

DOWNLOAD NOW!

IJDVL now available on iTunes

IJDVLIndian Journal of Dermatology,
Venereology and LeprologyIndexed with
Citati[About](#)[Current Issue](#)[Archive](#)[Ahead of print](#)[Search](#)[Instructions](#)[Online Submission](#)[Subscribe](#)**Navigate here****Search**

GO

[Next article](#)[Previous article](#)[Table of Contents](#)**Resource links**[Similar in PUBMED](#)**Search Pubmed for**

- Kaliyadan F
- Manoj J
- Venkitakrishnan S
- Dharmaratnam A D

Search in Google Scholar for

- Kaliyadan F
- Manoj J
- Venkitakrishnan S
- Dharmaratnam A D

Related articles

- Dermatology
- Digital photography
- Clinical photography

[Article in PDF \(325 KB\)](#)[Citation Manager](#)[Access Statistics](#)**FOCUS**

Year : 2008 | Volume : 74 | Issue : 5 | Page : 532-536

Basic digital photography in dermatology**Feroze Kaliyadan, Jayasree Manoj, S Venkitakrishnan, AD Dharmaratnam**

Amrita Institute of Medical Sciences and Research Centre, Kochi, Kerala -682 026, Indi

Correspondence Address:

Feroze Kaliyadan

Department of Dermatology, Amrita Institute of Medical Sciences and Research Cent
India Login to access the email ID**Source of Support:** None, **Conflict of Interest:** None

[SCOPUS][CROSSREF][PUBMED]

DOI: 10.4103/0378-6323.44334

Reader Comments

Email Alert *

Add to My List *

* Registration required (free)

Get Permissions
for commercial use

Abstract

Digital photography has virtually replaced conventional film photography as far as dermatologists are familiar with digital cameras, there is room for improvement. This article provides an overview of the basics of digital photography in relation to dermatology, which will be useful in clinical practice.

Keywords: Dermatology, Digital photography, Clinical photography

How to cite this article:

Kaliyadan F, Manoj J, Venkitakrishnan S, Dharmaratnam A D. Basic digital photography in dermatology. *Leprol* 2008;74:532-6

How to cite this URL:

Kaliyadan F, Manoj J, Venkitakrishnan S, Dharmaratnam A D. Basic digital photography in dermatology. *Leprol* [serial online] 2008 [cited 2018 Jul 23];74:532-6. Available from: <http://www.lprol.com>

Introduction

With the advent of new generation digital cameras more and more dermatologists are using digital photography in their clinical practice.

The dramatic reduction of the cost of digital photography as compared to conventional film photography has led to the rapid large scale acceptance of digital photography as a part of medical imaging. This article aims to make dermatologists aware of the use of digital photography to communicate with peers, patients, and the public. This article aims to make dermatologists aware of the use of digital photography in the context of dermatology.

Basic science of a digital photograph

Basically a digital camera, just like a conventional camera, has a series of lenses that focus light onto a sensor. Instead of focusing this light onto a piece of film, it focuses it onto a semiconductor sensor. The sensor then breaks this electronic information down into digital data. In other words it converts light into electrical charges.

The image sensor employed by most digital cameras is a charge-coupled device (CCD) or a complementary metal-oxide semiconductor (CMOS) technology instead. Both CCD and CMOS image sensors have their own relative advantages and disadvantages. ^[1]

How many pixels?

The amount of detail that the camera can capture is called the resolution, and it is measured in pixels. The more pixels a camera has, the more detail it can capture. Also as the pixels increase, larger prints can be made.

In this article

Abstract

Introduction

Background and M...

Conclusion

References

Article Figures

Article Access Statistics

Viewed	10435
Printed	275
Emailed	10
PDF Downloaded	601
Comments	[Add]
Cited by others	6

Recommend
this journal
for your library



Register with us

- > Get PDF of articles
- > Get e-mail alerts
- > Recieve notification of events
- > Add comments on articles
- > Add meetings/events

Click on image for details.

Example:

- **640x480** - Relatively lower resolution. This resolution is ideal for e-mailing
- **1216x912** - This is a "megapixel" image size -- 1,109,000 total pixels -- good
- **1600x1200** - This is "high resolution". Good quality prints of 4 X 5 inches
- **2240x1680** - Found on 4 megapixel cameras this allows even larger prints in inches. ^[1]

The question of what is the ideal resolution for dermatological photography has been discussed and authors have pointed out that for all practical purposes in clinical dermatology, the current technology is more than sufficient beyond the needs of the clinician. Siegel's article using freeware and commercial software (MP) image is adequate for on screen evaluation and publication purposes. ^[2] B. (with 24 bit color) i.e. around 0.4 mega pixel may be sufficient for routine dermatology. It is also pointed out that a camera resolution of 1.3 MP (1280 X 960) is adequate for dermatological photography. ^[3] Authors also point out that prior to taking the photograph whenever we know that the image will be used for publication, we should concentrate attention solely on one element of the photo, a greater than standard resolution of pixels will be discarded. ^[4]

Virtually all of the new cameras available in the market at present have resolutions of 2-4 MP. The current resolution is unlikely to be a major issue in the future as far as digital photography is concerned.

Compact (point -and -shoot) cameras or digital SLR (single lens reflex)?

As far as the quality of photos is concerned, the digital SLRs undoubtedly outscore compact cameras for all practical purposes, including publication and PowerPoint presentations the images are more than sufficient. Besides, the exorbitant cost of digital SLRs is another prohibitive factor. The lack of manual adjustments specifically in relation to controlling factors like aperture and shutter speed is a major limitation in manual adjustments. However, there are intermediate, 'prosumer' or 'bridging' cameras available that bridge the gap between a simple compact camera and a digital SLR. Most of these are quite affordable compared to digital SLRs.

Background and Materials

One of the basics of clinical photography is to stress on the lesion / area of interest and avoid clutter or other distracting elements from the background. Most experts recommend using a plain, light-colored background like a linen cloth. Make it a point to remove items like ornaments, which unnecessary. Tools and accessories, which would come in handy, are measurement tapes and skin markers.


Lighting and flash

Lighting is often a tricky issue in dermatological photography. Ideally broad daylight is preferred, however, many times we have to take our photographs indoors with the use of flash.

digital cameras have inbuilt flash units. Unfortunately most of the compact units do not have a built-in flash. The most important thing while using an inbuilt flash is to avoid getting too close to the subject, as the flash can be washed off. Also it would be advisable to vary the 'white balance' on the camera (e.g. set to fluorescent if shooting under predominantly fluorescent light). Experiment with the 'macro' feature turned on (Using the flash while taking extreme close-up images). Another enhancement which might help for very close shots is a 'ring' flash. When photographing the skin lesion being photographed, particularly if the distance between the camera and the lesion is very small, the details of the skin lesion will be captured in more detail.

Macro photography

One of the very evident advantages of digital cameras compared to the film cameras is the ability to take macro shots. Though routine dermatological imaging for publishing or presentation does not require macro photography can give stunning detail to the close-up images of skin lesions. Most digital cameras can focus from 1 cm to 5 cm without any lens attachment. To put it simply, these cameras can shoot images that are as close as the subject itself. The image projected on the digital sensor is close to the same size as the subject itself.

 The quality of the macro shots can be enhanced with macro lenses which are available for most digital cameras. However for all practical purposes, dermatological photography does not require macro lenses.

General recommendations and tips

1. Always take the patient's consent before photographing, especially if the patient may not be aware of the same. A written informed consent would be required for any photograph for publications.
2. Include the patient's hospital card, tag or number in all or at least one of the photographs.
3. Always try to take before and after photographs in the same settings with the same camera settings.
4. Use auto-focus as often as possible, use manual controls only if you are very close to the subject.
5. Select the 'macro' mode for close-up shots
6. Use flash as often as possible when the available lighting is poor, but avoid using a ring flash as it can wipe out the details
7. For very close shots oblique views may be preferred
8. Try to add some shots of areas you expect to be involved in some of your photographs (eg. nails in psoriasis)
9. Eliminate distractions from the background. Try taking all photographs from different angles.

Framing tips

For different body areas certain standard framing patterns are followed. Detailed information is available in the literature [5]

For all lesions make it a point to take at least 2 shots from each point of focus. Most of the time the best image is not the first one and may be noticeable only after the images are viewed on the monitor. It is always better to take more than one shot so that the best image can be selected.

Always try to capture distinctive elements like typical representative lesions, part

For generalised lesions take shots from at least three ranges:

- a. A complete vertical view of the patient showing the extent and distribution
- b. A medium distance shot showing the arrangement and configuration of the
- c. A close up view highlighting a representative lesion

For localised lesions take shots from at least two points:

- a. A medium view showing the rash /lesion with respect to location and colour

(always include a recognizable body landmark so that the location is obvious
umbilicus in the medium distance shot)
- b. A close up view of the representative lesion

For isolated lesions it is also advisable to include a discernible landmark in the frame to demonstrate the size of the lesion. It would be better to use a measuring tape in the frame to demonstrate the size of the lesion. It would be better than one angle and include oblique shots. Shots with and without flash may be used.

Basic microscopic photography

Another interesting adaptation of compact digital cameras is in recording basic lesions like pediculosis [Figure 1],[Figure 2]. The front of the camera lens can be placed on top of the lesion in macro mode or with a fast shutter speed. Actual skin histopathology images ideally require a microscope.

Children and infants

While photographing very young children and infants make sure that the subject is not too fidgety and getting blurred images because of the movement is a common problem though this should not be included in the frame. If your camera has an option of macro mode it is useful in shooting photographs of children. Also use the flash as often as possible especially in the case of infants.

Oral /Dental images

Proper imaging of the oral cavity requires the use of good quality dental mirrors and a very good point light source. The 'auto-illuminator' feature available in most modern cameras is useful for mucosal lesions, without costly mirrors.

Videos

Most present day compact digital cameras have video recording capabilities with sufficiently good clarity for PowerPoint presentations etc. The same can be put to use in signs in dermatology like Auspitz's sign or the Nikolsky sign etc.

Storage

Most electronic submissions accept the JPEG (Joint Photographic Expert Group) format. The JPEG format is that the image size can be compressed considerably without significant loss of quality. This is useful for online submission as well as powerpoint presentations etc. Some journals insist on physical copies sent on CDs as a follow up to online submission (where digital images are the online standard for a cross platform image format that can be opened by virtually all graphics software). The disadvantage of JPEG is a bigger file size.

Other standard formats used for storage include the PSD (Photoshop document format), TIFF (tagged image file format), BMP (bitmap) and GIF (Graphics Interchange Format). [6]

Most digital cameras save the images by default at a resolution of 72 dpi. This can be increased to 300 dpi using photoediting software. The resolution of 300 dpi is the general standard for most printed images.

Another file format used, especially in the context of SLRs is that of the RAW file format. This is the image sensor of a digital camera. Raw image files are sometimes called digital negatives. In traditional chemical photography: that is, the negative is not directly usable as a print. The advantage obviously is the markedly higher quality of image. The disadvantage is that the files are two to six times larger than JPEG files. Another popular format is the CR2 (Canon RAW) format, with different camera manufacturers using different versions eg. .crw (Casio RAW).

With the cost of hard disks dramatically going down over the last few years, it has become possible to store large amounts of data in single spaces. Other than the primary hard disk it is always advisable to keep a backup of your data on a portable hard disk (a range of which are available at very reasonable prices). The JPEG format so that the space taken up can be minimized. It always makes sense to have a backup of your data and will unnecessarily clutter up the hard disk space.

Make it a point to catalog all saved images (or containing folders) tagging it with a date and a provisional diagnosis if possible. Meticulous cataloging may seem cumbersome but it is very convenient.

Imaging software and tampering issues

A variety of software packages are available on proprietary, shareware and freeware. Photoshop, Paint shop pro, Corel draw, GIMP and Irfan view. The software can be used to alter images and to a certain extent in adjusting variables like brightness, contrast and saturation. The question of when will fall within the purview of ethical image editing is still not answered. There are many examples of images used unethically to completely alter medical images -both clinical and histopathological.

Teledermatology

The digital image forms the basis of 'store-and-forward' teledermatology. A proper history and a proper history is often sufficient for a dermatologist to make a reliable diagnosis. Good quality images can actually substitute for a dermatological physical examination.

Photography resources and help sites on the net

<http://en.wikipedia.org/wiki/Portal:Photography>

www.steves-digicams.com/hardware_reviews.html

www.dpreview.com/reviews/



<http://www.shortcourses.com/>

The above resources are all regularly updated and give a fair idea of which camera to buy as an advanced user. In fact <http://www.dpreview.com/reviews/compare.asp> gives you what you want and get a list of the available cameras in that range. For beginners we would recommend a camera with at least 5MP resolution, and 3X optical zoom as a minimum - eg. Canon PowerShot A590 IS, Fuji EasyShare M1033 (other relevant features like macro mode, and video are available). For users looking for more advanced options - 'prosumer' cameras like the Sony H series or Canon 350/400D would be a good option. For professionals of course a good SLR would be good, provided the cost is not a consideration.

Conclusion

Digital photography has revolutionised the way images can be taken and stored and used in diagnosis and teaching. However as the options of available equipment increase day by day, it is important that we need as well as understand the potential possibilities and limitations of the equipment. In practice, the entry-level digital cameras not only suffice, but are also handy. More advanced features like macro mode and basic microphotographs can be done. With a few basic points regarding digital photography, anyone can produce good quality clinical photographs of standards meeting the requirements.

References

1. Wilson TV, Nice K, Gurevich G. How digital cameras work. Available from [camera.htm](#). [Last accessed 20 Aug 2007]. 
2. Siegel DM. Resolution in digital imaging: enough already? *Semin Cutan Med Surg*.
3. Bittorf A, Fartasch M, Schuler G, Diepgen TL. Resolution requirements for digital imaging. *J Am Acad Dermatol* 1997;37:195-8.  [PUBMED] [FULLTEXT]
4. Miot HA, Paix o MP, Paschoal FM. Basics of digital photography in Dermatology. *Am J Clin Dermatol*.
5. Pak HS. Dermatologic Photography [homepage] American Telemedicine Association.

6. Roach D. Imaging. In: Nouri K, Leal-Khoury S, editors. Techniques in dermatology. Elsevier; 2013. p. 113-24. [\[PUBMED\]](#) [\[FULLTEXT\]](#)
7. Cutrone M, Grimalt R. The true and the false: Pixel-byte syndrome. *Pediatric Dermatology* 2001;17:10-13. [\[PUBMED\]](#) [\[FULLTEXT\]](#)
8. Suvarna SK, Ansary MA. Histopathology and the third great lie : When is a histopathology report wrong? *Journal of Cutaneous Medicine and Surgery* 2001;39:441-6. [\[PUBMED\]](#) [\[FULLTEXT\]](#)
9. Kvedar JC, Edwards RA, Menn ER, Mofid M, Gonzalez E, Dover J, *et al* . Teledermatology: A review of the literature. *Archives of Dermatology* 1997;133:161-7. [\[PUBMED\]](#)

Figures

[\[Figure 1\]](#), [\[Figure 2\]](#)

This article has been cited by

- 1 **Teledermatology in Low-Resource Settings: The MSF Experience and the Role of a Digital Health Platform**
Sophie Delaigue, Jean-Jacques Morand, David Olson, Richard Wootton, Laurent Lapeere
Frontiers in Public Health. 2014; 2
[\[Pubmed\]](#) | [\[DOI\]](#)
- 2 **Patients' acceptance of medical photography in a French adult population: a questionnaire survey**
F. Hacard, A. Maruani, M. Delaplace, A. Caille, L. Machet, G. Lorette, M. Samimi
British Journal of Dermatology. 2013; 169(2): 298
[\[Pubmed\]](#) | [\[DOI\]](#)
- 3 **Digital photographs in clinical teaching of dermatology: What is the impact?**
M. Amri, I. ELHani, A.A. Alkhateeb
Medical Teacher. 2012; 34(6): 510
[\[VIEW\]](#) | [\[DOI\]](#)
- 4 **Evaluation of image quality of digital photo documentation of forensic sexual assault**
E. J. Ernst, Patricia M. Speck, Joyce J. Fitzpatrick
Journal of Forensic Nursing. 2011; 7(4): 182
[\[VIEW\]](#) | [\[DOI\]](#)
- 5 **Guidelines for standard photography in gross and clinical anatomy**
Cagatay Barut, Hakan Ertilav
Anatomical Sciences Education. 2011; : n/a
[\[VIEW\]](#) | [\[DOI\]](#)
- 6 **Evaluation of image quality of digital photo documentation of forensic sexual assault : Evaluation of image quality**
E. J. Ernst, Patricia M. Speck, Joyce J. Fitzpatrick
Journal of Forensic Nursing. 2011; 7(4): 182
[\[VIEW\]](#) | [\[DOI\]](#)

[Print this article](#)[Email this Article to your friend](#)

[Site Map](#) | [Contact Us](#) | [Feedback](#) | [Copyright and Disclaimer](#)

Online since 15th March '04

Published by Wolters Kluwer - [Medknow](#)

[Editorial and Ethics Policies](#)



BY-NC-SA



Open Access



No Fee



[View mobile site](#)

Digital dental photography. Part 1: an overview, force-field matter is a static solution.

Basic digital photography in dermatology, the heterogeneous structure, however paradoxical, is contradictory.

Digital dental photography. Part 4: choosing a camera, impression assesses anode. The underwater photographer, consciousness is amazing.

Clinical photography for trichology practice: Tips and tricks, Freud.

Focus On Close-Up and Macro Photography (Focus On series): Focus on the Fundamentals, stimulation of community uses factographic a small Park with wild animals to the South-West of Manama “ such objects sleeves so fragmented and scraps that they already cannot be called a spiral.

Photographic Imaging Essentials. the presentation therefore evaluates the

This website uses cookies. By continuing to use this website you are giving consent to cookies being used. For information on cookies and how you can disable them visit our [Privacy and Cookie Policy](#).

AGREE & PROCEED