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| Authors &Year | Methodology or Techniques used | Advantages | Issues | Metrics used |
| May-20 | CNN, AlexNet, ResNet-18, VGG16, SVM, Black-hat filter, Inpaint Algorithm, Median Filter, Otsu’s Methodology | SVM Accuracy = 86.21%, ResNet Accuracy = 87% | Accuracy Original Data = 80%, Accuracy Augmented Data = 98.61% | AlexNet, ResNet-18, VGG16, SVM, ReLU |
| 2020 | CNN SENet154, WSL, Adam, weighted loss-entropy | Efficient Architecture | Not much improved with ensemble strategy | EfficientNet, SENet, ResNeXt WSL |
| 2020 | GLCM, HOG, GAC | Feature extraction for early detection | Not enough/adequate dataset | ABCD Rule, SVM Classifier, Accuracy, Sensitivity, Specificity using KNN |
| 2019 | Multiclass SVM, AlexNet, ReLU | Accuracy – 94.016% | Model used is a pre-trained model, robust | GOPS, L1D miss rate |
| 2019 | CNN, pooling layers, dense network, SVM | AlexNet, VGG16, ResNet-18 | Accuracy – 74 % |  |
| Apr-19 | CNN, pooling layer, dense network | Accuracy – 89.5% | Time consuming | Accuracy = 89.5%, Recall = 0.84, Specificity, Precision = 0.8325, F-measure = 0.8325 |
| Mar-19 | CNN, Inception V2 Net, K-means Cluster, Max-pooling, Sonification Algorithms | No. of K-means Epochs = 100 | F2-score +ve Prediction = 59.9%, High Sensitivity, Low Specificity | F2-score |
| 2019 | CNN | N/A | Small dataset (11,444), training may be inefficient, class imbalance | McNemar Test, ResNet50, Bonferroni Correction |
| 2018-2019 | CNN, VGG16, ImageNet | Accuracy – 92.5%, Max-pooling fetches maximum pixel | F1-score = 0.77, VGG16 Accuracy = 78% | Random Forest, XGBoost, SVM, ReLU, Sigmoid |
| 2018 | MatConvNet & GoogLeNet Inception V3 CNN | 1.28 million NATURAL images 500 epochs, pre-trained models used, MatConvNet provides pre-trained CNN models and some functions to create and initialize new neural networks | Limited computational resources, time-consuming procedures | GoogLeNet, AlexNet, ResNet, VGGNet, Simple Majority Voting, SMP |
| ary-Ann El Sharouni, MD December 23, 2020 | determine whether histologically confirmed regression was associated with better or worse survival in patients with primary cutaneous melanoma. | regression was a favorable prognostic factor for patients with stage 1 and 2 melanomas, especially in those with thin and intermediate thickness tumors and those with SSM subtype. | Multivariable Cox proportional hazards analyses were performed per cohort to assess recurrence-free survival (RFS) and overall survival (OS), and subgroup analyses according to Breslow thickness category and melanoma subtype were performed | A total of 17 271 Dutch patients and 4980 Australian patients were included |
| Fabiana C. P. S. Lopes, MD December 16, 2020 | To critically assess and synthesize the published data regarding the association between UV exposure and the risk of cutaneous melanoma in skin of color. | In this systematic review, the evidence suggests that UV exposure may not be an important risk factor for melanoma development in people with skin of color. | studies analyzed UV exposure as a risk factor for cutaneous melanoma in people with skin of color, which was defined broadly as any race/ethnicity other than non-Hispanic White, Fitzpatrick skin types IV through VI, or tanning ability of rarely or never burns. | After duplicate removal, 11 059 database records were screened, 548 full-text articles were assessed, and 13 met inclusion criteria. Study types included 7 ecological studies, 5 cohort studies, and 1 case-control study. All studies used race and/or ethnicity to categorize the participants, and more than 7700 melanomas in skin of color were included. |
| Japbani K. Nanda, BS September 16, 2020 | Single-center, retrospective, observational cohort study using an institutional database to identify patients diagnosed with melanoma at a tertiary care cancer hospital in New York, New York. | Patients treated with ICI ( ipilimumab, nivolumab, and/or pembrolizumab) therapy for metastatic melanoma remain at risk for the development of new CM(cutaneous melanoma) | Primary outcomes were the incidence proportion, the incidence rate, and the 5-year cause-specific cumulative risk | A total of 2251 patients were included |
| Sharif Omara, MBBS December 16, 2020 | To evaluate the proportion and rate of incidental skin cancer detection in urgent skin cancer clinics and investigate the rate of incidental skin cancer detection in 2 groups based on the degree of clinical suspicion of the index lesion for malignancy. | Individuals presenting with a clinically suspicious index lesion requiring biopsy are most likely to benefit from TBSE and should be counseled regarding the benefit | The proportion and rate of incidental skin cancer detection through TBSE and whether a clinically suspicious (malignant) index lesion was associated with a higher chance of having a malignant incidental lesion | 5944 patients referred to the clinic, 4726 individuals (79.5%) were evaluated |
| Geeti Khullar 2016 | A retrospective analysis of data from January 2003 to August 2013 was performed to evaluate the predisposing factors and histopathological types of cutaneous squamous cell carcinoma at the Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh. Demographic and disease characteristics such as age, gender and predisposing factors, particularly premalignant dermatoses were recorded and histopathology slides were reviewed. | Cutaneous squamous cell carcinoma is uncommon in Indian patients and a high index of suspicion is necessary when a rapidly enlarging nodule, verrucous fungating plaque or an ulcer with everted margins develops in long standing scars and other predisposing dermatologic conditions. Histopathological examination is mandatory to confirm the diagnosis and identify the subtype and this has prognostic implications. | To analyze the risk factors and to characterize the histopathological subtypes of cutaneous squamous cell carcinoma in Indian patients in an area, non-endemic for arsenicosis | Of the 13,426 skin biopsy specimens received during the 10-year period |
| Sasmita Panda 2018 | The present study was a retrospective study of 182 cases diagnosed histopathologically as malignant melanoma during 2011–2016. | The lower extremity is the most common site for melanoma, whereas extracutaneous melanomas are exceedingly rare and aggressive neoplasms. Melanoma can metastasize to regional lymph nodes, however, visceral metastasis to liver can also occur. In the absence of pigment in amelanotic melanoma, immunohistochemical markers such as HMB 45 can be used for definitive diagnosis. | To document the pattern of clinicopathological features of malignant melanoma cases attending in a regional cancer center in eastern India | retrospective study of 182 cases diagnosed histopathologically as malignant melanoma |
| Nazan Emiroglu1 Fatma Pelin Cengiz 01-06-2016 | This study included 98 patients with clinically and histopathologically confirmed Basal cell carcinomas. The dermoscopic features of the lesions from each patient were analyzed before the histopathological findings were evaluated. | dermoscopy can be used as a valuable tool for the diagnosis of Basal cell carcinomas and prediction of their histopathological subtypes | Basal cell carcinoma is the most frequent cancer in fair-skinned populations and dermoscopy is an important, non-invasive technique that aids in the diagnosis of Basal cell carcinoma. evaluate the relationship between histopathological subtypes and dermoscopic features of Basal cell carcinoma. | 3056 Article Accesses 8 Web of Science 18 CrossRef |
| Aimilios Lallas, MD 2017 | Dermoscopic images of histopathologically confirmed BCCs were retrospectively evaluated for the presence of predefined criteria. Univariate and adjusted odds ratios were calculated. Discriminant functions were used to plot receiver operating characteristic curves. | Dermoscopy is reliable in differentiating sBCC from other BCC subtypes | We sought to assess the diagnostic accuracy of dermoscopic criteria for differentiating superficial BCC (sBCC) from other BCC subtypes | Citation Indexes: 77 Exports-Saves: 3 Readers: 66 |
| Emina Kasumagic-Halilovic 2019 | Total number of 422 patients clinically diagnosed with basal cell carcinoma were included in the study.Data on age, gender, skin type, personal and family history, duration of disease, localization of lesions, clinical type of lesions, and recurrence rate were collected and analyzed. The data were statistically evaluated | The factors related to the development of BCC were older age and exposure to ultraviolet rays both in recreational and in occupational form. The prevention of BCC is based on the knowledge of risk factors, early diagnosis and treatment, particularly in susceptible populations | The aim of our study was to analyze the recent clinical trends of basal cell carcinoma by reviewing a single institution’s experience | Total number of 422 patients clinically diagnosed with basal cell carcinoma were included in the study |
| Daniel J Kadouch 2016 | This is a prospective non-inferiority multi-center RCT designed to compare the "OSS concept using RCM" to current standards of care in diagnosing and treating clinically suspected BCC | This RCT is the first to examine an OSS concept using RCM for diagnosing and treating clinically suspected BCC lesions Results of this research are expected to have applications in evidence-based practice for the increasing number of patients suffering from BCC and possibly lead to a more efficient disease management strategy | The aim of this research is to assess the efficacy and safety of a one-stop-shop (OSS) concept, using real-time in vivo reflectance confocal microscopy (RCM) (Vivascope 1500; Lucid Technologies, Henrietta, NY, USA) as a diagnostic tool, prior to surgical management of new primary BCCs. | carcinoma, basal cell; diagnostic services; microscopy, confocal; sensitivity and specificity; surgical procedures, operative |
| 2019 | STM32, ROC, CNN | Accuracy - 99%, F1-Score - 99% | computing and index loss, poor lesion skin discrimination specificity | ReLu, NLSC |
| 2020 | CNN, Inception-v3, Keras, TensorFlow | 0.86 AUROC for BKL | 0.78 AUROC for MEL | DCNN, LeakyReLU, Adamax optimizer, TPR is similar to the positive predictive value |
| 2020 | CNN, keras, Tensorflow | 7 types of skin lesion diseases identification namely: Benign Keratosis, Dermatofibroma, Vascular Lesion, Melanoma, Melanocytic Nevus, Basal Cell Carcinoma and Actinic Keratosis., InceptionResnet achieved an average accuracy of 91%, Accuracies of 90 and 91% | low F1 score | Inception V3, ResNet50, VGG16, MobileNet and InceptionResnet |
| 2017 | GANs, CNN, | size of 600×600 as input dataset, | sets the weight coefficient w in the softmax loss function | AlexNet, StyleGANs, InceptionV3-StyleGANs, ResNet50- StyleGANs, VGG16BN- StyleGANs |
| 2018 | CNN, SciKit, Keras, Tensorflow | 90% accuracry, Convolution maintains the spatial interrelation of the pixels, values of the pixels ranging from 0 - 255 i.e 256 pixels. | Rectified Linear Unit is a non-linear operation. ReLU acts on an elementary level. | OpenCV, ReLU |
| 2019 | AlexNet, Ordinary CNN, VGG-16, LIN, Inception-v3, and ResNet. | size of input images in the input is considered 28×28 pixel. | doesn’t give the best global solution | Lévy flight, ReLU |
| 2019 | CNN, Feature Extraction | Accuracy of 98%. for melanoma skin cancer detection and 93% for melanoma type, TPR of 94.25%, FPR of 3.56%, and EP of 4%, average accuracy of 91.66% | high error rates, 25.6% Caucasian error and 23.2 Xanthous error, validation loss of 57.56% | HSV format |
| 2019 | CNN, keras | trained on more than 126k images, higher image augmentation (24x) and image resolution (1k), the same performances can be achieved using less than 5000 images, No impact of image resize filters | Experiments at 277x277 pixel resolution, Experiments without transfer learning | ISIC 2017, AlexNet, VGG16, SGD optimiser, |
| 2019 | CNN, grad-CAM, Tensorflow | consists of 150,223 clinical images from 543 different skin diseases, achieved an accuracy of 87.25 ± 2.24% on the dermoscopic images for four common skin diseases, including SK, BCC, psoriasis and melanocytic nevus. | highest average precision (77.0%) | Inception-ResNet-v2, DenseNet121, Xception |
| 2020 | MVSM classifier, CNN, feature extraction | dataset which consists of eight different classes is compressed into 800 images and applied, The accuracy achieved is about 96.25%. | accuracy is lowered if minute amounts of foreign elements are found on the sample | GLCM, SVM, ABCD |