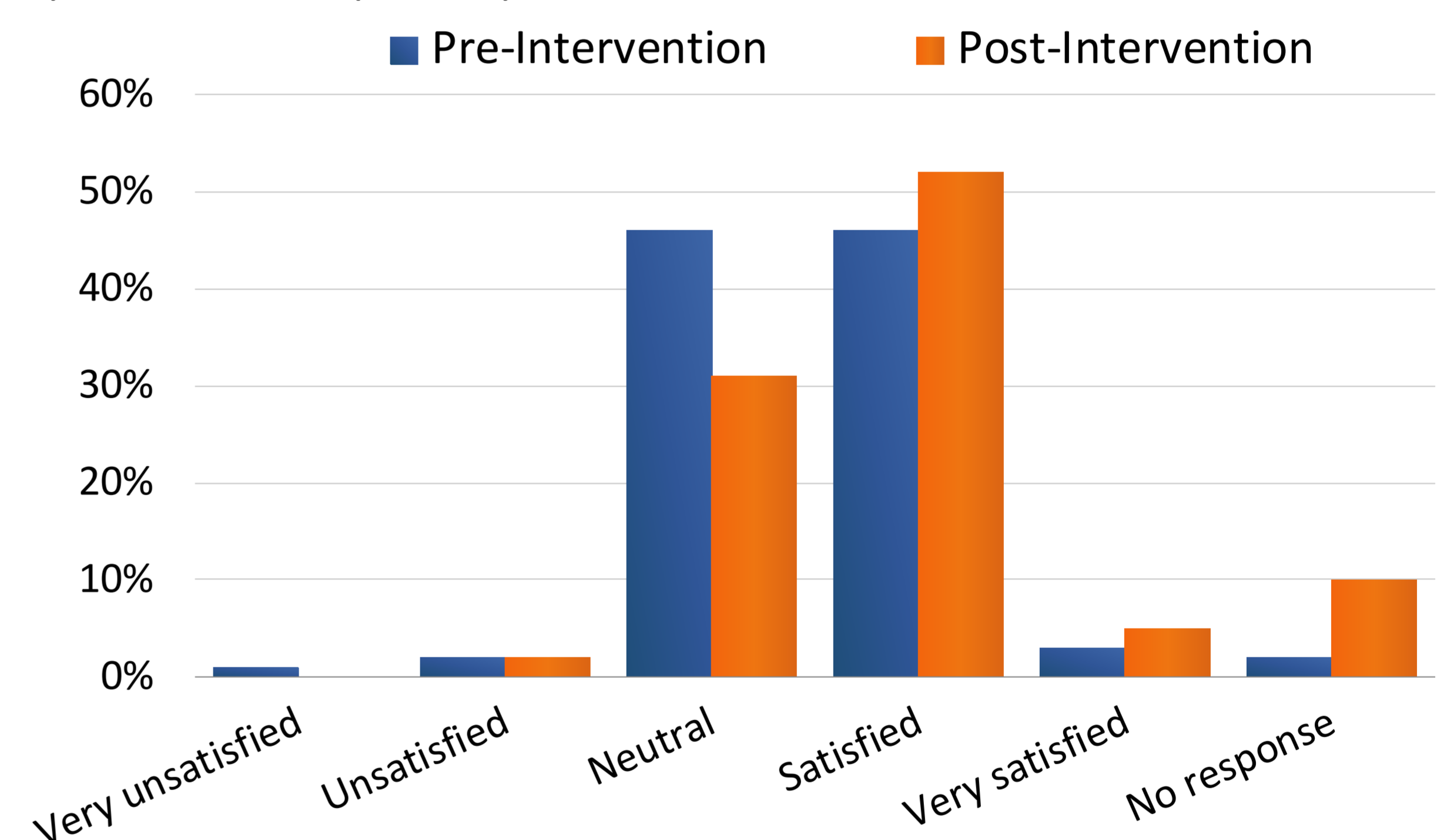


Figure 2: End-user satisfaction with laboratory information services, pre-/post-intervention.

A significant improvement of end-user satisfaction was observed post-intervention ($n=179$; mean(SD): 3.66(0.622)) as opposed to pre-intervention ($n=218$; 3.49(0.634)) ($p=0.009$). The demographics including age, gender, and profession did not demonstrate significant differences between the survey groups (Figure 2).

Conclusion

The mHealth intervention likely improved end-user satisfaction and the number of call queries in the information needs domain, but it did not improve phone call burden. Mixed results of this study highlight the possible utility of mHealth interventions in healthcare quality improvement, and the importance of continued evaluation of widely-used mHealth technology to ensure its meaningful and effective use. Further research is necessary to understand the utility of mHealth interventions in healthcare settings.

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