

EFFECTIVENESS OF DIGITAL INTERVENTION COMPARED WITH CONVENTIONAL APPROACHES FOR TOBACCO CESSATION AMONG ADULTS IN INDIA: A SYSTEMATIC REVIEW OF RANDOMIZED CONTROL TRIAL

CATEGORY: SYSTEMATIC REVIEW

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Abstract:

Introduction: Tobacco is a major health concern in India. Massive efforts are being made to increase tobacco cessation rate, maintaining quitting phase and reducing nicotine dependency still the success rates through conventional approaches in this area remains low. Digitalization is transforming many healthcare sectors in India however, availability of evidence in tobacco cessation and nicotine dependency are low.

Method: The current Systematic review of randomized control trials, was conducted as per Preferred Reporting Items for Systematic Review and Meta Analysis (PRISMA) 2020 and is pre-registered in the International Prospective Register of Systematic Review (PROSPERO - CRD420261504297). The research question was formulated using Population, Intervention, Comparison, Outcome (PICO) framework. After screening total 183 articles, 7 randomized control trial (between 2020 to 2026) were included. Search was done through search engines such as Google Scholar, PubMed, MEDLINE, and ResearchGate. Risk of bias was assessed through Cochrane (RoB2) tool.

Conclusion: The digital interventions show significant result in increasing tobacco cessation and reducing nicotine dependence.

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Keywords: tobacco cessation, Smoking cessation, tele- rehabilitation, Randomized control trial

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INTRODUCTION

Tobacco is a major health concern in India. According to Global Adult Tobacco Survey 2 (GATS 2) 2016-17 approximately 28.6% Indian adult Use adults aged >15 years use tobacco. (1)

In India tobacco cost estimated 1.28 million death per year (approximately 3500 deaths/day) including ~930,000 Smoking attributable death. More than 50% of all cancers diagnosed in India are tied to tobacco use. (2) The economic burden of tobacco was INR 1773.4 billion in 2017-18.(3)

India allocated approximately 574.57 crore annual budget for tobacco control activities however the prevalence of former smoker remains low. 35.5% smokers attempted quitting in first 12 month, only 14.2% had successfully quit 71.1% quit attempts

were unassisted and at high risk of relapse. Jayanti et al. reported that 69% attempted quitting, only 33% were able to stop using tobacco for 1 month but subsequently resumed using tobacco. (5,6,7)

Traditionally, tobacco cessation in India has relied on nicotine replacement therapy through various pharmacological means, and secondary on counseling, exercises, and cognitive behavioral therapies. (7)

The process of initiating tobacco cessation begins with evaluation of the distinct stage that user undergo as part of their behavior change of from quitting smoking to maintaining the quit phase. (8) Digital health represents the digital transformation of healthcare including but not limited to delivery of healthcare services and improve healthcare outcome

for healthcare professionals Communities and health systems. Effectiveness of digital healthcare is directly proportional to digital infrastructure, availability of resources, level of e-Health literacy among healthcare services seekers and providers. Data privacy and lack of infrastructure can be potential barriers while transforming healthcare system to digital means. (9,10) Ayushman Bharat Digital Mission is a major nationwide digital health initiative. (11)

According to the Internet and Mobile Association of India (IAMAI) and comprehensive Modular survey Telecom, India, 2024-25 2025, India had approximately 886 million active Internet users (55% in rural). Increasing digitalization provide a substantial infrastructure for delivering telehealth services efficiently. (12–14)

Similar studies have been conducted by Wasnik et al. which concluded that digital platforms have achieved up to 70% success in cessation. However, the Systematic review included 25 studies but the studies were not carried out in Indian settings. Digitalization of health care is directly associated with socioeconomic backgrounds and geographical factors hence there is need of strengthening evidence which investigate effectiveness of digital interventions in smoking cessation in India settings.(15)

The present Systematic review aims to bridge the gap between the availability of existing tobacco cessation resources and successful smoking cessation by systematically evaluating the effectiveness of digital cessation intervention in India by synthesizing evidence from randomized controlled trial this review seeks to strengthen the evidence base for digital approaches and identify effective strategies that can support and enhance smoking cessation services in Indian healthcare context.(12,16)

Aim and Objective

Aim: To investigate effectiveness of digital tobacco cessations interventions compared with conventional or non-digital approaches in achieving tobacco cessation among adults in India.

Objectives

1. To determine whether the digital tobacco cessation approaches are more effective in reducing nicotine dependency compare to conventional approaches in adult tobacco users in Indian setting
2. To compare the effectiveness of various digital means such as SMS/Text messages, Video calling, virtual reality and others.
3. To identify the strengths and barriers associated with delivery of digital tobacco cessation intervention in context of India study settings.

Method

The current Systematic review of randomized control trials, was conducted as per Preferred Reporting Items for Systematic Review and Meta Analysis (PRISMA) 2020 and is pre-registered in the International Prospective Register of Systematic

Review (PROSPERO - CRD420261504297). The research question was formulated using Population, Intervention, Comparison, Outcome (PICO) framework.

Inclusion and Exclusion criteria

The randomized control trials published between 2020 to 2026, conducted in Indian community settings, enrolled adults who consumed tobacco, delivered smoking cessation through digital means such as SMS/Text messages, video call, virtual reality etc. to the interventional groups, and investigated outcomes of tobacco cessation, Tobacco absenteeism and nicotine dependency were included. Articles published in language other than English were excluded.

Search strategy

A comprehensive search was conducted across 4 electronic databases and 183 articles were found. The search engines were MEDLINE via PubMed (n=58), Google Scholar(n=65), ResearchGate(n=49) and Cochrane(n=11). The key words used for search were ‘tobacco cessation, SMS/Text message intervention, mCessation, virtual reality, digital cessation, smoking cessation, Smokeless tobacco cessation, nicotine dependency, video calling’. Total 7 articles out of 183 articles were included and 176 articles were excluded, detailed search strategy is explained in PRISMA flow chart, 2020 in fig 1. Two reviewers independently screened all retrieved record against the predefined eligibility criteria. after removal of duplicate records, titles and abstracts were screened. Potential eligible records were retrieved by either reviewer for full text. The full texts were then independently assessed by two reviewers for further data extractions. Reviewers identified authors, titles, Clinical trial registration numbers of randomized control trials, age, gender, tobacco habits, randomization method, digital intervention used for smoking cessation, outcomes, etc. any disagreement was resolved by discussion.

Outcome

The included studies assessed tobacco cessation using different outcome measure. Reported measure included 7-day point prevalence absentees, verified biochemical tobacco cessation, level of carbon monoxide, self-reported tobacco absentees, quit rates, and nicotine dependence using Fagerström score (FTND).

Risk of bias assessment and certainty

Risk of bias in the included randomized control trial was assessed independently by two reviewers using Cochrane Risk of Bias 2 (RoB 2) tool. The assessment considered five standard RoB 2 domains: bias arising from the randomization process (D1); bias due to deviations from intended interventions (D2); bias due to missing outcome data (D3); bias in measurement of the outcomes (D4); and (D5) bias in selection of the reported result. Each domain was analyzed as low risk of bias, some concerned or high risk of bias. The certainty was

assessed using Grading of recommendations, assessment, development and evaluation (GRADE) approach.

Fig. 1 PRISMA 2020 flow diagram for new systematic reviews which included searches of databases, and other sources(17)

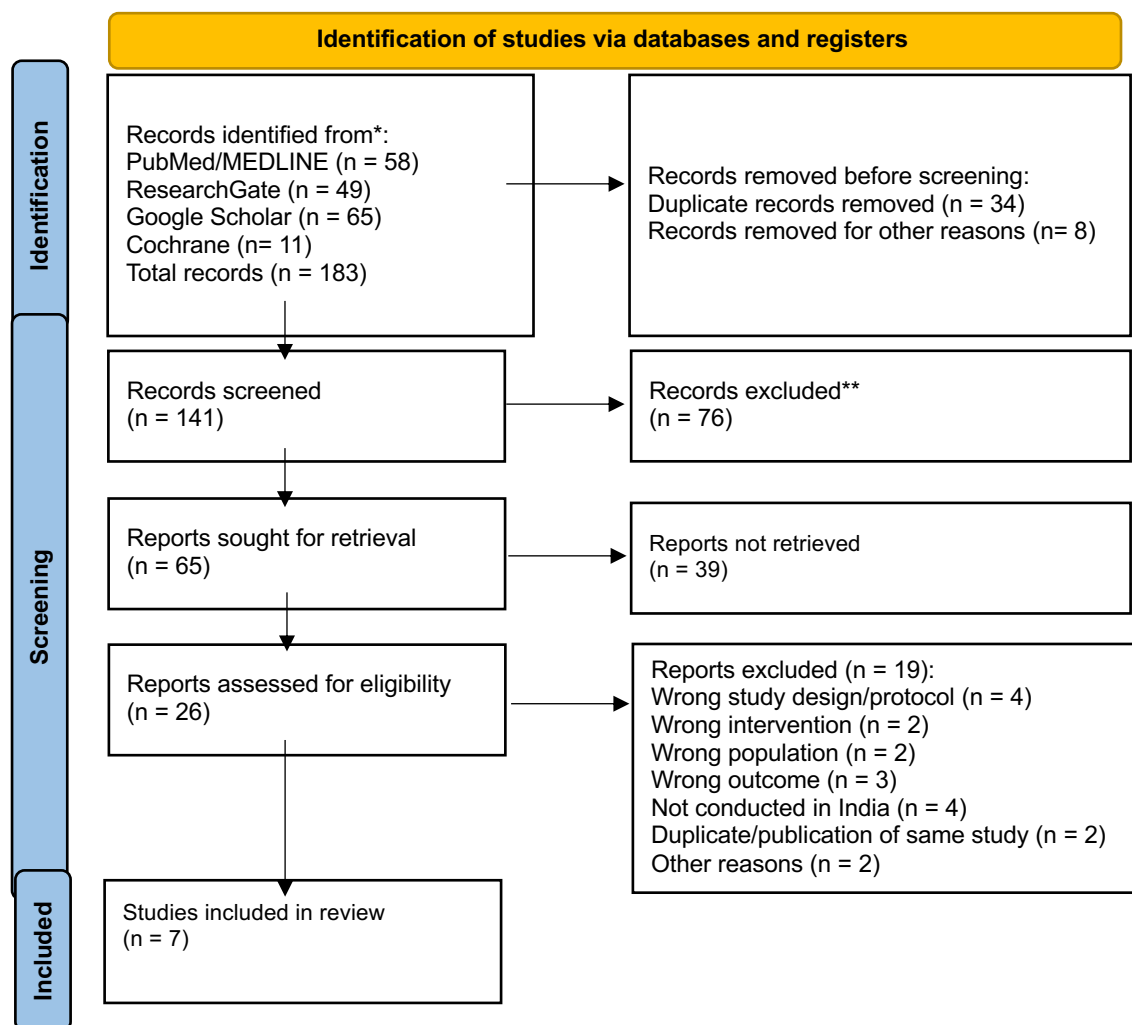


Table. 1 characteristic of studies included

No	Author(s) & Year	Population (Inclusion characteristics)	Sample Size	Intervention Group(s)	Control Group	Outcome Measures	Key Results
1	Jnaneswar A, (2020) (18)	Established/ regular smokers (≥ 100 cigarettes lifetime), aged 18–24 years (mean 21 ± 0.86)	N=204 randomised (Study group n=102; Control n=102); analysed: Study n=87, Control n=76 after attrition	photo-aging software intervention, personalised, digitally-aged facial images shown as both smoker and non-smoker versions, 2-minute motivational advice on effects of tobacco	Completed the same questionnaire only, without photo-aging intervention	FTND; effects of smoking on health/oral health (Likert scale); CO breath test, self-reported reduction/quitting	Significant reduction in FTND, ($p < 0.0001$); shift from severely to low-dependence group in 33% of study participants. Control group: 1 participant achieved established cessation
2	Haokip HR et al., (2021) (19)	Tobacco users aged 19–55 years attending de-addiction clinic, willing to use NRT;	N=82 total (Video-assisted nurse-led NRT n=41; Standard/control NRT n=41)	Video-assisted nurse-led NRT: 5-minute educational video on tobacco, quitting benefits +, telephonic reminders to use nicotine gum and attend follow-up; video repeated at 2 nd , 4th week follow-ups	Standard NRT with routine treatment: brief psychiatrist advice on drug compliance, health hazards, NRT use, and follow-up schedule	FTND, tobacco cessation via IRC Ruler (Importance, Readiness, Confidence, 10-point Likert scales)	Addiction significantly improved at 2 and 4 weeks (both $p < 0.001$, Readiness to quit significantly higher in study group at 2 and 4 weeks ($p < 0.001$); no significant difference in Confidence at either follow-up in control group
3	Hejjaji V et al., (2021) (20)	Adults aged 18–70 years, self-reported current daily use of cigarettes or bidis, with mobile phone able to send/receive SMS;	N=238 total (Intervention/ MUKTI n=151; Control n=87)	Community Health Worker (CHW)-led tailored home visits Trans-Theoretical Model stage: pre-contemplative every 2 months, contemplative monthly for 3 months) using Motivational Interviewing, plus optional tailored SMS (low/high intensity) synced to readiness-to-quit stage; NRT available via CHW at market price	Brief education: single CHW-led home visit on benefits of smoking cessation	14-day self-reported abstinence, exhaled carbon monoxide (< 10 ppm). Secondary: quit rates by age/education	Quit rate /Smoking absentees 31/151 (20.5%) intervention vs 9/83 (10.8%) difference 9.7%; RR=1.69 (95% CI 0.04–71.33), $p=0.74$ (not statistically significant). As-treated (optimal dose ≥ 3 CHW visits + ≥ 5 texts, n=46): 17/46 (36.9%) quit; RR=4.58 (95% CI 0.11–191.29), $p=0.37$. Younger (< 40 y) and more educated (≥ 10 yrs schooling) participants had higher (non-

							significant) quit rates. Marked cluster-level heterogeneity in uptake/quit rates
4	Nadkarni A et al. (2024)(21)	Adults ≥ 18 years currently using smoked or smokeless tobacco ($\geq$ once in past 28 days), willing to quit within 2 months, personal mobile phone, able to read/reply to SMS in English or Hindi	N=98 total (ToQuit n=49; Control n=49)	ToQuit text-messaging intervention: 124 messages over 8 weeks, 3–5 messages/day on 3–4 days/week, delivered at participant-preferred time slots; content = psychoeducation, goal setting, self-monitoring, avoidance strategies, social/pharmacological support, craving management, relapse prevention	Digital leaflet with details of functional tobacco cessation helplines in India (helpline name, number, languages)	Primary: self-reported abstinence from tobacco in past 7 days at 3 months. Secondary: 28-day point abstinence; mean score	7-day abstinence: 9/49 (22.5%) vs Control 7/49 (18.9%); $p=0.70$, 28-day abstinence, 20.0% vs Control 16.2%, (95% CI 0.35–4.14). Significant reduction in study group ($p=.003$). Participants reported high acceptability/satisfaction
5	Wasnik M et al., (2025)(22)	Adult smoking-form tobacco users, aged 18–60 years, and access a mobile phone; excluded terminal illness	N=150 total (50 per group; Group I, II, III)	Group I-NRT Group: Nicotine gum was prescribed based on smoking intensity: 4 mg/day for ≥ 25 cigarettes/day and 2 mg/day for < 25 cigarettes/day. Gum usage was scheduled as follows: Weeks 1-6: 1 piece every 1-2 hours; Weeks 7-9: 1 piece every 2-4 hours; Weeks 10–12: 1 piece every 4-8 hours. A maximum of 24 pieces per day was permitted. Group II-NRT + Counselling Group: Participants received NRT as described above, along with 30 minutes of personalized tobacco cessation counselling using the 5 A's (Ask, Advise, Assess, Assist, Arrange) and 5 R's (Relevance, Risks,	Group I: NRT alone (nicotine gum only, tapering schedule over 12 weeks)	Quit vs still-using status; Fagerström nicotine dependence score; exhaled carbon monoxide level)	quit rate 34%. Group II (NRT + Counselling) highest quit rate 44% (56% continued); Group III (NRT + mCessation) 30% quit (70% continued); Group I - lowest 28% quit (72% continued). All groups showed significant reduction ($p=0.001$) in nicotine dependence score, CO level from baseline to 3 months, with Group II showing the largest reductions (1.32 [Group I] vs 1.49 [Group III])

				Rewards, Roadblocks, Relapse) frameworks. Group III- NRT + mCessation Group: In addition to NRT, participants were enrolled in the mCessation program, a mobile-based initiative providing motivational and cessation support through text messages.			
6	Bhatt G et al.(2025)(23)	Tobacco users (smoked/smokeless) aged ≥ 30 years with an NCD (Diabetes, Hypertension/CVD, Stroke, Cancer, Chronic Respiratory Disease e.g. COPD/asthma), attending NCD clinics; and access a mobile phone	N=200 total (Intervention n=100; Control n=100)	Multi-component culture- and disease-specific package: 4 face-to-face counselling sessions (15–20 min, using 5A's/5R's and Trans-Theoretical Model) at 15-day intervals over 3 months, bilingual (Hindi/Punjabi) disease-specific pamphlets, bilingual SMS every 15 days, family involvement/SMS to family	Usual/routine care under NPCDCS: doctor consultation for NCD + brief advice to quit, nurse guidance, diet/lifestyle counselling by NCD counsellor	Primary: self-reported 7-day point abstinence. Secondary: frequency of tobacco use, tobacco expenditure (7-day), FTND score, stage of change, plasma cotinine (LC-MS/MS) at baseline & endline	7-day abstinence significantly higher in intervention vs control at 6 months (OR 8.8, $p<0.01$), 9 months ($p<0.01$) and 12 months (OR 5.7, $p<0.01$), % reduction in frequency of use significantly greater in intervention at 3, 9 and 12 months (all $p<0.01$). Plasma cotinine at 12 months significantly lower in intervention vs control (mean difference 44.3, 95% CI 9.9–78.8, $p=0.012$).
7	Thomas PA, Kumar BS (2026)(24)	Cigarette smokers aged ≥ 18 years; excluded those with history of Systemic disorders or on medication	N=160 total (40 per group across 4 groups)	Group I: VR + conventional counselling (tobacco cessation video via VR gadget at each visit); Group II: Teledentistry + conventional counselling (weekly calls for 1st month, then biweekly); Group III: mHealth/WhatsApp + conventional counselling	Group IV: Conventional face-to-face counselling alone (20–30 min/session)	FTND, 0–10; exhaled CO classification into no/low/moderate/high dependence; progression to light/no-dependence status as long-term effect marker	At 12 months, 'no dependence' achieved by: VR 21/40 (52.5%), tele-dentistry 6/40 (15%), mHealth/WhatsApp 13/40 (32.5%), conventional 1/40 (2.5%) ($p<0.001$). VR group had no participants remaining in high-dependence category at 12 months. VR

				(weekly reminder texts)			ranked most effective, followed by mHealth/; tele-dentistry and conventional counselling least effective
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Certainty was rated as high at the beginning of evaluation and for tobacco cessation and nicotine dependency and after assessment certainty was graded as low, moderate and high. Details of risk of bias for included articles and Certainty are shown in Table.2 and Table 3 consecutively.

Table.2 Risk of Bias Assessment for included studies

No.	Study	D1. Randomization	D2. Deviations from intervention	D3. Missing outcome data	D4. Measurement of outcome	D5. Selection of reported result
1	Bhatt et al.(23)					
2	Thomas & Kumar (24)					
3	Hejjaji et al.(20)					
4	Nadkarni et al. (21)					
5	Wasnik et al.(22)					
6	Jnaneswar et al. (18)					
7	Haokip et al.(19)					
		 Low risk of bias  Some concerns  High risk of bias				

Table.3 GRADE Assessment of certainty

Outcome	Studies	Starting certainty	Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	Final certainty
cessation/abstinence	7 RCT	High	Serious -1	Not serious	Not serious	Not serious	Undetected	Moderate
Nicotine dependence	4 RCT	High	Serious -1	Not serious	Not serious	Not serious	Undetected	Low

Results

Baselines characteristics of 7 studies included are shown in table. 1. Tobacco cessation, absenteeism and reduction in level of nicotine dependency through digital intervention demonstrated significant improvement compared to their respective control group consecutively. High immersion tools such as virtual reality achieved largest shift from 'high/severe nicotine dependence' to 'no nicotine dependency' in intervention group and only 2.5% in control group. For continuous

dependence score reductions, integrating personalized counselling with NRT yielded a 2.14-point FTND drop versus 1.32 points for NRT alone and text-messaging systems produced a mean ASSIST score drop from 25.23 to 22.61. Among 7 included studies 4 studies reported nicotine dependency score was assessed as an independent outcome. Detailed comparison on results is demonstrated in Graph.1 Detailed results achieved in various RCTs are described in Graph1 and Table 4.

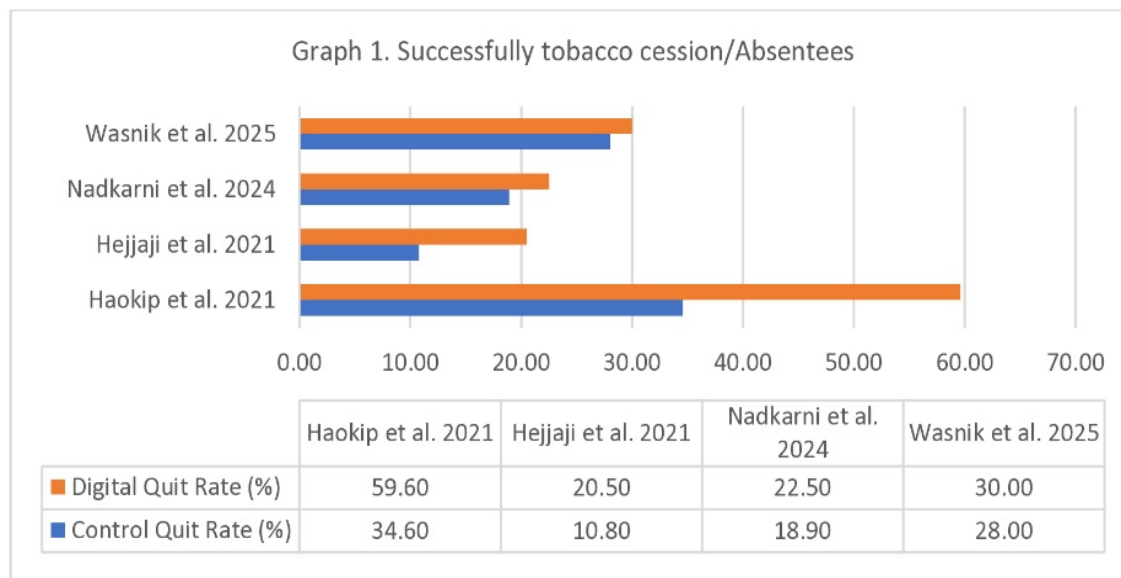


Table.4 Comparison for reducing nicotine dependence

Study	Digital modality	Digital Intervention (n/N)	Digital Intervention (%)	Control (n/N)	Control (%)
Thomas & Kumar 2026	Virtual reality	21/40	52.5	1/40	2.5
Thomas & Kumar 2026	mHealth/ WhatsApp	13/40	32.5	1/40	2.5
Thomas & Kumar 2026	Tele -dentistry	6/40	15.0	1/40	2.5
Bhatt 2025	SMS	27/100	27.0	6/100	6.0
Hejjaji, 2021	SMS	31/151	20.5	9/83	10.8
Nadkarni 2024	SMS	9/40	22.5	7/37	18.9
Wasnik 2025	mCessation + NRT	NR	30.0	NR	28.0

Discussion

Effectiveness of Digital intervention compared to conventional intervention on tobacco cessation and nicotine dependency.

The current Systematic review compares effectiveness of digital intervention with conventional means for tobacco cessation and nicotine dependency. The digital intervention has higher significance in achieving tobacco cessations and nicotine dependency Compared to control groups. Haokip et al, reported 59.6% successful cessation and reduction in nicotine dependency from 'severe' to 'no nicotine dependency' in 30%. (19,22) The results varied based on the type of smoking, type of digital intervention and follow-ups. Higher follow up were reported by follow up at 3,6,9 and 12 month Bhatt et al. and Jnaneswar et al. (18,23)

Comparison of various digital means among each other

Virtual reality was found most effective for achieving no nicotine dependence in Thomas and Kumar at 12 months.(24) SMS/Text message were found usefully as reminders by tobacco users due to frequency whereas video were more informative but were not giving reminders. The mCessation were found user-friendly and easy to access by tobacco users, among all intervention, SMS/Text message were the most commonly used intervention and virtual reality was used in only 1 RCT. (21,24) this results are aligned with research conducted by Goh et al. who reported variable abstinence outcomes across digital modalities, including telephone/text messaging interventions. The review also noted that cessation effects varied according to the intervention type, study population and duration of follow-up,

highlighting the heterogeneity of the available evidence. (25)

Conclusion:

Among all RCTs, Digital intervention showed consistent improvement in increasing tobacco cessation, maintaining the quit phase and reducing nicotine dependency compare to conventional interventions. Future studies may include larger number of studies from more comprehensive database. Despite massive digitalization in India among many healthcare sectors, use of digital intervention for tobacco remains unexplored and there is scope of further researches in this area.

References

1. Verma M, Rana K, Bhatt G, Sharma N, Lal P. Trends and determinants of tobacco use initiation in India: analysis of two rounds of the Global Adult Tobacco Survey. *BMJ Open*. 2023 Sep;13(9):e074389. doi:10.1136/bmjopen-2023-074389
2. Rao V, Chaturvedi P. Tobacco and health in India. *Indian J Cancer*. 2010;47(5):3. doi:10.4103/0019-509X.64373
3. John RM, Sinha P, Munish VG, Tullu FT. Economic Costs of Diseases and Deaths Attributable to Tobacco Use in India, 2017–2018. *Nicotine & Tobacco Research*. 2021 Jan 22;23(2):294–301. doi:10.1093/ntr/ntaa154
4. Tp Jayanthi, V Subhashini, Vm AE. Tobacco Use: Quitting Plan, Attempts and Obstacles for Cessation- A Cross-Sectional Study from A Sub-Urban Neighbourhood of Chennai-Tamil Nadu. *Natl J Community Med*. 2023 Jan 31;14(01):18–23. doi:10.55489/njcm.140120232603
5. Tripathy J. Socio-demographic correlates of quit attempts and successful quitting among smokers in India: Analysis of Global Adult Tobacco Survey 2016–17. *Indian J Cancer*. 2021;58(3):394. doi:10.4103/ijc.IJC_213_19
6. Chengappa K, Rao A, Shenoy R, Pai M, Jodalli P, Br A. Tobacco Control Policy in India: Progress and Challenges Quantified Using the Tobacco Control Scale. *Asian Pac J Cancer Prev*. 2024 Sep 1;25(9):3209–17. doi:10.31557/APJCP.2024.25.9.3209
7. Singh A, Kishore K. Smoking cessation in India: A narrative review. *Lung India*. 2025 Nov;42(6):532–6. doi:10.4103/lungindia.lungindia_571_24
8. Kumar R, Kumar M, Raj S, Arisham DK, Mavi AK, Singh K. Smoking cessation and its significant role in the Indian scenario. *Monaldi Arch Chest Dis*. 2023 Dec 4. doi:10.4081/monaldi.2023.2814
9. Dashti S, Peyman N, Tajfard M, Esmaceli H. E-Health literacy of medical and health sciences university students in Mashhad, Iran in 2016: a pilot study. *Electron physician*. 2017 Mar 25;9(3):3966–73. doi:10.19082/3966
10. Hoang Nguyen L, Bich Thi Le T. E-Health Literacy of Medical Students at a University in Central Vietnam. *Indian Journal of Public Health Research & Development*. 2020 Feb 1;11(2):1299. doi:10.37506/v11/i2/2020/ijphrd/195001
11. T Dakshayani Ms, K. Latha Dr, Soniya Devi T, A. Doris Lily Dr. Digital Health Technologies in India: A Comprehensive Review. *IJRTI*. 2025;10(10). doi:10.56975/ijrti.v10i10.206899
12. Rana RK, Kapoor N, Kumar D, Verma M, Taneja G. Digital Health Revolution in India: Transforming Health and Medicine. *Indian Journal of Community Medicine*. 2024 Dec;49(Suppl 2):S205–9. doi:10.4103/ijcm.ijcm_803_24
13. Kantar, Internet and Mobile Association of India (IAMAI). Internet in India 2024. New Delhi: Kantar; 2024.
14. Government of India, Ministry of Statistics & Programme Implementation. Results of Comprehensive Modular Survey: Telecom, 2025 [Internet]. New Delhi: Press Information Bureau; 2025 May 29 [cited 2026 Sep 9]. Available from: Press Information Bureau website.
15. Wasnik M, Dave B, Vadher V. Effectiveness of Digital Intervention for Tobacco Cessation Among Adults: A Systematic Review. *Addict Health*. 2025 Mar 29;17:1566. doi:10.34172/ahj.1566
16. Das DrJ, Kutum DrT, Deori DrC, Deori DrR. TELEHEALTH TECHNOLOGY AND HEALTHCARE. In: Neelima DrMG, Pathak DSS, Lokhande DrKB, Mitra DrD, Pankhaniya DrB, Seshadri DrS, et al., editors. IIP series [Internet]. Iterative International Publishers (IIP); 2022 [cited 2026 Sep 6]. p. 193–207. Available from: <https://www.iipseries.org/viewpaper.php?pid=1061&pt=telehealth-technology-and-healthcare> doi:10.58532/V3BFBT10P2CH7
17. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*. 2021 Mar 29;n71. doi:10.1136/bmj.n71
18. Jnaneswar A, Jha K, Barman D, Singh A, Pathak M, Kumar G. Software intervention in smoking cessation among engineering students in Bhubaneswar city: A randomized controlled trial. *Indian J Community Med*. 2020;45(4):534. doi:10.4103/ijcm.IJCM_56_20
19. Haokip HR, Kumar DR, Singh Rawat DV, Kumar Sharma DS. Efficacy of standard nicotine replacement therapy (NRT) versus video-assisted nurse-led NRT on tobacco cessation: A randomized controlled pilot trial. *Clinical Epidemiology and Global Health*. 2021 Jan;9:141–6. doi:10.1016/j.cegh.2020.08.004
20. Hejjaji V, Khetan A, Hughes J, Gupta P, Jones P, Ahmed A, et al. A combined community health worker and text messaging-based intervention for smoking cessation in India: Project MUKTI – A mixed methods study. *Tob Prev Cessation*. 2021 Mar 29;7(March):1–12. doi:10.18332/tpc/132469
21. Nadkarni A, Gaikwad L, Sequeira M, D'souza J, Lopes M, Haldankar R, et al. Text Message-Based Cessation Intervention for People Who Smoked or

Used Smokeless Tobacco in India: A Feasibility Randomized Controlled Trial. *Nicotine and Tobacco Research*. 2024 Aug 22;26(9):1201–8. doi:10.1093/ntr/ntae056

22. Department of Public Health Dentistry, KM Shah Dental College and Hospital, Vadodara, Sumandeep Vidyapeeth Deemed to be University, Piparia, Vadodara, Gujarat, India, Wasnik M, Dave B, Department of Paediatric and Preventive Dentistry, KM Shah Dental College, Vadodara, Gujarat state, India, Vadher V, Government Dental College, Raipur, Chhattisgarh, India. Effect of various interventions for smoked tobacco cessation among Indians in Chhattisgarh. *Bioinformation*. 2025 Feb 28;21(2):225–30. doi:10.6026/973206300210225

23. Bhatt G, Goel S, Yadav SK, Patial A, Medhi B, Grover S, et al. A randomised controlled trial to evaluate the effectiveness of a culture and disease-

specific, patient-centric multi-component tobacco cessation intervention package for the patients attending non-communicable disease clinics in Punjab, India. *Psychology & Health*. 2025 Sep 2;40(9):1497–514. doi:10.1080/08870446.2024.2333896

24. Thomas PA, Kumar BS. Comparative Effectiveness of Virtual Reality, mHealth, Teledentistry, and Counseling for Nicotine Dependence Reduction in Chennai Smokers. *World Journal of Dentistry*. 2026 May 21;17(5):443–8. doi:10.5005/jp-journals-10015-2825

25. Goh KW, Ming LC, Al-Worafi YM, Tan CS, Hermansyah A, Rehman IU, et al. Effectiveness of digital tools for smoking cessation in Asian countries: a systematic review. *Annals of Medicine*. 2024 Dec 31;56(1):2271942. doi:10.1080/07853890.2023.2271942