ISSN 0008-3194 (p)/ISSN 1715-6181 (e)/2021/137–155/$2.00/©JCCA 2021

The chiropractor's role in primary, secondary, and tertiary prevention of suicide: a clinical guide

Zachary A. Cupler, DC, MS[1]
Clinton J. Daniels, DC, MS[2]
Derek R. Anderson, PhD[2]
Michael T. Anderson, DC, MS[1]
Jason G. Napuli, DC, MBA[3]
Megan E. Tritt, MSW, LCSW[1]

Objective: *To provide the practicing chiropractor foundational knowledge to enhance the understanding of relevant primary, secondary, and tertiary public health measures for suicide prevention.*

Methods: *A descriptive literature review was performed using keywords low back pain, neck pain, psychosocial, pain, public health, suicide, suicide risk factors, and suicide prevention. English language articles pertaining to suicide prevention and the chiropractic profession were retrieved and evaluated for relevance. Additional documents from the Centers*

Rôle du chiropraticien dans la prévention primaire, secondaire et tertiaire du suicide : guide clinique

Objectif : *Donner aux chiropraticiens en exercice les connaissances de base nécessaires pour leur permettre de mieux saisir les mesures de santé publique primaires, secondaires et tertiaires servant à prévenir le suicide.*

Méthodologie : *On a fait une revue descriptive de la littérature à l'aide des mots-clés suivants : lombalgie, cervicalgie, psychosocial, douleur, santé publique, suicide, facteurs de risque de suicide et prévention du suicide. On a évalué la pertinence des articles en anglais portant sur la prévention du suicide et la profession de chiropraticien. On a examiné d'autres documents*

[1] Butler VA Health Care System, Butler, PA, USA
[2] VA Puget Sound Health Care System, Tacoma, WA, USA
[3] St. Louis VA Health Care System, St. Louis, MO, USA

Corresponding author: Zachary A. Cupler, Butler VA Health Care System
e-mail: zachary.cupler@va.gov

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The authors have no disclaimers, competing interests, or sources of support or funding to report in the preparation of this manuscript. ZAC, CJD, DRA, MTA, JGN, MET received indirect support from their institutions in the form of computers, workspace, and time to prepare this article.

Abbreviations
Acceptance Commitment Therapy – ACT
Centers for Disease Control and Prevention – CDC
Cognitive Behavioral Therapy – CBT
Columbia-Suicide Severity Rating Scale – C-SSRS
Dialectical Behavioral Therapy – DBT
Mindfulness-Based Stress Reduction – MBSR
Motivational Interviewing – MI
Post-traumatic stress disorder – PTSD
Social determinants of health – SDOH
Veterans Health Administration – VHA
World Health Organization – WHO

for Disease Control, Veterans Health Administration, and the World Health Organization were reviewed. Key literature from the clinical social work and clinical psychology fields were provided by authorship team subject matter experts.

Conclusion: *No articles reported a position statement regarding suicide prevention specific to the chiropractic profession. Risk, modifiable, and protective factors associated with self-directed violence are important clinical considerations. A proactive approach to managing patients at-risk includes developing interprofessional and collaborative relationships with mental health care professionals.*

(JCCA. 2021;65(2):137-155)

KEY WORDS: suicide prevention, chiropractic, public health, biopsychosocial, primary prevention, secondary prevention, tertiary prevention

provenant de Centers for Disease Control, de la Veterans Health Administration et de l'Organisation mondiale de la santé. Des experts en la matière, membres du comité de rédaction, ont fourni des articles importants sur le travail social clinique et la psychologie clinique.

Conclusion : *Aucun article ne renferme d'énoncé de principe sur la prévention du suicide issu de professionnels de la chiropratique. Les facteurs de risque, les facteurs modifiables et les facteurs de protection associés à l'automutilation sont des aspects importants à examiner. La prise en charge des patients vulnérables d'une manière proactive consiste entre autres à établir et à entretenir des liens de collaboration avec les professionnels de la santé mentale.*

(JCCA. 2021;65(2):137-155)

MOTS CLÉS : prévention du suicide, chiropratique, santé publique, biopsychosocial, prévention primaire, prévention secondaire, prévention tertiaire

Introduction

"Knowing is not enough; we must apply. Willing is not enough; we must do." – Goethe

Chiropractors primarily manage spine-related disorders and other various musculoskeletal complaints.[1,2] Chronic pain is a frequent chief complaint which has associations to suicidal self-directed violence.[3–5] Concerningly, suicide is a major global health predicament and an important cause of mortality and morbidity with nearly 800,000 deaths annually.[6,7] Self-directed violence accounts for 1.4% of all deaths worldwide and was the eighteenth leading cause of death in 2016[8], while in Canada, the suicide rate declined by 24% from 1981 to 2007 and has remained stable through 2017[9]. Worldwide, males have been found to complete suicide three times more often than females, while females far exceed males in the number of attempts of suicidal self-directed violence.[10] Apart from a small survey[11] assessing chiropractic interns and doctors of chiropractic near Toronto on their knowledge of a suicide lethality scale and patient management questionnaire and a recent call to action[12], there is no literature describing suicide prevention efforts specific to the chiropractic profession.

Suicide preparatory behavior and suicidal self-directed violence has been conceptualized as a continuum[13] and is a stigmatized issue for many people including health care professionals[14]. Similar to pharmacists[15], occupational therapists[16], and audiologists[14], chiropractors should consider their broader role in the health care delivery system with relation to suicide prevention. The chiropractor's didactic education and clinical training includes considerations of the biopsychosocial components of health.[17] This suggests chiropractors may play a role in identifying behavioral health risk factors and coordinating appropriate referrals to other members of the health care team.[18]

Foundational suicide prevention knowledge for the chiropractor includes understanding myths and appropriate terminology (Table 1). Historically, there have been inconsistencies in the terminology used to communicate about suicide, suicide attempts, and self-directed violence in the peer-reviewed literature and in public messaging.[19] Terms such as 'parasuicide' and 'suicide survivor' were used regularly in the literature but have since been deemed unacceptable terms.[19,20] The National Center for Injury Prevention and Control, Division of Violence Prevention, part of the Centers for Disease Control (CDC), has estab-

lished uniform nomenclature to improve communication between clinicians and researchers (Table 2).[20] There are also several myths and stereotypes that may hinder successful suicide prevention efforts (Table 3).[21–25] By recognizing the existence of personal bias and stigmatizing attitudes, chiropractors have the opportunity to improve communication with communities and patients at risk of suicide-related behaviors.

The purpose of this descriptive review is to provide the practicing chiropractor foundational knowledge to enhance the understanding of primary, secondary, and tertiary suicide prevention. Organized by public health

Table 1.
Uniform definitions for self-directed violence and suicide[20]

Self-directed violence	Behavior that is self-directed and deliberately results in injury or the potential for injury to oneself. *(This does not include risk-taking activities such as parachuting, gambling, excessive speeding in a motor vehicle, or substance abuse.)*
Suicidal self-directed violence	Behavior that is self-directed and deliberately results in injury or the potential injury to oneself. There is evidence, whether implicit or explicit, of suicidal intent.
Suicide attempt	A non-fatal self-directed potentially injurious behavior with any intent to die as a result of the behavior and may or may not result in injury.
Interrupted self-directed violence – by self	A person takes steps to injure self but is stopped by self prior to fatal injury
Interrupted self-directed violence – by other	A person takes steps to injure self but is stopped by another person prior to fatal injury. The interruption can occur at any point during the act such as after the initial though or after the onset of behavior
Preparatory acts	Acts of preparation towards making a suicide attempt, but before the potential for harm has begun. This can include anything beyond a verbalization or thought, such as assembling a method or preparing for one's death by suicide.
Suicide	Death caused by self-directed injurious behavior with any intent to die as a result of the behavior

Table 2.
Unacceptable self-directed violence terms and recommended acceptable terms[20]

Completed suicide	Implies achieving the desired outcome whereas those involved in the mission of "reducing disease, premature death, and discomfort and disability" would view this event as undesirable. *Recommended Term: suicide*
Failed attempt	Negative impression of the person's action, implying an unsuccessful effort aimed at achieving death *Recommended Term: suicide attempt or suicidal self-directed violence*
Nonfatal suicide	"Suicide" includes a death while "nonfatal" indicates no death occurred *Recommended Term: suicide attempt*
Parasuicide	Formally, used to refer to a person's self-directed violence whether or not the individual had an intent to die *Recommended Term: non-suicidal or suicidal self-directed violence*
Successful suicide	Implies achieving a desired outcome whereas those involved in the mission of "reducing disease, premature death, and discomfort and disability" would view this event as undesirable *Recommended Term: suicide*
Suicidality	Often used to refer simultaneously to suicidal thoughts and suicidal behavior. These phenomena are vastly different in occurrence, associated factors, consequences, and interventions so they should be addressed separately. *Recommended Term: suicidal thoughts and suicidal behavior*
Suicide gesture, manipulative act, suicide threat	Each of these terms gives value judgment with a pejorative or negative impression of the person's intent. They are usually used to describe an episode of nonfatal, self-directed violence. *Recommended Term: non-suicidal or suicidal self-directed violence*

prevention level, this paper aims to provide the chiropractic profession with a unified resource for the following: 1) factors associated with suicide self-directed violence relevant to common conditions seen in the chiropractic office, 2) how to communicate with the patient about self-directed violence and suicide intentions, 3) how to identify a patient at risk for suicidal self-directed violence through an evidence-based assessment, and 4) considerations for interprofessional collaboration and referral.

Methods

We performed a descriptive review using PubMed. We searched from index inception through April 2021. Search terms included *low back pain, neck pain, chiropractic, psychosocial, pain, public health, suicide, suicide risk factors,* and *suicide prevention*. Additional relevant texts and documents from the CDC, Veterans Health Administration (VA), and the World Health Organization (WHO) were also reviewed. Pertinent articles from the author's libraries were included. Key literature from the clinical social work and clinical psychology fields were provided by authorship team subject matter experts (D.A., M.T.).

Inclusion criteria

Articles describing suicide prevention in terms of primary, secondary, or tertiary measures were included when they were applicable and relevant to ambulatory health care environments. Clinical studies describing clinical screening, risk factor identification, protective factor identification, or referral for management of suicide risk

Table 3.
Common[*] myths associated with suicide[22]

Myth	Fact
Suicide only affects individuals with a mental health condition	Many individuals with mental illness are not affected by suicidal thoughts and not all people who attempt or die by suicide have mental illness. Relationship problems and other life stressors such as criminal/legal matters, persecution, eviction/loss of home, death of a loved one, a devastating or debilitating illness, trauma, sexual abuse, rejection, and recent or impending crises are also associated with suicidal thoughts and attempts.
Once an individual is suicidal, he or she will always remain suicidal	Active suicidal ideation is often short-term and situation-specific. Those with mental illness, the proper treatment can help to reduce symptoms. The act of suicide is often an attempt to control deep, painful emotions and thoughts an individual is experiencing. While suicidal thoughts may return, they are not permanent and an individual with previously suicidal thoughts and attempts can go on to live a long life.
Most suicides happen suddenly without warning	Warning signs, verbal and/or behavioral, precede most suicides.
People who die by suicide are selfish, cowardly, or just looking for attention, and take the easy way out.	Typically, people do not die by suicide because they do not want to live—people die by suicide because they want to end their suffering. Individuals who experience suicidal ideations do not do so by choice. They are not simply, "thinking of themselves," but rather they are going through a very serious mental health symptom, often associated with at least one mental health condition, or a difficult life situation.
Talking about suicide will lead to and encourage suicide.	There is a widespread stigma associated with suicide and as a result, many people are afraid to speak about it. Talking about suicide not only reduces the stigma, but also allows individuals to seek help, rethink their opinions, and share their story with others.
Someone who is suicidal is determined to die	Suicidal people are often ambivalent about living or dying. People are often looking for a way to stop their emotional and physical pain.
People who talk about suicide do not mean to do it.	People who talk about suicide may be reaching out for help or support. A significant number of people contemplating suicide are experiencing anxiety, depression, and hopelessness and may feel that there is no other option.
Someone making suicidal threats won't really do it	Those who talk about committing suicide or express thoughts about wanting to die are at risk and need attention
Asking a person if he/she is thinking about suicide will put the thought in his/her head and prompt to try it	If you know a person is depressed or in crisis, asking if they are thinking about suicide is actually helpful, giving them a chance to talk, which can be the first step toward finding help and solutions.
Medications and therapy are of little help	Treatment can work, whether it comes in the form of therapy, medication, or in combination

[*]Although, the nuances of specific societal and cultural variations surrounding suicide perception preclude us from addressing all myths for the purposes of this paper.

were considered relevant. The search was limited to English language articles only.

Exclusion criteria

Articles were excluded if they pertained to inpatient, acute care settings, and were not directly related to ambulatory health care environments. Due to the practice scope of a majority of chiropractors[2], studies focused on pharmacologic intervention for the management of risk factors (e.g., depression) were beyond the focus of this project and were excluded.

Results

No articles reported a position statement regarding suicide prevention and management specific to the chiropractic profession. We identified 93 articles relevant to the implementation of public health approaches, suicide prevention, risk factor screening, or crisis management strategies for musculoskeletal providers.

Discussion

Suicide is more than a mental health problem. It is a public health crisis that can, and must, be prevented by all health care providers. Chiropractors have previously demonstrated interest in public health efforts in the areas of physical activity promotion[26], smoking cessation[27], and most recently the COVID19 pandemic[28]. Making suicide prevention a priority in one's community and professional practice means considering the chiropractor's role at the primary, secondary, and tertiary prevention levels.

Risk, modifiable, and protective factors associated with self-directed violence and spinal pain

Similar to low back pain, suicide and self-directed violence are associated with numerous psychiatric comorbidities, social, and occupational circumstances; thus the need to consider the entire person through the context of biopsychosocial framework.[17,29,30] Spinal disorders, chronic pain[31], and self-directed violence appear to overlap for several comorbid conditions such as depression[29,32], pain catastrophizing[33], and post-traumatic stress disorder (PTSD)[34]. The chiropractor should be cognizant that risk factor associations do not equate to absolute risk and correlation for suicidal self-directed violence. For suicide factors, there are several key definitions to consider:

1) Risk factors are characteristics or conditions of the patient that have been found to have a statistical relationship to the presence of self-directed violence[22,35];
2) Dynamic or modifiable factors are characteristics or conditions of the patient that have been found to have a statistical relationship to the presence of self-directed violence and can be targeted for treatment or intervention (e.g., medication for depression, new employment)[36];
3) Protective factors are characteristics or conditions of the patient that have been found to have a statistical relationship to the absence of self-directed violence[22,35].

The literature suggests chiropractors have the potential to impact modifiable factors for self-directed violence related to opioid use.[37–40] Non-pharmacological care for chronic pain, including chiropractic services, has been found to reduce the likelihood of suicide risk factors and potentially play a protective role for self-directed violence in active military members who transitioned care to VA.[41] Chiropractors should also be concerned with risk factors that may present alongside of a spinal pain complaint. Depression has been identified during consensus statements for the chiropractic profession and interprofessional panels as a key clinical condition to routinely screen for, in particular with older adults.[42,43] Meanwhile, PTSD has also been evaluated as a co-occurring condition in the chiropractic office and appears to have a negative correlation with outcomes from care for neck or back pain.[34, 44–46] Finally, poor coping strategies may play an important role in both low back pain chronicity and suicidal ideation.[47, 48]

Primary suicide prevention: social determinants of health and health promotion

Public health primary prevention intends to address risk factors in susceptible populations and can emphasize social determinants of health (SDOH).[13] SDOH are defined as the conditions in which people are born, grow, live, work, and age, and are further shaped by the distribution of money, power, and resources at global, national, and community levels.[49] Upstream disease prevention in healthy individuals and populations, through the identification of SDOH barriers, has historically been considered

a key component of chiropractic wellness care.[18,50] At the primary prevention level, chiropractors should be knowledgeable of SDOH and regularly incorporate them into evaluations and care planning.[51] Health disparities born out of the inequalities in SDOH contribute to self-directed violence risk.[52] While suicide may have a basis in depression or substance abuse, the simultaneous contribution of risk comes from social factors like community breakdown, loss of key social relations, economic depression, or political strife.[53] Self-directed violence risk factors are further magnified by emotional states like hopelessness and impulsiveness.[54,55]

Lifestyle behaviors have been shown to have positive and negative relationships with suicide prevention.[55] In understanding the various risk factors and protective factors for self-directed violence, chiropractors can target SDOH (Table 4). For example, smoking cessation counseling is supported as a means to target primary prevention of suicide as multiple cohorts have found a dose-response association between smoking and risk of suicidal self-directed violence.[56] Physical activity, another promotable health behavior in the chiropractor's office, has been associated with lower rates of suicidal ideation in both adolescents and adults.[57–61] Moreover, depression is a predictor of risk for suicide[29,62] and it is very likely depressive symptoms may initially be identified in the chiropractor's office as it relates to spinal pain through yellow flag screening[17, 32].

Making judgments about a person's suicide risk factor status requires effective communication skills that incorporates empathy, compassion, and nonjudgmental listening.[63] At the heart of this action is promoting the knowledge that all suicides are potentially preventable, and, with appropriate skills, chiropractors can take the opportunity to address the whole person by considering SDOH. Assisting the patient in overcoming their complaint of spinal pain may function as an indirect protective factor for risk of suicidal self-directed violence. An episode of acute low back pain, as a painful experience, may be managed to resolution through education, practitioner-directed interventions, therapeutic exercise, and reassurance. In this instance, the chiropractor has the opportunity to assist the patient in cultivating self-efficacy, problem-solving, and coping strategies which are translatable skill sets.

Suicide prevention education and training for chiropractors and chiropractic students are additional targets for primary prevention strategies. To date, suicide preven-

Table 4.
Risk, dynamic, and protective factors associated with self-directed violence.[22,35,36]

Risk Factors	Dynamic (Modifiable) Factors	Protective Factors
• Family history of suicide	• Active psychological symptoms	• Social support and relationships
• History of previous suicide attempt(s)	• Hopelessness	• Family connectedness
• Psychiatric disorders (i.e. depression, anxiety disorder, bipolar disorder, schizophrenia, personality disorder)	• Suicidal ideation	• Positive coping strategies
• Substance use disorder (i.e. alcoholism, substance abuse)	• Suicidal communication	• Subjective well being
• Post-traumatic stress disorder	• Suicidal intent	• Pregnancy and parenthood
• Delirium	• Treatment adherence	• Religious or spiritual beliefs
• Hopelessness	• Substance use	
• Marital status	• Psychiatric admission	
• Sexual minority	• Psychosocial stress	
• Occupational status	• Problem-solving deficits	
• Military service	• Emotional turmoil	
• Chronic medical illness (i.e. diabetes, cancer, HIV/AIDS, chronic pain)		
• Childhood adversity		
• Rural residence		
• Firearms		

tion education has been under-described and limited in medical training.[63] Continued development of integrated clinical training opportunities[64], continuing medical education[65], and interprofessional collaboration with other health care disciplines are critical to expanding exposure to suicide prevention education.

Secondary suicide prevention: risk screening and identification

Secondary prevention is oriented towards high-risk populations for self-directed violence thoughts and behaviors.[13] It requires systematic processes designed to identify individuals who may be at high risk of suicide and to work with the patient and/or support persons to reduce risk factors and promote protective factors. Behavioral health providers receive extensive training regarding the identification and treatment of patients at-risk and patients actively suicidal, but most patients who will experience suicidal ideation are receiving care outside of the behavioral health setting.[66–68] Primary care has become a setting of interest surrounding suicide prevention, but ambulatory care and specialty clinics can offer the same support and intervention. As portal-of-entry providers, chiropractors are in a similar position to be in clinical contact with patients months prior to preparatory behavior, a suicide attempt, or suicide.

There is a significant opportunity and moral obligation during this time to identify and connect patients to needed public health resources or behavioral health treatment. The provision of education and connection when it matters could lead to early prevention, detection, and management as necessary. Gatekeeper training is one formal approach used in suicide prevention training for primary care providers and emergency room physicians.[69,70] Suicide prevention training for health care providers is believed to impact important factors related to suicide prevention – knowledge, perceptions about suicide prevention, reluctance, and self-efficacy – and that changes in these factors can influence intervention behavior.[69]

While the primary reason to present to the chiropractor is typically due to spine-related disorders[2], co-morbidities relevant to the patient's health status may warrant further investigation or immediate referral. A firm understanding of acceptable language (Tables 1 and 2) and communication related to self-directed violence is critical to preparing for future clinical encounters. Building screening processes into intake and evaluation is a simple way that chiropractors may strive to identify a patient at-risk for suicide-related behavior. For example, a review of systems within intake paperwork that queries the patient's experiences with depression, anxiety, PTSD, substance use disorder, and other mental health concerns can open the door to further investigation and conversation. A patient that has selected a mental health symptom or condition requires further inquiry to the status of their current mental health care, or lack thereof. This may play a crucial role in encouraging them to seek the support they need all the while cultivating patient-centered care. There are numerous unidimensional and multidimensional psychosocial screening tools available for the busy chiropractor's office that evaluate risk factors associated with self-directed violence and also assessment tools specific to suicidal self-directed violence (Table 5).[71–79] For example, in a multiyear cohort study of US veterans, Finley *et al*. observed veterans with various combinations of clinical characteristics including PTSD, chronic pain, and traumatic brain injury.[80] They observed interactions among specific clinical characteristic co-occurrences significantly increased the risk of suicide ideation, suicide attempt, and suicide ideation and attempts.

In 2016, The Joint Commission recommended health systems consider evaluating suicide risk in all patients and in all settings.[7] There are many ways to ask about suicidal thoughts or feelings during a medical appointment and this will likely vary by the individual chiropractor. Contrary to popular belief, questions related to suicidal thoughts does not promote suicide or self-harm action.[24,81] Some suggest a comprehensive question designed to assess for current or historical suicidal thoughts/feelings. For example, Bongar and Sullivan recommend the following: "*Have you, at any time in your life, ever done anything that anyone could have possibly interpreted as self-destructive or even suicidal?*"[82] Other providers may feel more comfortable with a succinct and direct form of inquiry such as "*Have you had any thoughts about suicide or harming yourself in any way?*" For those that prefer standardized methods of screening and are comfortable doing so, the Columbia-Suicide Severity Rating Scale (C-SSRS) is a widely available questionnaire designed to assess suicide risk level across a wide variety of medical settings using a standardized tool.[75]

The frequent nature of an active care plan with a chiro-

practor for the management of spine-related disorder may lend itself to the development of strong provider-patient rapport, trust, and a therapeutic relationship that allows the patient to feel more comfortable communicating mental health concerns than with their other health care providers. It is imperative that the practicing chiropractor is ready to recognize the patient in crisis (or trending towards crisis) and that their clinic should have standard operating procedures (e.g., national resources, referral pathways, and community resources) in place to assist these at-risk patients expeditiously (Appendices 1, 2, 3). The chiropractor may identify evidence for risk of self-directed violence with a review of systems, intake of history, or yellow flag screening tools on evaluation or at follow-up care when managing spinal complaints. Asking direct questions to the patient about current or recent

Table 5.
Assessment tools for screening for self-directed violence risk and risk factors[*,#]

Assessment tool	Tool description
Columbia Suicide Severity Rating Scale (C-SSRS)[75]	Designed to assess suicide risk level across a wide variety of medical settings. 3 to 8-item tool, depending on the answers provided
Fear-Avoidance Beliefs Questionnaire (FABQ)[79]	Unidimensional assessment for fear of pain caused by physical activity that leads to a catastrophizing response. 16-item tool with a 7-item work subscale and a 4-item physical activity subscale
General Anxiety Disorder-7 (GAD-7)[76]	Unidimensional assessment of generalized anxiety disorder, a distinctly separate domain than depression 7-item tool
Optimal Screening for Prediction of Referral and Outcome Yellow Flag (OSPRO-YF)[73]	Multidimensional assessment of risk and protective factors drawn from 11 psychosocial screening questionnaires and 136-items 17-item tool with a 6-item negative mood subscale, 6-item fear avoidance subscale, 5-item passive coping subscale
Pain Catastrophizing Scale (PCS)[72]	Unidimensional assessment of catastrophic thoughts as it relates to pain (i.e. rumination, magnification, feeling helpless). 13-item tool with a 4-item rumination subscale, 3-item magnification subscale, and 6-item helplessness subscale
Pain Self-Efficacy Questionnaire (PSEQ)[77]	Unidimensional assessment of self-efficacy when in pain. 10-item tool
Patient Health Questionnaire – 9 (PHQ-9)[71]	Unidimensional assessment for presence and severity of depression and depressive symptoms through 9 domains. 9-item tool *Patient is asked directly if they have had thoughts that you would be better off dead or of hurting yourself in someway.*
Subgroups for Targeted Treatment Back Screening (SBT)[78]	Multidimensional assessment screening for factors associated with disability in the primary care setting. 9-item tool with a 4-item physical subscale and a 5-item psychosocial subscale
Tampa Scale for Kinesiophobia Scale (TSK)[79]	Unidimensional assessment for degree of fear of movement and reinjury 17-item tool with a 6-item harm factor subscale and a 7-item activity avoidance factor subscale
West-Haven Yale Multidimensional Pain Inventory-Interference Subscale (WHYMPI/MPI-INT)[74]	Multidimensional assessment of pain interference in various areas of life in the social, occupational, and relational domains. 52-item tool with 12 subscales – 5 subscales assess dimensions of pain, 3 subscales assess perception pain impact on significant other, and 4 subscales assess pain impact on function and activities

* Consideration of patient burden as well as clinic preparedness to handle responses to assessments should play a role in assessment tool selection.

\# Caution is advised in interpreting a single assessment tool as an indication of risk of suicide, unless the tool specifically screens for suicide risk (i.e. C-SSRS), rather assessment tools are components of a comprehensive clinical picture that includes patient history, multiple assessment tools, and physical examination. For example, a high score on a GAD-7 alone does not necessarily indicate suicide risk, despite high generalized anxiety.

suicidal thoughts or feelings can aid to build a safe, caring space, and de-stigmatize self-directed violence and self-harm while advocating for utilization of available resources.[83–85] In the clinic, patients identified as high risk for self-directed violence or who endorse suicidal ideation require additional systematic secondary prevention intervention, typically beyond the training and comfort of the chiropractor. When available, a referral to a trusted behavioral health provider is recommended and the follow-up often includes individual risk assessment and safety/treatment planning designed to provide ongoing support for the patient to reduce risk factors and promote protective factors.

The response to a patient demonstrating suicidal behavior will also vary depending upon each provider's level of training, as well as their specific environment of care. For example, chiropractors practicing in a large, interdisciplinary team may have access to direct referral to a mental health provider for additional assessment and safety planning. In these settings, for example VA, providers often have the option of referring a patient directly to the Emergency Department (usually for high-risk) or to a same-day access/walk-in mental health clinic for more comprehensive evaluation.

For providers practicing independently in private practice or more remote settings, there may likely be fewer options and additional barriers to facilitating a smooth transition to mental health care for evaluation. Clinicians faced with these challenges may benefit by proactively generating a list of local mental health providers and resources rather than wait until an emergent situation arises at the clinic. A prepared list of resources is one way to increase efficiency in coordinating care for a patient experiencing suicidal behavior. Although time limitations are a barrier, providing a warm handoff (e.g., contacting the mental health provider while the patient is in the office) is generally recommended[86, 87] and may help to improve care coordination and a greater likelihood of follow up. Finally, there are 24/7 resources available to all clinical care providers and patients, such as the Crisis Services Canada Hotline. This resource can provide immediate consultation for patients or providers needing services or information. Appendix 1 contains Canadian and United States national resources for crisis hotlines, Appendix 2 contains 24/7 online forum and chat access resources, and Appendix 3 provides adolescent and pediatric resources.

Secondary suicide prevention: comprehensive evaluation and safety planning overview

While it is beyond the expectation of a chiropractor to conduct a comprehensive evaluation, it is useful to share knowledge of next steps for educating patients and/or loved ones. Once a patient is connected with a qualified mental health professional, they will likely participate in a comprehensive risk assessment that includes detailed inquiry regarding psychosocial history, mental health treatment history (pharmacological and non-pharmacological), past/current risk and protective factors, and treatment planning. Ideally, if suicide risk is accurately stratified, the patient is triaged to a clinically appropriate level of care and is given the necessary treatment referrals, while incorrect stratification may result in harm to the patient due to inappropriate recommendations, exposure to an inaccurate level or dose of care, or a lack of referral for appropriate treatments.[88]

When a patient is deemed to be at an elevated risk for self-directed violence or suicide, the standard practice also may include comprehensive safety planning. Safety planning is a collaborative process conducted with the patient to create a "plan" that often includes identification of triggers/warning signs, internal coping strategies, support contacts (family, friends, professional) for quick access, and methods of increasing environmental safety (e.g., limiting access to lethal means). Safety plans are considered a best practice and used as part of a variety of psychological therapies. Typically, the safety plan is provided to the patient and is included in their medical record so that other providers may have access to this resource if needed. A recent randomized controlled trial in active duty Army soldiers found those in either response planning groups had a 76 percent reduction in attempts, a decline in ideation, fewer overall inpatient hospital stays, and a reduction in negative emotion states compared to the control safety contract group.[89]

Depending on an patient's category of risk, there are numerous levels of care that may be appropriate for a patient with elevated suicide risk, including inpatient hospitalization, intensive outpatient programs (individual/group therapy 3 to 4 times per week), as well as engagement in weekly, outpatient, evidence-based treatments such as cognitive behavioral therapy (CBT), acceptance commitment therapy (ACT), or dialectical behavioral therapy (DBT).[90–95] There is a growing consensus in the

suicide behavior literature that treatment interventions should address coping deficiencies and symptoms of psychological distress in patients who have attempted suicide.[96]

Tertiary suicide prevention: integrated settings and chiropractic services

Tertiary prevention approaches aim to intervene with patients with a history of self-directed violence. The goals of these prevention efforts are to mitigate subsequent occurrences of self-directed violence through reducing the impact and progression of the established disease (e.g., suicide ideation or prior suicide attempt) by eliminating or reducing disability and suffering while maximizing potential quality of life years.[97, 98] In epidemiological terms, tertiary prevention aims to reduce the number and/or impact of complications. Specific for suicide prevention, aftercare[99] describes care for the individual while postvention[100] considers communities and loved ones. In parallel with secondary suicide prevention efforts, it is imperative that chiropractors develop the procedures that would enhance the connection with community-based organizations and mental health professionals. For the chiropractor, it is prudent to be cognizant of patients who have previously endorsed suicidal thoughts or engaged in self-directed violence. Both secondary and tertiary prevention efforts can function to support and enhance protective factors through skill building and treating painful complaints (Table 4).

Collaboration and team-based approaches to care have been developed in health care systems. In some instances, chiropractors are members of physical medicine and rehabilitation departments, chronic pain programs, pain management teams, or surgical departments.[101,102] Interprofessional team-based care contributions by chiropractors and behavioral health clinicians may optimize the psychosocial considerations.[18] Community-based teaching clinics for chiropractic students have demonstrated interprofessional care delivery for complex case management that includes mental and behavioral conditions in low-income populations.[103, 104] Meanwhile, the vast majority of chiropractors are in private practice and are at a significant disadvantage for collaborating with behavioral health specialists. A case example of co-located clinics for a chiropractor, family physician, and mental health professional highlights potential communication and referral pathways for anxiety and chronic tension-type headache.[105]

Whether co-located or more fully integrated, a growing body of research indicates that collaborative behavioral-primary care results in improved patient outcomes.[89] Interprofessional training for mental and behavioral health collaboration with chiropractors is largely unreported at this time and is a potential opportunity to enhance the chiropractor's role in evidenced-based tertiary suicide prevention.

In either a private practice or hospital-based chiropractic clinic, there are a variety of interventions that have demonstrated success in managing chronic musculoskeletal pain conditions in the setting of comorbid mental health conditions, such as prior suicide attempts or a history of suicidal ideation. Similar in framework to Gliedt *et al*.[18], there are several treatments and case management strategies for spinal-related disorders that may be considered by chiropractors that aim to promote coping skills and self-efficacy. These strategies include mindfulness-based stress reduction (MBSR), concepts of motivational interviewing (MI), and CBT (*Note: The delivery of these interventions are dependent upon scope of the individual's licensing jurisdiction*). Each can be incorporated into a visit as an adjunct to manual and exercise therapies and happen to reinforce concurrent mental health interventions.[99] Treatment with MBSR or CBT, compared with usual care, resulted in greater improvement in back pain and functional limitations with no significant differences in outcomes between MBSR and CBT.[106] These findings suggest that MBSR and/or CBT may be an effective treatment option for patients with chronic low back pain with an associated risk of comorbid risk of suicidal self-directed violence.[107, 108]

As noted in secondary prevention for high-risk patients, behavioral health specialists employ the same tools contextualized for suicide prevention. CBT in particular has been shown to be effective in treating mental health disorders with chronic pain[109], and CBT alone reduces suicide attempts, suicidal ideation, and hopelessness compared with other treatments[110]. Evidence also supports DBT for treating suicidal ideation and behavior.[111] The DBT approach combines elements of CBT, skills training, and mindfulness techniques with the aim of helping patients develop skills in emotional regulation, interpersonal effectiveness, and distress tolerance.[88]

Every state in the United States—as well as federal agencies, including the VA, Department of Defense, and Substance Abuse and Mental Health Administration—has fostered a community-based approach to suicide prevention.[88,94] Similarly in Canada, the Federal Framework for Suicide Prevention was published in 2016 and sought to align federal suicide prevention efforts with provinces, territories, Indigenous organizations, non-governmental organizations, and communities to prevent suicide.[112] We encourage chiropractors to participate in community-based interventions that are endorsed by local or national public health organizations. Organizing a monthly group session or supporting current community-based interventions to prevent risk factors, promote protective factors, and mitigate suicide behaviors (Table 4) is a potential unique manner for chiropractors to address SDOH for tertiary prevention. Presenting on a variety of topics, as an expert in public health, can be beneficial and encourage the overall community to live a better quality of life. Chiropractors can consider incorporating this approach into individual practices by partnering with larger established health care systems, county health departments, and other private organizations to build a proactive approach to reducing future suicidal occurrences through a community network.

There are also national and local public health organizations for chiropractors to join as members. For example, the American Public Health Association (APHA) has a suicide prevention special interest group. Several other APHA sections, including Chiropractic Health Care, Public Health Education and Health Promotion, and Occupational Health and Safety, provide chiropractors with resources to further assist in the development of a community-based approach to suicide prevention.[113] A chiropractor's county, province, and/or state funded crisis line, task force, or coalition is likely in need of volunteers. For example, Butler county in Pennsylvania, United States, maintains a local branch of 'Prevent Suicide PA'.[114]

Potential barriers to suicide prevention in the chiropractic office

While a patient endorsing thoughts of self-directed violence or reporting plans to perform self-directed violence are an unexpected clinical encounter in the chiropractic office, the implementation of suicide prevention efforts in the office do result in several logistical concerns. Additional assessment tools, scoring, and interpretation of screening tools is an additional burden to both the patient and the chiropractor. The chiropractic office is likely to have a certain flow or pace (e.g., appointment time) for new and follow-up patient care. Whereas a patient who flags for risk factors of suicide will require impromptu focus and time for potential further assessment or intervention. Standard operating procedures would serve the office well to include established contact lists with available resources, something else that requires frequent updating and verification of information accuracy. This may be difficult in a solo provider office and in offices where patient care is busy with little time built in between patient visits. Careful planning is necessary to provide the appropriate care for these instances with empathy, validation, and support and avoiding the appearance of being rushed with a very sensitive topic. Practitioners may have to allocate additional time to each of their treatment sessions just in case something like this were to come up. One should look inward and reflect on clinic flow to determine the feasibility of addressing suicide prevention screening in the chiropractic office.

Limitations

The objective of this descriptive report left little room to devote to the discussion of special populations such as children, adolescents, or geriatrics as well as the relationship of culture and ethnicity as they associate with suicide-related behavior. As this was a descriptive overview, there are many scenarios that were not covered that uniquely represent specific types of chiropractic practice or particular patient scenarios. There are resources available nationally and locally, which could not be highlighted due to limitation of space.

Further, the authors caution against the implementation and clinical application of suicide prevention in the chiropractor's office using only this clinical guide to navigate the process. This article serves as introduction and starting point to a nuanced and life-threatening condition. Additional training and workshops should be sought to gain confidence to address this clinical concern. Many of the organizations provided in the appendices are key sources for supplementary education and training opportunities (Appendices 1, 2, 3).

Conclusion

Biological, psychological, social, and cultural factors all have a significant impact on the risk of suicide and spine-related disorders. The chiropractic profession unknowingly has played a role in suicide prevention, particularly the primary and secondary prevention levels, through education and counseling behavior change related to SDOH and treatment of painful conditions. It is a chiropractor's responsibility to recognize patients at risk of self-directed violence and engage in primary and secondary suicide prevention; however, it is beyond the expectation of the chiropractor to conduct suicide risk evaluation and to address a suicide crisis independently. It is of moral and ethical obligation that we suggest a minimum level of competency to screen for risk factors related to self-directed violence. Efforts to implement standard operating procedures, including community and national resources, referral pathways, and establishing relationships with the behavioral health community, enhance the opportunities for chiropractors to contribute to the mitigation of this public health crisis.

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Appendix 1.
*National crisis hotlines**

Crisis Hotline Title	Crisis Hotline Description	Crisis Hotline Contact Information
CANADA		
Centre for Addiction and Mental Health (CAMH)	Canada's largest mental health teaching hospital and one of the world's leading research centres in its field.	Phone: 1-833-456-4566 (24/7) Website: http://www.camh.ca/
Crisis Text Line	The Crisis Text Line is a free text messaging resource offering 24/7 support to anyone in crisis.	Short Message Service (SMS): Text HOME to 741741 (24/7) Website: https://www.crisistextline.org/
The Canada Suicide Prevention Service	Crisis Services Canada evolved out of the Canadian Distress Line Network – a national network of existing distress, crisis and suicide prevention line services that has been engaging members since 2002.	Phone: 1-833-456-4566 (24/7) SMS: Text 45645 (4PM-Midnight) Website: https://www.crisisservicescanada.ca/en/
UNITED STATES		
National Suicide Prevention Lifeline	The National Suicide Prevention Lifeline is a national network of more than 150 local crisis centers. It offers free and confidential emotional support around the clock to those experiencing a suicidal crisis.	Phone: 800-273-8255 (24/7) Online chat: https://suicidepreventionlifeline.org/chat/ (24/7) Website: https://suicidepreventionlifeline.org/
Substance Abuse and Mental Health Services Administration's (SAMHSA) National Helpline	The Substance Abuse and Mental Health Services Administration's (SAMHSA) national helpline offers confidential treatment referrals in both English and Spanish to people struggling with mental health conditions, substance use disorders, or both.	Phone: 800-662-HELP (4357) (24/7) Website: www.samhsa.gov/find-help/national-helpline Support for those who are deaf or hard of hearing: Text to Telephone (TTY): 800-487-4889 (24/7)
The Trevor Project	The Trevor Project offers crisis intervention and suicide prevention to lesbian, gay, bisexual, transgender, queer, and questioning (LGBTQ) youth through its hotline, chat feature, text feature, and online support center.	Phone: 866-488-7386 (24/7) SMS: Text START to 678678 Online Chat: TrevorCHAT Website: https://www.thetrevorproject.org/
The Veterans Crisis Line	The Veterans Crisis Line is a free, confidential resource staffed by qualified responders from the Department of Veterans Affairs. Anyone can call, chat, or text — even those not registered or enrolled with the VA.	Phone: 800-273-8255 and press 1 (24/7) SMS: Text 838255 (24/7) Online chat: www.veteranscrisisline.net/get-help/chat (24/7) Website: www.veteranscrisisline.net Support for those who are deaf or hard of hearing: 800-799-4889

*Access to these resources may vary by country.

Appendix 2.
*Online forums and crisis support resources**

Resource	Resource Description	Resource Contact Information
ADAA Online Support Group	With more than 18,000 subscribers worldwide, the Anxiety and Depression Association of America's online support group is a safe, supportive place to share information and experiences.	Website: https://adaa.org/adaa-online-support-group
Befrienders	Global network of 349 emotional support centers around the world. It offers an open space for anyone in distress to be heard. Support is available via telephone, text message, in person, online, and through outreach and local partnerships.	Website: https://www.befrienders.org/
BetterHelp	Connects people with licensed, professional therapists online for a low, flat fee. Therapy is available whenever you need it.	Website: https://www.betterhelp.com/
IMAlive	IMAlive is a virtual crisis center. It offers volunteers who are trained in crisis intervention. These individuals are ready to instant message with anyone who needs immediate support. IMAlive is a virtual crisis center. It offers volunteers who are trained in crisis intervention. These individuals are ready to instant message with anyone who needs immediate support.	Website: https://www.imalive.org/
Self-Injury Outreach and Support	An international outreach organization offering a variety of resources for those who self-injure, including guides, stories, and methods for day-to-day coping	Website: www.sioutreach.org
Suicide Stop	A one-stop resource center aimed at assisting people who are dealing with suicidal or self-destructive tendencies. It is also tailored to provide essential information and tips for individuals who want to help someone else.	Website: www.suicidestop.com/suicide_prevention_chat_online.html
TrevorSpace	TrevorSpace is an online international peer-to-peer community for LGBTQ young people and their friends.	Website: https://www.trevorspace.org/
7 Cups of Tea	An online resource that offers free, anonymous, and confidential text chat with trained listeners and online therapists and counselors. With over 28 million conversations to date, it's the world's largest emotional support system.	Website: https://www.7cups.com/

*Access to these resources may vary by country.

Appendix 3.
*Adolescent and pediatric suicide prevention support resources**

Resource Title	Description	Crisis Hotline Contact Information
CANADA		
Kelty Mental Health Resource Center	Parents and caregivers can find a variety of information and resources relating to mental health issues affecting children and young adults	Website: www.keltymentalhealth.ca/
Kids Help Phone	Kids Help Phone is Canada's only 24/7, national support service. Offerings include professional counselling, information and referrals and volunteer-led, text-based support to young people in both English and French.	Phone: 1-800-668-6868 (24.7) Short Message Service (SMS): "CONNECT" to 686868
NEED2 Suicide Prevention, Education & Support	Online support network for Canadian youth up to 30 years. The site offers a number of different methods of digital communication to meet the needs of youth in crisis.	Website: www.youthspace.ca (6 pm – 12 am PT): SMS: (778) 783-0177 (6 pm – 12 am PT)
UNITED STATES		
JED Foundation	A nonprofit organization that exists to protect the emotional health and prevent suicide of our nation's teens and young adults. JED equips these individuals with the skills and knowledge to help themselves and each other, and encourages community awareness, understanding, and action for young adult mental health.	Website: https://www.jedfoundation.org/events/parents-action-fall-seminar-emotional-well-begins-home/
National Alliance on Mental Illness	Helping a loved one with mental illness can be challenging but knowing where to begin is an important first step. The National Alliance on Mental Illness offers family members and caregivers specific guidance on a variety of issues, including how to help prevent suicide.	Website: https://www.nami.org/Find-Support/Family-Members-and-Caregivers/Preventing-Suicide
Society for the Prevention of Teen Suicide	Helps parents and educators raise awareness about youth suicide and attempted suicide through the development and promotion of educational training programs. The site also offers resources for teenagers who are contemplating suicide.	Website: https://www.sptsusa.org/
Teen Health	Helps parents decide whether their child's behavior is just a phase or a sign of something more serious	Website: https://teenshealth.org/en/parents/emotions/
THRIVE app	Designed by the Society for Adolescent Health and Medicine. It helps guide parents in starting an important dialogue with their teenage children on a variety of health and wellness topics	App: https://www.adolescenthealth.org/About-SAHM/Healthy-Student-App-Info.aspx
To Write Love on Her Arms	A nonprofit that aims to help people struggling with depression, addiction, self-injury, and suicide by connecting them with the appropriate hotlines, resources, and online communities through its blog and social channels.	Website: https://twloha.com/

*Access to these resources may vary by country.