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A Scoping Review of Nurses' Involvement in Smoking Cessation Strategies for Patients

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Abstract

Smoking poses a serious threat to global public health and significantly endangers individual well-being. Helping patients quit smoking is crucial for enhancing their overall health, and nurses play a vital role in guiding this process. Nevertheless, there remains limited investigation into the specific functions nurses perform in smoking cessation interventions for patients. This scoping review aimed to identify and outline the particular responsibilities undertaken by nurses in supporting patients to quit smoking, while also offering insights to inform the design of future nursing interventions in smoking cessation. The review followed the methodological framework proposed by Arksey and O'Malley and adopted the Joanna Briggs Institute (JBI) three-step strategy to carry out an extensive literature search. Studies were sourced from ten major databases—PubMed, CINAHL, Web of Science, Embase, Cochrane Library, OVID, PsycINFO, CNKI, Wan Fang, and the VIP Database for Chinese Technical Periodicals—covering publications up to February 2024. Eligibility criteria were based on JBI's structure, which involves participants, content, and context. Included studies were either randomized controlled trials or quasi-experimental in design, involving nurse-led or nurse-supported smoking cessation interventions. Two reviewers independently conducted data extraction. The findings were synthesized and reported using the PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews) guidelines. Out of the retrieved literature, 53 studies met the criteria for inclusion. The analysis revealed six primary functions that nurses performed within smoking cessation interventions: assessors, educators, practice facilitators, coordinators, organizers, and supervisors. Of these, the most prevalent roles were assessors, educators, and practice facilitators. Commonly used approaches included the motivational interview technique and the 5A method. Nurses engaged patients using various methods such as distributing educational pamphlets, providing in-person education, and offering direct cessation guidance. Most studies focused on patients suffering from chronic obstructive pulmonary disease (COPD). Nurses are integral to smoking cessation interventions, frequently taking on diverse and significant roles. Despite their central involvement, a notable shortcoming was the lack of structured pre-intervention training, emphasizing the importance of developing more comprehensive training programs to enhance the effectiveness of future nursing-led smoking cessation strategies.

Keywords: Scoping review, Intervention, Nursing, Smoking cessation, Nurses' roles

Introduction

Smoking remains a significant global public health concern and is strongly linked to increased risks of stroke, cancer, and both cardiovascular and respiratory illnesses—each contributing significantly to mortality worldwide [1–3]. The World Health Organization (WHO) reported in 2019 that around 1.337 billion individuals aged 15 and older are tobacco users globally [4].

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Among them, China leads with over 300 million smokers, followed by India (276 million), Indonesia (60 million), and the United States (34.2 million) [5, 6]. Annually, tobacco consumption results in more than 8 million deaths and imposes an economic burden of $1.4 trillion globally [4].

Encouragingly, research has shown that smoking cessation leads to a marked decline in mortality related to chronic non-communicable diseases [7–9]. Although many smokers acknowledge the harmful effects of tobacco and wish to quit, overcoming addiction is challenging due to psychological and physiological dependencies [10]. Nevertheless, support from healthcare professionals significantly boosts the success rate of smoking cessation efforts [11]. Nurses, who are central figures in healthcare and maintain frequent patient interactions across various care settings—such as inpatient wards, outpatient clinics, and emergency departments [12, 13]—represent the largest workforce capable of delivering smoking cessation support in both clinical and community settings [14, 15]. Studies indicate that smoking cessation guidance from nurses has a positive impact on quit rates [16], as they play a vital role in administering effective interventions and conducting follow-ups [17, 18]. Thus, nurses are essential to the implementation of smoking cessation strategies, offering crucial knowledge and motivation that may result in more successful outcomes than support from other healthcare providers.

Although previous research has largely emphasized the effectiveness of specific intervention elements and nurses' contributions to smoking cessation [11, 19, 20], the broader scope of nurses' responsibilities in such interventions remains underexplored. To address this gap, we conducted a scoping review to map the types of interventions delivered by nurses and to clarify their roles in smoking cessation. This review aims to inform the development of evidence-based training strategies tailored for nurses, ultimately enhancing their commitment and capability to support patients in quitting smoking.

Materials and Methods

This scoping review was registered in advance on the OSF platform (https://osf.io/ba72e/).

Study design

The review followed the methodological framework established by Arksey and O'Malley [21], encompassing the following stages: (i) formulation of the research question, (ii) identification of relevant literature, (iii) selection of studies, (iv) data charting, and (v) synthesis and presentation of findings. Additionally, the review adhered to the PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews) guidelines to ensure comprehensive and transparent reporting throughout the process [22].

Search strategy

To ensure a comprehensive and systematic literature search, we employed the three-phase approach recommended by JBI for scoping reviews [23]. The initial phase involved preliminary exploration of PubMed and Embase using MeSH terms such as "smoking cessation," "tobacco use cessation," "smoking reduction," "nursing," and "nurses." Following this, we broadened our investigation to include ten supplementary databases—PubMed, CINAHL, Web of Science, Embase, Cochrane Library, OVID, PsycINFO, CNKI, Wan Fang Data Knowledge Service Platform, and the VIP Database for Chinese Technical Periodicals—utilizing a combination of controlled vocabulary (MeSH) and free-text search terms. To further strengthen the search process, we also conducted a manual review of reference lists from the relevant articles and reports identified. The search encompassed all available literature from the inception of each database up to February 2024.

Table 1. The intervention methods and theory models used in studies

Study	Intervention approach					Theory
	MI	5R	5A	CN	TTM	Stages of change model
Auer *et al.* [18]	√					
Bolman [24]	√					√
Bredie *et al.* [25]	√				√	
Castello *et al.* [26]			√			
Clair *et al.* [17]	√		√			
Cossette *et al.* [27]	√					√
Gies *et al.* [28]			√			
Ong *et al.* [29]	√		√			
Li *et al.* [30]	√		√		√	√
Li *et al.* [31]	√					
Canga *et al.* [32]						√
Ong *et al.* [33]						√
Wilson *et al.* [34]	√					√
Chouinard and Robichaud-Ekstrand [35]					√	

Lu *et al.* [36]					√	
Ma [37]			√			
Xue [38]			√			
Ma *et al.* [39]			√			
Xu [40]		√	√			
Si [41]			√			
Tian and Zhu [42]			√			
Zhang and Feng [43]			√			
Yan *et al.* [44]			√			
Hao and Wen [45]			√			
Cao [46]			√			
Zhang *et al.* [47]	√					√
Li *et al.* [48]			√			
Chen [49]				√		
Kang [50]				√		
Li and Zhang [51]				√		
Zheng *et al.* [52]				√		
Zhao [53]				√		
Tian [54]				√		

TTM: transtheoretical model of behavioral change, MI: motivational interviews, 5A: ask, advise, assess, assist, arrange, 5R: relevance, risk, rewards, roadblocks, repetition, CN: continuing nursing.

Inclusion and exclusion criteria

The criteria for study inclusion in this scoping review were formulated based on the JBI-recommended PCC framework (participants, concept, context) [23], which helped to delineate the review's boundaries and focus on pertinent research. Specifically, (i) participants included registered nurses such as clinical nurses, advanced practice nurses (APNs), and community nurses; (ii) concept centered on smoking cessation interventions administered by nurses to patients, encompassing behavioral, educational, and supportive types; (iii) context involved healthcare environments like hospitals, primary care centers, community settings, and specialized smoking cessation clinics; (iv) study design was limited to interventional research, including randomized controlled trials and quasi-experimental studies, to capture detailed insights into nurses' active roles and specific smoking cessation strategies; (v) language was restricted to publications in English or Chinese due to the language capabilities of the research team.

Excluded were studies that (1) did not represent original research, such as expert consensus statements, editorials, or review articles; (2) focused exclusively on pharmacological smoking cessation without involvement of nursing interventions, since such studies do not clarify the nurses' contributions; and (3) had inaccessible full texts or lacked complete data.

Screening process

After compiling records from the selected databases, duplicates were removed using NoteExpress software. Two independent reviewers then screened titles and abstracts according to the eligibility criteria for an initial selection. A full-text review followed to inform final inclusion decisions. Any disagreements between reviewers were resolved through consultation with a third team member.

Data extraction and analysis

Adopting a data extraction template adapted from Arksey and O'Malley [21], relevant study information was systematically collected, including author, year, country, participant characteristics, study design, who delivered the intervention, intervention details, primary outcomes, and major findings. The research team collaboratively examined these data to narratively summarize nurses' roles and detail the specific components of smoking cessation interventions they provided.

Results and Discussion

Process of literature selection and summary

As depicted in **Figure 1**, the initial search strategy yielded a total of 17,569 records. After duplicate removal and thorough screening, 53 studies were finally included in this scoping review.

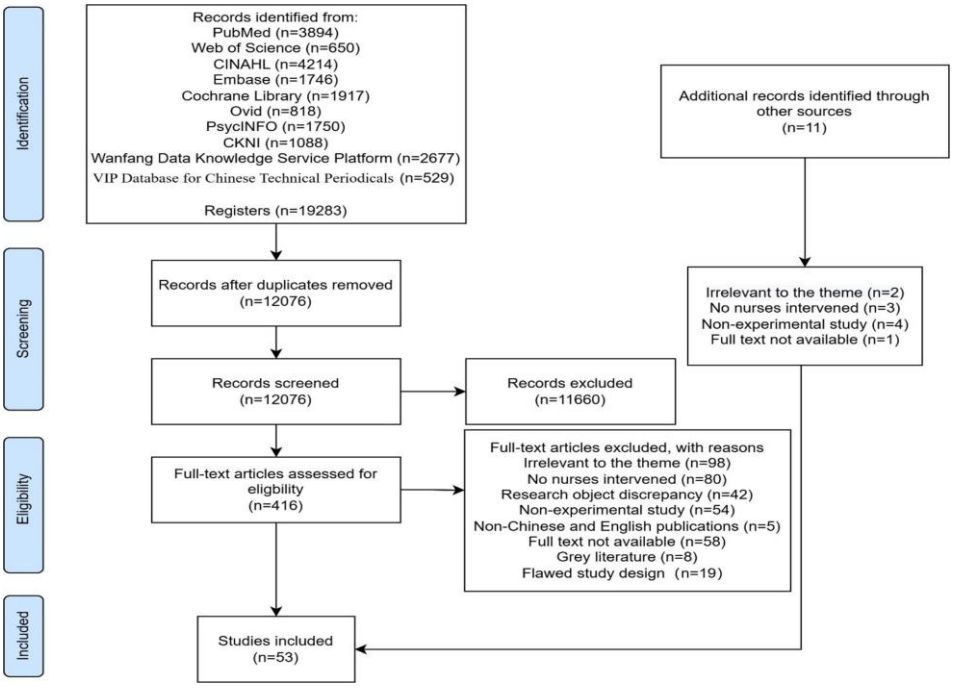


Figure 1. Study flow diagram for PRISMA

Characteristics of the studies and interventions

A total of 53 studies were examined in this review, with their core features and intervention strategies summarized in Supplementary Material.

Intervention providers and smoking cessation recipients

Out of the included studies, 43 centered on nurse-led smoking cessation interventions, while the remaining 10 involved participation from physicians or psychologists [18, 24, 47, 54–60]. Only 19 studies reported that nurses underwent specific training related to smoking cessation before implementing interventions [18, 24–26, 29–32, 34, 36, 46, 49, 56, 60–65]. A few studies featured specialized nursing roles, including smoking cessation specialist nurses [27], advanced practice nurses (APNs) [29], and nurse counselors focused on cessation support [33]. The largest group of recipients in these interventions was patients diagnosed with chronic obstructive pulmonary disease (COPD) [34, 38, 46, 49–55, 60, 62, 66–69]. Other common groups included individuals with coronary heart disease [18, 24, 25, 27, 33, 35, 36, 58, 70–72], cancer [33, 36, 63, 64], diabetes [17, 30, 32, 36], pulmonary heart disease [41, 42, 44], chronic bronchitis [37, 39, 43], and stroke [45, 48]. Additionally, eight studies involved patients whose illnesses were not explicitly identified [26, 28, 31, 56, 57, 59, 64, 65].

Intervention methods and theory models

As detailed in **Table 1**, the most frequently applied intervention techniques were motivational interviewing (MI) and the 5A nursing approach. These strategies were often guided by theoretical models, such as the Transtheoretical Model (TTM) and the Stages of Change Model. In studies conducted in China, continuous care was also employed to promote smoking cessation. In many cases, MI was combined with behavior change theories to design interventions tailored to patients' specific behavioral readiness.

Primary outcomes and reporting modalities

The synthesis of findings focused on several smoking cessation outcomes, including rates of abstinence, levels of nicotine dependence, frequency of smoking, and smoking behavior patterns. Carbon monoxide (CO) was the most frequently utilized biomarker to validate abstinence [17, 18, 28, 29, 33, 34, 36, 45, 55, 61, 63–65, 70]. Some studies also employed biological validation through the measurement of cotinine levels in urine or saliva [24, 32, 35, 56, 59], while others used both CO and cotinine for dual verification [30, 31, 70]. Despite the use of biochemical measures in many cases, a large proportion of studies relied primarily on participants' self-reported cessation status.

The roles of nurses in smoking cessation interventions

Six central roles undertaken by nurses during smoking cessation efforts were identified across the literature.

Assessors

Before initiating smoking cessation interventions, nurses began by determining patients' smoking status and reviewing their tobacco use history [17, 24–30, 32, 34, 37–46, 48, 50–53, 55, 61, 63, 64, 66, 67, 72, 73]. This assessment typically included details such as the age at which smoking began, daily cigarette intake, habitual smoking behaviors, degree of nicotine dependency [29, 32, 36–38, 41, 42, 44, 46, 54, 61, 73], and willingness or preparedness to quit [38, 56]. Nurses further evaluated patients' intention [26, 28, 31, 37, 39–43, 45, 46, 48, 53] and motivation to stop smoking [17, 40, 44, 55, 56], along with their specific stage of readiness to develop interventions aligned with the patient's current stage of behavioral change [48, 55]. During both intervention and follow-up phases, nurses regularly monitored challenges encountered by patients [24, 37, 38, 42–46, 49, 52] and measured smoking cessation progress [17, 25, 28, 30, 32, 37, 39–46, 49, 55, 57, 60–64, 70, 72, 73]. They tracked both short-term and long-term cessation outcomes [29, 65], assessed ongoing nicotine dependence [56, 60], evaluated patients' understanding of smoking cessation knowledge [18], gauged their motivation to remain abstinent [27], and reviewed their readiness to quit smoking thoroughly [31].

Educators

Nurses played a key educational role in smoking cessation efforts. The literature highlights three main methods they used to deliver health education:

1. Distributing materials such as brochures, leaflets, and videos focused on smoking cessation [24, 28, 30–33, 39, 41, 42, 45–48, 51–53, 55, 58–62, 64, 67–70, 73];
2. Offering one-on-one education sessions either in person during hospital stays or via telephone after discharge [17, 29, 30, 32–34, 37, 39–45, 47–49, 52–54, 56, 58, 62, 64, 66, 68, 69, 72, 73, 74];
3. Conducting group-based interventions like smoking cessation workshops or lectures [38, 47, 55, 62, 68, 69, 73].

Core educational content included:

1. Tobacco-related knowledge [24, 27, 29–34, 36, 37, 39–49, 52, 56, 58, 60, 62, 66–70, 72, 73, 74], covering topics such as the harmful health effects of tobacco, its role in disease, and the health benefits of quitting;
2. Instruction on how to quit smoking [17, 26, 34–36, 48, 56, 58, 61, 64, 65] and relevant smoking cessation techniques [29, 37–39, 41, 43, 46, 51, 53, 60, 62, 68, 69];
3. Identifying and managing symptoms of withdrawal [27, 31, 34, 36, 45, 62, 68];
4. Strategies to prevent relapse and deal with setbacks [33–35, 38, 39, 41–44, 58, 59, 70];
5. Addressing psychological symptoms and providing stress management support [29, 69].

Practice facilitators

As part of the intervention process, nurses encouraged patients to stop smoking before beginning formal treatment [17, 24, 26, 28, 33–37, 39, 43, 45, 56, 58, 64, 65, 68, 70] and offered positive reinforcement and emotional support [27, 38, 41, 42, 44, 48, 53, 60, 61, 67]. At the intervention's outset, nurses created individualized cessation plans [38, 40–46, 51, 53, 55, 68, 74] and helped patients establish specific quit dates [25, 26, 32, 33, 38, 40, 45, 46, 48, 55, 56, 61, 65, 68, 73]. During treatment, nurses implemented strategies to reinforce motivation based on patients' original intent to quit [25, 30, 31, 36, 40, 47, 60, 65, 69]. For individuals experiencing intense withdrawal symptoms or exhibiting significant nicotine dependence, nurses administered nicotine replacement therapy (NRT) [32–35, 59, 69, 73]. Nurses also addressed any emerging issues or withdrawal-related symptoms [24, 31, 40, 45, 46, 56, 61, 67], supported patients in confronting anxieties related to quitting [41, 42], and provided instruction on cessation methods [38, 44, 46, 68], appropriate use of medication [25, 26, 29, 60, 66], and lifestyle changes conducive to staying smoke-free [31, 46, 51, 69]. After discharge, nurses continued to promote a healthy lifestyle and smoking abstinence [37, 73], and in some cases, patients signed written commitments to solidify their resolve to quit [38, 40, 46, 55, 70].

Coordinating collaborators

Several smoking cessation interventions involved nurses collaborating with other healthcare team members. In some instances, nurses partnered with physicians to jointly develop suitable cessation strategies and offered them feedback on patient progress [24, 60, 62]. Nurses also worked alongside patients' family members to help establish a smoke-free environment either during hospitalization or upon discharge [44, 51, 55, 69, 73, 74]. Post-discharge, they followed up with families to verify patients' smoking cessation status [40, 72], supporting the reliability of self-reported data. In addition, nurses encouraged the involvement of family and close social circles to strengthen smoking cessation efforts [41, 42, 46, 47, 60, 69]. In some instances, they also served as intermediaries between patients and specialized smoking cessation centers [26].

Organizers

In certain studies, nurses took on organizational responsibilities within smoking cessation interventions. This included arranging educational events such as health lectures or informational sessions [47, 55, 62, 68]. Nurses

also promoted interaction among cessation participants to build peer support networks [49, 66, 70]. Moreover, they coordinated events where individuals who had successfully quit shared their journeys, the reactions of their families, and the benefits they experienced—an approach aimed at encouraging others by boosting morale and determination [38, 46, 48, 74]. Some interventions also included sessions where caregivers shared their perspectives and experiences caring for patients [69]. Additionally, nurses organized recreational activities during hospitalization to help patients stay distracted, enhance their stay, and support cessation outcomes [74].

Supervisors

Beyond their clinical and educational functions, nurses often served as supervisors throughout the smoking cessation process. During hospital stays, they consistently monitored patients' smoking behavior [44, 62]. After discharge, nurses maintained oversight by conducting follow-up visits to track progress toward cessation [52, 71] and assisted patients in correcting unhealthy tobacco-related habits [42]. Nurses also worked with family members to help supervise ongoing cessation efforts [52, 67] and promoted peer-to-peer accountability by encouraging patients to communicate and support one another [72]. Their involvement extended to mobilizing families and friends as part of the cessation strategy and closely observing patients' routines to improve success rates [40, 44, 46, 49, 53, 55, 69, 73].

This review highlights the vital contributions of nurses in supporting patients through smoking cessation interventions. Throughout the cessation process, nurses assumed multiple responsibilities, functioning as assessors, educators, practice facilitators, coordinating collaborators, organizers, and supervisors. Their efforts to promote smoking cessation were primarily carried out through distributing educational pamphlets, providing individualized health education, and delivering structured cessation guidance. Among the various techniques applied, motivational interviewing (MI) and the 5A method emerged as the most frequently employed strategies. The majority of targeted individuals were patients diagnosed with chronic obstructive pulmonary disease (COPD). Building upon the findings of Rice *et al*. [19], whose systematic review confirmed the effectiveness of nurse-delivered smoking cessation interventions in improving quit rates among adults, this scoping review expands that perspective by closely examining the distinct roles and intervention strategies that nurses utilize in clinical practice. It offers a more detailed exploration of the diverse actions taken by nurses, contributing practical insights for refining and enhancing smoking cessation programs in healthcare settings.

Of all the roles undertaken, assessment was found to be the most consistently applied and integrated throughout all phases of smoking cessation support. Both motivational interviewing and the 5A nursing intervention heavily incorporate the nurse's function as an assessor. MI, a patient-centered counseling technique, focuses on strengthening individual motivation to change behavior and has proven helpful in addressing addictive patterns. Its effectiveness has been demonstrated in promoting changes related to smoking, sedentary behavior, and unhealthy dietary habits [75]. Additionally, its success has been replicated in primary care contexts [76].

In the context of smoking cessation, nurses using MI first evaluate a patient's readiness to quit and determine their behavioral stage of change, allowing them to tailor a suitable intervention plan. Similarly, the 5A method—endorsed as the gold standard for smoking cessation by the U.S. Public Health Agency—guides nurses through five structured steps: ask, advise, assess, assist, and arrange [77]. Nurses initially gather information on patients' smoking history and assess their willingness to quit. Follow-up procedures include monitoring cessation outcomes, addressing barriers, and making necessary adjustments to improve the intervention's effectiveness.

One study has proposed integrating lifestyle and smoking risk evaluations—performed by registered nurses—into outpatient medical histories as a way to better direct cessation interventions [78]. Within the 5A framework, nurses not only advise on quitting but also aid in developing cessation plans, setting target quit dates, providing nicotine replacement therapy (NRT), offering instruction on quitting techniques, and motivating patients to sign cessation pledges. These actions demonstrate the significant role nurses play as practice facilitators in guiding and reinforcing smoking cessation efforts.

In their role as educators, nurses support patients in gaining essential knowledge and developing the skills required for smoking cessation. They guide patients in managing withdrawal symptoms and avoiding relapse through diverse educational methods, ensuring steady advancement in the cessation process. The significance of this educational function is underscored by Chaney's study, which emphasized the crucial involvement of nurse practitioners in administering effective smoking cessation treatments and informing patients about the health dangers associated with smoking [79].

Nevertheless, findings from the review of 53 studies showed that only a limited number of nurses had received formal training in smoking cessation interventions. A considerable portion of clinical nurses lacked both the knowledge and skills needed to assist individuals in quitting smoking. Interviews conducted with nurses revealed a general lack of confidence in offering cessation support, with some expressing concerns about insufficient expertise or viewing such support as outside their professional role [80]. Introducing structured learning programs focused on smoking cessation for healthcare providers has been shown to boost their confidence and competence in helping patients stop smoking [81]. Moreover, research has indicated that patients who received brief counseling interventions from nurse practitioners were nearly twice as likely to make a quit attempt compared to

those who did not receive any counseling [82]. For this reason, expanding smoking cessation training for nurses is crucial to enhance their confidence and knowledge, enabling them to provide more effective support to patients. In addition, smoking cessation education itself remains a critical intervention. Periods of hospitalization or recovery following illness are particularly effective moments to encourage individuals to quit smoking [83].

Nurses also act as coordinating cooperators in the delivery of smoking cessation interventions. Given that some patients place greater trust in physicians than in nurses, successful implementation of cessation strategies often requires physicians' cooperation—for instance, by having doctors encourage patients to quit smoking. In addition to involving doctors, nurses usually engage family members in the cessation process, enabling them to help sustain the patient's motivation and foster a supportive environment for quitting.

Moreover, nurses collaborate with smoking cessation organizations to direct patients to specialized care facilities. Their roles further extend to being organizers and supervisors of cessation activities. For example, nurses may lead peer support groups, providing a platform for individuals to exchange experiences and encourage one another—an approach that has demonstrated positive outcomes [84]. They also invite successful smoking cessation practitioners to speak at events and share their stories, which helps inspire patients and boosts their determination to quit.

Many long-term smokers struggle with quitting due to poor self-control, often requiring consistent supervision. Research has documented that nurses closely monitor patients during hospitalization and continue to follow up after discharge, sometimes enlisting the help of families to maintain oversight and motivation for quitting.

However, some research has faced limitations such as funding constraints and study location, leading to reliance on self-reported smoking cessation rates, which may be compromised by memory errors or inaccurate patient reporting. To address this, measuring carbon monoxide (CO) levels in exhaled breath provides a more objective assessment of smoking status. Technological advancements have enabled the use of mobile breath sensors to detect CO levels, which can enhance patients' motivation and improve success rates in quitting [85–88].

One such example is the use of the "Cure App Smoking Cessation" program, which integrates a smartphone application with a web-based management system. This setup enables healthcare professionals to track patients' cessation status through mobile CO detectors, thereby enhancing the overall effectiveness of the smoking cessation treatment [89]. Consequently, future studies should prioritize incorporating biochemical verification—such as mobile CO detection—to increase the accuracy of outcome data and strengthen the validity of research findings.

Although nurses play a vital role in smoking cessation interventions and utilize a range of approaches to assist patients in quitting, various obstacles can hinder their effectiveness and contribute to lower cessation success rates. For instance, even with national-level smoking cessation policies and smoking bans in place, specific healthcare settings—like psychiatric institutions and nursing homes—are not subject to these regulations, limiting nurses' ability to carry out smoking cessation interventions effectively [90]. Frazer and Kelleher [90] and Buchbinder *et al*. [91] also emphasized that emergency departments present an ideal opportunity for delivering smoking cessation education, offering a setting where patients can receive motivation, support, and guidance tailored to their self-reported smoking behaviors. Despite this potential, such opportunities are often overlooked, resulting in reduced patient participation in cessation efforts.

Nurses also encounter significant practice-related barriers, including time constraints and knowledge gaps [92, 93]. Due to demanding clinical workloads, nurses frequently lack the time needed to provide thorough smoking cessation counseling, as urgent clinical responsibilities often take precedence. Moreover, awareness of existing smoking cessation services may be limited. In typical practice, nurses may ask about a patient's smoking status during initial assessments or before treatment, but often do not prioritize smoking cessation as a central concern, which may reduce the overall impact of their efforts. Systemic issues further complicate this, such as nurses' lack of authority to prescribe nicotine replacement therapies (NRT), which can delay access to pharmacological treatment [93]. These combined challenges may partially explain why some patients struggle to quit smoking successfully. Hence, it is essential for future studies to design targeted interventions that address these limitations, empowering nurses with the necessary resources and support to enhance cessation outcomes.

The emergence of big data and digital platforms has opened up new possibilities for delivering smoking cessation interventions online. The increasing popularity of mobile health (mHealth) technologies has led to the development of chatbot systems designed to support patients in their journey to quit [94]. Additionally, motivational interview-based robotic tools have been investigated to enhance patients' readiness to quit [95]. Furthermore, mobile application-based pharmacological strategies have demonstrated promise in improving smoking cessation outcomes [96]. Given the heavy workload nurses often carry, they may have limited availability to deliver focused smoking cessation interventions directly to patients [97]. Thus, exploring web-based and digital solutions is critical moving forward, as such innovations could ease the burden on healthcare professionals, save time for both clinicians and patients, and reduce healthcare costs.

Moreover, the impact of the COVID-19 pandemic must be considered when interpreting the findings of this scoping review. Since the review period overlaps with the pandemic, many clinical trials involving in-person smoking cessation interventions were likely interrupted due to public health restrictions [98]. These disruptions

may have affected both the continuity of intervention delivery and the quality of data collection, resulting in a smaller number of eligible studies for inclusion. Consequently, the available body of evidence might not entirely reflect nurses' specific roles and smoking cessation practices during the pandemic. Future research should investigate how telehealth and digital strategies can overcome such challenges and sustain smoking cessation support in a post-COVID context.

Limitations

This study has several notable limitations. First, the participants were limited to individuals with existing diseases. Whether located in hospitals, community settings, or at home, these patients may demonstrate greater commitment to smoking cessation due to heightened motivation to quit compared to the general population of smokers. As a result, interventions targeting this group may show higher effectiveness. However, nurses also play a crucial role in supporting smoking cessation among healthy populations, such as social smokers and adolescents in school settings, which was not examined in this review. To improve the generalizability of findings, future research should broaden the participant scope to include smokers without diagnosed diseases.

Second, beyond the six roles identified in this review, an additional important function of nurses in smoking cessation is that of communicators. Effective communication underpins nurses' ability to carry out a range of nursing activities, including assessments and health education. Since communication was not explicitly measured as part of the smoking cessation interventions included in this review, this represents a limitation. Additionally, when guiding families to supervise smoking cessation, nurses often operate simultaneously as both coordinating collaborators and supervisors. To avoid redundancy, we classified this dual role solely under supervisors, which may not fully represent the multifaceted nature of their involvement.

Third, although this scoping review provides a comprehensive overview of nursing interventions in smoking cessation, it is constrained by the types of study designs included. Specifically, only interventional studies—such as randomized controlled trials and quasi-experimental designs—were considered. While this focus enabled an in-depth investigation of nursing roles and interventions, it may have limited the inclusion of evidence regarding other dimensions of smoking cessation that were not captured by these methodologies. Moreover, since a scoping review aims to map the overall evidence on nurses' primary roles rather than to evaluate the effectiveness of interventions in detail, some specific information on intervention outcomes and comprehensive evaluations might be underrepresented.

Conclusion

Overall, nurses serve a fundamental role in supporting patients through smoking cessation interventions by taking on diverse responsibilities, including those of assessors, educators, coordinators, practice facilitators, organizers, and supervisors. Continuous assessment and patient education are pivotal throughout the quitting process. Despite this, many nurses lack sufficient training in these vital skills. Enhancing educational programs, increasing the number of specialized nursing professionals, and establishing incentive systems to acknowledge and motivate nurses are essential steps to boost their involvement and effectiveness in smoking cessation efforts.

Moreover, capitalizing on Internet technologies can facilitate the introduction of novel interventions designed to boost patient success in smoking cessation.

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