

Integrating brief alcohol interventions with tobacco addictions treatment in primary care: qualitative study of health care practitioner perceptions

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Abstract

Background Randomized trials of complex interventions are increasingly including qualitative components to further understand factors that contribute to the success of complex interventions. In this paper, we explore the experiences of health care professionals who participated in the COMBAT trial; a web-based intervention implemented in the Ontario-wide Smoking Treatment for Ontario Patients (STOP) Program to prompt primary care practitioner delivery of a brief alcohol intervention as part of a smoking cessation program. This study conducted qualitative interviews with primary care practitioners to understand the factors influencing implementation and acceptability of the intervention. **Methods** Twenty three primary care practitioners were selected for a qualitative interview using intensity sampling, ensuring representation across study arms, organization types, and rates of intervention delivery. Interviews were 45 to 90 minutes in length and conducted by phone using an interview guide that was informed the National Implementation Research Network's Hexagon tool. Interview recordings were transcribed and coded iteratively between three researchers to achieve consensus on emerging themes. **Results** Most interviewed practitioners recognized the need to simultaneously address risky alcohol use and tobacco use, and shared that this type of work fits within the priorities of their respective clinics. Although most practitioners were knowledgeable about the evidence of health risks associated with dual alcohol and tobacco use, most still felt they could have benefited from additional training – beyond the two webinars delivered by the STOP program – prior to the launch of the COMBAT initiative. Practitioners acknowledged the value of adding a validated screening tool to the STOP program's baseline questionnaire; however, following through with a brief intervention and referral to treatment proved challenging due to limited time. **Conclusions** While practitioners recognized the value of the COMBAT initiative, insufficient training and time were frequently reported as barriers to adoption and delivery. The results of the study also show that practitioners' beliefs were reflective of the current social norms around alcohol use and this influenced their decision to offer a brief alcohol intervention to patients. Future designs of primary care-based interventions need emphasize organizational and sociocultural factors as part of the design.

Background

There is growing acknowledgement that qualitative methods can help with understanding why complex interventions, such as those employed in implementation science, are successful or unsuccessful (1-3). Therefore, it is not surprising that randomized trials of complex interventions are increasingly including qualitative components (4, 5). In this paper, we provide one of such examples, by exploring the experiences of health care professionals who participated in the Combined Alcohol and Tobacco (COMBAT) trial (6). The primary aim of the COMBAT trial was to assess whether a web-based clinical decision support system (CDSS) guiding practitioners to conduct Screening, Brief Intervention and Referral to Treatment (SBIRT) influenced the proportion of practitioners delivering a brief alcohol intervention to their patients who were smoking, and drinking above the Canadian Cancer Society (CCS) guidelines; female ≥ 1 standard (13.6g) drink/day; male: ≥ 2 standard drinks/day.

Alcohol use significantly increases the risk of cancers in individuals who smoke (7-16). SBIRT is an evidence-based practice for reducing hazardous drinking (17-24). Despite SBIRT's known efficacy, the majority of health care practitioners in Ontario do not incorporate brief alcohol interventions into their practice (25). As a result, with funding from the Canadian Cancer Society Research Institute, a cluster randomized trial was designed (6). Briefly, a total of 221 primary care clinics participating in a smoking cessation program, the Smoking Treatment for Ontario Patients (STOP) program, were randomized to the COMBAT trial (6).

The results of the trial showed 45% of those who were drinking above CCS guidelines were offered a brief intervention and an educational resource. In addition, the results showed that the use of a CDSS:

1. Did not increase practitioner likelihood of offering an alcohol intervention to eligible patients (26).
2. Increased the acceptance rate of an educational alcohol resource by patients. Patients were significantly more likely to accept a resource if their practitioner had access to CDSS (26).
3. Did not influence patients' smoking status and alcohol consumption within CCS guidelines at 6-month follow-up (26).

Given this evidence, qualitative interviews were conducted with health care practitioners implementing the STOP program (referred to as STOP practitioners) to understand their experience with the trial. The aim of the current study was to examine the factors influencing implementation and acceptability of the COMBAT trial among STOP practitioners.

Methods

Participants

Participants for this qualitative study included 23 STOP practitioners that were part of the COMBAT Trial and had enrolled at least 10 patients drinking above CCS guidelines. Participants were selected using stratified purposeful sampling (27) to ensure representation from:

- a. Practitioners who provided the resources to appropriate patients most of the time (at least 70%), some of the time (30%-69%), infrequently (less than 30%)
- b. Each study arm: practitioners who worked in sites with CDSS versus without
- c. Each organization type: Family Health Teams (FHT), Community Health Centre (CHC) and Nurse Practitioner-Led Clinic (NPLC)

Twenty-five potential participants received a phone call describing the project and inviting them to participate in an interview. Of the 25 invited, 23 agreed to participate and completed an interview, yielding a response rate of 92%.

This qualitative study, including the recruitment and consent process, received ethics approval from the Centre for Addiction and Mental Health (CAMH) Research Ethics Board (#035-2015).

Data Collection

All interviews were conducted by ML via telephone and lasted between 45 and 90 minutes. ML has a Masters of Public Health and has been working at CAMH for seven years. Prior to the launch of this study, she worked as a Research Analyst in the STOP program. However, she did not work directly with the STOP practitioners and was not known to the participants who were a part of this study. Throughout the interview process, ML was reflective of her experience with the STOP program and approach to interviewing to ensure her perspectives did not influence the interaction with the practitioners and their responses to the interview questions.

The interviews explored practitioners' experiences with delivering an alcohol intervention as part of the STOP program, including facilitators and barriers. The interview questions were structured around the six components of the original National Implementation Research Network's Hexagon Tool: evidence, resource availability, readiness, needs, fit, and capacity to implement (28). While this tool is primarily designed to guide decisions on the type of evidence based intervention to implement, we also used this framework to examine the barriers and facilitators to the success of the COMBAT intervention post-implementation. The Hexagon Tool has been used in other studies post-implementation to evaluate an intervention (29, 30). Interviews were audio recorded and transcribed verbatim by a transcriptionist. These transcripts were cross-checked with interview audio files and verified for accuracy by a researcher. Audio files and transcripts were anonymized and stored in a secure online database that can only be accessed by the study team.

Data Analysis

Data was coded and analyzed using the framework analysis approach (31). Transcripts were imported into NVivo 11 and a preliminary coding structure was developed using the updated Hexagon Tool framework released in 2018 (32), as well as key concepts from the interview guide. A subset of the transcripts was coded separately by two researchers in NVivo; additional codes were then added and revised iteratively as new themes arose during analysis. Any emergent themes were discussed and coding discrepancies were resolved through discussion until consensus was reached, followed by further revision of the coding framework. This process was repeated for three rounds until inter-rater agreement of at least 90% was achieved and the coding structure was finalized. At this point, no additional codes were added. All interviews were re-coded using the final framework. Data was organized into a Framework Matrix in NVivo to summarize findings, focus on the Hexagon Tool factors, and examine patterns. Themes specific to the study arm (i.e. practitioners who worked in sites with the CDSS versus without) were also analyzed. Throughout the analysis and writing of this manuscript, the research team was reflective of their status (e.g. working for the organization that coordinates STOP program), their training (e.g. implementation science and the Hexagon Tool), and their expertise in tobacco and alcohol control.

Results

Table 1: Baseline characteristics of the 23 practitioner who participated in the interviews.

	Control (n=12)	Intervention (n=11)
Organization type		
CHC	2	5
FHT	9	5
NPLC	1	1
Organization Performance		
Sites that provided the alcohol workbook infrequently (less than 30%),	4	3
Sites that provided the alcohol workbook some of the time (30%-69%)	7	6
Sites that provided the alcohol workbook most of the time (at least 70%)	1	2
Participant Gender		
Male	1	1
Female	11	10
Participant Occupation		
Nurse ^a	6	7
Pharmacist	2	2
Other ^b	4	2
Years in STOP Program		
< 2 years	2	2
2-5 years	3	6
> 5 years	7	3

^a Includes registered nurse and registered practical nurse.

^b Includes social worker, respiratory therapist, dietician

We organized our findings below using the key domains of the Hexagon Tool (32). First, we present the three components of the Hexagon Tool associated with the COMBAT program (evidence, supports, and usability) followed by the three components of the Hexagon Tool associated with the STOP implementing sites (need, fit, capacity).

(1) Evidence: practitioners' belief that there is evidence that implementing a brief alcohol intervention to the STOP program will be beneficial.

Most practitioners (17/23) believed there is evidence demonstrating the effectiveness of addressing alcohol in a smoking cessation program.

"it's not a separate issue. They can address both at the same time and people can be successful at addressing both two addictions." Interview 18

"When you get into smoking cessation, of course we all know the relevance [of addressing alcohol]"
Interview 14

"I really support the fact that you can stop everything at once because everything comes together half the time, anyway. You increase your smoking with your alcohol use. You associate these things quite a bit together, so it's excellent to stop everything at the same time." Interview 16

However some practitioners (n=6) voiced concerns that addressing alcohol may negatively affect participants' smoking cessation efforts.

"If you [try to] fix everything at once they end up not doing anything. They get discouraged and they get dismayed and they just, fall off wagon. So, you've got to figure out which is the most important and...thing to do right now. Tackle that and get some success and then you can start tackling the others. So, my stance is if...perhaps that is the case with addiction too. So, again, with the alcohol thing, I really don't think it's something to be pursued at that appointment. At that baseline appointment. Yeah. Mention it but other than that, move on and let's stick with your priority because, you've already identified the...that you want to give up smoking." Interview 10

Even when practitioners believed it was important to address alcohol and smoking at the same time, many participants (n=13) expressed some concerns with using the CCS guidelines to screen for alcohol use:

"I think that, you know, guidelines aren't black and white. Right? ... I think there needs to be some professional judgment." Interview 21

"The average person will go home and have a drink after work right? So, or a couple drinks one day and then you know, maybe a couple another day and then, you know, they're at their seven. So, some of the providers thought that maybe that number was kind of low." Interview 9

(2) Supports: practitioners' perception that there are sufficient resources to support the implementation of COMBAT, including staff, training, staffing, technology supports, data systems and administration.

Practitioners mentioned there were some resources in place at their clinics to support the implementation of COMBAT, but that much more was needed. Organizational limitations were frequently cited as a barrier to providing a brief alcohol intervention. Eighteen practitioners pointed to time as the most prominent barrier for implementing the COMBAT intervention.

"I feel the questions are relevant, the intervention is relevant. It's just a matter of whether or not we're able to do it in that given timeframe." Interview 20

"The actual questions themselves don't take up very much more time. The only thing is that if you get into discussing them that does take a lot of time. And I think the whole idea is to discuss it, but I don't always."
Interview 13

In order to address the time barrier, some practitioners (n=7) reported that their organization implemented an adaptation to address time constraints, including lengthening the initial appointment, allocating extra time each day for completing documentation and changing scheduling practices. Most of these practitioners (5/7) were from organizations randomized to the control arm of the study.

Training was another issue that was frequently reported as a major barrier for implementing COMBAT. Nineteen practitioners expressed desire for more training; however, the majority (n=15) of these practitioners had not attended any of the online training webinars offered by the study team. Practitioners who viewed the webinar had more favourable attitudes towards implementing the COMBAT initiative, and some credited this directly to watching the webinar:

"The webinar I listened to help reinforce that it's not a separate issue. They can address both at the same time and people can be successful at addressing both two addictions." Interview 18

Many respondents (n=19) including those who attended the webinar, expressed need for further training on the evidence of addressing alcohol and tobacco simultaneously, as well as techniques and tools that can be used during the intervention.

"I think if people understood that a little bit more, then maybe they might put a little bit more, I can say 'effort', because I think everyone puts effort into it but kind of think about framing. Because if you really understand the relationship and its impact that alcohol has on people's ability to quit smoking, that I think that if you really understand that, then you'll frame it in the sense it'll be better received and try to help people." Interview 4

Practitioners in the intervention group had mixed views about the CDSS, reporting benefits but also questioning some of the algorithms embedded in the CDSS. Most practitioners in the intervention group (n=9) reported they found the CDSS guidance helpful, and that it helped them deliver brief interventions when needed.

"I think as far as the portal goes, it's easy-peasy. I mean it's very easy read, it's very easy fill in the blanks, and I mean to be me it's got all the options ... the reminders to give an [alcohol] intervention are great" Interview 11

However, some practitioners in the intervention group (n=6) also expressed some challenges with using the portal technology, including: questioning the accuracy of the CDSS scoring, experiencing portal slowdowns, or experiencing discomfort when a patient was able to view the practitioner's screen with CDSS messaging.

"It could be my calculations are off, but I just wondered sometimes if it triggered some of them for being over when they weren't." Interview 17

"Sometimes I'm like, 'Oh, you know, are the patients seeing this.' Are they, you know, now going to be on guard that they see this popup that it's indicating that they have an alcohol addiction problem." Interview

Three practitioners mentioned that due to their lack of training in delivering an alcohol intervention, and/or their focus on smoking cessation, they would ignore the prompts:

“It's asking me to perform a brief intervention ... and I'm not going to do that because I'm not trained and because we're going to focus on your smoking.” Interview 10

Other technological barriers to effective implementation outside of the CDSS included the lack of secure email, which prevented practitioners from emailing resources to patients, as well as the lack of access to coloured printing, which many agreed was important for appeal of the educational resource.

(3) Usability: COMBAT has been clearly defined and operationalized in a way that fits with their context

There were mixed reviews regarding the operationalization of the COMBAT initiative and its usability. Most practitioners (n=19) found screening for alcohol was useful and they were happy to use validated assessments that could allow patients to reflect on their drinking.

“I think it's been really good, because there is more of an awareness on the client's perspective of the fact that if they said that they do drink then the questions are a whole lot more specific, especially when they, when it says, 'Yesterday was Friday' and the date and, 'How many drinks did you have that day?' And I take them through their week backwards, and I think that is a really good snapshot for them that, 'Oh, I really did have a lot more than I thought that I did.’” Interview 3

“It's nice to be able to point out some facts about the risks of cancer and alcohol use, and offer support around that. Because people won't realize if they're drinking too much until it comes up.” Interview 16

A common concern for practitioners working in clinics randomized to the intervention arm was that the CCS guidelines adopted by COMBAT were restrictive, and did not reflect the social norms. Some practitioners worried that if they intervene as prompted, it might end up stigmatizing patients.

“There's pushback ..., a lot of the counsellors had to do a lot of self-reflection. None of us smoke so, that was never an issue but we...now we bring in different substances and you're dealing with your own, personal...how you feel about it. ” Interview 5

“The average person will go home and have a drink after work right? So, or a couple drinks one day and then you know, maybe a couple another day and then, you know, they're at their seven. So, some of the providers thought that maybe that number was kind of low.” Interview 9

“It [the STOP Portal] warns you that they're drinking over the limit and all of that and binge drinking. And, they don't see that. And, I think society maybe we don't see that as a problem till three or four or five drinks” Interview 10

"So, I had two incidences yesterday where patient's may only drink once a week but on those occasions they might have five or more drinks and this triggers a whole line of questioning that I'm not sure is completely appropriate." Interview 12

"I don't want to set that stigma." Interview 17

Despite receiving training prior to the initiative launch, practitioners in the control arm did not seem completely aware of the CCS guidelines. When asked how they identified patients drinking above guidelines, most practitioners (n=9) used informal ways to score patients drinking.

"I don't add it up myself. And I don't report a specific number or anything in my EMR encounter. I just mention alcohol use." Interview 13

"I base it on the answers that they've given me throughout these questions. And you know, I've asked them if they feel alcohol is an issue." Interview 6

The few practitioners who reported using a scoring system (n=3) used the Canada's Low-Risk Drinking Guidelines.

"So, what I use are the, what's it called, the 'rethink your drinking' or the low risk drinking guidelines. That is what I use. So, if people are above that I tell them they are having too many drinks at a time." Interview 19

Another issue some (n=5) practitioners voiced was how COMBAT had operationalized the addition of the alcohol intervention to the patient's first visit. They preferred to move the brief intervention to the follow-up appointment. However, since this concept was un-probed, it is possible that additional respondents also felt this way but did not express it during the interview.

"So, my process has always been when I do my smoking education with patients we get them started and then usually it's only at the second appointment that I address these issues. So, that's why I find it really hard with the initial assessment when we're talking about the alcohol right away, right? Because, typically my second appointment with folks they start talking about triggers. How did it go and where's your trigger? And that's where we get into you know, the link with alcohol and smoking. And how much are you drinking and... So, the flow for me to do it when I've just met the patient and enrolling them in the STOP, it doesn't seem quite right..." Interview 18

"It's a question that we'd much rather delve into more deeply with...as far as COMBAT at a follow-up. [Because] we've developed a rapport and they're enrolled in the STOP and hopefully we haven't scared them away and they come back for follow-up. And that's a really good time to talk about other triggers...You're just shifting it. You're just sort of...even at the initial visit you cou...you still saying the connection between the two and the importance of it and you know, when I see you next time or maybe at another time, would it be okay if we talked about that a little bit more and I don...no one would say no. A few people would say no. Yeah, it's just a lot for a first visit." Interview 5

(4) Needs: practitioners' perception that their patients would benefit from COMBAT.

Practitioners were asked about the need for an alcohol intervention among STOP program participants. Most participants (18) felt an alcohol intervention was needed due to: its connection with smoking behaviours; prevalence of high drinking levels in their patient populations; and the frequent underestimation of drinking risks in primary care.

"I think it's very relevant. I think it's an important conversation to have, particularly in primary care just in general." Interview 23

"How important it truly is in its relation specifically to smoking cessation ... The two go hand-in-hand, you know what I mean? ... And, often the biggest reason why people, especially young people, don't quit is because of alcohol. Almost every 20-something that I have that can't quit smoking, it's always they do good on the week and then they go on the weekend, they're out with their friends and then their smoking again." Interview 4

A few practitioners (5) felt there was no need to address alcohol in the STOP program since their patients were facing more pressing issues:

"There are more important issues right now than alcohol. It's not that much of a big issue in our centre. You know, there are other you know...diabetes is very important. We do have an increase in diabetes in our community and COPD. So, alcoholism is not a big issue. So, these questions have you know, they're there. I need to do them but they're not really helping in any way." Interview 7

Only one practitioner mentioned there is a need for this intervention; in order to reduce cancer risks.

(5) Fit: COMBAT fits with current initiatives in the organization, priorities, structures and supports, and community values

All participants commented that the COMBAT initiative fits well with the priorities of their clinic and with the STOP program.

"I feel that the smoking cessation encompasses their alcohol, their eating, their sleeping, their... everything's a part of it, so I feel that I'm doing diligence if I offer them, you know, more information about some of the things that might arise because of their smoking cessation or something that's already a co-addiction" Interview 2

However, some practitioners were concerned that even though the alcohol intervention fit well with their clinics, it did not fit well with some of their patients, in particular men and younger adults. They voiced how both men and younger adults were generally more resistant to the screening questions and less likely to think their drinking is an issue, while women tended to be much more willing to accept resources.

"I would probably say the gender issue is very relevant. Most of my male patients seem to feel that they'll be just fine. So, they don't seem to want any additional information around it." Interview 20

Many respondents (n=11) reported that addressing alcohol with their clients was very difficult because alcohol is so normalized in our society.

"Where my people, most of them are...especially the men obviously more than the women are the heavy smokers of two packs a day. You know, drink a 24 on the weekend kind of thing. Or come home from hunting and drink three or four beer every night kind of thing. So, it's certainly an excess and they know that but they're not going to...that's what they've done, that's what their father did, that's what their son did; that's just what they do." Interview 17

Some practitioners (n=7) also described social determinants of health as barriers to the appropriateness or fit of this intervention among their patient populations. Respondents explained that unstable housing, trauma, poor support systems, and other precarious circumstances often meant their patients were less likely to be receptive to the intervention or take-home resources.

"As far as the type of patients who are declining? Again, our demographic here, we do have a lot of people on social assistance, low education, low income who have a lot of other social determinants of health issues that they're struggling with, and I feel like that's definitely a barrier. It's almost like their lives are too overwhelming to take it on." Interview 9

Practitioners frequently said that patients are often already stressed by the thought/task of quitting smoking, the added alcohol layer often seems irrelevant or overwhelming to them.

"For a lot of them it's already hard enough to come in to talk about their smoking...I just found... you know, if they're coming in, they know they're coming in for smoking, they're open for that. And, I just at first found that when you start asking about the alcohol it starts...kind of made some people feel uncomfortable or you know, why are you asking me all these questions." Interview 17

A few practitioners in the control group (3) mentioned that the alcohol abstinence resource did not fit with the harm reduction framework they use in their clinic, so they preferred to offer the alcohol reduction resource whenever intervention was needed. The COMBAT intervention provided the option of two educational resources. The first resource encouraged alcohol reduction for patients drinking above CCS guidelines but not at risk of alcohol dependence. The other resource encouraged alcohol abstinence for patients at risk of alcohol dependence, as determined by the Alcohol Use Disorders Identification Test (AUDIT 10) questionnaire (33).

"We work from a Harm-Reduction perspective here...We do try to work with clients who use alcohol in a way that reduces the harm. Often times, abstinence is not a goal for the client or not realistic at this time so kind of working with the client where they're at." Interview 1

(6) Capacity to Implement: clinic has the capacity to implement COMBAT as intended and to sustain and improve it over time.

None of the practitioners reported having financial barriers to implement the COMBAT program. However, nine practitioners highlighted the lack of staff in their clinics or supports in the area as a barrier for them to implement the COMBAT initiative:

"We only have one Social Worker; one full-time Social Worker and wait time for people in our area to get mental health counseling can be up to six months. So, you know, that's the thing we've, you know, we've ripped off the Band-Aid and we have no way of stopping the bleeding at this point. So, because we have very few mental health resources here in this area, Psychiatry, Mental Health Services in the community. Even in our own clinic, we just don't have the mental health support." Interview 12

A common phrase that came up when practitioners explained they lacked the capacity to implement COMBAT with fidelity, especially to provide the brief intervention, was they felt that they were 'opening up a can of worms'.

"Now I've opened a whole can of worms, now what? They came to see me for smoking and now I know about drinking...it's a lot." Interview 5

"So, if you identify it, then you've opened up a full can of worms and then you need to do something with it...because now you own it, for the most part. So, I guess it's that follow up piece. It's great to identify the issues but what's going to be in place to deal with it?" Interview 12

"It's like opening up another can of worms. And, right now we're trying to deal with the smoking cessation, right? Like, one thing at a time." Interview 9

Discussion

In our study, practitioners generally reported positive attitudes toward the inclusion of alcohol screening questions, and reported systematically using these questions to screen their patients for risky alcohol use. Most practitioners felt addressing alcohol in smoking cessation treatment was important and effective. However, many practitioners were not always in agreement with, or aware of, the established alcohol guidelines, and reported using subjective judgement or non-systematic methods of assessing whether or not to provide a brief intervention alcohol intervention. When they did report using a guideline to score participants' answers, it was the Low-Risk Drinking Guidelines (34) which have higher drinking cut-offs than the CCS drinking guidelines. Similar to other studies, our study showed that practitioners' decision to provide a brief intervention is heavily influenced by the social acceptability of alcohol, which acts as a barrier to practitioners offering brief interventions (35-37).

Moreover, the majority of practitioners in our study identified lack of training as a major barrier in addressing alcohol as a part of smoking cessation; which is similar to what has been reported in other studies (37-40). While only a few practitioners had attended at least one of the two webinar trainings provided by COMBAT, practitioners who had attended a webinar still expressed a need for more training. Unlike what has been observed in the literature (41), online webinar trainings did not appear sufficient in

helping practitioners feel prepared to deliver SBIRT. Given that lack of training was identified as a major barrier, it may be important for future programs to invest additional resources more intensive forms of trainings (i.e. longer duration, in-person) to increase practitioner's confidence and capacity to deliver the intervention.

Also comparable to what has been observed in other studies, the practitioner's beliefs about how the patient would be impacted strongly influenced the practitioner's decision to provide the intervention. Some of the concerns raised by COMBAT practitioners that have also been raised in the literature included: patients presenting with other issues (36), and concerns of stigmatizing patients (35, 37, 42). As a result, trainings for practitioners should also focus on identifying the practitioner's current beliefs and developing strategies to address them.

Another barrier to delivering the intervention as intended was whether the intervention aligned with the practitioner's own treatment plan for their patients. For example, some COMBAT practitioners shared that they preferred to address alcohol use with their patients at the second or third visit, instead of the first. As a result, these practitioners chose not to offer the alcohol intervention or resources. This finding is, again, similar to what other researchers have found (36).

In contrast to previous studies (37, 43), practitioners reported the screening questions were useful for understanding their patients' alcohol consumption. Moreover, practitioners participating in the COMBAT Trial did not engage mechanically with the CDSS. As has been reported elsewhere (44), practitioners would only follow the CDSS instruction if they believed it to be accurate and an appropriate treatment approach for their patients.

These findings help us understand some of the quantitative findings of the trial, including the observation that most participants were screened for alcohol use (99.6%) but fewer provided a brief intervention (26). The results of this qualitative study show that most participants found screening STOP participants for alcohol use meaningful and useful. The results also help with understanding why no significant differences were observed in practitioners' likelihood of offering an alcohol intervention to eligible patients, between the practitioners' randomized to clinics with a CDSS and those randomized to clinics without the CDSS. It is unlikely that practitioners will offer a brief alcohol intervention and provide an educational resource to their patients, regardless of the presence of a CDSS, if they do not perceive it as needed for their patient population. This finding contributes to the growing literature of partial implementation of technology in health service settings (45).

For this study we used the Hexagon Tool as a framework to understand the barriers and facilitators of implementing an alcohol intervention into the STOP program (32). Even though this framework is primarily used as a planning tool to guide the selection of a program to implement, it also proved useful as a framework to understand what enabled and hindered practitioners in implementing COMBAT as intended. For interventions that have already been implemented, the Hexagon Tool helps with understanding whether or not the intervention was appropriate for the local context (32). It is able to break down the pragmatic dilemmas - organizational (need, fit and capacity) and program specific

(evidence, support and usability) - that practitioners faced, and how it affected their ability to deliver the intervention (32). As a result, the Hexagon Tool is able to help us identify the gaps in the intervention and how we can improve its design for future programs.

Limitations

There are two main limitations to our study. First, interviews were conducted before we knew the trials' results, specifically that CDSS did not increase practitioner likelihood of offering an alcohol intervention but did increase the acceptance rate of an educational alcohol resource by patients. As a result, we did not probe to understand practitioners' perceptions on how the CDSS influenced their decision to deliver of the brief intervention. Second, it sampled the views of a small number of STOP practitioners who implemented the COMBAT initiative. It is possible that the perspectives of practitioners who took part in the qualitative interviews may not reflect the views of practitioners who did not participate. However, the intensity sampling methodology we used allowed us to interview practitioners from diverse clinic settings (FHTs, CHCs, and NPLCs) study arm (intervention and control) and belonging to clinics which provided the resource frequently and infrequently. In addition, our high response rate, 92%, and the similarity of the identified themes to previous qualitative research in this field strengthens the validity this study and supports the applicability of the result.

Conclusion

The results of the qualitative interviews with STOP practitioners add to our understanding of factors that are necessary to successfully embed a brief alcohol intervention into an existing smoking cessation program delivered in primary care settings. Our findings suggest that, despite the introduction of a CDSS aimed at encouraging brief alcohol intervention delivery in a smoking cessation program offered in primary care clinics in Ontario, the goal of an effectively embedded preventative care pathway for alcohol remains tenuous. Although more trainings and supports for health care practitioners might help embed the delivery of brief interventions over time, the results of this study show the need to change social norms regarding alcohol; in order to effectively embed alcohol interventions into a smoking cessation program in primary care clinics. It was clear that the beliefs of practitioners are reflective of a larger sociocultural context. Since 2015, Ontario has been changing its laws to make alcohol more accessible (46). The Liquor Licence Act of Ontario (2015) was changed to allow grocery stores in Ontario to sell wine, beer and cider. The 2018 campaign promises to decrease the price of beer, the revamping the sales policy of alcohol to extend the hours alcohol can be sold in the province. The 2019 Ontario budget expanded access to alcohol by allowing: drinking alcohol in parks, tailgating at sporting events, earlier opening hours for bars, and relaxing alcohol-advertising rules. In this context, it seems unlikely that societal perceptions regarding alcohol will change in a way that would encourage more health practitioners to offer patients a brief alcohol intervention. However, as previous research has found these same policies may increase the need for such interventions (47, 48).

List Of Abbreviations

AUDIT: Alcohol Use Disorders Identification Test

CAMH: Centre for Addiction and Mental Health

CCS: Canadian Cancer Society

CDSS: Clinical Decision Support System

CHC: Community Health Centres

COMBAT: **C**ombined **A**lcohol and **T**obacco

FHT: Family Health Teams

NPLCs: Nurse Practitioner-led Clinics

SBIRT: Screening, Brief Intervention, and Referral to Treatment

STOP: Smoking Treatment for Ontario Patients

Declarations

Ethics approval and consent to participate: The study was reviewed by the research ethics board at the Centre for Addiction and Mental Health (approval number: 035-2015). Informed consent from health care providers' to participate in the study was obtained via written consent before the interview was conducted.

Consent for publication: Not Applicable

Availability of data and material: The datasets generated and/or analysed during the current study are not publicly available but are available from the corresponding author on reasonable request.

Competing interests: The authors declare that they have no competing interest with regards to this manuscript. However, some authors have general disclosures to report. PS reports receiving grants and/or salary and/or research support from Centre for Addiction and Mental Health, Health Canada, Ontario Ministry of Health and Long-Term care, CIHR, Canadian Centre on Substance Use and Addiction, Public Health Agency of Canada, Medical Psychiatry Alliance, Canadian Cancer Society Research Institute, Cancer Care Ontario, and the Ontario Institute for Cancer Research, McLaughlin Centre, Academic Health Sciences Centre, Workplace Safety and Insurance Board, National Institutes of Health, The Association of Faculties of Medicine of Canada. PS also reports receiving funding from the following commercial organizations Pfizer Inc./Pfizer Canada, Bhasin Consulting Fund, Shoppers Drug Mart and Patient-Centered Outcomes Research Institute, ABBVie, Bristol-Myers Squibb; and has received consulting fees from Pfizer Inc./Pfizer Canada, Johnson & Johnson Group of Companies, MedPlan Communications, Evidera Inc., Kataka Medical Communications, Miller Medical Communications, Nvision, Insight Group,

Sun Life Financial, Inflexxion Inc.. Through an open tender process, Johnson & Johnson, Novartis, and Pfizer Inc. are vendors of record for providing smoking cessation pharmacotherapy, free or discounted, for research studies in which PS is the principal investigator or co-investigator. BL has obtained funding from Pfizer (GRAND Awards, including salary support) for investigator-initiated projects. BL has/will received some in-kind donation of cannabis product from Canopy and Aurora and medication donation from Pfizer and Bioprojet and was provided a coil for TMS study from Brainsway. BL has/will perform research with industry funding obtained from Canopy (through research grants handled by CAMH or University of Toronto, Aphria (through research grants handled by CAMH or University of Toronto), Bioprojet, ACS and Alkermes. BL has received in kind donations of nabiximols from GW Pharma for past studies funded by CIHR and NIH.

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Authors' contributions: PS, NM and AN conceptualized designed and supervised the study. LZ, BL, JR, NG, AS and DB provided input on the study design. ML conducted the interviews and was supervised by AN. NM and ML analyzed the data, and NM drafted the manuscript. AN, LZ, BL, JR, NG, AS and DB provided input on the interpretation of the results. All authors participated in the critical revision of the manuscript and approved the final report

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