

# Stigma related to screening, brief intervention, and referral intervention for behavioral health risk factors in healthcare settings: A systematic review

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## KEYWORDS

stigma, screening, brief intervention and referral, SBIR, tobacco use, alcohol use, insufficient physical activity

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## ABSTRACT

**INTRODUCTION** This systematic review aimed to synthesize existing studies on stigma (patient or provider's perspective) related to screening, brief intervention, and referral (SBIR) for tobacco use, alcohol use, and insufficient physical activity.

**METHODS** We conducted a systematic review in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). We systematically searched articles in MEDLINE, CINAHL, EMBASE, and Web of Science databases using predetermined keywords. We reviewed both the title/abstract and full text using an a priori set of inclusion and exclusion criteria to identify the eligible studies. We appraised study quality, extracted data, and summarized the characteristics of intervention design and study findings from the included studies.

**RESULTS** No published studies were found pertaining to SBIR related to stigma for tobacco use or insufficient physical

activity. Five studies were included in the review; all focused on SBIR-related stigma for alcohol use. The studies reported that patients perceive stigma in accessing treatment for alcohol use in healthcare settings. Our review identified that patients who consume alcohol fear being judged or stigmatized by their provider, which may lead patients to provide dishonest answers and hide their alcohol use status. We identified that patients are concerned about the confidentiality of the information collected on alcohol use and its impacts on their employment and housing.

**CONCLUSIONS** Patients' fear of being judged or stigmatized prevents them from getting treatment for alcohol use and reduces providers' ability to engage and support patients. More studies are needed to explore stigma related to SBIR for risk factors (including tobacco use and physical activity) using standardized stigma measurement tools.

## INTRODUCTION

Tobacco use, alcohol use, and insufficient physical activity are leading modifiable risk factors for preventable chronic diseases and poor outcomes (e.g. increased healthcare utilization and cost)<sup>1-4</sup> In 2015, 28% of new cancer cases diagnosed in Canada were attributable to tobacco use, 5% to alcohol consumption, and 9% to physical inactivity<sup>3,5</sup>. A recent Canadian study estimated that these factors are associated with about 20% of total health system costs in Canada<sup>6</sup>. These negative impacts could be prevented or reduced by supporting patients' health risk behavior change. Smoking cessation can significantly reduce post-operative complications, all-cause mortality, and hospitalization<sup>7,8</sup>.

Alcohol abstinence interventions can significantly reduce respiratory failure and post-operative complications<sup>9</sup>. Increasing by 10, 20, and 30 minutes daily physical activity from the previous physical activity level, the total deaths per year can be reduced by 6.9%, 13.0%, and 16.9%, respectively<sup>10</sup>.

Screening, brief intervention, and referral (SBIR) is an integrated health promotion approach that systematically links screening, brief advice/intervention, and referral to provide timely support to individuals for modifiable risk factor behavior change, which can reduce the risk of adverse health outcomes<sup>11</sup>. Screening involves identifying patients with risk factors (e.g. tobacco use, alcohol use,

or insufficient physical activity). A brief intervention involves a conversation between providers and patients about the health impacts of these risk factors, the patients' readiness to change their behavior, and the provision of informational materials to the patient to encourage risk-reducing actions. Referral connects patients to services available in their community to support health behavior change<sup>11</sup>. The objective of this systematic review was to synthesize knowledge from existing studies on stigma (patient or provider's perspective) related to SBIR for tobacco use, alcohol use, and insufficient physical activity. Understanding the experience of patient stigma related to SBIR is critical to guide the design of an SBIR intervention and its implementation.

Evidence demonstrates that SBIR is effective in changing behaviors<sup>12-14</sup>. A Cochrane systematic review of 42 studies found that smoking cessation increased significantly with the provision of brief advice by a health provider or with more intensive support, including brief advice and referrals or follow-ups<sup>15</sup>. The findings from another systematic review found that at the 12-month follow-up, patients who received brief intervention had a statistically significant decrease in alcohol consumption compared to the usual care cohort (21.8 vs 6.7 drinks/week reduction)<sup>16</sup>. A recent randomized trial in an emergency department showed patients significantly reduced alcohol use at 5 months after they received SBIR compared to the control group (38.5% vs 57.4%)<sup>14</sup>. The literature indicates that patients who received SBIR have significant short- and long-term health improvements and increased life expectancy and quality of life<sup>12,16,17</sup>. These benefits have reduced healthcare expenditures and 30-day, 1-year, and 2-year healthcare utilization (e.g. ED visits, hospital admissions)<sup>18</sup>. Despite the evidence on the effectiveness of SBIR, patients may experience or perceive stigma during the SBIR process, and that can be a barrier to healthcare seeking and engaging in behavior change. Studies pertaining to addictions and mental health demonstrate that stigma perceived by patients inhibits them from engaging in treatment or care<sup>19,20</sup>. Evidence suggests that there are suboptimal levels of engagement with SBIR, sometimes providers do not want to discuss behavioral health intervention because they felt uneasy discussing it with patients and were concerned about being perceived as judgmental, triggering feelings of shame, or harming the provider-patient relationship<sup>21</sup>, sometimes patient do not want to engage in SBIR due to fear of being judged or discrimination. However, little is known about the stigma related to the SBIR intervention in healthcare settings among patients who use tobacco or alcohol, or do not engage in sufficient physical activity.

Goffman defines stigma as 'an attribute that is deeply discrediting, which reduces its bearer from a whole and usual person to a tainted, discounted one'<sup>22</sup>. According to the health stigma and discrimination framework by Stangl et al.<sup>22</sup>, stigma experience includes discrimination, self-stigma,

perceived stigma, and secondary or associative stigma, which influences a range of outcomes among affected populations<sup>23</sup>. Experienced discrimination refers to stigmatizing behaviors that fall within the purview of the law in some places, such as refusal of housing, and employment<sup>23</sup>. Self-stigma is defined as a stigmatized group member's own adoption of negative societal beliefs and feelings, as well as the social devaluation, associated with their stigmatized status<sup>32</sup>. Perceived stigma is the perceptions about how stigmatized groups are treated and the expectations of bias being perpetrated by others<sup>23</sup>. Finally, secondary, or 'associative' stigma, refers to the experience of stigma by family or friends of members of stigmatized groups or among healthcare providers who provide care to members of stigmatized groups<sup>23</sup>. Stigma practices include stereotypes, prejudice, stigmatizing behavior, and discriminatory attitudes<sup>23</sup>.

This systematic review aimed to synthesize existing studies on stigma (patient or provider's perspective) related to SBIR for tobacco use, alcohol use, and insufficient physical activity.

## METHODS

### Search strategy

We conducted a systematic review in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement<sup>23</sup>. We systematically searched MEDLINE, CINAHL, EMBASE, and Web of Science databases for articles published in English from the inception of these databases to March 2024. We used Mendeley software to manage and review the articles extracted from the databases. To formulate the search strategy, we used the Population, Intervention, Comparison and Outcome (PICO) approach: P=Adult patients with either of three risk factors (tobacco use, alcohol use, insufficient physical activity); I=Screening, brief intervention, and referral (SBIR) in healthcare setting; C=Not applicable for the aim of this review; and O=Stigma experienced or perceived by patients or providers' perspective (stigma is defined as experienced discrimination, self-stigma and perceived stigma as defined by health stigma and discrimination framework)<sup>23</sup>. We identified keywords for each PICO theme and combined them using 'OR' (within the same theme) and 'AND' (between the themes). Subject matter experts and a librarian determined the search strategies. The complete search strategy is provided in the Supplementary file.

### Exclusion and inclusion criteria

Articles were reviewed using the following inclusion criteria: 1) studies that met PICO defined above; 2) qualitative or quantitative primary studies published in peer-reviewed journals; 3) studies published in the English language; and 4) studies that assessed patients' experience with SBIR in relation to the risk factors or assessed providers' experience on providing SBIR to patients in relation to the risk factors.

### Study identification

Two authors performed a title and abstract review, followed by a full-text review for inclusion using the criteria listed above. Each reviewer examined half of the total titles and abstracts. A randomly selected 20% of titles and abstracts were reviewed in pairs, which demonstrated 94% agreement between the two reviewers. The same process was used for full-text review, which resulted in 85% agreement between the two reviewers. Any disagreements in the selection of articles were resolved by discussion to reach consensus between the reviewers or by consulting a third reviewer.

### Data extraction and analysis

We extracted data from the included studies using a structured data extraction tool. The tool included the variables, such as: study objective, study design, study population, study setting, stigma measurement or data collection tools and techniques used. For the outcomes, the aspects of stigma measured, analytical methods, and key results were identified and extracted. We used narrative synthesis to qualitatively summarize individual study characteristics and key findings on SBIR related stigma experienced by patients for the three risk factors.

### Quality assessment

The quality of the included studies was appraised using quality assessment tools as appropriate to study designs: the Critical Appraisal Skills Program for qualitative studies<sup>24</sup> and the Mixed- Methods Appraisal Tool for quantitative studies<sup>25</sup>. Two authors did an appraisal of the quality of the included studies. Any disagreements in the quality of the included studies were resolved by discussion to reach consensus between the reviewers, or by consulting a third reviewer.

## RESULTS

### Characteristics of included studies

The PRISMA diagram shows the review process and the reasons for the studies' exclusion (Figure 1). In the initial search, we retrieved 3803 articles, of which 1907 were duplicates. Once the Mendeley software highlighted duplicates, they were deleted from our database. Of 1784 articles screened for title and abstract, 54 were included for full-text review. Five studies met inclusion criteria and were included in the review<sup>21,26-29</sup>.

All the studies focused on SBIR related to alcohol use. Importantly, no studies pertaining to stigma in relation to SBIR for tobacco use or insufficient physical activity were

**Figure 1. PRISMA diagram for article selection**

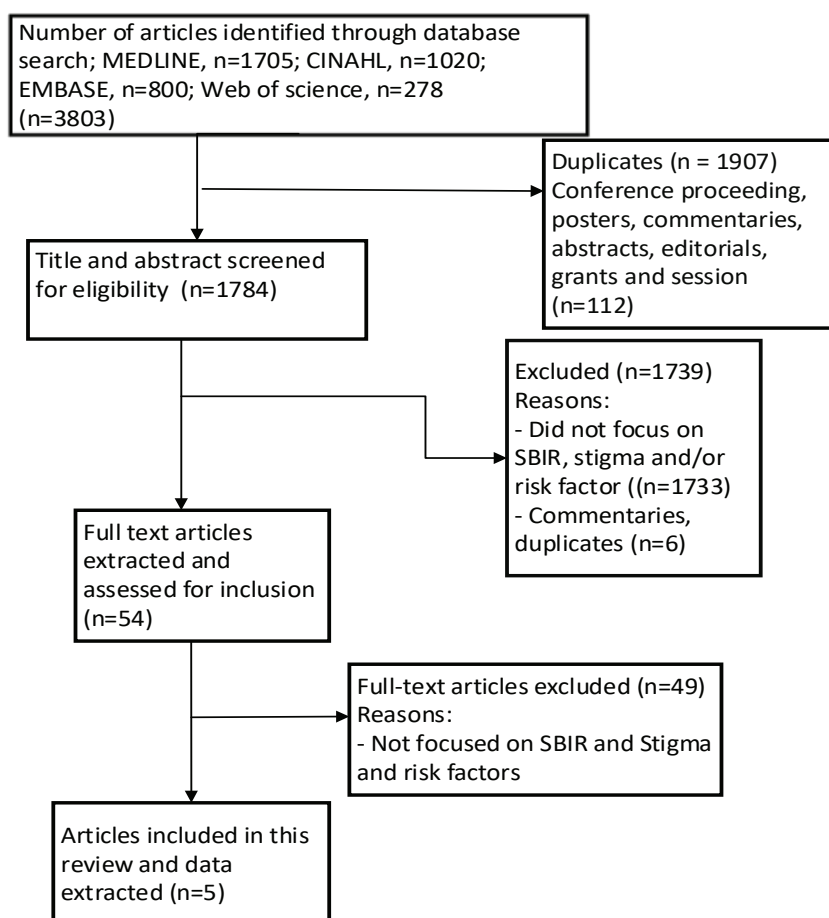


Table 1. Characteristics of included studies

Authors Year Location	Objective	Study setting	Study population, sample size	Key study methods
Fortney et al. <sup>27</sup> 2004 USA	To determine the prevalence of different types of public stigma perceived by a community-based sample of at-risk drinkers and to identify the characteristics of at-risk drinkers that are significantly associated with high levels of perceived public stigma.	Primary care	Patients (n=733)	<ul style="list-style-type: none"> <li>• Cross-sectional study (using quantitative research methods)</li> <li>• A probability-based random sample of phone numbers in 6 southern states</li> <li>• Vignette was used to measure stigma (vignettes are short, vivid descriptions of hypothetical persons or situations, which contain enough information for respondents to base a judgment)</li> <li>• Stigma was conceptualized into 7 treatment sectors: 1) community judgment of drinking; 2) community judgment of primary care treatment; 3) community judgment of specialty treatment; 4) primary care provider judgment; 5) specialty provider judgment; 6) primary care lack of privacy; and 7) specialty care lack of privacy</li> </ul>
Hanschmidt et al. <sup>21</sup> 2017 France, Germany, Italy, Spain, UK	To present the distribution of perceived barriers for alcohol screening among hypertensive patients in a sample of primary healthcare professionals from the largest European countries. The secondary aim was to identify the role of stigma as a barrier to alcohol screening.	Primary care	Healthcare providers (n=3081)	<ul style="list-style-type: none"> <li>• A cross sectional study (using quantitative research methods)</li> <li>• Online survey that used a questionnaire developed by researchers and general practitioners (GPs)</li> </ul>
McNeely et al. <sup>26</sup> 2018 USA	To gain an understanding of substance use screening from a diversity of clinical stakeholders, as part of a multi-site study of the National Institute on Drug Abuse (NIDA) Clinical Trials Network (CTN). The overarching goal of this CTN study is to implement substance use screening.	Primary care clinic	Healthcare providers (n=52); patients (n=15)	<ul style="list-style-type: none"> <li>• A qualitative study, using focus groups</li> <li>• Semi-structured interviews that used constructs from the knowledge to Action (KTA) framework</li> <li>• The interview was conducted by a psychologist in English</li> <li>• The average length of the focus groups and interviews was 45 to 60 minutes, and all sessions were audio recorded</li> </ul>
Miquel et al. <sup>28</sup> 2018 Spain	To: 1) identify GPs' attitudes and possible barriers in the identification and clinical management of alcohol use among HT patients; and 2) explore whether any of the following GP's characteristics were associated with these barriers: sex, age, GP training (graduate and postgraduate), number of patient visits per day and GP's own pattern of alcohol consumption.	Primary care	General practitioners (n=867)	<ul style="list-style-type: none"> <li>• Cross-sectional study (using quantitative research methods)</li> <li>• Internet survey</li> </ul>
Staton et al. <sup>29</sup> 2018 Tanzania	To identify potential perceived barriers to implementing a brief negotiation interview (BNI) in Tanzania.	Emergency department	Healthcare providers (n=35)	<ul style="list-style-type: none"> <li>• Cross-sectional study (using quantitative research methods)</li> <li>• A questionnaire created based on knowledge, attitude, and practice (KAP)</li> <li>• A stigma scale called perceived alcohol stigma (PAS) was created to evaluate alcohol use stigma</li> </ul>

Table 2. Quality assessment of included studies

Qualitative studies										
	Clear statement of aims of the research	Qualitative methods appropriate	Research design appropriate	Recruitment strategy appropriate	Data collection addressed research issue	Relationship adequately considered	Ethical issues considered	Data analysis rigorous	Clear statement of findings	Results help locally
McNeely	Yes	Yes	Yes	Yes	Yes	Cannot tell	Yes	Yes	Yes	Yes
Quantitative studies										
	Clear statement of aims of the research	Data collection addressed research question	Sampling strategy relevant to address the research question	Sample representative of the target population	Measurement appropriate	Non-response bias low	Statistical analysis appropriate to answer the research question			
Fortney	Yes	Yes	Yes	Yes	Yes	Cannot tell	Yes			
Hanschmidt	Yes	Yes	Yes	Yes	No	Cannot tell	Yes			
Miquel	Yes	Yes	Yes	Yes	No	Cannot tell	Yes			
Staton	Yes	Yes	Yes	Yes	Yes	Cannot tell	Yes			

found that met the inclusion criteria. Table 1 describes the characteristics of the five included studies, four quantitative studies (cross-sectional study design) and one qualitative study. All included studies were published after 2000. Of the five studies, two were conducted in the USA, one was conducted in Spain, one was conducted in Tanzania, and one study was a comparison among five European countries. The study participants were patients (in one study), healthcare providers (in three studies), and both patients and healthcare providers (in one study). Four studies were conducted in a primary care setting, and one in an emergency department. Only two studies mentioned the use of a stigma measurement tool to assess stigma<sup>27,29</sup>. Staton et al.<sup>29</sup> use the Perceived Alcohol Stigma (PAS) scale to evaluate perceived alcohol use stigma. The PAS scale assesses expectations of devaluation and discrimination by querying how 'most or other people' think or act towards an individual with current or prior alcohol problems. Fortney et al.<sup>27</sup> used vignette to measure stigma. Vignettes are short, vivid descriptions of hypothetical persons or situations, which contain enough information for respondents to base a judgment. Vignettes are intended to activate the respondents' imagination and interest, and then elicit responses using Likert scales.

### Quality assessment of the included studies

Based on the Critical Appraisal Skills Program for qualitative studies, the qualitative study<sup>26</sup> was judged to have a clear research aim, appropriate qualitative methodology and research design, data collection method to address their

research objective, a clear statement of findings that would provide local benefit. However, the study did not mention whether the relationship between the researcher and participants was adequately considered. The Mixed Methods Appraisal Tool for quantitative studies was used to assess quality for the four quantitative studies<sup>21,27-29</sup>. They were judged as meeting three of the five quality criteria (relevant sampling strategy, representative sample, and appropriate statistical analysis). Two quantitative studies<sup>27,29</sup> met additional criteria of appropriate measurement and none of the quantitative studies provided information on non-response bias (Table 2).

### Study findings

A study conducted by Staton et al.<sup>29</sup> reported that most healthcare providers had a significant stigma against patients with alcohol-use disorders. The study measured stigma using PAS, a validated tool, and found that on average healthcare providers had a high score for perceived stigmas (3.4/5 on the scale). This means that healthcare provider stigma against patients is real, and patient could perceive this stigma and hence they did not engage in health changing intervention<sup>29</sup>. This study reports that individuals who undertake alcohol treatment, even if they are fully recovered, are not allowed to take on certain jobs/occupation such as teachers, doctors etc. Furthermore, 87% of the healthcare providers agreed that patients who have been in alcohol treatment are more likely to experience some stereotypes, prejudice, and discriminatory attitudes from their



Table 3. Main findings from selected articles

Authors Year Location	Study findings
Fortney et al. <sup>27</sup> 2004 USA	<ul style="list-style-type: none"> <li>• Patients perceive stigma more often from the community treatment centers and less from their providers – community judgment of specialty treatment (56.3%), community judgment of primary care treatment (48.9%).</li> <li>• A substantial proportion of respondents perceived a lack of privacy for both primary care treatment (42.0%) and specialty care treatment (45.2%).</li> <li>• Community judgment about treatment in the primary care sector was significantly and substantially correlated with treatment in the specialty care sector. This suggests that help seeking is stigmatized regardless of the treatment sector.</li> </ul>
Hanschmidt et al. <sup>21</sup> 2017 France, Germany, Italy, Spain, UK	<ul style="list-style-type: none"> <li>• Among respondents with fewer screens, the specified reason was stigma (and some of the reasons related to this is that alcohol use is difficult to discuss, dishonest answers, denial).</li> <li>• In France and Italy, the most cited barrier to alcohol screening was stigma (e.g. 'refusal of the patient to speak about it'; 'alcohol consumption is considered normal and if investigated patients feel labeled as alcoholic').</li> </ul>
McNeely et al. <sup>26</sup> 2018 USA	<ul style="list-style-type: none"> <li>• Patient felt uncomfortable disclosing alcohol use because they fear a negative reaction from their provider, concerns about confidentiality, and not being ready to discuss their alcohol use.</li> <li>• Patients worry about how medical providers will react – patients and providers stated that patients may be uncomfortable disclosing alcohol use out of fear of being judged by their provider.</li> <li>• Patient noted that the quality of the patient-provider relationship is an important determinant of whether patients will feel comfortable disclosing alcohol use. Some patients expressed concern about unforeseen consequences of screening if providers were to react negatively to a patient's disclosure of alcohol use.</li> <li>• Patients speculated that if they felt uncomfortable with their provider's reaction it could impact their engagement in care.</li> <li>• Patients are concerned about having alcohol use information in their medical record – concerns about alcohol use information appearing in their medical record, and how that could affect the care they receive from other providers.</li> <li>• Some patients felt that having alcohol use information in their medical record could potentially impact their job, insurance payments for medical care, and providers' willingness to prescribe some medications (such as controlled substances).</li> <li>• Patients talked about the stigma of alcohol use and felt that patients get blamed for having an alcohol use disorder.</li> </ul>
Miquel et al. <sup>28</sup> 2018 Spain	<ul style="list-style-type: none"> <li>• Half of them reported lack of time as a barrier to screening for alcohol use and 28.4% considered alcohol consumption non-relevant for HT.</li> <li>• Stigma was noted as a barrier to health seeking behavior by the healthcare professionals due to fear of annoying the patient or feeling that having previous knowledge of the patient habits precludes repeating the questions.</li> </ul>
Staton et al. <sup>29</sup> 2018 Tanzania	<ul style="list-style-type: none"> <li>• Stigma: The average PAS was 3.4 (SD=0.9) with 66% (n=23) of the participants scoring high in the PAS Likert scale.</li> <li>• More than 35% of the respondents disagreed that a person who had excessive alcohol use is just as intelligent as the average person.</li> <li>• More than 30% would not accept a fully recovered alcoholic as a teacher for young children and 70% would not hire a former alcoholic to take care of their children.</li> <li>• 87% agreed that people think less of someone who has been in an alcohol treatment.</li> <li>• 51% of the healthcare providers agreed that most employers would pass over the application for a job of a former alcohol user.</li> <li>• In the social/community side, 77% agreed that most young women would be reluctant to date a man who has been hospitalized for alcoholism and 77% agreed they would take the opinion of a person in alcohol treatment less seriously.</li> </ul>

community, hence, some patients avoid alcohol treatment all together<sup>29</sup> (Table 3).

Fortney et al.<sup>27</sup> assessed the prevalence of public stigma

perceived from a community-based sample of people with risky drinking in seven treatment sites for alcohol use.

The study found that 86% of study respondents perceived

stigma concerning their community's judgment about at-risk drinking, 49% of study respondents perceived stigma for community judgment about seeking primary care treatment for alcohol disorders, 56% of study respondents perceived stigma for community judgment about seeking specialty treatment, and 36% of study respondents perceived stigma related to primary care providers' judgment. The study concluded that patients are stigmatized regardless of where they access treatment for their alcohol use or care<sup>27</sup>. Furthermore, the study indicated that a notable number of respondents (42%) reported a lack of privacy during alcohol treatment at their treatment site. Some of these respondents stopped their alcohol treatment due to the lack of privacy.

Three studies<sup>21,26,28</sup>, reported stigma as a barrier to engaging in the SBIR process. In the study by McNeely et al.<sup>26</sup>, patients felt uncomfortable disclosing alcohol use because they fear a negative reaction from their provider. Some patients had concerns about the confidentiality of their information, and worried about the impact on their employment, housing and the care they receive from other providers<sup>26</sup>. This study also noted that patients will refuse to participate in SBIR intervention due to fear of being judged and blamed by providers for having alcohol use disorder. Hanschmidt et al.<sup>21</sup> reported that providers are reluctant to talk about patient alcohol treatment because they do not want the patient to feel uncomfortable and felt that alcohol use is difficult to discuss with patients<sup>21</sup>. Providers sometimes felt that some patients provide dishonest answers, and some are in denial of their alcohol intake; hence, they did not inform patient about alcohol treatment programs<sup>21</sup>.

## DISCUSSION

This systematic review summarizes the findings of studies about stigma experiences related to SBIR for behavioral risk factors change in healthcare settings. Notably, no studies were found that had investigated stigma associated with SBIR in relation to tobacco use or insufficient physical activity. This review shows that patients perceive stigma during screening and when accessing treatment for alcohol use in healthcare settings. Patients were concerned about the confidentiality of information collected on alcohol use and its impacts on their socioeconomic wellbeing. Some patients provided dishonest answers on their alcohol use status due to fear of being judged and were in denial of their alcohol intake. Providers felt it is difficult to discuss alcohol treatment with patients because it makes patients uncomfortable. Patients' experience of stigma can prevent uptake of alcohol treatment programs for behavior change and prevent providers from offering support to their patients. Patients' experience of stigma (fear of being judged and concerns with the confidentiality of information) can lead to information bias, particularly underestimating risk status.

The literature on stigma related to SBIR intervention is scarce and caution should be taken in the interpretation

of reported findings. First, there were only five studies on this issue, with no studies on tobacco use and insufficient physical activity; hence, we cannot provide information on the experience of patient stigma related to SBIR for these other two risk factors. Second, the included studies on alcohol use mostly focused on screening and treatment aspects, not on the brief conversations between patients and providers; hence, studies on alcohol use do not provide sufficient understanding of SBIR related stigma. Third, only one study measured stigma using a standardized validated tool – Perceived Stigma of Addiction Scale (PSAS). The remaining studies did not use a standardized tool to measure stigma or did not report the measurement tools used, and classified stigma into a single category – stigma was measured too broadly. It is important to evaluate the performance of existing measurement tools on stigma, and if needed optimize them or develop a new tool to comprehensively measure stigma to better facilitate program intervention implementation. Fourth, the studies included in the review did not report detailed information about the stigma perceived by patients or providers, such as what type of stigma was perceived, demographic and sociocultural characteristics of those who perceived stigma, characteristics of those who perceived stigma the most, factors influencing the stigma perception, and if the perceived stigma impacted their engagement in other healthcare system.

The findings indicate a need to establish SBIR for alcohol use as a routine practice in patient care to help destigmatize this health promotion practice. Healthcare sites and providers need to be equipped and ready to deliver such care in a non-stigmatizing manner. The findings suggest that it would be important for healthcare providers to articulate the purpose and benefits of risk factor screening, how the screening information is collected and that the screening results will be kept confidential and used only to support patients' health care. It is critical that providers are trained and educated about the impact of modifiable risk factors, the importance of addressing them, and the SBIR intervention process – including the use of destigmatized language, tools, and patient facing resources. In the face of stigma, the expectations of negative repercussions, and privacy issues from disclosing alcohol use information, providers need to be motivated to support patients in their behavior change journey. Providers also need to offer support free of judgement, so patients feel the benefits of disclosing their information and they can engage in conversations with providers. Additionally, there is a need to engage patients and providers in the design of the SBIR intervention to support the development of trust between patients and providers<sup>30-33</sup>. Other strategies include provider training on health promotion and facilitating lifestyle changes in health professional schools' curricula and practice-based training on SBIR in healthcare settings. In Alberta, Canada, SBIR intervention is currently being implemented in hospital-based healthcare environments. Alberta Health Services is

universally implementing Connect Care (i.e. an Electronic Clinical Information System) in its health system. Built upon the previous paper-based SBIR implementation pilot in Alberta, Canada<sup>34</sup>, we are now leveraging Connect Care to create and integrate a robust SBIR process (for each component 'screening', 'brief intervention', and 'referral') for the risk factors in electronic workflows [the initiative is called: Integrating Prevention into Connect Care for Health (IPiC-Health)]. This review findings informed the design and implementation of the intervention to enable providers to support patients routinely and effectively with risk factors.

### Strengths and limitations

This review summarizes the patients' experience on stigma related to alcohol SBIR in healthcare settings and it identifies the gaps in the literature using the systematic literature review approach. However, some limitations must be noted. The review may have excluded relevant articles that were not written in English. Studies on the topic of stigma related to SBIR for risk factors are limited and they do not provide patient specific characteristics, nor do they provide detailed information about the type of perceived stigma. Future studies should explore stigma related to SBIR for modifiable risk factors (including tobacco use and physical activity) using standardized stigma measurement tools to guide the design of SBIR intervention implementation.

### CONCLUSIONS

This review found that patients can perceive stigma during the screening and treatment process for alcohol use. Patients' fear of being judged or stigmatized can prevent them from seeking or participating in treatment programs and behavior change. Providers' knowledge about the importance of addressing patients' modifiable risk factors, the SBIR process, and their providers motivation and readiness to support patients using a stigma free SBIR process will be important to normalize SBIR in routine patient care. Patients' and providers' participation in the design of SBIR process will also be key. The literature on patients' experience of stigma related to SBIR for modifiable risk factors is very limited. Future studies should explore stigma related to SBIR for risk factors (including tobacco use and physical activity) using a standardized stigma measurement tool.

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The authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none was reported.

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