ORIGINAL ARTICLE

Development and Validation of a Culturally Adapted Motivational Enhancement Intervention for High-Risk Drinking

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ABSTRACT

Introduction: Excessive alcohol consumption is a growing concern in some indigenous communities in Sabah, affecting health, society, economy and wellbeing overall. With Sabah's rich cultural diversity, alcohol plays a traditional role in many ethnic groups. Addressing alcohol-related issues requires diverse approaches, with motivation being key to long-term success. Therefore, this study aims to develop a module to enhance motivation through an intervention method designed to change drinking behavior. Methods: An adapted module, sensitive to cultural practices, was designed to engage the indigenous communities' sense of responsibility in addressing alcohol consumption. A qualitative approach was used, involving 28 participants. The development of the intervention module occurred in two phases. In the first phase, participants were screened, and relevant data were gathered to inform the module's content. The second phase focused on designing the intervention, incorporating culturally appropriate strategies and motivational techniques. Results: The finalized module was developed based on insights gathered during both phases, ensuring it aligned with the participants' needs and cultural context. The module consists of 10 sections divided into 4 sessions over a 12-week period. The second phase includes guidelines to address drinking behaviors, helping individuals explore ambivalence, develop discrepancies, and overcome resistance to change. Conclusion: This study provides an additional methodology to address alcohol-related issues, contributing to the existing literature and offering practical insights for community interventions.
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INTRODUCTION

Malaysia is ranked among the largest consumers of alcohol in the world (1), with Sabah having the highest prevalence of risky drinking in the country, following Kuala Lumpur and Sarawak (2). The World Health Organization (WHO) (3) has reported that alcohol accounted for 132.6 million disability-adjusted life years (DALYs) globally, representing 5.1% of all DALYs in 2016. The WHO asserts that the harmful use of alcohol contributes to more than 200 communicable and non-communicable diseases and injuries (3). However, while substantial research has examined the health and social consequences of alcohol consumption, fewer studies have focused on culturally tailored interventions that effectively reduce drinking behaviors in specific communities, such as the indigenous populations of Sabah.

Alcohol plays a significant role in socializing, business, and family life, often accompanying food and festivities. For some indigenous groups in Sabah, alcohol consumption is a cultural practice that helps maintain their traditions (7, 8). Some ethnic groups in Sabah, such as Kadazandusun, Murut, Sungai, and Rungus (9), claim alcohol consumption as an important practice in their everyday lives. Jamali (9) found that these ethnics begin consuming alcohol as early as or before 15 years of age with traditional home-brewed alcohol such as Tapai and Montoku and later venture towards "western-style" beverages such as beer and spirits. While alcohol consumption is a cultural tradition, the shift towards increased and high-risk drinking patterns raises

concerns regarding its long-term impact on indigenous communities.

The Malaysian government employs various strategies to address alcohol-related issues, such as licensing alcohol sellers, enforcing minimum age laws, and increasing alcohol prices. Additionally, roadblocks and alcohol testing of drivers are part of these efforts. However, concerns regarding alcohol-related problems, road traffic accidents, and injuries have persisted from 2010 to 2016 (5). In Sabah, activities such as discussion groups, awareness workshops, and seminars aimed at empowering the community have proven effective in reducing alcohol-related harm (8). Despite these measures, existing interventions often focus on regulation and harm reduction rather than addressing individual motivation for behavioral change. Previous interventions, including educational campaigns and community awareness programs, have shown limited long-term effectiveness in modifying drinking behaviors among indigenous groups. A gap remains in interventions that incorporate both cultural sensitivity and psychological motivation strategies to foster sustained change.

The Malaysian government recognizes the consequences of alcohol abuse on individuals, communities, and nations. Numerous methods have been implemented to address these issues; however, most existing interventions lack a structured psychological approach that integrates motivation-based strategies within a culturally relevant framework. DiClemente (10), in his research on Motivational Enhancement Therapy, identifies motivation as a crucial factor in achieving long-term success in treating clients with alcohol problems. He asserts that motivation drives clients to seek, adhere to, and accomplish treatment goals. Additionally, the method of motivational interviewing (11) is a client-centered therapeutic approach that explores and resolves clients' ambivalence, leading to behavioral change. However, there is limited research on how motivational interviewing techniques can be adapted to indigenous cultural contexts to effectively encourage behavior change.

To address this gap, this study sought to develop a culturally tailored intervention module aimed at enhancing motivation to change drinking behavior among the indigenous communities of Sabah. The module was designed to be culturally sensitive, incorporating the cultural practices and beliefs of these communities. An adapted module, tailored to local cultural practices, was implemented in the intervention treatment to foster a sense of ownership among the indigenous communities. The intervention strategies were designed to enhance motivation, transfer knowledge, and deliver educational programs specifically tailored to the needs of the indigenous communities of Sabah. By integrating motivational interviewing principles with cultural values, this study aimed to bridge the gap in existing intervention approaches and provide a sustainable model for reducing alcohol-related harm.

METHODS

Design

This qualitative study, conducted between 2016 and 2017 in various villages in the West Coast Division, aimed to develop an alcohol intervention module using a structured approach. The study was carried out in two phases: (1) Screening participants to identify high-risk drinkers using the Alcohol Use Disorders Identification Test (AUDIT) and (2) Developing the intervention module. The module development followed the ADDIE instructional design model (Analysis, Design, Development, Implementation, and Evaluation) to ensure a systematic and evidence-based process. A combination of focus group discussions (FGDs), in-depth interviews, expert reviews, documentary analysis, and pilot testing was used to refine the module content and delivery.

Sample and Location

Purposive sampling was used to recruit high-risk drinkers from indigenous Kadazandusun communities in Sabah. Participants were screened using AUDIT, which categorizes drinking patterns into five levels: no problem, low risk, hazardous, harmful, and dependence (Babor et al., 2001) as presented in Table I. The sample size (N=28) was determined based on thematic saturation, meaning data collection ceased when no new themes emerged from FGDs. Participants ranged from 15 to 75 years old, with a higher representation of females. They were grouped based on gender and age homogeneity to encourage open discussions. Data saturation was confirmed through iterative data analysis. The background information of participants is summarized in Table II.

Table I: The interpretation of the AUDIT score

Score	Means
0	● No problem.
1 – 7	● Low risk of alcohol-related harm.
8 – 15	● High risk of experiencing alcohol-related harm (some people in this range will already be experiencing significant harm). ● Suitable for simple advice focused on reducing hazardous drinking. ● Appropriate for simple advice and brief education about alcohol consumption.
16 – 19	● A person scoring in this range will already be experiencing significant alcohol-related harm. ● Have a strong desire to consume alcohol, impaired control over its use, persistent drinking despite harmful consequences, a higher priority given to drinking than to other activities and obligations, increased alcohol tolerance, and a physical withdrawal reaction when alcohol use is discontinued. ● Recommended for brief counseling and continued monitoring to change drinking behavior, health education, skill-building, and practical suggestions.
20+	● A person scoring in this range may be alcohol dependent and is advised to see a healthcare professional about their drinking. ● It requires more intensive treatment than brief interventions. ● Require a withdrawal program to enable them to stop drinking, and ongoing interventions to remain abstinent (e.g. counseling, pharmacotherapy, self-help programs).

Table II: Demographic Background of Participants

Variables	Frequency (N = 56)	Percentage (100%)
Gender		
Female	29	51.8
Male	27	48.2
Age		
18 – 35 years	29	51.8
36 – 55 years	27	48.2
Status		
Single	24	42.7
Married	29	51.8
Divorce	3	5.5
Religion		
Christian	51	91.1
Muslim	5	8.9
Job sector		
Government	6	10.7
Private	18	32.2
Self-employed	32	57.1
Smoking		
Yes	25	44.6
No	31	55.4

Focus Group Discussions (FGDs)

The FGDs aimed to explore cultural perspectives on alcohol use and gather input for module development. Each session lasted 60-90 minutes and was facilitated by a trained moderator using a semi-structured guide. Discussion topics included motivations for drinking, perceived risks, cultural norms, and readiness to change. To minimize response bias, moderators emphasized confidentiality, used neutral probing, and reassured participants that there were no right or wrong answers. Discussions were audio-recorded, transcribed verbatim, and analyzed thematically.

Module Development

The module was developed in five stages following the ADDIE framework:

1. Analysis: Identifying drinking patterns, cultural factors, and intervention needs through FGDs and literature review.
2. Design: Structuring the module based on identified themes and integrating behavior change techniques.
3. Development: Creating session plans, materials, and culturally appropriate content.
4. Implementation: Conducting pilot testing with high-risk drinkers to assess feasibility and engagement.
5. Evaluation: Expert validation and iterative refinement based on feedback.

Expert validation involved consultation with public health specialists, psychologists, and community leaders to ensure cultural and professional relevance. Pilot testing was conducted with a subset of participants to assess comprehension and practicality, leading to further refinement.

Module Development Framework

The Motivational Enhancement Intervention (MEI) module was developed using the ADDIE framework (Analysis, Design, Development, Implementation, Evaluation). This structured approach ensured systematic planning, content selection, and iterative improvements based on empirical evidence and participant feedback. The module integrates multiple methods, including brief intervention, motivational interviewing (MI), motivational enhancement therapy (MET), focus group discussions (FGDs), and support groups.

Each method was selected based on established effectiveness in addressing alcohol-related harm:

Brief Intervention: Demonstrated efficacy in reducing alcohol consumption among at-risk drinkers (12).

Motivational Interviewing: A well-supported strategy to enhance motivation and resolve ambivalence toward change (11).

Focus Group Discussion: Used for participatory learning and fostering shared experiences among participants.

Support Groups: Established to provide ongoing psychological and emotional reinforcement beyond structured sessions.

The module was designed in two phases:

1. Participant Selection Phase: Screening of high-risk drinkers using AUDIT scores.
2. Intervention Phase: Implementation of structured sessions over 12 weeks, integrating MI techniques and peer support.

Content Validity and Expert Review

The MEI module underwent peer expert review to ensure content validity. The review process included:

1. Collaborative Discussion: The module was reviewed by a panel of researchers specializing in alcohol harm reduction programs in Sabah.
2. Expert Evaluation: Two independent experts: a psychiatrist and a psychologist with expertise in substance abuse assessed the module's content relevance, clarity, and feasibility.
3. External Validation: A softcopy of the module was shared with an original developer of Motivational Enhancement Therapy (MET) for feedback.

The external evaluators of the Motivational Enhancement Intervention (MEI) module assessed its structure, content suitability, and feasibility for the target population. They evaluated the module’s alignment with its intended objectives, time allocation, and potential to reduce alcohol-related harm. The content validity index (CVI) was calculated at 0.92, indicating strong agreement on the module’s clarity, organization, and relevance. This high CVI suggests that the module is a well-designed intervention for addressing alcohol-related challenges.

Pilot Testing and Refinements

A pilot study was conducted to assess module feasibility and effectiveness. Key refinements included in Table III.

Table III: Summary of Intervention Refinements

Issues Identified	Initial Intervention Strategy	Modification Implemented	Rationale for Change
Limited depth in ambivalence discussion	15-minute Diamond Dialogue (DD) session	Extended to 30 minutes	Allowed in-depth exploration of personal and communal ambivalence toward alcohol use
Difficulties with self-assessment questions	Emphasis on deficits and risks	Shifted to strength-based reflection	Enabled participants to recognize their coping strategies rather than focusing on weaknesses
Lack of continued support post-intervention	No structured follow-up mechanism	Introducing a WhatsApp support group	Addressed participant needs for ongoing psychological and peer support beyond intervention sessions

Measures
A set of questionnaires was used to measure the effectiveness of the developed module which consists of six sections. Section one was demographic background of participants; section two was Alcohol Use Disorders Identification Test (13) to measure the pattern of drink and used for screening pattern of drinking; section three was Stage of Change Readiness and Treatment Eagerness Scale (14) to measure an individual's readiness to change behaviour; section four was Drinking refusal self-efficacy questionnaire-revised (15) to measure the ability of participants to refuse drinking alcohol in various situations; section five was Brief Young Adult Alcohol Consequences Questionnaire (16) to measure alcohol-related problems; section six was Personnel wellbeing index-Adult (17) to measure the quality of life of participants.

Effectiveness Assessment
The module's effectiveness was evaluated through pre- and post-intervention assessments using the above measures. Changes in AUDIT scores, self-efficacy, readiness to change, and quality of life indicators were analyzed. Qualitative feedback from participants was also collected to assess perceived usefulness and cultural appropriateness.

Data Analysis
A thematic analysis was utilized to identify and interpret patterns within the qualitative data gathered from the 28 participants. This method allowed the research team to explore participants' experiences and perceptions of alcohol consumption and cultural practices, ensuring the development of an intervention that is both culturally sensitive and contextually relevant. By coding the data into themes, the team derived insights that informed the module's structure and content, effectively addressing the motivations and challenges faced by indigenous communities in Sabah regarding alcohol use. This approach not only deepens the understanding of the complex social dynamics surrounding alcohol consumption but also enhances the module's potential effectiveness in promoting behavioral change within these communities.

RESULTS

The Motivational Enhancement Intervention Module Development
The Motivational Enhancement Intervention (MEI) is a combination of methods including brief intervention, motivational interviewing, motivational enhancement intervention, focus group discussion, and support group. These methods were chosen based on their demonstrated effectiveness in prior studies on alcohol intervention (12, 10, 18, 19). The combination aligns with the ADDIE framework, ensuring systematic module development (18). The MEI module was an important and innovative part of the present study. It was designed and developed to reduce the negative consequences of alcohol abuse for individuals and communities. The MEI, adapted from Motivational Enhancement Therapy (MET) (10), has become a new tool for the indigenous communities of Sabah. The module's development was informed by focus group discussions (FGDs) with community members, a literature review, and expert validation. The brief intervention technique (20), which began with screening followed by the intervention, was applied in the present study to select eligible participants for the intervention program. Enhancing motivation using the motivational interviewing (11) approach combined with brief intervention in the treatment is an effective strategy to address alcohol problems. The MI approach was used to resolve ambivalence towards change by increasing participants' self-efficacy in the focus group discussions during each session of the intervention program.

The activities were arranged according to the objectives of each module. The selection of activities was guided by FGDs and expert consultation, ensuring cultural and contextual relevance. Previous studies suggested several activities related to the objectives of the MEI modules that were suitable for implementation in the intervention. However, the researchers selected the most appropriate activities for the sample in this study, which was completed during the second stage of module development. The module was structured following the ADDIE framework, progressing through Analysis, Design, Development, Implementation, and Evaluation. This systematic approach ensured that the intervention components were evidence-based and adaptable to the target population. The MEI underwent peer expert review to ensure content validity. The module includes guidelines, proposed activities, a planning guide, and information on the benefits and harms of alcohol. It is divided into two phases, comprising 10 modules that were implemented across 4 sessions over 12 weeks. Each section has different goals and activities. The first phase of the module focuses on participant selection, specifically targeting high-risk drinkers (those with hazardous and harmful drinking patterns based on the AUDIT score). Selected participants then proceed to the next phase. The second phase consists of the intervention program, which is divided into four sessions, as shown in Table IV.

Table IV: Motivational Enhancement Intervention Program

Phase 1 (screening)	Phase 2 (Intervention)
Session 1: • Identify the pattern of alcohol consumption **Section 2:** • Provide personalized AUDIT feedback **Section 3:** • Select participants **Section 4:** • Group division	**Session 1:** • Module 1: Introduction of the program • Module 2: Identify and address ambivalence • Module 3: Build motivation for change • Module 4: Constructing a decision balance for changing **Session 2:** • Module 5: Develop a change plan • Module 6: Forming a behavioral goal • Module 7: Strengthen commitment to change **Session 3 & Session 4:** • Module 8: Review progress on the change plan • Module 9: Renew motivation • Module 10: Termination of therapy research project

The Motivational Enhancement Intervention (MEI) program module

The MEI program module is the key result of this study, developed to serve as a structured intervention for reducing alcohol-related harm. It serves as a resource for primary care health providers: physicians, nurses, community health workers, and others who assist individuals facing harmful alcohol consumption. This intervention encompasses clear advice, brief counseling, ongoing monitoring to foster improved drinking behaviors, health education, skill development, and practical strategies. Table V details the specifications of the MEI, outlining session durations, objectives, and utilized materials.

Table V: The Motivational Enhancement Intervention Program Specification

MODULE 1: INTRODUCTION OF MODULE		
Activities		***1. Icebreaking – "The nips and me"*** ***2. Module description*** ***3. Create a peer support group***
	Materials:	***Nips candy, Informed consent form***
	Duration:	***30 minutes***
	Objective:	***The objectives of the intervention program are to create a welcoming environment that encourages participant interaction and mutual support, provide essential study information, and facilitate ongoing communication and monitoring through a chat group.***
MODULE 2: IDENTIFY AND ADDRESS AMBIVALENCE		
Activity		***1. Identify and address ambivalence***
	Material:	***Diamond Dialogue (DD) Tool***
	Duration:	***30 minutes***
	Objective:	***To identify and address ambivalence in drinking behavior by exploring participants' perceptions of alcohol's positive and negative aspects, its role in their lives and community, and the beliefs influencing their drinking behavior.***
MODULE 3: BUILD MOTIVATION TO MAKE CHANGE		
Activity		1. ***Build motivation for change using the MI approach***
	Materials:	***1. Alcohol toolkit Chapter 3: General knowledge about alcohol.*** ***2. Alcohol toolkit Chapter 4: Alcohol and culture.***
	Duration:	***30 minutes***
	Objective:	***To build participants' motivation for change.***
MODULE 4: CONSTRUCTING A DECISIONAL BALANCE FOR CHANGING		
Activity	*Constructing a decisional balance for changing*	
	Material:	***1. Change scale*** ***2. Drinking Diary***
	Duration:	***30 minutes***
	Objective:	***To develop a change plan in drinking behavior, assess motivation levels and set specific goals for behavior change.***

CONTINUE

Table V: The Motivational Enhancement Intervention Program Specification. (CONT.)

MODULE 5: DEVELOP A CHANGE PLAN	
Activity	***Develop a change plan***
	Material: ***Problem-solving sheet***
	Duration: ***30 minutes***
	Objective: 1. ***To acknowledge the progress of participants.*** 2. ***To generate participants' skills in critical thinking when facing problems.*** 3. ***To plan behavior efficiently.***
MODULE 6: FORMING BEHAVIORAL GOALS	
Activity	***Forming behavioral goals***
	Material: ***Workbook IMEI Module***
	Duration: ***30 minutes***
	Objective: ***1. To identify who would help participants to make a change.*** ***2. To determine what kind of drinking situations need to be avoided.*** ***3. To generate activities to reduce or to avoid excessive drinking.***
MODULE 7: STRENGTHEN COMMITMENT TO CHANGE	
Activity	***Strengthen commitment to change***
	Material: ***1. Alcohol toolkit chapter 2: Alcohol and you*** ***2. Alcohol toolkit chapter 5: Reducing alcohol-related harm*** ***3. Alcohol toolkit chapter 6: A guide to change your drinking habits***
	Duration: ***30 minutes***
	Objective: ***To strengthen commitment to change in drinking behavior, the objectives are to reinforce the resolve to change, prevent binge drinking, reduce alcohol-related harm, and offer clear guidelines for behavior modification.***
MODULE 8: REVIEW PROGRESS ON THE CHANGE PLAN	
Activity	***Review progress on the change plan***
	Material: ***Workbook MEI Module***
	Duration: ***30 minutes***
	Objective: ***The objectives aim to assess participants' progress, identify challenges, gather strategies for overcoming these challenges, and reinvigorate motivation in changing drinking behavior.***
MODULE 9: RENEW MOTIVATION	
Activity	***Renew motivation***
	Material: ***Self-assessment sheet***
	Duration: ***30 minutes***
	Objective: ***The objective is to renew motivation in drinking behavior by helping participants recognize their strengths and weaknesses, affirm positive behaviors, deepen self-exploration, and embrace their emotions.***
MODULE 10: COMPLETION OF THE MODULE	
Activity	***Completion of the module***
	Material: ***No material***
	Duration: ***30 minutes***
	Objective: ***To complete the module and assist with future planning.***

Pilot Testing and Refinements

The MEI Module completed pilot testing to fine-tune measurements, methods, and implementation. Three major improvements were identified:

1. Extension of Ambivalence Discussion: The first 15-minute Diamond Dialogue (DD) session was insufficient to explore ambivalence about drinking at individual and communal levels. This segment was extended by 30 minutes to allow for active focus group involvement.
2. Self-Assessment for Renewed Motivation: Initially, the self-value questions posed challenges for participants with drinking-related issues. To foster motivation for change, these questions were replaced with self-assessment prompts that emphasize strengths, weaknesses, and coping strategies.
3. Introduction of Support Groups: While the focus group format encouraged open dialogue, participants expressed a desire for ongoing interaction. Consequently, a WhatsApp support group was established to offer continuous psychological and emotional support, enabling participants to connect and motivate each other.

Inter-Rater Reliability of Motivational Enhancement Intervention (MEI) Module

The expert evaluation confirmed the suitability of the MEI module, with a CVI of 0.92, reflecting strong consensus on its relevance and effectiveness. Both evaluators endorsed the module's implementation and provided recommendations. They emphasized the importance of ensuring that facilitators are appropriately qualified and skilled in implementing the module and recommended sufficient follow-up for participants during and after the intervention. In response to this feedback, the researcher trained four counselors to facilitate the module effectively. Additionally, a follow-up was conducted three months after the module implementation to assess its long-term impact and participant progress (16).

Focus Group Discussion Findings

Qualitative analysis of FGDs yielded three dominant themes: barriers to change, self-efficacy improvements, and the role of peer influence.

1. Barriers to Change: Participants identified key obstacles preventing behavior modification. Social drinking norms, peer pressure, and easy accessibility of alcohol were frequently cited as impediments. Additionally, many participants expressed concerns about the potential stigma associated with reducing alcohol consumption, particularly in social settings where heavy drinking was normalized. These findings highlight the need for interventions that address social reinforcement and external pressures.
2. Self-Efficacy Improvements: Many participants reported increased confidence in controlling alcohol consumption. The integration of MET and strength-based self-assessment exercises was particularly effective in helping individuals recognize their ability to set limits. This increase in self-efficacy was reflected in participants' articulation of personal coping strategies, including substituting alcoholic beverages with non-alcoholic alternatives and engaging in alternative social activities.
3. Peer Influence: Support groups played a pivotal role in sustaining motivation post-intervention. Participants frequently cited group discussions as a source of accountability, encouragement, and emotional support. The WhatsApp support group emerged as a crucial component in maintaining behavior change, providing a space where individuals could share challenges, celebrate progress, and seek advice in real time.

Participant Outcomes

The impact of the intervention was evaluated based on changes in AUDIT scores, motivation levels, and retention rates.

1. AUDIT Score Reduction: Pre- and post-intervention comparisons revealed a statistically significant decrease in alcohol consumption patterns. The mean AUDIT score dropped from 18.2 (SD = 3.5) pre-intervention to 11.4 (SD = 3.2) post-intervention ($P < .05$). This reduction suggests that the module effectively contributed to behavioral change, aligning with previous literature on the efficacy of motivational interventions in alcohol harm reduction.
2. Motivation Level Improvement: Thematic analysis of qualitative responses indicated a shift in readiness for change. Prior to intervention, participants exhibited ambivalence about modifying their drinking behavior, often expressing doubts about their ability to do so. Post-intervention, there was a marked increase in the articulation of positive change statements, indicating enhanced motivation. Participants also demonstrated greater awareness of the consequences of excessive alcohol use and showed increased willingness to adopt harm reduction strategies.
3. Retention Rates and Engagement: The intervention achieved an 85% retention rate, with most participants completing all scheduled sessions. High retention was attributed to the engaging nature of the sessions, the inclusion of interactive activities, and the continuous peer support facilitated through WhatsApp. Participants who remained engaged in the intervention process were more likely to report positive behavioral outcomes, reinforcing the importance of sustained support mechanisms in alcohol reduction interventions.

Visual Representations

To enhance clarity and accessibility, key findings are presented in structured formats:

Figure 1: A flowchart outlining participant screening, intervention phases, and post-intervention support.

Table III: A structured summary of module

refinements, including rationale and observed outcomes.

Intervention Process Flowchart
Figure 1 illustrates the step-by-step progression of the study, outlining the key phases of the intervention:
1. Screening for Eligibility: Participants were assessed based on inclusion criteria to determine their eligibility.
2. Pilot Testing: A preliminary trial was conducted to refine the intervention content and ensure feasibility. Adjustments were made based on feedback.
3. Actual Study Implementation: The finalized intervention was administered to eligible participants.
4. Intervention Implementation: Participants underwent the structured intervention sessions.
5. Three-Month Follow-Up: In line with Kahler (16), a follow-up assessment was conducted for three months post-intervention to evaluate behavioral changes and long-term effects.

This flowchart provides a structured visualization of the research design and intervention process, highlighting modifications made based on pilot testing to enhance the effectiveness of the intervention.

Table of Modifications and Justifications
To enhance clarity, Table V presents an overview of module modifications, detailing the identified issues, initial intervention strategies, refinements made based on participant feedback, and the rationale behind these changes.

DISCUSSION

The methods used to enhance participants' motivation to change their drinking behavior during the focus group discussion included expressing empathy, developing discrepancy, rolling with resistance, and supporting self-efficacy (18). The support group offers psychological and social support to its members. Kendall et al. (21) found that support groups were effective in improving social functioning during group interventions. Psychological and social support among members fosters positive interactions and has a beneficial impact on their adaptation to new circumstances (22). The quality of support from others significantly influences how individuals cope with their situations (23).

A critical comparison of the Motivational Enhancement Therapy (MET) approach used in this study with previous interventions highlights its advantages. Unlike generic brief interventions, MET integrates structured personalized feedback and motivational interviewing (MI) principles, which have been shown to enhance behavior change more effectively in alcohol use interventions (24). Previous culturally adapted alcohol intervention modules have often focused on abstinence-based approaches or community-led harm reduction strategies (25,26). However, MET's strength lies in its ability to address ambivalence through a guided yet non-confrontational approach, which aligns with the cognitive-behavioral mechanisms needed for sustained change.

The primary reason for adopting the MET approach is its proven effectiveness in reducing hazardous and harmful drinking in community settings (24), primary care or clinics (25), and outpatient addiction centers (26). Additionally, there are several benefits to using MET (27), including helping individuals resolve ambivalence about treatment engagement and behavioral change related to drinking; enhancing motivation for change; providing feedback that stimulates discussions about personal drinking behavior and encourages self-motivational statements; applying MI principles to strengthen motivation and create a change plan; and the facilitator addressing change, reviewing strategies in use, and continually encouraging participants' commitment to change.

The Motivational Enhancement Therapy (MET) approach is characterized by a non-confrontational and non-judgmental style, making it effective for facilitating various types of behavior change. This approach can be applied regardless of an individual's level of commitment to change, including those who are highly resistant or unmotivated (28). However, unlike standard MI-based interventions, the culturally adapted module in this study incorporated indigenous beliefs and traditional norms about alcohol consumption, which have been both facilitators and barriers to behavior change. For example, while alcohol is deeply rooted in social traditions, participants expressed a readiness to shift toward moderation when provided with culturally relevant narratives emphasizing community well-being (29). This suggests that integrating cultural components within MET could enhance its acceptability and impact.

To ensure the structured development of the module, this study followed the ADDIE framework (Analysis, Design, Development, Implementation, and Evaluation). Content was determined based on focus group discussions (FGDs), literature reviews, and expert validation to ensure both cultural relevance and adherence to MET principles. Unlike previous interventions that may not have incorporated structured development models, the ADDIE framework ensured systematic implementation and refinement of the module based on participant feedback (29). Some content originally presented in this section has been moved to the Methods and Results sections for clarity. The Diamond Dialogue tool, for instance, has been discussed in the Methods section as part of the intervention design rather than the Discussion.

An important aspect of this study was the assessment of changes in motivation to reduce drinking behaviors. Motivation was evaluated through pre- and post-intervention self-reports using validated measures of readiness to change and confidence in reducing alcohol

use (30). Significant improvements were observed, indicating the effectiveness of the MET module in enhancing motivation. These findings are further supported by qualitative feedback, where participants described increased self-awareness and willingness to adopt harm reduction strategies.

Quality of life (QOL) is a comprehensive concept encompassing an individual's physical, mental, and social well-being. This study demonstrates that increasing motivation to modify drinking behaviors can significantly enhance participants' well-being. Positive changes in lifestyle can contribute to greater happiness in daily life. Furthermore, social contexts and conditions have been identified as crucial factors influencing an individual's QOL. However, the scalability of this intervention beyond the studied indigenous communities requires further investigation. While the cultural adaptation of MET proved effective in this context, future studies should explore its applicability in other indigenous and non-indigenous settings. Specifically, quantitative trials assessing long-term behavioral outcomes across diverse populations would provide stronger evidence for its broader implementation (31).

Implication

This study offers a new methodological approach for addressing alcohol-related issues. It contributes to existing literature and provides practical insights applicable to community interventions. The study's contributions are categorized as follows:

1. Theoretical Contributions: The findings provide empirical support for existing behavioral change theories in alcohol use interventions. The study reinforces the effectiveness of Motivational Enhancement Therapy (MET) principles in fostering behavior change among indigenous communities, particularly when culturally adapted.
2. Methodological Contributions: This study developed the Intrinsic Motivational Enhancement Intervention (MEI) as a culturally tailored tool to address harmful alcohol use within Sabah’s indigenous communities. The MEI was structured using the ADDIE framework (Analysis, Design, Development, Implementation, and Evaluation), ensuring a systematic approach to its content development. Focus group discussions (FGDs), literature reviews, and expert validation informed the intervention’s design to align with both MET principles and cultural norms.
3. Practical Implications: The effectiveness of the MEI was evaluated through pre- and post-intervention assessments measuring participants' motivation to change their drinking behavior. Validated measures of readiness to change and confidence in reducing alcohol use were used, demonstrating significant improvements in motivation post-intervention. The results indicate that this approach successfully enhanced participants’ willingness to modify their drinking behavior, supporting its practical application in indigenous communities at high risk of alcohol-related harm.
4. Policy Implications: Policymakers should consider the cultural and traditional significance of alcohol in Sabah’s indigenous communities when designing intervention strategies. This study supports a harm reduction approach rather than abstinence-based models, as participants showed greater engagement when interventions aligned with their cultural values. By recognizing the sociocultural role of alcohol, a harm reduction strategy can mitigate negative consequences while respecting indigenous traditions.

By addressing alcohol-related challenges through a culturally responsive framework, this study offers valuable contributions to both research and practice. Future studies should include long-term follow-up evaluations and randomized controlled trials to further validate the MEI’s effectiveness across diverse indigenous populations.

Limitation

Finding participants was the most significant challenge in this study. Researchers discovered that when discussing alcohol programs or interventions within the village, some villagers expressed disinterest, believing they had no alcohol-related problems. In fact, some communities perceive these programs as solely intended for individuals with severe alcohol addiction. Additionally, the researchers found that certain communities feared being labeled as alcoholics (or "logop" in the Dusun language) and stigmatized by their peers. Consequently, they often denied having any alcohol issues and declined assistance. It's important to note that the study's findings cannot be generalized to all indigenous communities in Sabah. Sabah comprises 33 ethnic groups, with Kadazandusun being the largest, followed by Bajau, Murut, Bisaya, Brunei, and others. However, this research focused solely on the Kadazandusun and Bajau ethnicities. Therefore, the findings are applicable only to these two groups. To address this limitation, future studies should be conducted with other indigenous groups in Sabah, such as the Murut, Brunei, or Bisaya communities. This would allow for a more comprehensive understanding of alcohol-related issues among the diverse indigenous populations of Sabah.

Direction for future research

Future research should focus on the implementation of support groups at the community level, as they have shown promise in enhancing intervention sustainability. The inclusion of structured support group methods is expected to be beneficial in establishing long-term community-based support systems. This study demonstrated that support groups provide participants with emotional, psychological, and behavioral reinforcement, enabling them to modify their drinking behavior. The effectiveness of these groups is rooted in the presence of empathetic listeners who facilitate open discussions in a nonjudgmental, supportive

environment.

Furthermore, support groups have been found to improve participants' social connectedness, self-efficacy, stress management, and overall psychological adaptation. They also serve as a critical link between healthcare providers, researchers, and the community. By fostering increased awareness of alcohol-related harms, support groups can encourage high-risk individuals to seek treatment and adopt harm reduction strategies. Future studies should explore quantitative trials to assess the long-term impact of support groups on drinking behavior and alcohol-related health outcomes. Additionally, research should investigate collaborative networks involving healthcare professionals, community leaders, and policymakers to reduce alcohol-related harm.

A key area for future investigation is the role of policy and structural interventions in modifying drinking behaviors. Strengthening community involvement, improving current alcohol regulations, and incorporating professional and stakeholder engagement could enhance intervention effectiveness. Future studies should also evaluate the impact of these multi-level approaches on drinking norms and health outcomes using mixed-method designs.

The involvement of local communities is essential for enhancing social cohesion, leveraging existing structures and networks, and mapping alcohol-related problems to design effective local strategies. Future research should assess how integrating behavioral change interventions with policy modifications can lead to sustained reductions in alcohol consumption. Longitudinal studies are needed to evaluate the sustainability of such interventions and their influence on community-wide drinking norms. Establishing a collaborative framework between professional groups, stakeholders, and policymakers may be critical in addressing alcohol-related issues at the community level and ensuring long-term intervention success.

CONCLUSION

In conclusion, this study has effectively enhanced the readiness to change drinking behavior, increased drinking refusal self-efficacy, and improved the quality of life among hazardous and harmful drinkers in the indigenous communities of Sabah. Additionally, it has successfully reduced alcohol consumption and alcohol-related harm in these communities. A novel aspect of this research was the incorporation of a psychological perspective, which contributed to increased readiness to change, enhanced drinking refusal self-efficacy, and a reduction in hazardous and harmful drinking, along with improved overall quality of life among the indigenous populations of Sabah. It can be concluded that the IMEI Module was effective in changing drinking behavior in these communities. It is anticipated that these findings will assist future studies in addressing alcohol-related issues within the indigenous communities of Sabah.

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REFERENCES

1. Arshad M, Omar M, Shahdan N. Alcoholism among youth: a case study in Kuala Lumpur, Malaysia. International Journal of Culture and History. 2015; 1(1):21-28.
2. Mutalip M, Kamarudin R, Manickam M, Hamid H, Saari R. Alcohol consumption and risky drinking patterns in Malaysia: findings from NHMS 2011. Alcohol and Alcoholism. 2014; 49(5): 593–599. Available from: https://doi.org/10.1093/alcalc/agu042
3. World Health Organization (WHO) 2022. Alcohol. Available from: https://www.who.int/news-room/fact-sheets/detail/alcohol
4. World Health Organization (WHO) 2011. Global status report on alcohol and health 2011. Geneva, World Health Organisation. Available from: https://www.who.int/publications/i/item/global-status-report-on-alcohol-and-health-2011
5. World Health Organization (WHO) 2018. Global status report on alcohol and health 2018. Geneva, World Health Organisation. Available from: https://www.who.int/publications/i/item/9789241565639
6. Fortin M, Moulin S, Picard E, Belanger R, Demers A. Tridimensionality of alcohol use in Canada: Patterns of drinking, contexts and motivations to drink in the definition of Canadian drinking profiles according to gender. Canadian Journal of Public Health. 2015;106(2):59- 65. Available from: https://pubmed.ncbi.nlm.nih.gov/25955673/
7. Shoesmith W, Tha N, Naing K, Abba R, Abdullah A. Unrecorded Alcohol and Alcohol-Related Harm in Rural Sabah, Malaysia: A Socio-economically Deprived Region with Expensive Beer and Cheap Local Spirits. Alcohol and Alcoholism: 2016:1–6. Available from: https://doi.org/10.1093/alcalc/agw005
8. Lasimbang H, Shoesmith W, Daud M, Kaur N, Pau Jin M, Singh J, et al. Private troubles to public issue: empowering communities to reduce alcohol-related harm in Sabah, Malaysia. Health Promotion International. 2015 :1–8. Available from: https://

doi.org/10.1093/heapro/dav090
9. Jamali M, Mustapha Z, Ismail R. Pola dan faktor yang mempengaruhi peminuman minuman keras remaja Dusun Malaysia. Malaysian Journal of Society and Space. 20095; (2):82-101.
10. DiClemente C, Bellino L, Neavins T. Motivation for change and alcoholism treatment. Alcohol Research & Health, 1999; 23(2):86-92. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC6760428/
11. Miller W. Instructor's Manual for William Miller on Motivational Interviewing. Mill Valley Psychotherapy.net. 2012.
12. Masadeh M. Focus group: reviews and practices. International Journal of Applied Science and Technology. 2012; 2(10):63-68.
13. Miller W, Tonigan J. Assessing drinkers' motivation for change: The Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES). Psychology of Addictive Behaviors. 1996; 10: 81-89. Availeble from: https://doi.org/10.1037/0893-164X.10.2.81
14. Saunders J, Aasland O, Babor T, De La Fuente J, Grant M. Development of the Alcohol Use Disorders Identification Test (AUDIT). WHO collaborative project on early detection of persons with harmful alcohol consumption. Addiction. 1993; 88:791-804. Available from: https://doi.org/10.1111/j.1360-0443.1993.tb02093.x
15. Oei T, Hasking P, Young R. Drinking refusal self-efficacy questionnaire revised (DRSEQ-R): a new factor structure with confirmatory factor analysis. Drug Alcohol Depend. 2005; 78:297-307. Available from: https://doi.org/10.1016/j.drugalcdep.2004.11.010
16. Kahler C, Strong D, Read J. Toward efficient and comprehensive measurement of the alcohol problems continuum in college students: The Brief Young Adult Alcohol Consequences Questionnaire. Alcoholism: Clinical and Experimental Research. 2005; 29(7):1180–1189. Available from: https://doi.org/10.1097/01.ALC.0000171940.95813.A5
17. Cummins R, Tomyn A, Weinberg M. Manual of Personal Wellbeing Index – Adult (PWI-A): 5th Edition. Deakin University: The Australian Centre on Quality of Life. 2013.
18. Kendall K, O'Dell M. Psychosocial issues in transplantation. In: Ohler, L. & Cupples, S. eds. Core Curriculum for Transplant Nurses. International Transplant Nurses Society. Mosby Elsevier. 2007.
19. Triandis H, Suh E. Cultural influences on personality. Annu. Rev. Psychol. 2002; 53:133–160. Available from: http://dx.doi.org/10.1146/annurev.psych.53.100901.135200
20. Mumtaz W, Vuonga P, Xiac L, Malika A, Abd Rashid R. Automatic diagnosis of alcohol use disorder using EEG features. Knowledge-Based Systems. 2016; 105:48-59. Available from: http://doi.org/10.1016/j.knosys.2016.04.026
21. Bien T, Miller W, Tonigan J. Brief interventions for alcohol problems: a review. Addiction. 1993; 88(3):315–336. Available from: https://doi.org/10.1111/j.1360-0443.1993.tb00820.x
22. Sargent S, Wainwright S. A qualitative study exploring patients perceived quality of life following an emergency liver transplant for acute liver failure. Intensive Critical Care Nursing. 2007; 23(5):272-280. Available from: https://doi.org/10.1016/j.iccn.2007.03.005

23. Orford J, Copello A, Velleman R, Templeton L. Family members affected by a close relative's addiction: the stress-strain-coping-support model. Drugs: Education, Prevention and Policy. 2010; 17(s1), 36-43. Available from: https://doi.org/10.3109/09687637.2010.514801
24. Noknoy S, Rangsin R, Saengcharnchai P, Tantibhaedhyangkul U, McCambridge J. RCT of Effectiveness of Motivational Enhancement Therapy Delivered by Nurses for Hazardous Drinkers in Primary Care Units in Thailand. Alcohol Alcohol. 2010; 45(3):263–270. Available from: https://doi.org/10.1093/alcalc/agq013
25. Willerick M. Effectiveness of a motivational enhancement group treatment in a community treatment program with a substance abusing population. Dissertations. 482. Western Michigan University. 2011.
26. Dieperink E, Fuller B, Isenhart C, McMaken K, Lenox R, Pocha C et al. Efficacy of motivational enhancement therapy on alcohol use disorders in patients with chronic hepatitis C: a randomized controlled trial. Addiction. 2014; 109(11):1869-1877. Available from: https://doi.org/10.1111/add.12679
27. Prochaska J, DiClemente C, Norcross J. In search of how people change: applications to addictive behaviors. American Psychologist. 1992; 47:1102-1114. Available from: https://doi.org/10.1037/0003-066X.47.9.1102
28. Festinger L. Theory of Cognitive Dissonance. Stanford University Press, Standford, CA. 1957.
29. Yamaguchi A. Influences of quality of life on health and well-being. Soc Indic Res. 2015; 123:77–102. Available from: https://doi.org/10.1007/s11205-014-0738-z
30. Miller WR, Rose GS. Motivational Interviewing and its effectiveness: A review of theory and research. Am Psychol. 2009;64(6):527-537. Available from: https://doi.org/10.1037/a0016830
31. Marín-Navarrete R, Horigian V, Media-Mora M, et al. Motivational enhancement treatment in outpatient addiction centers: A multisite randomized trial. Int J Clin Health Psychol. 2017;17(1):9-19. Available from: https://doi.org/10.1016/j.ijchp.2016.05.001