

Research Article

Expert Consensus Statements on Smoking Cessation Best Practice in Saudi Arabia

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Abstract

Background: Each year in Saudi Arabia, approximately 70,000 individuals die from smoking-related diseases and there is an urgent need for practical, evidence-based, best-practice guidance on smoking cessation for healthcare professionals in this country.

Methods: A working group of six prominent local practitioners from six medical centers and hospitals across the Kingdom of Saudi Arabia developed a series of consensus statements on current best practice in smoking cessation using available literature and the Delphi technique.

Results: Four key topics were identified: Increasing awareness of smoking cessation programs; creating a patient journey that results in high patient satisfaction; Addressing healthcare professional engagement and greater accountability in the delivery of smoking cessation programs; Exploring the role of government/policymakers in shaping smoking cessation programs and providing incentives. Within each of these topics, members were well aligned on the consensus statements after the first round of the Delphi process, with >80% agreement on all statements. The strength of supporting evidence from the literature, including clinical guidelines and best-practice articles in smoking cessation published between 2016 and 2021, was considered 'strong' for the majority of the consensus statements.

Conclusions: The guidance provided here in the form of consensus statements derived from published data combined with real-world experience aims to provide key stakeholders essential advice on the promotion and delivery of smoking cessation in Saudi Arabia, a country in which tobacco consumption remains high.

Keywords: Tobacco use; Smoking; Smoking cessation; Best practice; Consensus statements; Saudi Arabia

Abbreviations

GCC: Gulf Cooperation Council; HCP: Healthcare Professional; WHO: World Health Organization

Introduction

Tobacco use is a significant public health issue and one of the leading causes of morbidity and mortality [1]. Globally, tobacco use was responsible for 8.71 million deaths in 2019, equating to 15.4% of all deaths worldwide [2]. Each year in Saudi Arabia, approximately 70,000 individuals die from smoking-related diseases and it is well recognized that there is no safe level of exposure to tobacco [3,4]. In 2016, the total economic cost (healthcare expenditure and productivity loss due to morbidity and mortality) associated with smoking and secondhand smoke exposure in Saudi Arabia was estimated to be US\$6309 million [5].

Prevalence estimates for 2018 report a cigarette smoking rate of 21.4% across 13 regions of Saudi Arabia, with 17% of smokers being daily smokers (this rate varied widely across regions, from 21.49% in Aljwf to 8.06% in Najran) [1]. Cigarette smoking in Saudi Arabia is far more prevalent among men (32.5%) than women (3.8%) [1]. It

is projected that by 2025, the smoking rate amongst Saudi men will increase to 36.1% [6].

In addition to traditional cigarettes, other forms of tobacco consumption are prevalent in Saudi Arabia, especially amongst younger people. A recent meta-analysis found that 26% of male and 5% of female Saudi college students smoked tobacco in the form of cigarettes, shisha and cigars, cross-sectional studies of Saudi medical students report rates of e-cigarette use of 10-12.2%, and 36.2% of 464 surveyed University Students from Eastern Province had tried shisha at least once [7-11]. The use of e-cigarettes and shisha (waterpipe) by non-smokers has been identified as a gateway to the use of cigarettes and other tobacco products [8,12-14].

The popularity of shisha in Saudi Arabia may have cultural associations alongside the misconception that it is not as harmful as smoking cigarettes, and this is especially true for Saudi youth who exhibit poor knowledge regarding the risks of shisha [11,15]. Harmful substances present in cigarette smoke including nicotine, tar, polyaromatic hydrocarbons and heavy metals are also present in waterpipe smoke, often at levels exceeding those found in cigarette smoke [16]. Furthermore, waterpipe smoking is a significant risk factor for pulmonary and cardiovascular disease [13].

While few people understand the specific health risks of tobacco use, most tobacco users want to quit when they are made aware of the dangers of tobacco and the benefits of quitting [4]. Quitting smoking results in improvements in circulation and lung function within 2-12 weeks, improvements in coughing and shortness of breath over 1-9 months, a reduced risk of coronary heart disease within 1-year, and a reduced risk of stroke and lung cancer over 5-10 years [17,18]. For those who quit smoking after suffering a heart attack, the risk of another heart attack is reduced by 50% [19]. Furthermore, smoking cessation benefits economies through reduced healthcare expenditure and loss of productivity due to smoking-attributable illness [17].

The high prevalence of tobacco use in Saudi Arabia and the rapidly rising death rate associated with its use is a major public health concern [3]. The Saudi Arabian government have implemented a number of measures to control the use of tobacco, including the implementation of MPOWER measures recommended by the World Health Organization (WHO) Framework Convention on Tobacco Control [3,19]. MPOWER is a policy package intended to assist in the country-level implementation of effective interventions aimed at reducing the demand for tobacco and comprises the following six evidence-based components [19]:

- Monitor tobacco use and prevention policies
- Protect people from tobacco smoke
- Offer help to quit tobacco use
- Warn about the dangers of tobacco
- Enforce bans on tobacco advertising, promotion and sponsorship
- Raise taxes on tobacco

To date, 24 countries have implemented one or more MPOWER tobacco control measures, resulting in a reduction in the global smoking prevalence from 22.7% in 2007 to 17.5% in 2019 in those aged over 15 years [20]. While the WHO recognizes this is encouraging progress, they warn of the challenges posed by new products such as electronic nicotine delivery systems and heated tobacco products [20].

In June 2017, Saudi Arabia doubled its tobacco tax, resulting in a significant reduction in cigarette consumption [21]. While this has been a significant step in the right direction, the need for smoking cessation support is clear, with only 4% of attempts to quit tobacco successful without support; this number is doubled by professional support and proven cessation medication intervention [17,18].

Saudi Arabia has a national agency to control tobacco use - the 'National Committee for Tobacco Control'. The committee published guidelines for tobacco control in 2018 [3,22]. As one of their key guideline recommendations, the committee state 'It is mandatory that physicians and healthcare providers invariably identify and document tobacco use status and provide treatment for every tobacco user seen in a healthcare setting'[22]. The guidelines also promote the use of the 5A's framework for smoking cessation (Ask, Advise, Assess, Assist and Arrange) [22].

As part of their Vision 2030 program, the Saudi Arabian government is determined to enhance the quality of preventative and

therapeutic healthcare services [3]. However, the smoking pandemic is still prevalent in Saudi Arabia despite education programs to prevent the uptake of smoking, action to reduce environmental second-hand smoking, and the provision of smoking cessation support [23]. A contributing factor may be the apparent lack of smoking cessation knowledge among primary healthcare providers and the relatively high prevalence of smoking among healthcare workers themselves (20.1%) [24,25]. Despite their apparent lack of knowledge and inadequate delivery of smoking cessation counseling and therapy according to the clinical practice guidelines, it is clear and encouraging that healthcare providers have positive attitudes towards smoking cessation [25,26]. A survey of almost 700 healthcare workers in the western region of Saudi Arabia reported that 65% of those who smoked wanted to quit, and 70% had tried to quit in the year prior [25].

Here we present consensus statements on smoking cessation best practice developed by an expert working group of six prominent local practitioners and tobacco control activists. The consensus statements have been developed to provide practical guidance on smoking cessation for family and general practitioners, and internal medicine specialists, and to demonstrate the value of smoking cessation programs to policymakers in Saudi Arabia. The working group emphasizes the importance of providing current data and real-world clinical experience to guide physicians in understanding smoking cessation treatment.

Methods

In 2021, the working group, comprising six prominent local practitioners from six different medical centers and hospitals across the Kingdom of Saudi Arabia, participated in an advisory board meeting to discuss smoking cessation patient journeys in Saudi Arabia, to define current best practice in smoking cessation in Saudi Arabia and to identify any unmet needs. From this discussion, the group identified a set of four key topics: Increasing awareness of smoking cessation programs; creating a patient journey that results in high patient satisfaction; Addressing healthcare professional (HCP) engagement and greater accountability in the delivery of smoking cessation programs; Exploring the role of government/policymakers in shaping smoking cessation programs and providing incentives.

Within each of these key topics, a series of questions were asked and the working group provided their feedback. A literature search of clinical guidelines in smoking cessation published between 2016-2021 provided relevant international and local publications, including guidelines and best practice articles to guide the members in developing their answers. From their responses, a series of consolidated consensus statements were developed. The Delphi technique was used to assess the extent of agreement amongst the working group and to resolve disagreement on any particular consensus statement [27]. Recommendations were graded as 'strong' (evidence based on international guidelines, randomized controlled clinical trials, meta-analyses and systematic reviews) or 'weak' (based on clinical experience, expert opinion).

Results

Consensus statements on smoking cessation best practice

Below we outline the consensus statements and supporting

evidence, along with a grading of the strength of the recommendation. Members were well aligned on the consensus statements after the first round of the Delphi process, with >80% agreement on all statements.

Key topic 1: Increased awareness of smoking cessation programs:

Question: What is the role of tobacco control campaigns?

Consensus statement: Tobacco control campaigns should be used to drive smokers to quit smoking and prevent new smokers from initiating smoking. Campaigns should reach target group(s) at regular frequent intervals providing education and updated research data to increase awareness of smoking cessation programs, highlight the urgency to quit smoking and emphasize the hazards of smoking.

Summary of evidence: Most tobacco users are unaware of the full harms of tobacco use and this is especially true for adolescents and young adults [11,15,19]. The addictiveness and dangerous health consequences of tobacco use must be relayed via comprehensive warnings [19]. Hard-hitting campaigns via multiple channels have been reported to be effective in convincing users to quit and such campaigns should highlight tobacco cessation successes and seek to prevent smoking initiation, especially among youth [19,28,29].

A recent systematic review and meta-analysis found mixed results on the effectiveness of tobacco interventions; while policies and interventions have the potential to reduce smoking, evidence of their effectiveness is hampered by the lack of high-quality trials [30]. However, in Saudi Arabi, an anti-smoking campaign launched at the beginning of Ramadan in 2017 saw a 321% increase in the number of visitors to anti-smoking clinics in the region [3].

Strength of recommendation: Strong

Question: What is the role of social media use in promoting smoking cessation?

Consensus statement: Social media platforms such as WhatsApp, Instagram, Facebook, and Twitter provide a freely available and easily accessible forum to support and boost tobacco control efforts, especially among younger generations and those who have previously been difficult to engage in behavioral health interventions. Via these platforms, smokers may be informed of smoking cessation programs, be educated and motivated by influencers, receive personalized messages or prompts to help them quit smoking, and reach out for smoking cessation support from other participants, learning about their successes and challenges with quitting smoking. Social media interventions afford unique opportunities to overcome barriers such as cost, geographic distance and stigma that could impede attempts to quit smoking. Virtual clinics may also take advantage of social media platforms, providing advisory services via chat or video calling.

Summary of evidence: Apps, the internet, email, chat, and text messaging increase the potential for cessation services to reach more tobacco users [29]. 'Tips From Former Smokers', a Centers for Disease Control and Prevention initiative delivered via a selection of media and social media channels, has been running since 2012, and has helped over half a million smokers successfully quit [31]. In a cross-sectional study, including 473 smokers taking part in smoking cessation intervention programs run by the Riyadh branch of King Abdul-Aziz Medical City and PURITY, a Saudi anti-smoking

association, Twitter and WhatsApp users found it easier to quit smoking than those who did not use these channels, and 44.7% of participants would recommend taking part in a social media support group to prevent smoking relapse [32].

A number of smoking cessation apps have shown promise in small randomized controlled trials; however, none have been tested in fully powered studies [33]. A systematic review of Smartphone apps for smoking cessation found that among the top 50 apps for smoking cessation recommended by the leading app stores, only two had any scientific support in terms of published research [33].

A Cochrane review of internet-based interventions for smoking cessation found that internet programs that were interactive and tailored to individual responses resulted in higher quit rates at ≥ 6 months compared with written self-help or usual care [34].

Strength of recommendation: Strong

Question: How should smoking cessation campaigns be targeted to at-risk populations e.g., adolescent, pregnant, hypertensive, or obese patients?

Consensus statement: Smoking campaigns targeted towards at-risk populations should involve regular education in areas where they are gathered, for example: schools, universities, workplaces, malls, restaurants, community pharmacies, health clinics, antenatal clinics, and hospitals. Focus group and survey data may be used to develop clear and targeted messaging with person-to-person psychosocial interventions for high-risk populations such as pregnant women and tailored information for individuals with hypertension, or mental disorders. Extra care should be given when addressing adolescents, with smoking cessation knowledge and advice delivered in an engaging, empathetic, and motivating manner.

Summary of evidence: In a cross-sectional study, 1497 Southwest Saudi Arabian residents aged ≥ 15 years (49.2% were smokers) perceived school awareness programs as the most successful for smoking cessation, followed by TV and Radio campaigns [35].

A youth smoking cessation program, 'Smokefree Teen' using TV, radio, online, and social media channels was found to increase engagement with evidence-informed cessation resources for teen smokers, emphasizing the value of using multiple media channels to increase engagement with this group. The US Preventative Services Task Force recommend that primary care clinicians provide interventions, including education or brief counseling, to school-aged children and adolescents to prevent the initiation of tobacco use in this group [36].

Pregnancy has been described as a 'teachable moment' and provides an ideal window of opportunity to promote smoking cessation [37]. Psychosocial intervention such as counseling should be offered and may comprise motivational interviewing, cognitive behavioral therapy, psychotherapy, relaxation and other strategies. Such therapy during pregnancy can be delivered by clinicians, trained counselors, smoking cessation specialists etc [37].

Strength of recommendation: Weak

Question: What should be done to raise awareness on the use of e-cigarettes/shisha?

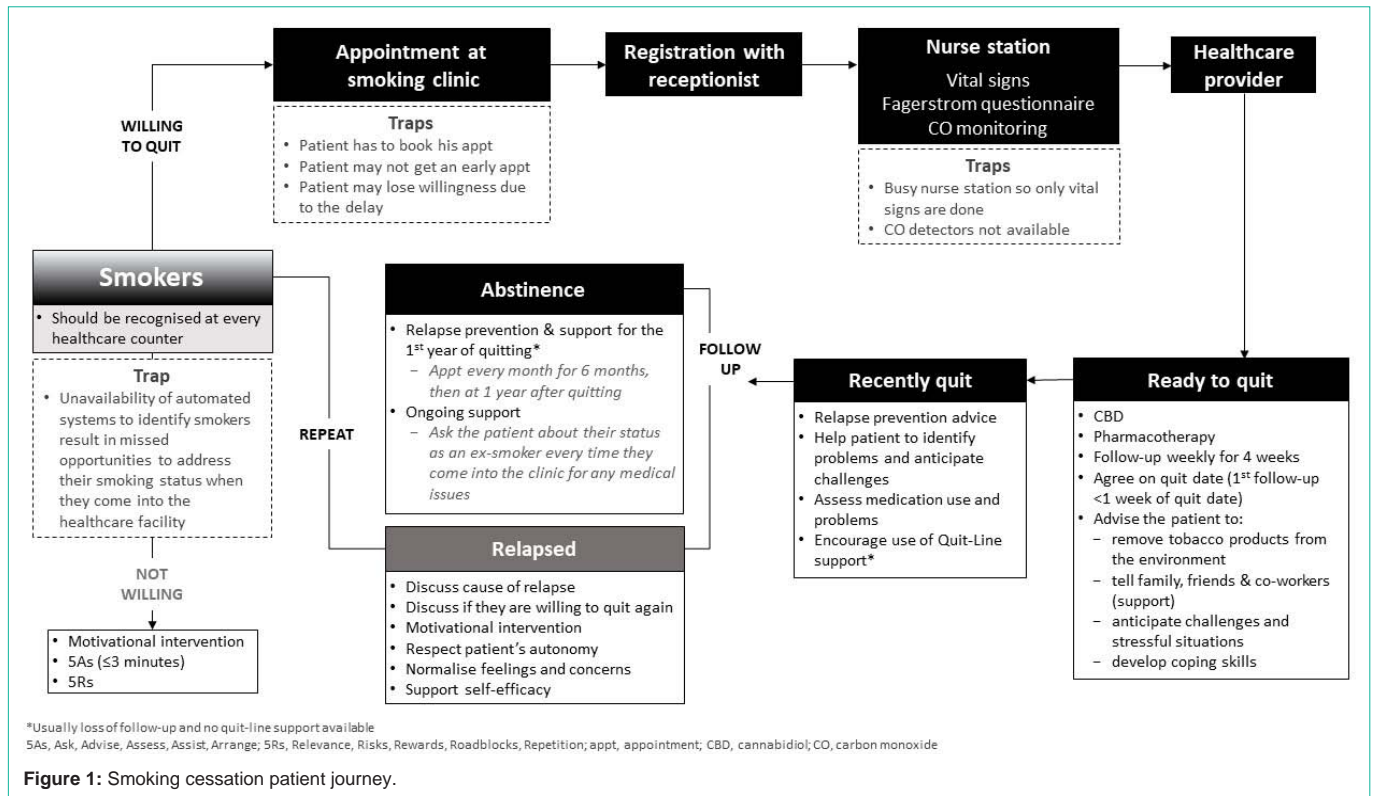


Figure 1: Smoking cessation patient journey.

Consensus statement: Healthcare professionals involved in smoking cessation programs must be fully aware of the risks of e-cigarettes/shisha use and raise awareness of their dangers. Patients’ personal accounts on the harms of using these products may be relayed via media channels. The misconception that these products are a safer alternative to smoking must be dispelled. Research into local knowledge and attitudes towards e-cigarette and shisha use should be undertaken to understand knowledge and attitudes towards their use. Education should emphasize that shisha use is associated with chronic obstructive pulmonary disease, ischemic heart disease, and cancers. Laws should be enacted that limit the use of e-cigarettes and shisha.

Summary of evidence: The low risk-perception associated with shisha and its societal acceptability have contributed to the high prevalence of its use among young adults in Saudi Arabia [15,38]. Healthcare providers should enquire about shisha use, educate regarding its dangers, and advise users to quit [13]. Shisha users should be provided with cessation counseling and encouraged to set a quit date [13]. They should be referred to credible sources of information about the risks of shisha [13].

Knowledge is also poor regarding the risk of e-cigarettes and awareness must be raised about the risks associated with their use [8,10].

Strength of recommendation: Weak

Question: What is the role of the physician/healthcare provider in increasing awareness of smoking cessation programs? What guidance should be given for doctors who are smokers?

Consensus statement: Healthcare providers must act as role

models for smoking cessation by remaining tobacco free and promoting a tobacco-free culture. They must actively encourage their patients to quit smoking, referring them to appropriate smoking cessation clinics. They should include tobacco control in the agenda of all relevant health-related congresses and conferences, and patient encounters, and actively participate in World No Tobacco Day. Healthcare providers should be actively involved in organizing and delivering campaigns to establish smoke and tobacco-free schools, hospitals, restaurants, shops, and leisure premises and activities. Healthcare providers who are smokers should be reminded of the importance of being a role model and be prioritized to undergo an intensive smoking cessation program.

Summary of evidence: In Saudi Arabia in 2019, there were 542 anti-smoking clinics and during the first half of that year they had helped over 11,000 smokers to quit [3]. However, knowledge of smoking cessation is poor among healthcare providers despite their positive attitudes towards smoking cessation [24-26].

A survey of 697 healthcare workers in Saudi Arabia indicated a crude prevalence of current smoking of 18.4%, while 9.8% were past smokers and suggesting a need for establishment of smoking cessation programs targeting healthcare workers. A case of “Physician heals thyself” [25].

Strength of recommendation: Strong

Key topic 2: Creating a patient journey that results in high patient satisfaction:

Question: How should patients who smoke be identified?

Consensus statement: Patients who smoke should be identified

by including a question on smoking status in the triaging of patients across the healthcare system and at each consultation regardless of the specialty (Figure 1). Electronic health records can alert to smoking status and it should be mandatory that data on smoking status is entered into the system. Social media campaigns could be used with a pop-up question of 'Do you smoke', with advice to those who answer 'yes'.

Summary of evidence: A content analysis using the 5As model in 14 trials that assessed electronic health record modifications required to support tobacco cessation indicated that while all systems provided documentation of smoking status (Ask), only 35.7 % provided advice to quit (Advise), 57.1 % allowed documentation of a patient's willingness to quit (Assess), 78.6 % offered medication prescribing, 57.1 % provided educational materials, 50.0 % offered referral to a quit line, 42.9% referral to a tobacco treatment specialist and 35.7% documented provision of counseling (Arrange) [39].

Strength of recommendation: Strong

Question: Upon presentation to the hospital/clinic, how should patients who are smokers and seeking treatment be managed?

Consensus statement: Patients who smoke and are seeking treatment for smoking cessation should be referred to a smoking cessation clinic and continue to be managed by a multidisciplinary team with treatment customized to their individual needs. The five major steps to intervention (5As: Ask, Advise, Assess, Assist, Arrange) should be employed (Figure 1).

Summary of evidence: The 5As (Ask, Advise, Assess, Assist, Arrange) can be completed with a patient ready to quit tobacco within 3–5 minutes in a primary care setting [40].

Strength of recommendation: Strong

Question: Upon presentation to the hospital/clinic, how should patients who smoke but are not seeking treatment for smoking cessation be managed?

Consensus statement: Patients who smoke but are not seeking treatment for smoking cessation should receive intervention using the 5Rs model (Relevance, Risks, Rewards, Roadblocks and Repetition), designed to motivate smokers unwilling to quit at this time (Figure 1).

Summary of evidence: The 5Rs model is based on a motivational counselling intervention to help them develop motivations to quit. If the patient doesn't think quitting is important focus on "Risks" and "Rewards", if they want to quit but don't think they can do so successfully focus more on "Roadblocks". If they remain unready to quit, end positively with an invitation to come back if they change their minds [40].

Strength of recommendation: Strong

Question: What treatment options should be recommended for patients? How should information about treatment be communicated to patients?

Consensus statement: Patients wishing to quit smoking should be offered psychological support, cognitive behavioral therapy, stress management (Table 1), and pharmacological treatment (i.e., nicotine replacement therapy [patches, lozenges, gums, nasal sprays,

inhalers], varenicline [Champix], or bupropion (Table 2)). Such treatment should be offered according to the relevant guidelines and patient preferences. Information regarding treatment options should be communicated through campaigns, advertising at community centers, malls, coffee shops, primary health centers, hospitals and through social media. Smokers wishing to quit should be informed that pharmacological intervention can double the success rate.

Summary of evidence: Combining pharmacological treatment with behavioral interventions increases the success rate of smoking cessation [41]. Most clinical guidelines recommend combining pharmacological intervention (nicotine replacement therapy [NRT], bupropion, varenicline) with cognitive-behavioral therapy [36,42].

Strength of recommendation: Strong

Question: How should patient adherence and smoking abstinence be encouraged?

Consensus statement: Patient adherence to smoking cessation should be encouraged through a relationship of trust, empathy, problem solving, and continuity of care. The patient should be involved in developing their personalized treatment plan. Support in the form of frequent follow-up calls, a help and advice hotline, interaction via social media, and reinforcement of the health gains associated with quitting, will improve adherence.

Summary of evidence: Telephone helplines have demonstrated success in helping smokers to quit, while a Cochrane review indicated with moderate-certainty that proactive telephone counseling helps increase quit rates in smokers [43,44]. Personalized and interactive internet-based interventions result in higher quit rates, Smartphone apps have shown promise for promoting changes in smoking in small randomized trials but none have been tested with fully powered studies [33,34]. A Saudi Arabian study has shown that social media provides a good platform to discuss smoking cessation treatment and reduce smoking relapses and suggest that more social media support groups should be developed [32].

Strength of recommendation: Strong

Question: What additional needs should be considered for the treatment of patients with comorbidities?

Consensus statement: Comorbidities should be identified in patients undergoing smoking cessation programs. Smoking cessation programs provide the opportunity to reduce cardiovascular mortality and morbidity and improve wellbeing. However, other cardiovascular risk factors and comorbidities like hypertension, type II diabetes mellitus, hyperlipidemia, and obesity should be tackled as well. Concurrent medication use should be recorded and any potential drug-drug interactions or contraindications identified. The risk of nicotine affecting the efficacy of concurrent medications should be considered as too should the effects of nicotine withdrawal on concurrent medication pharmacokinetics and pharmacodynamics, with dose adjustments undertaken as necessary.

Summary of evidence: Evaluation of recent evidence on smoking cessation and cardiometabolic outcomes indicates that cessation of smoking is justified in those with a high risk of weight gain and diabetes. However, awareness of a 'lean paradox' in which lower weight is associated with increased cardiovascular disease risk in

smokers may improve motivation to stop smoking despite possible weight gain [45].

In a Saudi Arabian case control study, among diabetic or hypertensive patients, 21.1% were abstinent and 42% had reduced cigarette consumption for >6 months after attending Ministry of Health tobacco cessation clinics, although the reduction in smoking was small (1.81 per day; 95% CI 1.04-2.58) [46]. Likelihood of quitting was increased in those with a lower educational level (adjusted odds ratio [aOR] 17.01; 95% CI 1.00-289.2; $p = 0.05$) or with controlled hypertension (aOR 17.8; 95% CI 1.5-209.6; $p = 0.02$) [46].

The US National Diabetes Education Program has identified pharmacists, podiatrists, optometrists, and dentists as key individuals to encourage to implement evidence-based strategies to improve diabetes-related clinical outcomes using a toolkit that encourages healthcare providers to ask, advise, and assist patients in their efforts to reduce risk, including smoking cessation, and increase healthy behaviors [47].

Strength of recommendation: Strong

Question: How should relapse be prevented? What should be done to assist patients who do relapse?

Consensus statement: Patients should be informed that relapse may be part of their journey to smoking cessation and be educated regarding smoking withdrawal symptoms and expected challenges, with appropriate management strategies and ideas for lifestyle modification to mitigate the risk of relapse. Patients who relapse while receiving smoking cessation therapy should be assessed for relapse causes and given advice on avoiding such triggers. Their treatment plan should be reassessed for appropriate therapy, treatment dosing, and support. Frequent follow-up can reduce the risk of withdrawal.

Summary of evidence: In Saudi Arabia, factors such as lack of willpower, other smokers around a person, and stress at home/work are posing challenges to the nation's fight against tobacco use [48]. A recent Cochrane review does not support the use of behavioral treatments to prevent relapse after quitting smoking, the most promising treatment was the extended use of pharmaceutical supports, in particular, Varenicline [49].

Strength of recommendation: Strong

Key topic 3: Address healthcare professional (HCP) engagement and greater accountability in the delivery of smoking cessation programs:

Question: What do you recommend regarding physician training in smoking cessation and benchmarks that should be set for evaluation of current knowledge?

Consensus statement: Physician training in smoking cessation should involve certified training programs with a hands-on curriculum and regular annual training covering both brief and in-depth interventions. Such training should cover all aspects of smoking cessation including economic, social, epidemiologic, pharmacological, psychological and health, and focus on local guidelines for tobacco cessation. Smoking cessation education should feature across all health professional courses. Training should aim at creating tobacco control leaders.

Summary of evidence: A survey of Saudi Arabian physicians suggested that smoking cessation counseling and therapy delivery, according to clinical practice guidelines, is inadequate, mostly due to lack of time (72.6%) and lack of training (66.9%) [26].

While teaching modules for undergraduate medical students produce sustained improvements in knowledge, skills, and attitudes, the effects on self-reported counseling and support for smokers willing to quit were negligible [50]. In contrast, a large-scale trial of comprehensive cessation training for 787 healthcare practitioners provided a small increase in the likelihood of smoking abstinence at 6 months (OR 1.12; 95% CI 1.02-1.24) [51].

Strength of recommendation: Strong

Question: How can physician-pharmacist and physician-nurse relationships be improved to facilitate optimal patient care?

Consensus statement: In order to facilitate optimal patient care, healthcare professionals including physicians, nurses, and pharmacists should all be trained in smoking cessation, with an understanding of their individual roles and the importance of team communication and a collaborative approach. Regular team meetings should be undertaken to discuss obstacles and challenges in patient care.

Summary of evidence: The shortage of physicians in GCC countries has been identified as a barrier to the delivery of smoking cessation treatment and there have been efforts to involve non-physician healthcare providers such as nurses and pharmacists in these services [52].

While a systematic review cast some doubt on the value of pharmacist-led interventions for tobacco smoking cessation, a Cochrane review of 7 studies including 1774 participants concluded that trained community pharmacy personnel delivering more intensive behavioral smoking cessation interventions can provide effective support with improved smoking cessation rates at 6 months (RR 2.30; 95% CI 1.33-3.97) [53,54]. A systematic review of 17 studies indicated that nurse interventions also play an important role in helping patients quit smoking [55].

Strength of recommendation: Strong

Question: What is the role of virtual consultations/clinics?

Consensus statement: Virtual smoking cessation consultations/clinics play an important role in smoking cessation programs. They ensure accessibility to smoking cessation treatment for a large number of smokers and provide an ideal platform for counselling and follow up. Virtual clinics during COVID-19 provided essential treatment services and consultations.

Summary of evidence: Quitting smoking during the COVID-19 pandemic is a challenge for patients and healthcare providers. Virginia researchers set up a successful telehealth treatment campaign using a standing order for medication therapy, an appropriately timed media campaign and efficient telehealth services, and redistribution of tasks between support staff and providers to enable effective delivery of multidisciplinary behavioral interventions [56]. Likewise, a study in rural smokers found that telemedicine integrated into primary care provides indirect effects that increased likelihood of smoking cessation

Table 1: Psychosocial interventions for smoking cessation (Adapted from U.S. Department of Health and Human Services 2020). [U.S. Department of Health and Human Services 2020].

Behavioral Therapy	Addresses historical learning processes related to smoking and current contextual factors that make it difficult to quit including social, behavioral, and environmental factors, by equipping smokers with practical strategies to avoid and/or cope with triggers, manage cravings, and reduce withdrawal symptoms.
Cognitive Therapy	A psychotherapeutic approach based on the idea that behavioral problems are maintained by cognitive factors, including beliefs that lead to automatic thoughts about particular situations.
Motivational Interviewing	Directive, patient-centered, nonconfrontational, non-judgmental, and highly collaborative technique that helps people explore and resolve ambivalence about making a behavior change.
Acceptance and Commitment Therapy	Draws on cognitive therapies but focus on changing psychological events directly. Focus is on the context and functions of psychological phenomena, and change strategies to help individuals experience their physical sensations, emotions, and thoughts. For example, accepting intense physical sensations (e.g., nicotine withdrawal, urge to smoke) and the emotions and thoughts that accompany those sensations.
Contingency Management and Monetary Incentives	Use of incentives (money, gift cards, or other tangible goods) to motivate people to change health behaviors.

Table 2: Commonly used smoking cessation medications (Adapted from Bpac NZ 2009).

	Effectiveness chance of long-term abstinence	Number needed to treat (NNT)	Clinically significant adverse effects	Contraindications	Available as
Nicotine replacement therapy (NRT)	2-fold increase	14			Patch, gum, inhaler, lozenge, sublingual tablet
Nortriptyline	2-fold increase	11	Adverse effects on cardiovascular function	Acute recovery phase following a myocardial infarct	Tablet
Bupropion	2-fold	11	Increased risk of seizures	History of seizures, eating disorders, bipolar disorder, acute alcohol withdrawal, breastfeeding	Tablet*
Varenicline	2- to 3-fold	8	Post-marketing cases of depression, suicidal ideation and myocardial infarction		Tablet*

after 12 months compared with quitline-like phone counseling [57].

Strength of recommendation: Weak

Key topic 4: Exploring the role of government/policymakers in shaping smoking cessation programs and providing incentives:

Question: What is the role of government/policymakers in shaping smoking cessation programs and providing incentives?

Consensus statement: Government and policymakers play a major role in shaping smoking cessation programs. They are responsible for directing funding and ensuring that smoking cessation programs are incorporated at all levels of healthcare services. They are responsible for tobacco control and smoke-free policies, and enforcing restrictions on smoking. They are responsible for implementing the WHO’s MPOWER measures designed to assist in the country-level implementation of effective interventions to reduce the demand for tobacco.

Summary of evidence: Government plays an important role in addressing a range of lifestyle behaviors and population health, including reducing health disparities and chronic disease and can unite diverse approaches across sectors and engaging the private sector [58]. Potential, barriers to implementing tobacco dependence include a lack of healthcare system infrastructure, low political priority and lack of funding along with a lack of awareness among policymakers’ about the effectiveness and affordability of tobacco dependence treatment [59].

The Gulf Cooperation Council (GCC) initiated tobacco control activities in 1979 and all GCC member states have a national level agency controlling tobacco use [3]. The Saudi Arabian government has implemented MPOWER measures recommended by the WHO Framework Convention on Tobacco Control [3,19]. In Saudi Arabia,

a sizable budget has been allocated by the Ministry of Health to fund various tobacco control programs [3]. Despite several anti-smoking initiatives, the prevalence of tobacco use is still high in Saudi Arabia and policymakers must address anti-smoking initiatives to effectively control tobacco use in the nation [3]. Perceived barriers to smoking cessation in Saudi Arabia include access constraints, cost challenges facing smokers who pay (at least partially) for smoking cessation medications, lack of social support, and the limited time for patient contact and inadequate training in smoking cessation services by healthcare providers [52].

Strength of recommendation: Strong

Patient journey

The ideal smoking cessation patient journey from initial presentation to abstinence was outlined, highlighting areas of support that HCPs can provide and pitfalls that may lead to patient loss at stages in the process (Figure 1).

Therapeutic options for patients

Treatment guidelines indicated that patients wishing to quit smoking should be offered psychological support, cognitive behavioral therapy, stress management (Table 1) in partnership with pharmacological treatment (i.e., nicotine replacement therapy [patches, lozenges, gums, nasal sprays, inhalers], varenicline [Champix], or bupropion (Table 2)) [36,42]. The treatment options should be tailored to patient preferences and be reinforced at each healthcare visit.

Discussion

The three main stakeholders in smoking cessation practice are patients, physicians and the healthcare system, and increasing awareness of smoking cessation in all these groups is of utmost

importance. Through their consensus statements the working group has shared opinions on a comprehensive range of potential solutions to the challenges faced by these groups, including improved training of healthcare practitioners, the use of electronic health information for a more targeted approach to patients who smoke, the role of digital technology for virtual consultations/clinics and awareness campaigns, and the role of government in setting policies for therapy reimbursements and incentives for physicians to undertake smoking cessation programs in their clinics and hospitals. The financial gains of investing in smoking cessation programs are well documented with estimates suggesting that for every dollar spent on smoking cessation approximately US\$3.00 is saved [60].

Given the popularity of shisha and e-cigarette use among young people in Saudi Arabia, this group must be a target of smoking cessation campaigns, with a focus on education regarding the harmful and addictive effects of these substances [7-11]. This audience must be informed that these products may be a gateway to smoking, that e-cigarettes are not a proven therapy for smoking cessation, and that their use will expose them to chemicals and toxins [8,12-14,16]. It may also be impactful to demonstrate the tar accumulation in the shisha pipe as an example of what may accumulate in the lungs.

A potential barrier to smoking cessation, especially among women, is the fear of weight gain [61]. Consideration and reassurance should be given to those with concerns about weight gain during abstinence from smoking, informing them that smoking presents a much greater health risk than the negligible health risks involved in the modest weight gain they may experience – dieting during quitting smoking is not recommended [61]. The group of patients with psychiatric disorders presents a challenge for smoking cessation [62].

For patients who quit tobacco use, emphasis should be placed on education regarding expected challenges, with appropriate management strategies and ideas for lifestyle modification to mitigate the risk of relapse, including avoiding triggers [28]. It is essential that these patients receive ongoing and frequent follow-up as this is an essential element of any successful smoking cessation program.

Conclusion

Tobacco consumption rates remain high and awareness of smoking cessation low in Saudi Arabia despite the introduction of measures to promote smoking cessation. The guidance provided here in the form of consensus statements derived from published data combined with real-world experience aims to provide key stakeholders essential advice on the promotion and delivery of smoking cessation in Saudi Arabia.

Declaration

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