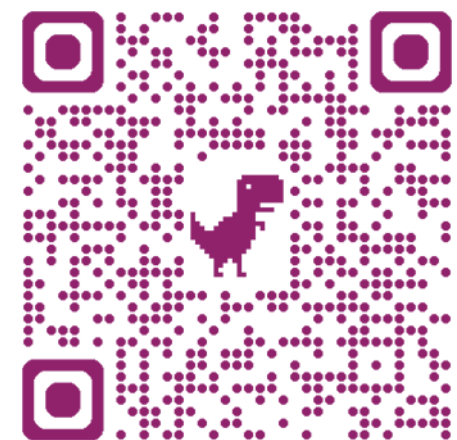


# MAPPING AND ASSESSING MOBILE APPLICATIONS FOR CANCER CARE PROFESSIONALS

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## Introduction

Within the context of healthcare, mobile applications are increasingly being used to improve the management of diseases. Such applications have also infiltrated cancer care from prevention to treatment and survivorship showcasing great potential. Nevertheless, the introduction and utilization of such mobile technologies in cancer care is not without challenges that hinder their potential. One of the most pressing needs is healthcare professionals' ability to identify the most suitable applications from the large numbers that are available, as well as critically evaluating these apps' quality and clinical effectiveness.

## Methodology

A systematic search of apps in Google Play and the AppStore was conducted using PRISMA guidelines. The search terms used were “oncology or cancer prevention” or “cancer treatment or cancer therapy” or “cancer support”; “health care professional\*” or “doctor” or “nurse\*”, “nursing\*”; “health manager\*”. The retrieved apps were then evaluated against the criteria incorporated in the Mobile App Rating Scale (MARS).

App	Focus/Type of cancers	Platform	App	Engagement (A)	Functionality (B)	Aesthetics (C)	Information (D)	App Subjective Quality (E)	App quality mean score (A + B + C + D) / 4
All Diseases Treatments	Learning of disease treatment. Includes for most types of cancer.	Android	ONCObase	4.10	4.87	3.66	4.37	3.75	4.25
All Diseases Treatments 2023	Learning of disease treatment. Includes for most types of cancer.	Android	Oncology Board Review	3.47	4.33	4.11	4.24	3.17	4.03
Current Medical Diagnosis and Treatment	Diagnosis and treatment information. Includes for most types of cancer.	Android & iOS	Hematology & Oncology Consult	3.07	4.50	4.22	4.12	2.92	3.98
ESMO Interactive Guidelines	Cancer diagnosis and treatment recommendations guidelines. Includes for most types of cancer.	Android & iOS	Radiation Oncology Exam Review	3.73	4.17	3.55	4.25	3.08	3.92
Fitzpatrick's Color Atlas	Guideline update for dermatological disease. Includes precancerous lesions and cutaneous carcinomas.	Android & iOS	NCCN Guidelines	3.20	3.62	3.83	4.75	3.87	3.85
Harrison's Manual of Medicine	Guideline update in different pathologies. Includes for most types of cancer.	Android & iOS	ESMO Interactive Guidelines	3.60	4.62	3	4.10	3.87	3.83
Hematology & Oncology Consult	Hematology and oncology information. Includes for most types of cancer.	Android & iOS	Current Medical Diagnosis and Treatment	3.50	4.12	2.83	4.13	3.12	3.65
NCCN Guidelines	Guideline update in oncology. Includes for most types of cancer.	Android & iOS	TNM Cancer Staging Manual	2.93	4.25	3.22	4.17	3.08	3.64
ONCOassist	Decision support by providing a range of tools (e.g., treatment protocols, prognostic scores). Includes for most types of cancer.	Android & iOS	Pediatric Disease & Treatment	2.60	4.25	4.17	3.39	3.12	3.60
Oncology Board Review	Oncology exam training. Includes for most types of cancer.	Android & iOS	Radiation Oncology Q&A Review	2.93	4.17	3.67	3.59	2.66	3.59
Oncology Nursing Drug Handbook	Cancer Treatment/Drug therapy. Symptom management cancer. Includes for most types of cancer.	Android & iOS	Williams Manual of Hematology	3.20	4.37	3	3.58	2.62	3.53
Pediatric Disease & Treatment	Information on children's diseases, pediatric treatments, and medical calculators. Includes bone, eye and hematological cancers.	Android	All Diseases Treatments	2.50	4.62	4	2.95	2.50	3.52
Pharmacology for Nursing 2023	Oncology exam training. Includes for most types of cancer.	Android & iOS	Oncology Nursing Drug Handbook	3.07	3.75	3.78	3.11	2.66	3.43
Radiation Oncology Exam Review	Radiation exam training. Includes for most types of cancer.	Android & iOS	Pharmacology for Nursing 2023	3.73	3.17	3.22	3.25	3.33	3.34
Radiation Oncology Q&A Review	Learning of radiation oncology. Includes for most types of cancer.	Android & iOS	Washington Manual of Oncology	2.55	3.75	3	4.05	2.50	3.34
TNM Cancer Staging Manual	Classification and staging of cancer. Includes for most types of cancer.	Android & iOS	All Diseases Treatments 2023	1.90	4.37	3	3.20	2.37	3.12
Washington Manual of Oncology	Guideline update in oncology. Includes for most types of cancer.	Android & iOS	Harrison's Manual of Medicine	2.60	3.67	3	3.15	1.83	3.11
Williams Manual of Hematology	Guideline update in hematology. Includes for most types of cancer.	Android & iOS	Fitzpatrick's Color Atlas	2.60	3.33	2.78	3.12	2.58	2.96

## Conclusion

This study provides a ranking of cancer-related apps for HCPs, detailing the strengths and limitations of each to aid in curating useful digital resources. Generally, the study showed a significant number of low-quality applications with a few applications however, showing notable potential utility. The findings underscore a lack of robust evidence in current literature supporting the effectiveness of health apps for cancer care.

## Results

The search yielded 221 mobile applications in AppStore and GooglePlay. Following the screening phase, 18 mobile apps that met the inclusion criteria were evaluated and prioritized by MARS peer review. The majority of the identified applications (83.3%) were available for both Android and iOS. All apps had commercial affiliations, except for two which were affiliated with non-governmental organizations. Based on the MARS evaluation, the mean score was 3.59, with only two applications exceeding the 4-point threshold, which denotes a ‘good’ level of quality.