Section: Surgery

Systematic Review Article

AWARENESS AND PRACTICES RELATED TO SMOKING AND ALCOHOL CESSATION PRIOR TO SURGERY: A SYSTEMATIC REVIEW

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ABSTRACT

Background: Smoking and excessive alcohol consumption are well-established risk factors for adverse postoperative outcomes, including wound complications, pulmonary infections, prolonged hospital stay, and increased morbidity and mortality. Evidence suggests that preoperative cessation of tobacco and alcohol significantly reduces surgical complications and improves recovery. Despite established clinical guidelines recommending cessation at least 4–8 weeks prior to elective surgery, patient awareness, adherence, and implementation of cessation practices remain inconsistent across healthcare settings. However, current evidence on awareness and real-world practices is fragmented. A comprehensive systematic review is therefore warranted. This systematic review aims to assess the level of awareness and the practices related to smoking and alcohol cessation prior to surgery among patients undergoing surgical procedures.

Materials and Methods: This systematic review followed PRISMA guidelines and included English-language observational studies, randomized control trials, systematic review, meta-analysis, guidelines studies, focusing awareness and practices related to smoking and alcohol cessation prior to surgery and postoperative outcomes. Studies were included according to predefined inclusion criteria. Databases including PubMed/MEDLINE, Scopus, and Web of Science were searched using relevant keywords. Study selection and data extraction were performed, the risk of bias was assessed using appropriate design-specific tools, and findings were synthesized narratively.

Results: Preoperative smoking and alcohol cessation reduces postoperative complications. Smoking cessation for at least 4 weeks before surgery significantly lowers pulmonary, wound, and overall complications, with greater benefits seen with longer cessation. Intensive cessation programs combining behavioral support and pharmacotherapy improve abstinence rates and may reduce postoperative morbidity. Combined smoking and alcohol use is associated with the highest risk of postoperative complications, readmission, and reoperation.

Conclusion: Preoperative smoking and alcohol cessation interventions, particularly those lasting 4–8 weeks and involving behavioral and pharmacological support, improve abstinence rates and reduce postoperative complications, with greater benefits seen with longer cessation. However, further large-scale studies with standardized methods and long-term follow-up are needed to determine optimal intervention timing and long-term outcomes.

Keywords: Smoking cessation, Alcohol cessation, Awareness and practices, surgery, Preoperative care, post operative outcomes.

INTRODUCTION

Many smokers undergo surgery each year, and quitting smoking before an operation can significantly reduce respiratory, cardiovascular, and wound-related complications. The preoperative period offers an important opportunity to encourage long-term smoking cessation. Primary care providers play a key role by supporting patients to stop smoking before surgery and maintain abstinence afterward. Effective support requires understanding the perioperative risks of smoking, recognizing surgery as a motivating "teachable moment," and applying appropriate cessation strategies such as brief counselling and pharmacotherapy (Warner DO, 2005).[1]

Smoking and hazardous alcohol use are major risk factors for postoperative complications. These risks arise from reversible physiological changes that can improve with abstinence. Stopping smoking or alcohol use 3–8 weeks before surgery significantly reduces wound, cardiopulmonary, and infectious complications. Therefore, patients scheduled for surgery should be screened for these behaviors and provided with appropriate cessation interventions (Tønnesen H et al., 2009).[2]

According to a 2020 WHO study, smoking significantly increases the risk of post-surgical complications, including heart and lung issues, infections, and delayed wound healing.[3]

Perioperative smoking cessation reduced postoperative complications (21% vs 41%; P = 0.03), with a relative risk reduction of 49% and a number needed to treat of 5. Patients who abstained had fewer complications than those who continued smoking. Overall, cessation initiated even 4 weeks before surgery appears effective in lowering complication risk (Lindström D et al., 2008).[4]

Tobacco use is a major health risk and an established contributor to postoperative complications. The preoperative assessment period, typically 2–4 weeks before surgery, provides an important opportunity for smoking cessation interventions (Tang E et al., 2025).[5]

Understanding patients' awareness and behavioral practices regarding smoking and alcohol cessation before surgery is therefore crucial for developing effective perioperative education strategies and intervention programs. Evaluating existing evidence can help identify gaps in knowledge, barriers to cessation, and opportunities to improve patient outcomes through targeted perioperative care.

Therefore, the present systematic review aims to evaluate the existing literature on awareness and practices related to smoking and alcohol cessation prior to surgery, highlighting current evidence and identifying areas requiring further research and clinical attention.

Objectives: The objective of this systematic review is to assess the awareness and practices of smoking and alcohol cessation prior to surgery among patients undergoing surgical procedures.

MATERIALS AND METHODS

This systematic review was conducted in accordance with PRISMA guidelines. A comprehensive literature search was performed in PubMed, Scopus, Web of Science, and Google Scholar using the following keywords: Smoking cessation, Alcohol cessation, Awareness and practices, surgery, Preoperative care, Post operative outcomes. Eligible study designs included observational studies like cohort studies, case–control studies, cross-sectional studies, randomized controlled trials (RCTs), Meta-analysis, relevant review articles, guidelines. Studies without extractable data or clearly defined outcome measures, commentaries and conference abstracts were excluded.

Titles, abstracts, and full texts were independently screened by two reviewers, with disagreements resolved by consensus. Data extraction and quality assessment were performed independently using standardized tools appropriate to study design. Due to heterogeneity among studies, a qualitative synthesis was conducted.

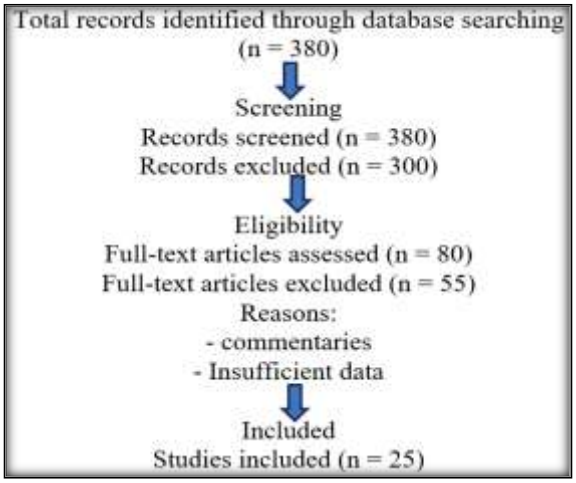

Figure 1: PRISMA Flow chart of Study Selection Process

RESULTS

High-risk alcohol use is a common surgical risk factor, and reducing alcohol intake around the time of surgery may improve outcomes. In a study of 51 participants, brief advice and health coaching interventions were evaluated and found to be acceptable and satisfactory. High retention (86.3%) was observed, and alcohol consumption decreased by 50–60% from baseline to follow-up in both groups, supported by biomarker evidence (Fernandez AC et al., 2022).[6]

Egholm JW, et al., 2018, reported that intensive alcohol cessation programs increased abstinence during the intervention period and likely reduced postoperative complications when implemented four to eight weeks before surgery. However, evidence was insufficient to determine their effect on postoperative mortality.[7]

Evidence-based guidelines for chronic wounds—such as venous leg ulcers, diabetic foot ulcers, and pressure ulcers—often emphasize biologic therapies. However, behavioral factors like smoking, which impair healing, should also be addressed in management plans (McDaniel JC & Browning KK, 2014).[8]

The combination of smoking and risky drinking conferred the highest likelihood of complications, readmission, and reoperation before surgery. Co-occurring alcohol and smoking at the time of surgery warrants special attention as a patient risk factor and deserves additional research (Fernandez AC et al., 2023).[9]

Meta-analysis of 25 studies showed that quitting smoking less than four weeks before surgery does not significantly change respiratory risk, whereas cessation beyond four weeks reduces respiratory complications and stopping for three to four weeks lowers wound-healing complications. Overall, longer preoperative abstinence provides clear benefits, while short-term cessation has minimal impact (Wong J et al., 2012).[10]

In a randomized trial of 70 patients undergoing ankle fracture surgery with high alcohol intake, participants received either a 6-week intensive alcohol cessation program (Gold Standard Programme for Alcohol cessation {GSP-A}) or usual care. The intervention significantly increased short-term complete abstinence (18/35 vs 5/35), but long-term low-risk drinking rates were similar between groups. There were no significant differences in postoperative complications, quality of life, or hospital costs. Overall, while the program improved early cessation, it did not impact clinical outcomes, highlighting the need for more effective perioperative strategies (Egholm JWM et al., 2022).[11]

In a meta-analysis by Mills E et al., 2011, found that randomized trials showed a 41% reduction in postoperative complications (95% Confidence Interval {CI}: 15–59, P = 0.01), with benefits increasing by 19% for each additional week of smoking cessation. Cessation of at least 4 weeks had significantly greater effects than shorter durations. Observational studies also showed reduced overall complications (RR 0.76), wound complications (Relative risk {RR} 0.73), and pulmonary complications (RR 0.81). Longer cessation duration was associated with a 20% reduction in total complications.[12]

In a randomized trial conducted in three Danish hospitals, 120 surgical patients were assigned 6–8 weeks preoperatively to either a smoking intervention group (counselling plus nicotine replacement therapy with cessation or ≥50% reduction) or a control group. After exclusions, 52 controls and 56 intervention patients were analyzed. The intervention group had significantly lower overall complication rates (18% vs 52%), particularly for wound-related complications (5% vs 31%), with trends toward fewer cardiovascular complications and reoperations. Hospital stay was slightly shorter in the intervention group. These findings suggest that preoperative smoking cessation programs can substantially reduce postoperative morbidity (Møller AM et al., 2002).[13]

Preoperative smoking cessation programs that combine behavioural support with nicotine replacement therapy improve short-term quitting rates and may reduce postoperative complications. Evidence suggests that interventions started 4–8 weeks before surgery, with regular counseling and Nicotine Replacement Therapy (NRT), are more likely to enhance long-term cessation and clinical outcomes. Although varenicline has shown benefits for long-term cessation, its effects on early abstinence and postoperative complications remain unclear, and the optimal intensity of intervention is still uncertain (Thomsen T et al., 2014).[14]

Alcohol abuse increases postoperative complications by two- to threefold, especially infections, bleeding, cardiopulmonary issues, and wound problems. These risks arise from immune dysfunction, cardiac impairment, and coagulation imbalance. Assessing alcohol use preoperatively and promoting abstinence or appropriate perioperative management can help reduce complications (Tonnesen H & Kehlet H, 1999).[15]

Preoperative abstinence for one month significantly reduced postoperative complications in alcohol-dependent patients (31% vs 74%). The intervention group also showed improved immune response before surgery, fewer cardiac events, arrhythmias, and hypoxaemic episodes, along with a reduced physiological stress response. These findings suggest that short-term abstinence lowers surgical risk by improving organ function and minimizing exaggerated stress responses (Tonnesen H et al., 1999).[16]

Smoking increases the risk of postoperative complications but remains a modifiable behavior. Preoperative cessation, supported by behavioral and pharmacological interventions, can significantly reduce these risks. The perioperative period offers a critical opportunity for surgeons, anesthesiologists, nurses, and other healthcare professionals to encourage and support smoking cessation (Vu JV & Lussiez A, 2023).[17]

Three RCTs (140 participants) evaluating intensive perioperative alcohol cessation interventions showed a reduction in postoperative complications, with fewer events in intervention groups compared to controls (Relative Risk {RR} 0.62). Mortality was low and did not differ significantly between groups. Quit rates were substantially higher in intervention groups (Egholm JW et al., 2018).[7]

A pre–post questionnaire study among smokers awaiting elective surgery found that providing a quit-pack with educational material and Quitline support at wait list placement increased ≥1 month preoperative abstinence by 8.6% (P = 0.03; Number Needed to Treat {NNT} = 12), demonstrating improved smoking cessation rates (Webb AR et al., 2014).[18]

Intensive preoperative alcohol cessation strategies may lower postoperative complication rates, but evidence remains limited. Their impact on mortality and hospital stay is unclear, and further research is needed to determine optimal timing, duration, and intensity of these interventions (Oppedal K et al., 2018).[19]

Harrogate S et al.,2023, found that perioperative tobacco cessation interventions improve abstinence rates at the time of surgery and up to 12 months postoperatively. Evidence quality was moderate due to variability in study designs. More intensive interventions, especially those extending into the postoperative period, appear to be more effective. Future research should focus on integrating evidence-based strategies into surgical care, using standardized outcomes, and incorporating patient perspectives to enhance acceptability and effectiveness.[20]

Smoking was associated with a higher risk of overall complications and hematoma, but not other postoperative outcomes. While cessation should be encouraged, delaying surgery solely for smoking abstinence may not be necessary. Further well-designed studies are needed for clearer conclusions (Garip M et al., 2021).[21]

Smoking cessation for more than 4 weeks before surgery improves wound healing, while shorter abstinence is linked to higher complications and slower recovery. Structured cessation strategies should be integrated into surgical planning to improve outcomes (Kolar BG et al., 2025).[22]

Among 168 patients, the intervention group showed higher smoking cessation rates both at the time of surgery and at 30 days postoperatively compared to controls, although complication rates were similar between groups. These findings suggest that a low-intensity preadmission smoking cessation intervention can effectively increase abstinence without adding significant workload for healthcare staff (Lee SM et al., 2013).[23]

Pulmonary complications remained higher in former smokers than non-smokers but decreased with longer smoking cessation. Compared with active smokers, preoperative cessation reduced pulmonary complications by 27% at ≥2 weeks, 29% at ≥4 weeks, and 37% at ≥8 weeks. Cessation of ≥4 weeks also reduced wound complications by 33%, overall complications by 31%, and mortality by 14%. Short-term cessation showed no significant effect on surgical site infections or bleeding (Tang E et al., 2025).[5]

Table 1: Summary of key findings of included studies

Author (Year)	Key Findings
Fernandez AC et al. (2022)	Brief advice and health coaching were acceptable, with high retention (86.3%) and 50–60% reduction in alcohol consumption.
Egholm JW et al. (2018)	Intensive alcohol cessation (4–8 weeks) increased abstinence and likely reduced postoperative complications; effect on mortality unclear.
McDaniel JC & Browning KK (2014)	Smoking negatively affects wound healing and should be addressed alongside biological therapies.
Fernandez AC et al. (2023)	Combined of smoking and risky drinking, increased risk of complications, readmission, and reoperation.
Wong J et al. (2012)	Smoking cessation >4 weeks reduced respiratory complications and stopping for three to four weeks lowers wound healing complications; short-term cessation had limited benefit.
Egholm JWM et al. (2022)	Intensive alcohol program improved short-term abstinence but showed no effect on complications or long-term outcomes.
Mills E et al. (2011)	Smoking cessation before surgery significantly reduces postoperative complications, with the greatest benefit seen when cessation is maintained for at least four weeks preoperatively.
Møller AM et al. (2002)	Smoking cessation with counseling and NRT significantly reduced postoperative and wound-related complications.
Thomsen T et al. (2014)	Combined behavioral and pharmacological interventions improved cessation and may reduce complications; optimal intensity unclear.
Tønnesen H & Kehlet H (1999)	Alcohol abuse increased postoperative complications 2–3 fold due to physiological impairments.
Tønnesen H et al. (1999)	One-month alcohol abstinence reduced complications and improved immune and cardiac function.
Vu JV & Lussiez A (2023)	Preoperative smoking cessation supported by behavioral and pharmacological interventions, reduces complications and is a key opportunity for intervention.
Egholm JW et al. (2018)	RCTs showed reduced complications and higher abstinence.
Webb AR et al. (2014)	quit-pack with educational material and Quitline support at wait list placement increased ≥1 month preoperative abstinence by 8.6%.
Oppedal K et al. (2018)	Alcohol cessation may reduce complications, but effects on mortality and hospital stay remain unclear.
Harrogate S et al. (2023)	Perioperative tobacco interventions improved short- and long-term abstinence; more intensive programs more effective.
Garip M et al. (2021)	Smoking increased overall complications and hematoma, but not all outcomes.
Kolar BG et al. (2025)	Smoking cessation >4 weeks improved wound healing.
Lee SM et al. (2013)	Low-intensity intervention increased cessation rates without affecting complication rates.
Tang E et al. (2025)	Preoperative smoking cessation for ≥2-8 weeks reduces pulmonary and postoperative complications, with greater risk reduction observed with longer cessation duration.

CONCLUSION

Intensive alcohol cessation programmes (4–8 weeks), including pharmacological and behavioral support, likely reduce postoperative complications and improve short-term abstinence. However, evidence is limited by small sample sizes, lack of long-term data,

and study homogeneity, highlighting the need for larger, high-quality trials (Egholm JW et al., 2018).[7] An increased duration of smoking cessation prior to surgery is linked to a reduced incidence of postoperative complications (Mills E et al., 2011).[12] Preoperative smoking cessation for at least 2–4 weeks reduces postoperative complications, with greater benefits seen with longer cessation periods (Tang E et al., 2025).[5]

Preoperative smoking cessation likely increases quit rates and reduces postoperative complications, but its effect on wound healing is uncertain. More standardized and long-term research is needed (Alhabdan, S. et al., 2025).[24]

Brief counselling and educational materials enhanced motivation for behavioral change, with brief counselling showing a stronger impact on smoking cessation (Alba LH et al., 2022).[25]

Preoperative smoking and alcohol cessation interventions, particularly those lasting 4–8 weeks and including behavioral and pharmacological support, improve abstinence rates and reduce postoperative complications, with longer cessation periods providing greater benefits. Brief counselling and educational interventions also enhance smoking cessation. However, further large-scale studies with standardized methods and long-term follow-up are needed to better understand long-term outcomes and determine optimal timing and intervention strategies.

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