Outcome of a “modified brief intervention” program delivered at work place for a population with hazardous alcohol use

**ABSTRACT**

**Introduction:** At the population level, screening and brief intervention (BI) is the most cost-effective method to reduce the burden of disease due to hazardous alcohol use. In delivering BI at individual level, trained workforce as well as time is a limiting factor. Hence, a study was conducted to assess the outcome of a “modified brief intervention” program delivered at workplace in a group setting for the participants identified with hazardous alcohol use pattern, as a secondary prevention measure.

**Materials and Methods:** Study was a pre- and post-intervention study without a control group. Following an educational lecture, conducted by a mental health team including a psychiatrist, participants were screened using the WHO ASSIST questionnaire, V3.0 version. Those screened positive for hazardous alcohol use were given “modified brief intervention” in a group setting at their workplace which consisted of two semi-structured sessions of 1-h duration each. The sessions were spaced in a month. First session was based on motivation enhancement measures along with gathering of current alcohol use details and second session focused on relapse prevention. Three months later, the outcomes were assessed using a semistructured questionnaire and ASSIST was reapplied. The analysis was done using the R-commander from R-software.

**Results:** No significant difficulty was experienced in conducting the interventions. Fifty (55.6%) participants stayed alcohol abstinent following second session and another 22 (24.44%) had reduced both the quantity and frequency of use. Paired *t*-tests revealed statistically significant reduction in all secondary outcome parameters (ASSIST scores, usual dose in one sitting, maximum dose, and number of days of use in month). Eighty (88.89%) participants reported the program to be effective. Only 3 months of observation is a limitation.

**Conclusion:** The study provides an efficient secondary prevention model to reduce hazardous drinking at the population level needing less workforce, cost, and time.

**Keywords:** ASSIST, brief intervention, hazardous alcohol use, secondary prevention

Adverse effects due to alcohol use are a ubiquitous problem throughout the world, and no working community is immune to it. The World Health Organization (WHO) global status report on alcohol and health 2018 stated harmful use of alcohol resulting in 3 million deaths (5.3% of all deaths) worldwide, and 132.6 million disability-adjusted life years (DALYs) which amounts to 5.1% of all DALYs, in the year 2016. Worldwide, alcohol was responsible for 7.2% of all premature (among persons 69 years of age and younger) mortality in 2016. Mortality resulting from alcohol consumption was higher than that caused by diseases such as tuberculosis, HIV/AIDS, and diabetes. The alcohol attributed disease burden was the highest in low-income and lower-middle income countries when compared to upper-middle income and high-income countries. Alcohol is the only psychoactive and dependence...
producing substance, with significant global impact on population health, that is not controlled at international level by a legally binding regulatory framework. The WHO stressed the importance of reducing alcohol use globally to attain the sustainable development goal 3 (ensure healthy lives and promoting well-being for all at all ages).\cite{1}

Hazardous use of a drug is defined as use of that drug in amounts that will probably lead to harmful consequences for the user.\cite{2} In ICD-11, hazardous alcohol use is included in a separate chapter as a health risk factor and is defined as “a pattern of alcohol use that appreciably increases the risk of harmful physical or mental health consequences to the user to an extent that warrants attention and advice from health professionals.”\cite{3,4} The increased risk may be due to frequency of use, from the amount used on one occasion, or from risky behaviors associated with alcohol use or the context of use. The use pattern has not yet reached to the state of having resulted in harm to physical or mental health of the user or others around the user. The treatment for reducing/stopping use of alcohol after a person is dependent on it is usually prolonged and difficult due to neurobiological and psychosocial adaptation. Hence, the WHO emphasizes efforts which aim to reduce the hazardous/harmful use of alcohol.\cite{5}

The prevention of alcohol use-related harms at an early stage is an important measure to ensure satisfactory work output by anybody. The secondary prevention includes measures which identify and treat people who have developed preclinical stages or early stages of disease but yet not the overt signs of illness or its complications. Alcohol brief intervention (ABI) is a short, evidence-based, structured conversation about alcohol consumption with a patient/service user that seeks, in a nonconfrontational way, to motivate and support the individual to think about and/or plan a change in their drinking behavior to reduce their alcohol consumption and/or their risk of harm. At the population level, screening and brief intervention (BI) is the most cost-effective method to reduce the burden of disease due to hazardous alcohol use.\cite{6} Screening and ABI methods have also been shown to be among the most effective and economical secondary prevention services to be delivered in primary health care settings.\cite{7}

BI has two stages. The first stage is screening to identify the extent of substance use. Alcohol Use Disorder Identification Test is the most commonly used tool for screening purpose.\cite{7} However, many other screening tools have also been used. The second stage is personalized BI procedure which is carried out, based on the information derived from screening. The intervention content can range from brief advice to motivational interviewing, advice approaches (such as FRAMES),\cite{8} motivational enhancement therapy, cognitive behavioral approaches, or a combination of the above.

The intervention can be a single session to several sessions of brief counseling to address more complicated conditions.\cite{9,10} Each session can last from 5 min to as much as 135 min.\cite{11,12} There is extensive evidence for the effectiveness of ABI in reducing alcohol consumption for up to a year. It is more useful for hazardous drinking clients than those with the features of alcohol dependence.

Primary care setting is most commonly used for delivering BI. However, ABI has also been delivered in college, hospital, accident, and emergency and community settings.\cite{13-16} A systematic review and meta-regression analysis by Platt et al. showed a modest effect of BI in the primary care setting but limited efficacy in community settings and college settings.\cite{17}

ABI but does not require highly skilled training in the management of substance use disorders and can be provided by counselors, nurses, general practitioners, and other primary health-care workers with a brief period of training in delivering ABI.\cite{5,6,18}

Estimates of the prevalence of hazardous drinking in different communities have ranged from 6% to 32%.\cite{19-22} A study on male industrial workers in India reported the prevalence of hazardous drinking to be 21%.\cite{22} In absolute terms, this translates into a very large number. Typically, ABI is delivered face to face to a client. Availability of trained workforce as well as time are limiting factors, in delivering ABI at individual level for whoever screened positive for hazardous alcohol use during a screening drive. In a country like India where trained workforce is extremely scarce, delivering ABI in one to one sessions may not be feasible. Conducting ABI in a group setting is more practical. However, there have been very few published studies on ABI delivered in a group setting. Structured BI in a group setting, in the United Kingdom, for family members living with substance misuse had shown promising results with respect to reduction of impact of the problem as well as positive changes in coping behavior.\cite{23} A pilot study of ABI delivered to adolescents in a group setting showed preliminary evidence of effectiveness.\cite{24} These studies have indicated that BIs can be delivered in a group setting too with success. Hence, this study was conducted to assess the feasibility and outcome of a novel “modified brief intervention” program delivered at workplace in a group setting for those participants identified with hazardous alcohol use pattern, as a secondary prevention measure.

**Aim of the study**

To assess the feasibility and outcome of a “modified brief
intervention” program delivered at workplace in a group setting for participants who are identified with hazardous alcohol use as a secondary prevention strategy.

Objectives

1. To develop a feasible and tentatively effective “modified brief intervention” program in consultation with stake holders of the community, to be delivered at workplace, for participants with hazardous alcohol use problem, in multiple sessions
2. To form a group of participants with hazardous alcohol use who can take part in entire program of “modified brief intervention”
3. To assess the difficulties faced during the process
4. To assess the outcome of the program by assessing the changes in the desired outcome parameters.

MATERIALS AND METHODS

The program was carried out by a 03 member mental health team comprising of a psychiatrist, and psychiatric nursing staff from a large tertiary level hospital between September 2017 and April 2018. To begin with the program, a brainstorming focused group meeting was held between the hospital authorities and administrative authorities of the community for whom the program was planned to be delivered. The points discussed and suggested during the session were noted, and a detailed program was envisaged. The program was based on the tenets of ABI which included screening and delivery of intervention except that it was to be delivered in a group setting, at the workplace of the participants.

For screening purpose, Alcohol, Smoking and Substance Involvement Screening Test (ASSIST), Version 3 developed by (World Health Organization, Geneva, Switzerland) was used.[23] ASSIST is a brief screening questionnaire to find out about the pattern of psychoactive substance use. It was developed by the WHO and an international team of substance use researchers as a simple method of screening for hazardous, harmful, and dependent use of alcohol, tobacco, and other psychoactive substances. The questionnaire consists of total of 8 (eight) questions which provides the information on lifetime use, use during the past 3 months, problems related to use, risk of current or future harm, dependence, and injecting drug use. The specific score range exists for the stages of use for each substance, for instance score from 11 to 26 indicated hazardous use of alcohol. The ASSIST can help warn people that they may be at risk of developing problems related to their substance use in the future and provide an opportunity to start a discussion about their substance use. It has a high reliability factor (test-retest kappa coefficients ranged from 0.58 to 0.90 for question stems and from 0.61 to 0.78 for specific substance categories). Multiple global trials noted the questionnaire to be highly valid in diagnoses across genders and cross culturally.[26]

The major components of the program were as follows:

a. First phase – Psychoeducation lecture of 30 min duration stressing the importance and nature of the program, measures ensured to keep the confidentiality of the participants and the personal rights of the group screened positive for hazardous use of alcohol, as well as the voluntary nature of participation in the program. A verbal informed consent was obtained before the start of screening. Subsequently, ASSIST questionnaire was applied. After completion of the first phase, individuals who screened positive for hazardous use of alcohol were informed about their problem in a confidential manner. Their availability as well as preparedness for the subsequent interventions till the end of the program was confirmed and their consent for the second phase obtained.

b. Second phase – Those who screened positive for hazardous use and consented to attend the program till end, were made into a group at their respective working locations. Subsequently, 02 semi-structured sessions of 1 h duration were carried out at their working place. The first session was based on motivation enhancement measures along with gathering of current alcohol use details. The second session focused on relapse prevention. The two lectures were spaced out with a month gap in between. The sessions comprised of information dissemination and participative discussion with plenty of audio-video presentations using computer. The presentations were largely uniform in nature though explanations differed according to the needs expressed by participants. Participants were encouraged for seeking clarifications as well as advice for help anytime throughout the session.

c. Third phase – Assessment of the outcome of the program after 3 months of last intervention session using a semi-structured questionnaire and reapplication of ASSIST.

Study was a pre- and post-intervention study without the control group. The results were analyzed using R Commander Package” in “R Software,” version 3.1.0, a Graphic User Interface (GUI) for the R programming language, licensed under the GNU General Public License, and developed and maintained in the sociology department at McMaster University, Ontario Canada. Categorical data were described by frequencies and associations were analyzed using the Chi-square/fisher test. Continuous data were described by mean/standard deviation (SD) and associations analyzed using the Student’s t-test/paired
One hundred and six participants screened positive for hazardous use of alcohol and consented to be part of all phases of intervention. They were included in the study. Ninety participants (84.90%) completed the study. The mean age of the participants was 38.62 years (sd-6.98). The mean age of onset of alcohol use was 25.27 years (sd-4.95). Mean years of service was 18.61 years (sd-6.78).

Fifty participants (55.56%) had stayed abstinent from alcohol after intervention in the prior 3 months before final assessment. Another 22 (24.44%) participants had reported reducing both quantity of alcohol being consumed as well as frequency of the use. Fifty-three (58.89%) participants had reported the lack of detail knowledge about alcohol-related harm before intervention. Twenty out of forty (50%) who still were using alcohol attributed it to party occasions. Eighty participants (88.9%) expressed that the program was very useful [Table 1].

Average amount of alcohol consumed in one sitting before intervention was 93 ml (sd-38.70) and the same was 38.67 ml (sd-51.91) after intervention which was statistically significant (paired t-test t-value = 10.88, P < 0.0001). Average maximum amount of alcohol consumed in one sitting before intervention was 172 ml (sd-59.12), and after intervention, it was 65.33 ml (sd-88.88). The difference was statistically significant (paired t-test t-value = 12.22, P < 0.0001). The average number of days when alcohol was consumed in a month, prior to intervention was 4.79 days (sd-4.57) and the same after intervention was 1.62 days (sd-3.21) which again was statistically significant (paired t-test t-value = 6.57, P < 0.0001). The average score of ASSIST-alcohol subtype before intervention was 17.68 (sd-6.11). The same was 6.56 (sd-4.16) after intervention, and the difference was highly significant (paired t-test t-value = 15.99, P < 0.0001) [Table 2]. Maximum amount of alcohol used in a sitting before intervention had a significant association to the primary outcome (abstinent vs. nonabstinent = 151.2 ml vs. 198 ml, t-value = -4.04, P < 0.0001). Same was the case with average number of days in month when alcohol was consumed before intervention (abstinent vs. nonabstinent = 3.14 days vs. 6.85 days, t-value = -4.16, P < 0.0001). Average dose of alcohol consumed in one sitting too had significant influence on final abstinent status (abstinent vs. nonabstinent = 79.8 ml vs. 109.5 ml, t-value=-3.89, P < 0.0002). The presence of domestic problems, prior knowledge of ill-effects of alcohol, whether staying with family or not and age of onset of use did not influence the primary or secondary outcome parameters [Table 3].

**RESULTS**

This intervention was devised according to the tenets of ABI, except that the delivery was done in a group setting at the place of work of the participants. There were no major problems encountered in conducting the program after the initial brainstorming session with the stake holders of the community for whom the program was to be held. However, the mental health team needed to frequently liaise with administrative authorities for ensuring the presence of the participants on the day of the program. For this purpose, the availability of those participants screened positive for hazardous use were sought in the beginning itself, for the entire duration of the program and subsequent plans were made according to it. Even then, 16 participants could not complete the study.

Study participants were largely homogenous in nature since all were from similar service background with nearly 20 years of service, none had any serious medical or psychiatric side effects due to alcohol use, and none had reported any domestic problems. About 70% were staying with their families and nearly 60% had less knowledge about alcohol, all of which gave a chance for making a nearly uniform intervention program.

The encouragement given to the participants in clarifying the doubts as well as for asking help needed, made the sessions

### Table 1: Primary outcome variables

| Description | n (%) |
|-------------|------|
| Total number of soldiers who attended all the intervention modules (completers) | 90 (out of 106=84.90) |
| Total number of completers who remained abstinent from alcohol after last intervention for next three months | 50 (out of 90=55.56) |
| Total number of completers who reported reduction in quantity and frequency of alcohol use after last intervention for next three months | 22 (out of 90=24.44) |
| Total number of completers who were benefitted by the intervention | 50+22=72 (out of 90=80) |
| Total number of completers who reported lack of detail knowledge prior to intervention | 53 (out of 90=58.89) |
| Total number of completers who reported the program being useful | 80 (out of 90=88.9) |
participative and dynamic in nature, thereby fulfilling the nature of BI procedure. A gap of 1 month after first intervention session helped the participants to try out the knowledge gained into action and factors resulted in lapses could be discussed during the second intervention session which was based on relapse prevention model. The assessment after 3 months following the last session gave a chance to understand the early success/failure of the program.

No participant was met with a negative reaction from the working environment, and none were labeled as alcohol abusers. The authorities gave a positive outlook toward the program as it involved early attention of the problem before more difficult managerial issues as well as loss of trained workforce is arisen.

At the end, 55.56% of the participants staying alcohol abstinent was an encouraging result. Another nearly 24.44% significantly reducing the amount and frequency of alcohol intake raised the total people benefited from the program to nearly 80%. All secondary outcome parameters were significantly reduced following the intervention. In those who could not stay abstinent after the program, the already existing usual and maximum dose in one sitting as well as the frequency of the use was significantly higher than those who stayed abstinent after the program which reflects the need and the importance of programs like this which reduces the amount and frequency of alcohol use. Many were harboring glamorous myths about the medical, psychiatric, and social complications of increased alcohol use. Many were neither aware of “path to care” for attending to this problem nor the organizational policies on the subject.

The fact that this program was held at the workplace, without much cost factor involved, with larger clientele being attended in a short time span with less workforce points toward the need for more regular and refined such programs. The intervention module was not so highly technical that only a specialist trained in addiction psychiatry or a general psychiatrist could deliver it. After a brief training in subject, any health-care worker can deliver the same which will widen the reach and benefits of such programs to far-flung areas and larger clientele. The same model needs more trials with different working group populations with modifications as per the requirements of the individual group.

The study provides an efficient secondary prevention model with less workforce and time requirement to reduce hazardous drinking at population level. Since the program was novel in its nature, it cannot be compared to any previous models.

### Limitations
Three-month assessment of outcome after last intervention is a significant limitation of the study. Further long-term studies will be the answer for the problem. A “hawthorn effect” cannot be ruled out among the participants while postintervention reporting. Assessment of biochemical parameters prior and after intervention may possibly remove this problem. However, since all were in “hazardous

### Table 2: Secondary outcome variables

| Description | Prior to intervention (mean with SD) | Postintervention (mean with SD) | Paired t-test value and P (<0.05 taken as significant) |
|-------------|-------------------------------------|---------------------------------|-----------------------------------------------------|
| Amount of alcohol consumed in one sitting among completers | 93 ml (sd-38.70) | 38.67 ml (sd-51.91) | 10.88 and <0.0001 (significant) |
| Maximum amount of alcohol consumed in one sitting among completers | 172 ml (sd-59.12) | 65.33 ml (sd-88.88) | 12.22 and <0.0005 (significant) |
| Number of days when alcohol was consumed in a month among completers | 4.79 days (sd-4.57) | 1.62 days (sd-3.21) | 6.57 and <0.0001 (significant) |
| Score of ASSIST - alcohol subtype among completers | 17.68 (sd-6.11) | 6.56 (sd-4.16) | 15.99 and <0.0001 (significant) |

SD – Standard deviation; ASSIST – Alcohol, Smoking and Substance Involvement Screening Test

### Table 3: Variables influencing the outcome

| Description | Abstinent group (mean with SD) | Nonabstinent group (mean with SD) | Paired t-test value and P (<0.05 taken as significant) |
|-------------|-------------------------------|----------------------------------|-----------------------------------------------------|
| Amount of alcohol consumed in one sitting | 79.8 ml (sd-31.85) | 109.5 ml (sd-40.51) | -3.89 and <0.0001 (significant) |
| Maximum amount of alcohol consumed in one sitting | 151.2 ml (sd-57.17) | 198 ml (sd-51.20) | -4.04 and <0.0001 (significant) |
| Number of days when alcohol was consumed in a month | 3.14 days (sd-3.42) | 6.85 days (sd-5.01) | -4.16 and <0.0001 (significant) |

SD – Standard deviation
use” stage, the chances of biochemical abnormalities might be less. Although the groups had many things in common with respect to predisposing and perpetuating factors for the use of alcohol, there might have been individual differences with respect to familial, cultural, and ethnic backgrounds as well as ethos and culture of the working place and community. The delivery of program in working place locations partly resolved the issue, but still there could be heterogeneity of the group with respect to individual needs for help. Refining of the program in the form of separate sessions for those needing such helps in the working locations itself may be a way ahead. Although the program could be delivered by a team of mental health-trained professionals, such resources are scarce in our country. Hence, brief special training of paramedical staff as well as MBBS level doctors for the execution of programs of this nature is the way ahead for successful conductance of this novel module.

CONCLUSION

Alcohol use and adverse effects due to it is a major health hazard for entire human population. Attending to the problem at “hazardous drinking” stage produces much better results than at a stage when one is dependent on alcohol. Hence, a program like this “modified brief intervention” delivered at the work place is an efficient secondary prevention model for reducing “hazardous alcohol use” problem with less workforce, monetary, and time requirements. The short course of training followed by the delivery of this program by MBBS doctors and paramedical staff will further increase the reach and benefits of this model for a larger clientele. Such a program is very important in a lower-middle-income country like India where trained health-care providers are scarce and the alcohol attributed disease burden is high.

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Conflicts of interest
There are no conflicts of interest.

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