WHATSAPP IN DIGITAL CYTOLOGY TELECONSULTING: A PRELIMINARY ASSESSMENT

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Introduction

New frontiers for the exchange and sharing of multimedia files (images, video, audio) are today offered by the Applications (APPs) for smartphones. The instant messengers, for example, are APPs useful to send text messages, multimedia files (images, video, audio), position to other users using standard cellular mobile numbers. The study of new solutions based on these APPs in digital cytology could introduce new opportunities for the remote diagnosis in teleconsulting.

Testing an instant messenger in digital cytology

The objective of the study was to test an instant messenger in digital cytology.
The methodological flow was the following:

- Identification of the instant messenger;
- Set-up of the work group;
- Choice of the medical images;
- Investigation of the acceptance of the methodology.

Identification of the instant messenger

WhatsApp (Facebook Corp, USA) instant messenger is the most diffused and most convenient way of quickly sending messages on your mobile phone to any contact on your contacts list in the phone.

Obviously the only requirement is that people involved in the network must have the APP installed on their own device. Currently, *WhatsApp* is compatible with just about all mobile operating systems on the market: Android, iOS, Symbian and Windows Phone. This basically means you are able to use *WhatsApp* to communicate with anyone, regardless of what model of device they have.

WhatsApp users can send text messages, voice messages, links and images to any other user. These first characteristics makes *WhatsApp* useful for the remote-image exchanging in telemedicine.

Set-up of the work group

One of the most interesting and most used functions on *WhatsApp* is that it lets you easily create and manage groups among your mobile phone contacts. Any user can enter any group, as long as they have been invited by the group's creator, and they can leave it whenever they want. This function is useful in digital cytology to set-up a group of experts.

A first group has been settled up using the specific function of *WhatsApp* with a logo. Figure 1 shows the first group of "Digital Cytology & Wapp".

Figura 1. Logo proposed for the first work group in *WhatsApp*

At the moment a group of experts is under recruitment including subjects having worked in the previous investigations (1-7) and specialists in digital cytology.

Choice of the medical images

Six e-slides were obtained by means of a scanner Aperio. A total of 38 snapshots have been extracted from six e-slides relevant to cervico-vaginal cells.

Four snapshots have been used in this investigation. Figure 2 shows the image exchanging and sharing in the environment of the *WhatsApp*.

Figure 3 shows a shared image with the relevant magnification of a detail indicated by a pointer.

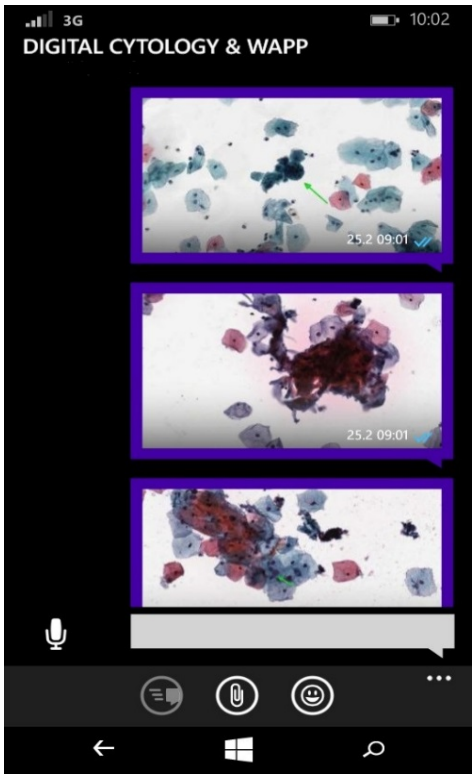

Figura 2. Example of image sharing in *WhatsApp*

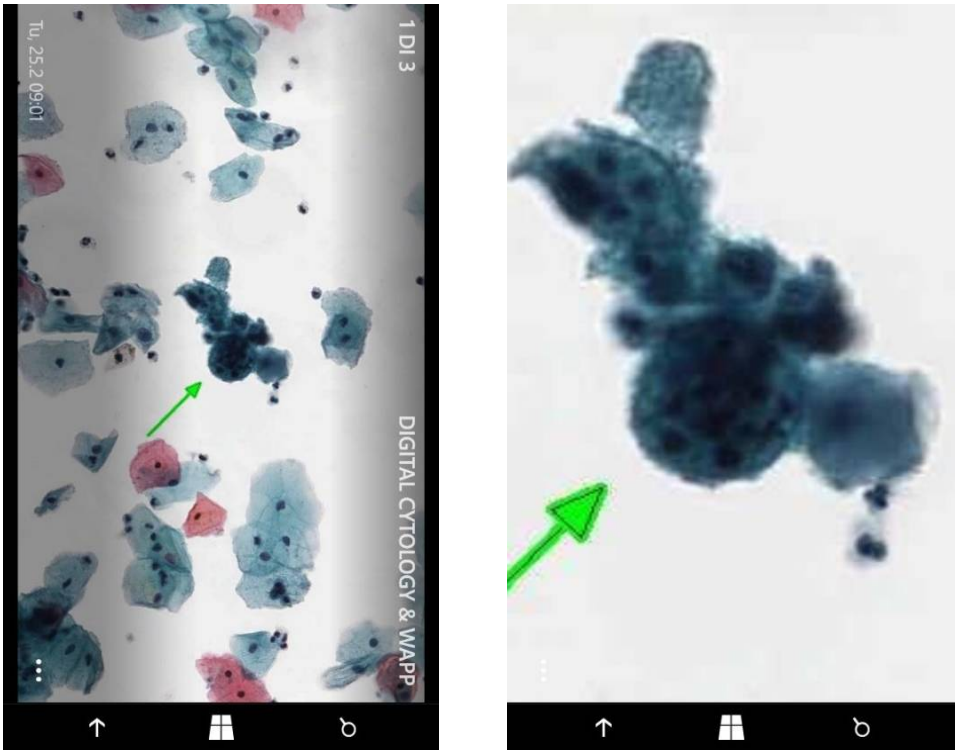

Figura 3. Magnification of a shared image in *WhatsApp*

Investigation of the acceptance of the methodology

A preliminary investigation on the acceptance of the methodology has been performed.

A survey for the investigation has been designed with 5 questions. Each question allowed a graded assessment (Min =1; Max=4).

The assessed issues were the following:

- User-friendly.
- Usefulness.
- Speed.
- Subjective perception of quality of image.
- Subjective perception of technology.

Fifteen students at the Faculty of Medicine of Sapienza Univesity (Rome) were recruited for the test.

The test was conducted using the smartphone Lumia 535, Nokia with the basic functions, in an area with a 3G wireless field at 3/5 of Power.

Figure 4 shows the successful outcome, in particular:

- The parameters "Usefulnes", "Speed" and "User-friendly" received an assessment higher than 3.3 in mean value.
- The parameters "Subjective perception of quality of image" and "Subjective perception of technology" received an assessment very near to the level 3 in mean value.

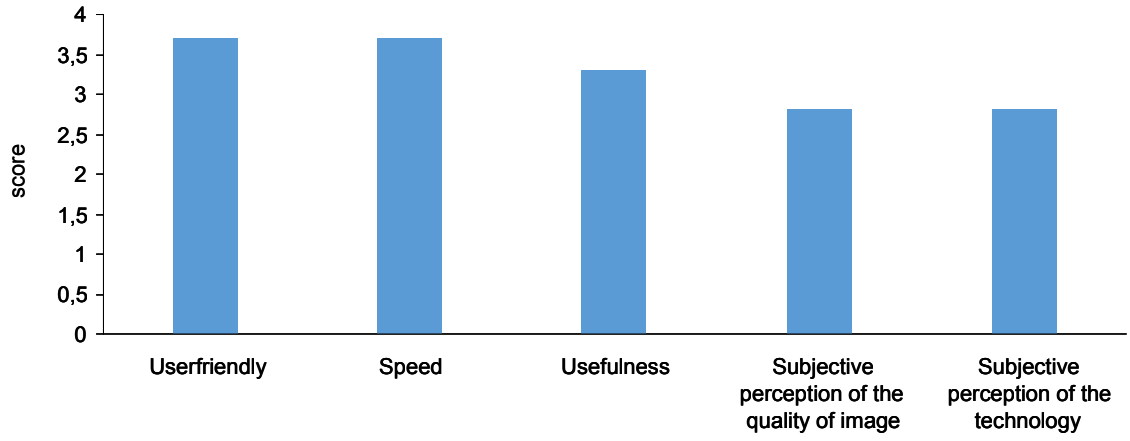

Figure 4. Outcome of the assessment of the use of WhatsApp in digital citology

Work in progress

At the moment we are designing a specific environment for the assessment of the methodology based on the Health Technology Assessment (HTA), using the previous successful approach designed for the digital cytology (1-7). In order to speed the assessment we have

planned to design the questionnaires, for the data-collection in the HTA, using the online-surveys based on *Onedrive* (Microsoft Corp, USA).

This allows an easy collection of the feedback directly in excel online ready for the post processing elaboration and analysis. From a global point of view, this work shows how the instant messengers used for the social networks could contribute in telemedicine for cooperative diagnosis. In particolar, the study demonstrates that the use of *WhatsApp* for the teleconsulting is feasible. Even if the study is at an initial stage, preliminary results are indicating that the methodology could give a significant contribution in the field of telemedicine.

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