Annals of Plastic and Reconstructive Surgery

Short Communication
Published: 26 Mar, 2019

Informal Medical Photography: Picture Perfect?

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Abstract

Aim: Photography is increasingly used in healthcare and now forms part of guidelines for managing conditions such as open lower limb fractures. It allows improved communication between health care staff, and forms a record of progress. Until recently this was performed by formal medical photography or a departmental camera, but we are now able to use smart phones to take clinical photos directly to electronic healthcare records.

The number of photos taken worldwide is increasing dramatically, approaching an estimated 2 trillion annually. We aim to study how this might be affecting the quality of photography within healthcare.

Methods: Fifty patients on CUH plastic surgery trauma list in January 2018. Notes reviewed for injury, presence of photography and patient consent for this to be performed. Photos were reviewed for photographer, angles, lighting, focus, image name, clutter and inclusion of staff members.

Results: Fifty patients studied with an average age 43.7 years. 68% of injuries were to the upper limb. Smartphone photography was performed in 76% of patients, with an average of 1.9 views taken. 50% of views were direct AP, with less common use of other angles. Lighting was good in 66% of images, and 82% were in focus. Other people in addition to the patient were seen in 29% of images.

Consent for photography was only documented in 8% of notes, and only 37% of images were titled with a site and side.

Conclusion: There are many advantages to facilitating medical photography, but it is important to maintain the quality of these photos. In this study we found that many photos are inadequate to inform care due to poor quality.

In addition, patients are generally older than their healthcare provider. They may therefore not have the same experience of smart phone use; including encrypted image uploads as their provider. Explanation and consent should therefore be documented.

Keywords: Electronic healthcare records; Photography; Assessment

OPEN ACCESS

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Received Date: *07 Mar 2019*
Accepted Date: *26 Mar 2019*
Published Date: *02 Apr 2019*

Citation:
Kiely J. Informal Medical Photography: Picture Perfect?. Ann Plast Reconstr Surg. 2019; 3(1): 1023.

Introduction

Photography has become a key part of modern culture; used for illustration, memory and communication. Over one trillion photographs are now taken each year, facilitated by rapid advances in technology particularly in smart phones [1]. With the upsides of this surge come downsides, including impact on self-esteem or bullying due to images shared through social media.

Medical photography has similarly become more frequent. While previously restricted to a departmental camera or professional clinical photographers, both of which might be difficult to access, modern electronic healthcare record systems allow staff to use their own smart phones to upload photography directly [2,3]. This allows illustration of a patient's progress through their healthcare journey, enhanced communication within the multidisciplinary team, and (with suitable permission) used as a teaching aid. Photos are also useful in telemedicine, where their use has been particularly shown in burns but also telemedicine more generally [4,5].

An example of this is the HAIKU® smart phone application, which is part of the epic systems corporation electronic healthcare records package. Registered HAIKU® users have smart phone access to parts of the records kept in their Trust's main EPIC® system, and have the ability to upload images taken with their smart phone camera without these being stored locally. Images are previewed before upload and can be titled to provide further information.

Despite the apparent advantages of such informal medical photography, there may also be downsides. Professional clinical photographers are trained and use guidelines to allow standardized

images, particularly for procedures such as Rhinoplasty [6]. Casualisation of this process could result in photos that are less useful or worse [7]. At present there are no guidelines for how best to produce images, potentially relying on either an individual's own interest in photography or trial and error. It is therefore important to assess the quality of the photography we are currently performing.

Methods

Cambridge University NHS Foundation Trust has used the EPIC® system since October 2014, and through this staffs are able to use the HAIKU® application. Within the Plastic Surgery department images are used to plan elective and emergency surgery, and to track the progress of wounds. This reduces the need to remove dressings on multiple occasions, improving patient care and flow.

A patient search was performed on the Plastic Surgery emergency list in January 2018, and notes of these patients were reviewed for their demographics, injury, photography and treatment. Photographs from initial A&E presentation were reviewed for photographer, image title, image number, image angles, focus, lighting and documented consent. Approval for this study was obtained from the Clinical Audit department, and the study was conducted in accordance with the STROBE statement.

As multiple clinical factors determine further management of a given wound, including functional effect and patient choice, we did not study whether the images in their own right affected patient care.

Results

50 patients were identified on the emergency list over a 22 day period. 68% were male, and they had an average age of 43.7 years (range 9 months to 94 years). 76% had photography performed through HAIKU®, and these images were available for review. 68% of injuries were to the upper limb, 20% lower limb, and 12% to other areas of the body. 58% of images were taken by the plastic surgery department, with most of the remaining images taken by A&E staff. 61% of images were taken by medical staff, with the remainder taken by nursing staff- usually an emergency nurse practitioner.

The images taken at initial assessment were reviewed for their quality. On average 1.9 views were taken, with a range of 1 to 6, although 53% only had one image. 50% of image series were in an anteroposterior orientation. Other angles, such as AP/lateral (26%) or near/far (24%), were taken less frequently. Image lighting was adequate or good in 83%, and 82% of images were in focus. Images should ideally be titled with a side and site, as would be expected for radiography. However, in this series titles were uncommon, and found in only 37% of images. Unfortunately, 10% of images were untitled, poorly lit and out of focus.

On further review of the notes, it was found that consent for photography had only been documented for 8% of patients for whom this had been performed, although in a further 8% consent was not possible due to altered conscious level at initial assessment.

Conclusion

Medical photography has become a common facet of modern healthcare. Facilitating this through systems such as HAIKU® allows a greater range of patients to benefit, particularly in the emergency setting where Clinical Photographers are not normally available.

However, images taken by untrained staff in an uncontrolled environment are likely to be of a lower quality than those taken by trained Clinical Photographers. Indeed, some of the images in this small study were inadequate to even identify the imaged body site, let alone plan care. Image previews should be reviewed before upload to improve quality. Multiple images are useful, and by using mixed angles additional information can be gained, such as helping to size and site wounds. This may help when planning management. Use of camera flash also helps to improve image quality through even lighting.

In addition, consent for photography was poorly documented. Although being photographed has become a common feature of modern life, patients are at a vulnerable point in their life. They are also often older than their healthcare provider, and therefore likely to have a different life experience of photography [8]. It is important to explain that images taken in this manner will not remain on a provider's smart phone, but instead be uploaded and stored securely, and document this consent accordingly.

Although this is a small single centre study, the finding that informal medical photography may be of a low quality is likely to be generalisable to other centres, due to similar settings, electronic systems and smart phone technology. However, the extent of this is likely to be variable.

Informal medical photography offers many benefits to patients and providers; careful use can increase these benefits further while avoiding the pitfalls.

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