



BMJ Open Smoking cessation interventions for US adults with disabilities: protocol for a systematic review

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ABSTRACT

Introduction People with disabilities have a higher prevalence of cigarette smoking than people without disabilities. However, little information exists on smoking cessation interventions tailored to address the unique needs of people with disabilities. This paper describes a systematic review protocol to identify and evaluate tobacco smoking cessation interventions designed to improve outcomes for people with disabilities.

Methods and analysis We will conduct a systematic review of the literature using the procedures outlined by Cochrane. We will search four electronic databases (CINAHL Plus (EBSCO), Embase (Ovid), Medline (Ovid) and PsycINFO (Ovid)) with no date restriction to identify tobacco cessation interventions tailored to meet the needs of people with disabilities. We will extract data and assess risk of bias using the RoB2 and ROBINS-I for included studies using Covidence systematic review software. Quantitative and qualitative syntheses will summarise key study characteristics and outcomes with text, tables and forest plots; a meta-analysis will be conducted, if appropriate.

Ethics and dissemination Ethical approval is not required as there are no primary data associated with the study. Data will be disseminated through a peer-reviewed articles and conference presentations.

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INTRODUCTION

Cigarette smoking has decreased over the past decade; however, smoking continues to be the leading cause of preventable disease and death in the USA.¹ Disability is defined by the interaction between someone's health condition and personal and environmental factors that limit community participation and functioning.² Adults with disabilities (ie, people who self-report limitations in domains including cognition, daily living, hearing, mobility or vision) have a higher prevalence of current cigarette use (23.3% vs 16.7%) and nicotine dependence (14.6% vs 8.0%) compared with those without a disability,³ as well as a greater odds of current cigarette, pipe and smokeless tobacco users than adults without disabilities (adjusted

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This review will use a rigorous methodology following Cochrane guidelines and the Preferred Reporting Items for Systematic Review and Meta-Analysis checklist.
- ⇒ This systematic review will use a broad definition of disability as part of the search strategy guided by the literature and a librarian.
- ⇒ Although the use of recommended search terms for disability will be used, it is possible certain disability types may be missed due to varying definitions of disability.

odds ratio [AOR]=1.32, 1.85, 1.57, respectively).⁴ Additionally, US adults with a cognitive (AOR=0.79), independent living (AOR=0.84), self-care (AOR=0.81) or vision disability (AOR=0.78) have a lower odds of former smoking.³ Quitting tobacco use can increase life expectancy⁵ and is critical to improve health, especially for people with disabilities as this population has higher rates of various chronic disease (eg, diabetes, asthma, stroke).⁶ Additionally, quitting cigarettes can result in improvements in mental and general health in people with disabilities.⁷

Although there are many smoking cessation interventions (eg, nicotine replacement therapy, counselling, text message programmes, contingency management), few studies have specifically examined the effects of these interventions on people with disabilities. Previous reviews on smoking cessation indicate that a combination of behavioural support and pharmacotherapy can increase the likelihood of quitting smoking in adult tobacco users.⁸ Additional reviews investigating cessation interventions tailored to specific populations have included people with severe mental illness,^{9–11} people with chronic disease,¹² people with medical conditions,^{13 14} people with substance use disorders,¹⁵ adolescents,¹⁶ young adults^{17 18} and people with mild or moderate intellectual

disabilities.¹⁹ However, no expansive review on tobacco cessation interventions has covered a range of disabilities rather than limiting to specific disability types.

Reviews of smoking cessation interventions for those with disabilities are especially important because current cessation strategies that do not consider the unique needs of people with disabilities could prove to be ineffective. For example, some interventions encourage strategies that do not accommodate the needs of people with various disabilities (eg, encouraging walks or deep breathing exercises) and fail to account for personal care attendants that also may smoke.²⁰ Additionally, current tobacco cessation programmes may lack cultural competency and therefore be inappropriate for people with communication or linguistic barriers, including people who are deaf.²¹ It is possible that the inaccessibility of current cessation programmes extends to other disabilities (eg, cognitive, visual) if materials are not provided in plain language, in braille or accessible by screen reader. Finally, as compared with the general population, people with disabilities are more likely to encounter other barriers related to social determinants of health, including less access to health resources,²² less likely to work,²³ live in poverty²⁴ and experience discrimination,²⁵ all factors that can influence their access to tobacco cessation interventions.

Due to the unique barriers encountered by individuals with disabilities, and the higher prevalence of cigarette use among this population,^{4 26} there is a need to identify interventions that have been tailored to people with various disabilities and examine if these interventions were successful in promoting smoking cessation. The purpose of this manuscript is to describe a protocol for a systematic literature review on tobacco cessation interventions for people with disabilities. The results of the review will be synthesised to identify and assess the evidence of available interventions for this population.

METHODS AND ANALYSIS

Design

A systematic review of empirical research will be conducted with the objective of (1) identifying tobacco cessation interventions for people with disabilities and (2) assessing the evidence of the interventions. Any amendments made to this protocol during the systematic review process will be documented during the dissemination of the results.

Eligibility criteria

Study design

Eligible studies will be behavioural or pharmacological interventions at the individual or group level. Studies will provide empirical data on tobacco cessation using a range of study designs, including randomised controlled trials, cluster-randomised controlled trials, quasi-experimental studies, single-subject design studies and cohort studies. Control conditions in studies will include no intervention; delayed intervention beginning after follow-up;

treatment-as-usual; or general tobacco, smoking cessation, or health education provided to all participants. Other potential studies will be retrieved by reviewing the references of included articles and contacting experts. Qualitative studies, formative research without outcome data on smoking behaviour, interventions focusing on prevention rather than smoking cessation, and studies with no control or comparators will be excluded.

Participants

Participants in the studies must be aged 18 or above and living in the USA. Participants must be living with a disability (eg, cognitive, communication, hearing, independent living, intellectual/developmental, visual). Interventions focusing on tobacco cessation for people with psychiatric disabilities will be excluded as reviews on this population already exist.^{9 11} Additionally, interventions tailored towards people with primarily medical conditions or chronic conditions (eg, chronic obstructive pulmonary disease, acute coronary syndrome, HIV, rheumatoid arthritis) will be excluded as reviews exist on these populations as well.^{13 14 27 28} Studies will be limited to the USA due to varying healthcare contexts that may affect the interventions offered or access to tobacco cessation interventions (eg, through free national public healthcare).

Outcome measures

Eligible outcome measures include change in smoking behaviour (eg, cigarettes per day) and smoking cessation or abstinence. Examples of outcomes include 7-day point prevalence abstinence, self-reported quitting or biological measures (eg, exhaled carbon monoxide, cotinine). The primary outcome will be smoking status at 6 months follow-up in line with reporting recommendations.²⁹ Secondary outcomes will include adverse outcomes (eg, psychological distress), social validity outcomes and quality of life outcomes. Studies must measure a change from baseline to follow-up in every study group. Secondary outcomes will include adverse outcomes (eg, psychological distress), social validity outcomes and quality of life outcomes. [Table 1](#) uses the Population, Intervention, Comparison, Outcome strategy to provide a summary of the participants, intervention, comparators and outcomes.

Search methods

Similar terms to search for articles in CINAHL Plus (EBSCO), Embase (Ovid), Medline (Ovid) and PsycINFO (Ovid) were developed with a university librarian (GSA) and were applied with no date restriction (online supplemental table 1). The reference list of all full-text records assessed for eligibility will be screened, experts in the field will be contacted and conference abstracts (eg, Society for Research on Nicotine and Tobacco, American Public Health Association) from the January 2017 to December 2022 will be reviewed to identify potential additional

Table 1 Review PICO

PICO strategy	Inclusion criteria	Exclusion criteria
P–Population	Adults (aged 18+) with disabilities living in the USA and with a disability (eg, cognitive, hearing, intellectual/developmental, mobility, vision).	People with psychiatric disabilities; people with a chronic disease or a medical condition (eg, chronic obstructive pulmonary disease, HIV)
I–Intervention	Any behavioural (eg, counselling, financial incentives) or pharmacological (eg, nicotine replacement therapy) interventions at the individual or group level.	
C–Comparison	No intervention; delayed intervention; treatment-as-usual; general tobacco, smoking cessation or health education.	
O–Outcome	Primary outcome will be smoking status (eg, cigarettes per day, self-reported quitting, exhaled carbon monoxide) at 6 months follow-up. Secondary outcomes will include adverse outcomes, social validity outcomes and quality of life outcomes. Studies must measure the change from baseline to follow-up in all study groups and the minimum follow-up period is 1 month.	

records. Studies will be limited to those conducted in the USA and published in English.

Study selection

Two authors (AN and SDR) will review the title and abstract of all studies to determine initial eligibility based off the inclusion and exclusion criteria. Records will be included in full-text review if at least one reviewer suggests inclusion. Once titles and articles are screened, two authors (JAS and SDR) will review the full text to determine if the article should be included. If the two reviewers disagree on any article, a third reviewer (ACV) will discuss with the two reviewers whether the article should be included in the next stage. At the full-text review stage, reviewers will provide reasons for exclusion. A rank order of exclusion criteria will be the following: (1) not focused on people with disabilities, (2) focused on people living with a psychiatric disability (eg, schizophrenia, bipolar, generalised anxiety disorder), (3) focused on people with disabilities, but not in the USA, (4) review article, (5) policy statement, (6) no intervention described, (7) no comparison/control, (8) outcome not assessed at same time points in both groups, (9) no relevant outcome, (10) case series and (11) length of follow-up too short (ie, less than 1 month). If an article should be removed for multiple reasons, only the first applicable reason from the ranked list will be recorded.

Quality assessment

The revised version of the Cochrane tool (RoB 2) will be used to assess risk of bias in randomised studies.^{30 31} For non-randomised studies, the ROBINS-I tool will be used.^{30 32} Two reviewers will assess risk of bias in all studies. Any disagreements in risk of bias will first be discussed between the two reviewers completing the tools; arbitration by a third researcher will be used, if necessary. A sensitivity analysis will be conducted to analyse separately studies that are determined to have a high risk or unclear risk of bias. Studies will be assessed for selective reporting

by verifying that all outcomes noted in the methods section are reported on. Additionally, publication bias across studies will be considered through funnel plots, if there are sufficient numbers of included studies.

Data extraction

Data related to general study information (eg, title, authors, funding), methods (eg, study design, intervention characteristics, setting, participants, outcomes, mode of delivery, smoking duration) and conclusions will be extracted using a data extraction template in Covidence (Veritas Health Innovation, Melbourne, Australia; see online supplemental table 2). Categories will be revised and added as necessary during the process. Two reviewers will extract data (JAS and TGE) from all records and extracted data will be checked for consensus. Disagreements on extracted data will first be discussed between the two extracting reviewers and arbitrated by a third researcher, if necessary.

Data analysis

Data elements to be extracted include general study characteristics (eg, study design, setting, participant characteristics, theoretical basis), intervention type (eg, counselling, pharmacological) and components (ie, characteristics that might modify intervention effectiveness), mode of delivery, outcome measures, time points of data collection, measurement method and disability domain (eg, cognitive, mobility, hearing). General study characteristics will provide an overview of what tobacco cessation interventions exist in the literature and for whom. These data will be presented in summary tables and graphs related to key outcomes and study characteristics. Data will be synthesised with a narrative summary of the evidence using text, tables, and forest plots and the certainty of evidence will be assessed following the GRADE approach.³⁰

Potential subgroup analyses will be considered for studies that address the same disability domain using a

similar intervention type with the same outcome. We will determine the appropriate methods of synthesis after extracting study characteristics of each record to identify what studies are similar enough to be grouped together. If possible and appropriate, a meta-analysis will be undertaken. Summary statistics will be calculated for each study, with a risk ratio being calculated for dichotomous variables and a difference between means for continuous variables. An effect size will be calculated using Hedge's g . A combined effect size will be calculated using a random-effects meta-analysis or a fixed-effect meta-analysis and a forest plot will be used to illustrate effect estimates with CIs. Heterogeneity will be tested for using a χ^2 and I^2 test.

Patient and public involvement

No patient involved.

ETHICS AND DISSEMINATION

There are no primary data associated with this study and the review only covers published literature. Therefore, we will not seek ethical approval as it will not be required. We intend to disseminate findings from this systematic review in peer-reviewed journal articles and in conference presentations.

Strengths and limitations

This will be the first systematic review to identify tobacco cessation interventions for people across a range of disability domains. Although one previous review has analysed the literature for tobacco cessation interventions for people with intellectual disabilities,¹⁹ this review was limited to those with mild or moderate intellectual disabilities and is nearly a decade old. Findings from this review will identify gaps in the tobacco cessation literature and provide recommendations on future research that will also inform policy and programmatic changes to improve tobacco treatment in people with disabilities.

Limitations of this study include limiting the search to English and interventions implemented in the USA. Additionally, although we have used recommended search terms for disability³³ and used broad search terms in an attempt to capture all people living with disabilities, it is possible that some disability types will be missed due to varying definitions of disability.

Contributors JAS and ACV conceived and originally designed the systematic review. GSA and JAS developed the search strategy. SDR, TEG, LM and AN provided critical appraisal, feedback and recommendations on the design of the review. JAS wrote the original protocol draft. All authors provided comments on the draft and approved the final version of the protocol.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

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REFERENCES

- Centers for Disease Control and Prevention. Current cigarette smoking among adults in the United States. 2022. Available: https://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking/index.htm
- World Health Organization. *International classification of functioning, disability and health (ICF)*. Geneva, Switzerland: World Health Organization, 2001. Available: <http://whqlibdoc.who.int/publications/2001/9241545429.pdf>
- Schulz JA, Parker MA, Villanti AC. Trends in cigarette smoking prevalence and status among U.S. adults with disabilities, 2015–2019. *Drug and Alcohol Dependence* 2023;243:109738.
- Schulz JA, West JC, Hall JP, et al. Disparities in tobacco use by disability and type: findings from the 2019 national health interview survey. *Am J Prev Med* 2022;63:552–63.
- Taylor DH, Hasselblad V, Henley SJ, et al. Benefits of smoking cessation for longevity. *Am J Public Health* 2002;92:990–6.
- Pharr JR, Bungum T. Health disparities experienced by people with disabilities in the United States: a behavioral risk factor surveillance system study. *Glob J Health Sci* 2012;4:99–108.
- Mitra M, Chung MC, Wilber N, et al. Smoking status and quality of life: a longitudinal study among adults with disabilities. *Am J Prev Med* 2004;27:258–60.
- US Preventive Services Task Force, Krist AH, Davidson KW, et al. Interventions for tobacco smoking cessation in adults, including pregnant persons: US preventive services task force recommendation statement. *JAMA* 2021;325:265–79.
- Peckham E, Brabyn S, Cook L, et al. Smoking cessation in severe mental ill health: what works? An updated systematic review and meta-analysis. *BMC Psychiatry* 2017;17:252.
- Banham L, Gilbody S. Smoking cessation in severe mental illness: what works? *Addiction* 2010;105:1176–89.
- Siskind DJ, Wu BT, Wong TT, et al. Pharmacological interventions for smoking cessation among people with schizophrenia spectrum disorders: a systematic review, meta-analysis, and network meta-analysis. *Lancet Psychiatry* 2020;7:762–74.
- Ho LLK, Li WHC, Cheung AT, et al. Effectiveness of smoking cessation interventions for smokers with chronic diseases: a systematic review. *J Adv Nurs* 2021;77:3331–42.
- Lovatt S, Wong CW, Holroyd E, et al. Smoking cessation after acute coronary syndrome: a systematic review and meta-analysis. *Int J Clin Pract* 2021;75:e14894.
- Ledgerwood DM, Yskes R. Smoking cessation for people living with HIV/AIDS: a literature review and synthesis. *Nicotine Tob Res* 2016;18:2177–84.
- Thurgood SL, McNeill A, Clark-Carter D, et al. A systematic review of smoking cessation interventions for adults in substance abuse treatment or recovery. *Nicotine Tob Res* 2016;18:993–1001.
- Garrison MM, Christakis DA, Ebel BE, et al. Smoking cessation interventions for adolescents: a systematic review. *Am J Prev Med* 2003;25:363–7.

- 17 Villanti AC, West JC, Klemperer EM, *et al.* Smoking-cessation interventions for U.S. young adults: updated systematic review. *Am J Prev Med* 2020;59:123–36.
- 18 Villanti AC, McKay HS, Abrams DB, *et al.* Smoking-cessation interventions for U.S. young adults: a systematic review. *Am J Prev Med* 2010;39:564–74.
- 19 Kerr S, Lawrence M, Darbyshire C, *et al.* Tobacco and alcohol-related interventions for people with mild/moderate intellectual disabilities: a systematic review of the literature. *J Intellect Disabil Res* 2013;57:393–408.
- 20 Moorhouse MD, Pomeranz JL, Barnett TE, *et al.* Tobacco cessation intervention for people with disabilities: survey of center for independent living directors. *Rehabilitation Counseling Bulletin* 2011;54:118–21.
- 21 Jones EG, Goldsmith M, Effken J, *et al.* Creating and testing a deaf-friendly, stop-smoking web site intervention. *Am Ann Deaf* 2010;155:96–102.
- 22 Okoro CA, Hollis ND, Cyrus AC, *et al.* Prevalence of disabilities and health care access by disability status and type among adults-United States, 2016. *MMWR Morb Mortal Wkly Rep* 2018;67:882–7.
- 23 Organisation for Economic Co-operation and Development. *Sickness, disability and work: keeping on track in the economic downturn – background paper*. Stockholm: Organisation for Economic Co-operation and Development, Directorate for Employment, Labour and Social Affairs, 2009.
- 24 World Health Organization. *World report on disability*. Geneva: World Health Organization, 2011.
- 25 Dammeyer J, Chapman M. A national survey on violence and discrimination among people with disabilities. *BMC Public Health* 2018;18:355.
- 26 Cornelius ME, Loretan CG, Wang TW, *et al.* Tobacco product use among adults-United States, 2020. *MMWR Morb Mortal Wkly Rep* 2022;71:397–405.
- 27 Pires-Yfantouda R, Absalom G, Clemens F. Smoking cessation interventions for COPD: a review of the literature. *Respir Care* 2013;58:1955–62.
- 28 Lopez-Olivo MA, Sharma G, Singh G, *et al.* A systematic review with meta-analysis of the effects of smoking cessation strategies in patients with rheumatoid arthritis. *PLoS One* 2022;17:e0279065.
- 29 Hughes JR, Keely JP, Niaura RS, *et al.* Measures of abstinence in clinical trials: issues and recommendations. *Nicotine Tob Res* 2003;5:13–25.
- 30 Higgins JPT, Thomas J, Chandler J, *et al.*, eds. *Cochrane handbook for systematic reviews of interventions*. 2nd Edn. Chichester (UK): John Wiley & Sons, 2019.
- 31 Sterne JAC, Savović J, Page MJ, *et al.* Rob 2: a revised tool for assessing risk of bias in randomised trials. *BMJ* 2019;366:14898.
- 32 Sterne JA, Hernán MA, Reeves BC, *et al.* ROBINS-I: a tool for assessing risk of bias in non-randomised studies of interventions. *BMJ* 2016;355:i4919.
- 33 Walsh ES, Peterson JJ, Judkins DZ, *et al.* Searching for disability in electronic databases of published literature. *Disabil Health J* 2014;7:114–8.

Supplemental Table 1. Search strategy, by database

Database	Search terms
Medline Search Strategy (Ovid)	<p>Concept: Disability (Population)</p> <ol style="list-style-type: none"> 1. Disabled persons/ or amputees/ or hearing impaired persons/ or visually impaired persons/ 2. (disabled person\$ or disab\$ or disabled people).ti,ab. 3. amputee\$.ti,ab. 4. (hearing impaired person\$ or hearing impaired people).ti,ab. 5. (visually impaired person\$ or visually impaired people).ti,ab. 6. "Activities of Daily Living"/ 7. Developmental Disabilities/ or developmental disability\$.ti,ab. 8. Mental Retardation/ or mental\$ retard\$.ti,ab. 9. Mobility Limitation/ or mobility limitation\$.ti,ab. 10. Dependent ambulation/ or dependent ambulation.ti,ab. 11. Paraplegia/ or paraplegia.ti,ab. 12. Quadriplegia/ or quadriplegia.ti,ab. 13. Hearing Loss/ or hearing loss.ti,ab. 14. Blindness/ or blindness.ti,ab. 15. Vision Disorders/ or vision disorder\$.ti,ab. 16. exp Self-Help Devices/ or assistive technology.ti,ab. 17. functional limitation\$.ti,ab 18. activity limitation\$.ti,ab. 19. mobility impairment\$.ti,ab. 20. vision impairment\$.ti,ab. 21. hearing impairment\$.ti,ab. 22. cognitive impairment\$.ti,ab. 23. intellectual disabilit\$.ti,ab. 24. participation limitation\$.ti,ab. 25. "activit\$ daily living".ti,ab. 26. Deafness/ 27. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 <p>Concept: Smoking Cessation (Outcome)</p> <ol style="list-style-type: none"> 28. Smoking Cessation/ 29. "Tobacco Use Cessation"/ 30. "smoking cessation".ti,ab. 31. "quit smoking".ti,ab. 32. "quitting smoking".ti,ab. 33. "tobacco cessation".ti,ab. 34. "Tobacco Use Cessation".ti,ab. 35. "smoking abstinence".ti,ab. 36. "tobacco abstinence".ti,ab. 37. Tobacco Smoking/pc 38. ((stop* or quit* or cessation or cease* or abstain* or abstinence) adj3 (smok* or tobacco)).ti,ab. 39. 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 37 or 38 <p>Concept: Intervention</p> <ol style="list-style-type: none"> 40. "Intervention Studies"/ 41. "intervention".ti,ab. 42. "program".ti,ab. 43. "Program Evaluation"/ 44. "program evaluation".ti,ab. 45. "evaluation studies".pt. 46. "clinical trial".pt. 47. "clinical trial".ti,ab.

Database	Search terms
	48. "Comparative Study".pt.
	49. "Clinical Trials as Topic"/
	50. "Randomized Controlled Trials as Topic"/
	51. "Evaluation Studies as Topic"/
	52. "randomized".ti,ab.
	53. "randomised".ti,ab.
	54. "Cohort Studies"/
	55. "Treatment Outcome"/
	56. 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55
	57. 27 and 39 and 56
	58. limit 57 to ("all adult (19 plus years)" and english)
PsycINFO search strategy (Ovid)	<p>Concept: Disability (Population)</p> <p>1. disab\$.ti,ab.</p> <p>2. disabilities/ or developmental disabilities/ or multiple disabilities/ 3. (developmental disabilit\$ or multiple disabilit\$).ti,ab.</p> <p>4. special needs/ 5. disorders/ 6. behavior disorders/ 7. disability accommodation\$.ti,ab.</p> <p>8. (disability discrimination or attitude\$ toward disab\$).ti,ab.</p> <p>9. disabled personnel/ 10. (mobility impairment\$ or vision impairment\$ or hearing impairment\$ or intellectual disabilit\$).ti,ab.</p> <p>11. amputation/ 12. (amputation or amputee\$).ti,ab.</p> <p>13. hearing disorders/ or exp deaf/ 14. (hearing disorder\$ or deaf).ti,ab.</p> <p>15. vision disorders/ or exp blind/ 16. (vision disorder\$ or blind).ti,ab.</p> <p>17. (functional limitation\$ or activity limitation\$ or participation limitation\$).ti,ab.</p> <p>18. physical mobility/ 19. physical mobility.ti,ab.</p> <p>20. mental\$ retard\$.ti,ab.</p> <p>21. cognitive impairment/ 22. cognitive impairment\$.ti,ab.</p> <p>23. mobility aids/ or assistive technology/ 24. (mobility aid\$ or assistive technology).ti,ab.</p> <p>25. exp augmentative communication/ 26. augmentative communication.ti,ab.</p> <p>27. paraplegia/ or quadriplegia/ 28. (paraplegia or quadriplegia).ti,ab.</p> <p>29. (activit\$ of daily living or self care skill\$).ti,ab.</p> <p>30. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29</p> <p>Concept: Smoking Cessation (Outcome)</p> <p>31. Smoking Cessation/ 32. "smoking cessation".ti,ab.</p> <p>33. "quit smoking".ti,ab.</p> <p>34. "quitting smoking".ti,ab.</p> <p>35. "tobacco cessation".ti,ab.</p> <p>36. "tobacco use cessation".ti,ab.</p> <p>37. ((stop* or quit* or cessation or cease* or abstain* or abstinence) adj3 (smok* or tobacco)).ti,ab.</p>

Database	Search terms
	38. 31 or 32 or 33 or 34 or 35 or 36 or 37
	Concept: Intervention
	39. "experimental design"/
	40. "Between Groups Design"/
	41. "Clinical Trials"/
	42. Cohort Analysis/
	43. "Followup Studies"/
	44. "Hypothesis Testing"/
	45. "Longitudinal Studies"/
	46. "Repeated Measures"/
	47. Quasi Experimental Methods/
	48. "Evaluation"/
	49. "Program Evaluation"/
	50. "Treatment Effectiveness Evaluation"/
	51. "Surveys"/
	52. "Consumer Surveys"/
	53. "Mail Surveys"/
	54. "Telephone Surveys"/
	55. "randomized".ti,ab.
	56. "randomised".ti,ab.
	57. "intervention".ti,ab.
	58. "program".ti,ab.
	59. 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58
	60. 30 and 38 and 59
	61. limit 60 to (english language and "300 adulthood <age 18 yrs and older>")
Embase Search Strategy (Ovid)	Concept: Disability (Population)
	1. Disabled person/
	2. (disabled person\$ or disab\$ or disabled people).ti,ab.
	3. hearing impaired person/ or hearing impairment/ or hearing disorde
	4. visual disorder/ or visual impairment/ or visually impaired person/
	5. visual disorder\$.ti,ab.
	6. amputee/ or amputee\$.ti,ab.
	7. (hearing impaired person\$ or hearing impaired people).ti,ab.
	8. (visually impaired person\$ or visually impaired people).ti,ab.
	9. daily life activity/
	10. Developmental disorder/ or developmental disability\$.ti,ab.
	11. mental deficiency/ or mental\$ deficien\$.ti,ab.
	12. mental\$ retard\$.ti,ab.
	13. walking difficulty/ or mobility limitation\$.ti,ab.
	14. dependent ambulation.ti,ab.
	15. Paraplegia/ or paraplegia.ti,ab.
	16. Quadriplegia/ or quadriplegia.ti,ab.
	17. hearing loss.ti,ab.
	18. Blindness/ or blindness.ti,ab.
	19. vision disorder\$.ti,ab.
	20. exp Self-Help Device/ or assistive technology.ti,ab.
	21. functional limitation\$.ti,ab.
	22. activity limitation\$.ti,ab.
	23. "activit\$ of daily living".ti,ab.
	24. mobility impairment\$.ti,ab.
	25. vision impairment\$.ti,ab.
	26. hearing impairment\$.ti,ab.
	27. deafness.ti,ab.

Database	Search terms
	28. deaf.ti,ab.
	29. cognitive impairment\$.ti,ab.
	30. intellectual disabilit\$.ti,ab.
	31. participation limitation\$.ti,ab.
	32. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31
	Concept: Smoking Cessation (Outcome)
	33. Smoking Cessation/
	34. smoking cessation program/
	35. smoking reduction/
	36. smoking prevention/
	37. smoking cessation agent/
	38. ((stop* or quit* or cessation or cease* or abstain* or abstinence) adj3 (smok* or tobacco)).ti,ab.
	39. 33 or 34 or 35 or 36 or 37 or 38
	Concept: Intervention
	40. "Intervention Study"/
	41. "intervention".ti,ab.
	42. "program".ti,ab.
	43. "program evaluation".ti,ab.
	44. "clinical trial".ti,ab.
	45. "randomized".ti,ab.
	46. "randomised".ti,ab.
	47. "health care quality".ti,ab.
	48. "evaluation".ti,ab.
	49. "evaluation research"/
	50. "follow up"/
	51. "clinical study"/
	52. comparative study/
	53. "controlled study"/
	54. "cohort analysis".ti,ab.
	55. "outcome assessment"/
	56. 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55
	57. 32 and 39 and 56
	58. limit 57 to ((english and adult <18 to 64 years>) or aged <65+ years>)
CINAHL	Concept: Disability (Population)
Search Strategy (EBSCOhost)	1. Disabled+
	2. disab*
	3. disabled person*
	4. disabled people
	5. functional limitation*
	6. Functional Status
	7. activity limitation*
	8. participation limitation*
	9. Americans with disabilities act
	10. "Americans with Disabilities Act"
	11. activit* of daily living
	12. Activities of Daily Living+
	13. developmental* disab*
	14. Developmental Disabilities
	15. cognitive impairment*
	16. intellectual disabilit*
	17. mental* retard*
	18. Mental Retardation

Database	Search terms
19.	paraplegia
20.	Paraplegia
21.	quadriplegia
22.	Quadriplegia
23.	mobility limitation*
24.	mobility impairment*
25.	hearing impaired person*
26.	hearing impaired people
27.	hearing loss
28.	hearing impairment*
29.	Hearing Disorders
30.	Deafness+
31.	Hearing Loss, Central
32.	Hearing Aids+
33.	Lipreading
33.	visually impaired person*
34.	visually impaired people
35.	Vision Disorders
36.	vision disorder*
37.	blindness
38.	Blindness
39.	vision impairment*
40.	assistive technolog*
41.	Sensory Aids
42.	Assistive Technology
43.	Assistive Technology Devices+
44.	Assistive Technology Services
45.	amputee*
46.	Architectural Accessibility
47.	Self Care+
48.	assistive technolog*
49.	Communicative Disorders
50.	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49
	Concept: Smoking Cessation (Outcome)
51.	MH "Smoking Cessation"
52.	MH "Smoking Cessation Programs"
53.	MH "tobacco control"
54.	(stop* OR quit* OR cessation OR cease* OR abstain* OR abstinence) N3 (smok* OR tobacco)
55.	51 or 52 or 53 or 54
	Concept: Intervention
56.	MH "Experimental Studies"
57.	MH "Nonexperimental Studies"
58.	MH "Quasi-Experimental Studies"
59.	MH "Program Evaluation"
60.	MH "Comparative Studies"
61.	MH "Evaluation Research+"
62.	MH "Health Services Research+"
63.	MH "Multicenter Studies"
64.	MH "Survey Research"
65.	MH "Experimental Studies+"
66.	MH "Nonexperimental Studies+"

Database	Search terms
67.	MH "Quasi-Experimental Studies+"
68.	MH "Treatment Outcomes+"
69.	"randomi?ed"
70.	"intervention*"
71.	"program"
72.	56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71
73.	50 and 55 and 72

"/" and "MH" = MeSH subject heading; "exp" and "+" indicated subheadings grouped under a term captured in search; "ti" = title; "ab" = abstract; "\$" and "*" = truncation (i.e., unlimited variations of root word searched); "pt" = publication type; "?" = optional wildcard character

CINAHL search will be limited to the following: Human; Geographic Subset: USA; Language: English; Age Groups: All adult

Supplemental Table 2. Data Extraction Template

General study information
Study ID <input type="text"/>
Title <input type="text"/>
Authors <input type="text"/>
Journal <input type="text"/>
Methods
Study design
<input type="radio"/> Randomized controlled trial
<input type="radio"/> Cluster-randomized controlled trial
<input type="radio"/> Quasi-experimental study
<input type="radio"/> Single-subject design
<input type="radio"/> Cohort Study
<input type="radio"/> Other
<input type="text"/>
Definition of current smoking <input type="text"/>
Definition of smoking cessation/abstinence <input type="text"/>

Baseline smoking assessment**Follow-up smoking assessment****Study setting****Length of follow-up (time-point)****Follow-up method****Start date****End date****Study funding sources****Possible conflicts of interest for study authors**

Participants**Initial sample size****Sample size after exclusions****Number at follow-up****Method of recruitment of participants**

- Phone
- Mail
- Clinic patients
- Voluntary
- Other

Baseline Population Characteristics

	Intervention	Comparison	Overall
Disability Type			
Age			
Race			
Gender			
Cigarettes/day on smoking days (m [sd])			
Smoking duration (years smoked [sd])			

Inclusion criteria**Exclusion criteria****Inducement to enter study****Intervention****Intervention and Comparisons**

	Intervention	Comparison
Description		
Theoretical basis		
Unit of delivery (i.e., individual, group, community)		
Mechanism of change (e.g., education, skill building, motivation)		
Content (e.g., facts, risk information, skills)		
Strategies or modalities (e.g., practice, demonstration, lectures, counseling, incentives, social support)		
Implementer		
Implementation location		

Intervention Modifications / Accommodations

What intervention modifications or accommodations were noted to address the needs of people with disabilities?

Mode of Delivery

How was the intervention delivered (e.g., in-person, text)?

Outcomes**Primary outcome**

Measurement of primary outcome

Biochemical validation

- Yes
- No

Baseline primary outcome

	Mean	SD
Intervention		
Comparison		

Postintervention primary outcome

	Mean	SD
Intervention		
Comparison		

Follow up primary outcome

	Mean	SD
Intervention		
Comparison		

Secondary outcomes

If no secondary outcomes, please put "n/a"

Measurement of secondary outcomes

If no secondary outcomes, please put "n/a"

Baseline secondary outcome

	Mean	SD
Intervention		
Comparison		

Postintervention secondary outcome

	Mean	SD
Intervention		
Comparison		

Follow-up secondary outcome

	Mean	SD
Intervention		
Comparison		

Adverse or unanticipated effects**Conclusions****Major conclusions**

Limitations

Notes

Any other notes