

Supplementary table 2: Included studies

No.	Authors	Year	Title	Country	Specialty	Disease studied	Sample size	Intervention	Control	Blinding	Primary outcome	Trial registration
1.	Sadasiva m, et al.	2016	Impact of a Collective Intelligence Tailored Messaging System on Smoking Cessation: The Perspect Randomized Experiment	United States	Medicine	Smoking addiction	120	AI recommended motivational messages	Standard tailored messages	Single (study staff)	Influence of messages	NR
2.	Morrison , et al.	2017	The Effect of Timing and Frequency of Push Notifications on Usage of a Smartphone- Based Stress Management	United States	Psychiatry	Stress	77	Smartphone- based stress management system	Daily/oc casional notificati ons within pre- defined	Not stated	Notificatio n response	ISRCTN6717 7737

			Intervention: An Exploratory Trial						time frames			
3.	Labovitz, et al.	2017	Using Artificial Intelligence to Reduce the Risk of Nonadherence in Patients on Anticoagulation Therapy	United States	Cardiology	Ischemic stroke	28	AI system monitoring	No daily monitoring	Not stated	Adherence to therapy	NCT02599259
4.	Rostill, et al.	2018	Technology integrated health management for dementia	United Kingdom	Psychiatry	Dementia	408	Technology-integrated health management for dementia	No TIHM	Not stated	Alerts	NR
5.	Wang, et al	2018	Real-time automatic detection system increases colonoscopic polyp and adenoma	China	Gastroenterology	Adenoma	1058	AI-aided colonoscopy	Standard colonoscopy	None	Adenoma detection rate	ChiCTR-DDD-17012221

			detection rates: a prospective randomised controlled study									
6.	Lin, et al.	2019	Diagnostic Efficacy and Therapeutic Decision-making Capacity of an Artificial Intelligence Platform for Childhood Cataracts in Eye Clinics: A Multicentre Randomized Controlled Trial	China	Ophthalmology	Cataract	350	AI-assisted cataract detection	Normal clinic	Double	Diagnostic accuracy for congenital cataracts	NCT03240848

7.	Voss, et al.	2019	Effect of Wearable Digital Intervention for Improving Socialization in Children With Autism Spectrum Disorder A Randomized Clinical Trial	United States	Psychiatry	Autism	474	AI-driven behavioral intervention	Applied behavioral analysis therapy	Single	SRS-II, EGG, VABS-II, NEPSY-II socialization scores	NCT03569176
8.	Wu, et al.	2019	Randomised controlled trial of WISENSE, a real-time quality improving system for monitoring blind spots	China	Gastroenterology	Upper GI lesions	324	AI-aided esophagogastroduodenoscopy	Standard esophagogastroduodenoscopy	Single	Blind spot rate	ChiCTR1800014809

			during esophagogastroduo denoscopy									
9.	Wang, et al.	2020	Effect of a deep-learning computer-aided detection system on adenoma detection during colonoscopy (CADE-DB trial): a double-blind randomised study	China	Gastroenterology	Adenoma	1046	AI-aided colonoscopy	Sham	Double	Adenoma detection rate	ChiCTR1800017675
10.	Persell, et al.	2020	Effect of Home Blood Pressure Monitoring via a Smartphone Hypertension Coaching	United States	Medicine	Hypertension	333	AI-driven coaching app	Blood pressure tracking app	None	Systolic blood pressure at 6 months	NCT03288142

			Application or Tracking Application on Adults With Uncontrolled Hypertension A Randomized Clinical Trial									
11.	Wijnberg e, et al.	2020	Effect of a Machine Learning-Derived Early Warning System for Intraoperative Hypotension vs Standard Care on Depth and Duration of Intraoperative Hypotension	Netherlands	Cardiology	Intra-operative hypotension	68	AI-driven early warning system for intraoperative hypotension	Standard care	None	Time-weighted average of intraoperative hypotension	NCT03376347

			During Elective Noncardiac Surgery The HYPE Randomized Clinical Trial									
12.	Pavel, et al.	2020	A machine-learning algorithm for neonatal seizure recognition: a multicentre, randomised, controlled trial	United Kingdom	Neurology	Neonatal seizures	264	Automated seizure detection algorithm	Conventional EEG	Single	Diagnostic accuracy of healthcare professionals with aid of algorithm	NCT02431780
13.	Nimri, et al.	2020	Insulin dose optimization using an automated artificial intelligence-based decision support	Israel	Endocrinology	Diabetes	108	AI-based decision support system	Physician guided care	Single	Time of glucose level within target range	NCT03003806

			system in youths with type 1 diabetes									
14.	Liu, et al.	2020	The single-monitor trial: an embedded CADe system increased adenoma detection during colonoscopy: a prospective randomized study	China	Gastroenterology	Adenoma	790	AI-aided colonoscopy	Routine colonoscopy	None	Adenoma detection rate	ChiCTR1800018058
15.	Gong, et al.	2020	Detection of colorectal adenomas with a real-time computer-aided system (ENDOANGEL): a randomised	China	Gastroenterology	Adenoma	704	AI-aided colonoscopy	Unassisted colonoscopy	Single	Adenoma detection rate	ChiCTR1900021984

			controlled study									
16.	Luo, et al.	2020	Artificial Intelligence-Assisted Colonoscopy for Detection of Colon Polyps: a Prospective, Randomized Cohort Study	China	Gastroenterology	Polyps	150	AI-aided colonoscopy	Unaided colonoscopy	None	Polyp detection rate	NCT0471262 65
17.	Anan, et al.	2021	Effects of an Artificial Intelligence-Assisted Health Program on Workers With Neck/Shoulder Pain/Stiffness and Low Back Pain:	Japan	Orthopaedics	Neck/shoulder and back pain	94	AI-assisted health program	Usual care routine	None	Pain level	(UMIN-CTR) 000033894

			Randomized Controlled Trial									
18.	Blomberg, et al.	2021	Effect of Machine Learning on Dispatcher Recognition of Out-of-Hospital Cardiac Arrest During Calls to Emergency Medical Services: A Randomized Clinical Trial	Denmark	Cardiology	Cardiac arrest	654	AI-led alerts	Normal protocol	Double	Recognition of cardiac arrest	NCT04219306
19.	Chen, et al.	2021	The Role of Deep Learning-Based Echocardiography in the Diagnosis and Evaluation of the Effects of Routine Anti-Heart-	China	Cardiology	Heart failure	80	AI-based echocardiography	Routine echocardiography	None	Mortality and rehospitalization rate	NR

			Failure Western Medicines in Elderly Patients with Acute Left Heart Failure									
20.	Eng, et al.	2021	Artificial Intelligence Algorithm Improves Radiologist Performance in Skeletal Age Assessment	United States	Radiology	Skeletal age	1903	AI diagnostic aid	Without aid	None	Mean absolute difference between the skeletal age	NCT03530098
21.	Harada, et al.	2021	Efficacy of artificial-intelligence-driven differential-diagnosis list on the diagnostic accuracy	Japan	Medicine	Various medical conditions	22	AI-assisted differential diagnosis	Without AI assistance	Single	Diagnostic accuracy	UMIN000042881

			of physicians: An open-label randomized controlled study									
22.	Hassoon, et al.	2021	Randomized trial of two artificial intelligence coaching interventions to increase physical activity in cancer survivors	United States	Oncology	Different cancer types	42	AI coaching	Written information	Single	Change in steps per day	NCT03212079
23.	Jayakumar, et al.	2021	Comparison of an Artificial Intelligence-Enabled Patient Decision Aid vs Educational Material on	United States	Orthopaedics	Osteoarthritis	129	AI-enabled patient decision aid	Educational material	None	Knee OA Decision Quality	NCT03956004

			Decision Quality, Shared Decision-Making, Patient Experience, and Functional Outcomes in Adults with Knee Osteoarthritis: A Randomized Clinical Trial									
24.	Kamba, et al.	2021	Reducing adenoma miss rate of colonoscopy assisted by artificial intelligence: a multicenter randomized controlled trial	Japan	Gastroenterology	Adenoma	358	AI-aided colonoscopy	Unaided colonoscopy	None	Adenoma miss rate	jRCTs032190061

25.	Luna, et al.	2021	Artificial intelligence application versus physical therapist for squat evaluation: a randomized controlled trial	United States	Medicine	Physical therapy	30	AI-assisted exercise application	Unassisted exercise	Single	Successful squats	NCT04624594
26.	Medina, et al.	2021	Electrophysiological brain changes associated with cognitive improvement in a pediatric attention deficit hyperactivity disorder digital artificial intelligence-driven intervention:	Spain	Psychiatry	Attention deficit hyperactivity disorder	29	AI-driven cognitive stimulation program	Commercial video games	Single	Conners CPT (CPT-III) score	ISRCTN71041318

			Randomized controlled trial									
27.	Mertens, et al.	2021	Artificial intelligence for caries detection: Randomized trial	Germany	Dentistry	Caries	22	AI-based diagnostic support	Unaided diagnosis	None	Accuracy metrics	DRKS00022357
28.	Prochaska, et al.	2021	A randomized controlled trial of a therapeutic relational agent for reducing substance misuse during the COVID-19 pandemic	United States	Medicine	Substance-related disorders	180	AI relational conversational agent	No intervention during the study	None	Past-month substance use occasions	NCT04096001
29.	Rafferty, et al.	2021	A novel mobile app (heali) for disease treatment in participants with irritable bowel	United States	Gastroenterology	Irritable bowel syndrome	58	AI dietary mobile app	Educational material	None	Quality of life score	NCT04256551

			syndrome: Randomized controlled pilot trial									
30.	Seok, et al.	2021	A personalized 3d-printed model for obtaining informed consent process for thyroid surgery: A randomized clinical study using a deep learning approach with mesh-type 3d modeling	Korea	Endocrinology	Thyroid lesions	53	AI 3D-printed thyroid model	Without model	None	Patient general knowledge and satisfaction	KCT0005069
31.	Seol, et al.	2021	Artificial intelligence-assisted clinical decision support for childhood asthma management: A	United States	Paediatrics	Childhood asthma	184	AI-assisted decision support	Usual asthma care	Single	Asthma exacerbation occurrence within one year	NCT02865967

			randomized clinical trial									
32.	Stromblad, et al.	2021	Effect of a Predictive Model on Planned Surgical Duration Accuracy, Patient Wait Time, and Use of Presurgical Resources: A Randomized Clinical Trial	United States	Surgery	Gynaecological and colorectal surgery	683	AI-assisted surgical predictions	Standard estimation process	None	Accurate surgery duration prediction	NCT03471377
33.	Turino, et al.	2021	Management and treatment of patients with obstructive sleep apnea using an intelligent monitoring system	Spain	Pulmonology	Obstructive sleep apnea	60	Intelligent monitoring system	Standard management	None	Compliance to CPAP	NCT03116958

			based on machine learning aiming to improve continuous positive airway pressure treatment compliance: Randomized controlled trial									
34.	Wang, et al.	2021	Utilization of Ultrasonic Image Characteristics Combined with Endoscopic Detection on the Basis of Artificial Intelligence Algorithm in Diagnosis of Early Upper	China	Gastroenterology	Early gastric cancer	80	Endoscopy with AI-based ultrasound imaging	Endoscopy alone	None	Detection rate of upper gastric cancer	NR

			Gastrointestinal Cancer									
35.	Wu, et al.	2021	Evaluation of the effects of an artificial intelligence system on endoscopy quality and preliminary testing of its performance in detecting early gastric cancer: a randomized controlled trial	China	Gastroenterology	Early gastric cancer	1050	AI-aided endoscopy	Endoscopy alone	Single	Number of blind spots during endoscopy	ChiCTR1800018403
36.	Wu, et al.	2021	Effect of a deep learning-based system on the miss rate of gastric neoplasms during	China	Gastroenterology	Gastric neoplasm	1886	AI-assisted endoscopy	Unaided endoscopy	Single	Gastric neoplasm miss rate	ChiCTR2000034453

			upper gastrointestinal endoscopy: a single-centre, tandem, randomised controlled trial									
37.	Xu, et al.	2021	The Clinical Value of Explainable Deep Learning for Diagnosing Fungal Keratitis Using in vivo Confocal Microscopy Images	China	Ophthalmology	Fungal keratitis	1089	AI-assisted image reading	Unassisted image reading	None	Accuracy	NR
38.	Xu, et al.	2021	Artificial intelligence-assisted colonoscopy: A prospective, multicenter, randomized	China	Gastroenterology	Polyp	2352	AI-assisted colonoscopy	Conventional colonoscopy	None	Polyp detection rate	ChiCTR1800015607

			controlled trial of polyp detection									
39.	Yao, et al.	2021	Artificial intelligence-enabled electrocardiograms for identification of patients with low ejection fraction: a pragmatic, randomized clinical trial	United States	Cardiology	Low ejection fraction	358	AI-enabled electrocardiograms	Usual care	None	New diagnosis of low ejection fraction	NCT04000087
40.	Zeng, et al.	2021	Long-Term Assessment of Rehabilitation Treatment of Sports through Artificial Intelligence Research	China	Medicine	Sports health management	150	AI-based personalized sports management service system	General management	None	Blood glucose, blood pressure, lipids	NR

41.	Zhang, et al.	2021	Artificial Intelligence Algorithm-Based Ultrasound Image Segmentation Technology in the Diagnosis of Breast Cancer Axillary Lymph Node Metastasis	China	Oncology	Breast cancer	90	AI-based ultrasound image segmentation	Routine ultrasound	Double	Accuracy metrics	NR
42.	Zhang, et al.	2021	Value of Rehabilitation Training for Children with Cerebral Palsy Diagnosed and Analyzed by Computed Tomography	China	Paediatrics	Cerebral palsy	73	AI-assisted analysis of brain images	Original images	None	Cerebral artery blood flow velocity (VP) and Vascular pulse index (PI)	NR

			Imaging Information Features under Deep Learning										
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