

## Research Article

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# Multi-tier mobile social platform improves communication and satisfaction among faculty and residents in an orthopaedic department

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## ABSTRACT

**Background:** Outdated communication methods in the medical field, such as pagers and telephones, have given way to smart phone based apps. The aim of this study was to test effectiveness of and satisfaction with a multi-tier smartphone based communication system.

**Methods:** 30 participants of the orthopaedic surgery unit of PDDYP hospital were recruited. A multi-tier smart phone based communication system was established and questionnaires were used to assess effectiveness and satisfaction with the system over a 6 month period.

**Results:** Response rate was 100%. There was significant improvement with effectiveness and satisfaction with communication between team members post implementation of the new multi-tier communication system.

**Conclusions:** We advocate the use of a multi-tier smart phone based communication system to improve effectiveness and satisfaction with communication between team members in orthopaedic surgery.

**Keywords:** Communication, Orthopaedic department, Questionnaires, Effectiveness and satisfaction

## INTRODUCTION

The medical fraternity relies on effective and concise communication between team members. Historically, this has consisted of telephonic conversations. Although able to dictate verbal descriptions, visual supplements are lacking. To add visual data to the exchanges, clinical photographs taken by digital cameras were transmitted as downloadable files between computers having modern and telephonic link as telemedicine gained popularity in the 1990's.<sup>1</sup>

With advanced internet access facilities in the late 2000s, images were transferred through internet and accessed by personal computers or mobile phones. More recently, photographs taken by Smartphones have been shared with other smartphones.<sup>2,3</sup>

WhatsApp is an early stage technology startup founded to build a better short message service alternative. It is a proprietary cross platform instant messaging application for smart phones.

With Apple's recent announcement of the HealthKit program, smartphone based telemedicine has become a reality in the modern medical arena.

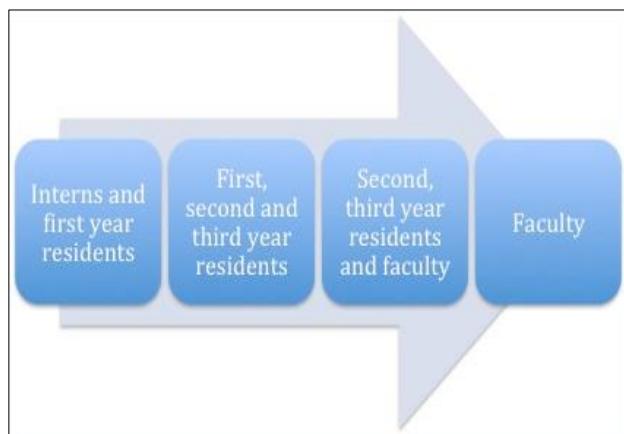
In this study, we assessed effectiveness of communication and satisfaction with communication among team members of an orthopaedic unit at an academic institution before and after the institutionalization of a WhatsApp-based multi-tier communication platform.

## METHODS

We conducted a prospective study in department of orthopaedic surgery unit 3 at Padmashree Dr. DY Patil hospital and research centre, Navi Mumbai, India. The study duration was 6 months (July 2013 to December 2013). A total of 8 faculty members, 12 residents and 20 interns were included in the study.

A multi-tier WhatsApp based platform was established (Figure 1), consisting of groups of team members, in July 2013. Groups were used to communicate confidential and name de-identified data regarding patient updates, laboratory investigations, clinical photographs, intra-operative images, pre- and post-operative radiographs, CT and MR images, and post-operative wound photos.

All participants completed a questionnaire (Likert-style responses) to assess effectiveness of communication and satisfaction with communication before and after implementation of the program.



**Figure 1: Flowchart of multi-tier communication system.**

## RESULTS

### *Response rate*

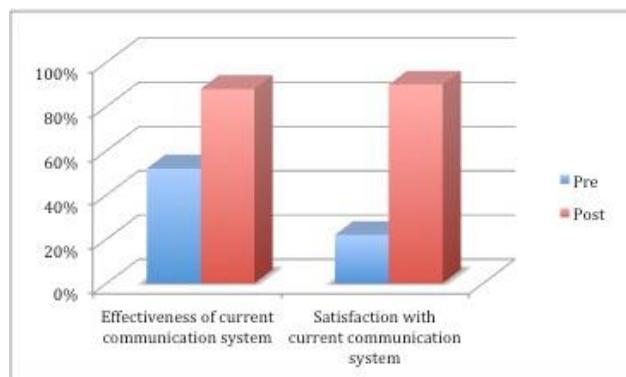
All participants completed the pre- and post-implementation questionnaires (response rate = 100%).

### *Demographic data*

90% of responders were male and 10% female. Faculty constituted 20% of all responders, residents 30% and interns 50%. Average age of responders was  $32 \pm 4.6$  years.

### *Questionnaire data*

Response data to questions pre and post-implementation is presented in Figure 2.



**Figure 2: Questionnaire data pre and post-implementation of multi-tier communication system.**

## DISCUSSION

In a constantly changing and rapidly expanding profession, the need for effective communication between team members is paramount. Orthopaedic surgery is no different. Outdated methods of communication such as pager system and telephonic exchanges between faculty and residents have given way to visual communication of data. WhatsApp, a social media platform, expands this domain allowing transmission of constant updates, real time chat messaging, clinical photograph, lab investigation and radiographs transmission.

In this study we found that implementation of a WhatsApp based multi-tier communication system significantly improved team perception of effectiveness of communication and satisfaction with communication methodology. Timely inputs about patients were able and rapid changes to management plans could be instituted.

We strongly advocate this method of technology be tested and implemented at other orthopaedic surgery departments and used for communication between faculty and team members.

## CONCLUSION

Implementation of a multi-level smartphone based social communication system significantly improved effectiveness and satisfaction with communication between team members in an orthopaedic surgery department. The authors advocate the use of such systems at other institutions.

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*Ethical approval: Not required*

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