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Screening and brief intervention of risky post-war alcohol consumption among hospital outpatients in Tigray, 2026: results from randomized control trial

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Abstract

Background

Risky alcohol consumption is prevalent among conflict-affected populations in low-and middle-income countries. However, studies on the effectiveness of screening brief intervention (SBI) for risky alcohol use among hospital outpatients in such settings remain limited. This study assessed the effectiveness of SBI in mitigating risky post-war alcohol consumption among public hospital outpatients.

Methods

We conducted randomized controlled trial with 6-and 12-month follow-ups to examine the effects of SBI on reducing hazardous/harmful alcohol use among hospital outpatients. Eligible participants were adults (≥ 18 years) of both sexes with AUDIT scores between 8 and 19 for men 7 to 19 for women. AUDIT questionnaire was used as an assessment instrument. After screening hazardous/harmful drinkers were randomized into intervention (brief counseling and alcohol leaflets) and control (no intervention). Data were analyzed with Stata v15. Descriptive statistics summarized baseline characteristics. Independent t-tests, Mann-Whitney U tests, and repeated-measures ANOVA applied to compare AUDIT scores and examine time effects.

Results

Control group had higher mean age (mean = 43.28, SD = 17.22) than the intervention group (mean = 40.65, SD = 2.78), though the difference was non-significant (p = 0.5428). Females comprised 38.5% of the intervention group versus 20.7% of controls; and 82.8% of controls were married compared with 57.7% of the intervention group. At 6- and 12-month follow-ups, significant differences in mean (*p = 0.003*, 95% CI: 1.17 to 5.38) and median (z = 5.405, *p < 0.001*) AUDIT scores were observed, indicating lower alcohol consumption levels among participants in intervention group. Repeated-measures ANOVA further revealed a significant main effect of time on AUDIT scores (F(2, 50) = 73.41; *p < 0.001*), suggesting substantial changes in alcohol use patterns across measurement occasions.

Conclusion

SBI significantly reduced unhealthy alcohol consumption among public hospital outpatients in a conflict-affected settings.

Trial registration (01/28/2025): NCT06918106

Introduction

Post-war environments are often marked by increased rates of mental conditions such as post-traumatic stress disorder (PTSD), depression, anxiety, and substance use disorders (1). Alcohol, in particular, is frequently consumed as a coping mechanism in response to trauma and stress (2, 3).

Globally, alcohol consumption is widespread and socially accepted, yet it remains a major public health concern. In 2018, 2.3 billion people were current drinkers, with alcohol being responsible for 2.6 million deaths in 2019 and 139 million disability-adjusted life years (4–6). Surveys conducted on a general population and university also reported that the prevalence of alcohol consumption is high (7). Alcohol consumption is a leading risk factor for communicable and non-communicable diseases (8–11). For instance, alcohol consumption was reported to worsen the prognosis and reduce survival rates of patients who underwent a total laryngectomy for advanced laryngeal cancer (12).

Prevalence alcohol consumption varies widely across regions: the prevalence of unhealthy alcohol consumption is reported to be 34.7% among Australian hospital outpatients (13), 30.8% in Nepal (14), and 41.8% (43.8%, 29.2%, and 12.4% for hazardous drinking, harmful drinking, alcohol-dependence, respectively) in India (15). In Africa, rates are similarly high, with 41.2% of South African men and 18.3% of women classified as hazardous drinkers (16). In Ethiopia, the current and lifetime prevalence of alcohol consumption is reported to be 23.86% and 44.16%, respectively (17). Few studies from referral hospitals in Ethiopia also reported that AUD prevalence ranges from 34.5% to 38.9% among outpatients (18). However, lower rates alcohol related problems have been observed in specific population, such as pregnant women (15%) and rural residents (12.4%) (19, 20).

Reducing hazardous or harmful alcohol consumption can substantially prevent several alcohol-attributed diseases (21), and brief–intervention has been found to show an encouraging potentials in reducing problematic alcohol consumption (22). Several brief alcohol intervention efficacy studies have been conducted among individuals with varied ranges of alcohol disorders in different settings. For instance, Madras et al., (23) conducted a brief intervention in multiple health care settings and able to reduce heavy alcohol consumption by 38.6%, and an illicit drug use by 67.7% from baseline rates 6 months later. Similarly, Aldridge et al., (24) had reported that 35.6% of the prevalence of alcohol use, 43.4% of heavy drinking and 75.8% of illicit drug use were reduced 6 months later to the brief intervention.

Despite these findings, little is known about prevalence of alcohol consumption among outpatients in post-war Tigray. This study addresses this gap by investigating the prevalence of alcohol consumption and its associated factors, and testing the efficacy of brief intervention on reducing hazardous and harmful alcohol use among outpatients at Suhul General Hospital.

Existing evidences remain inconsistent in reporting the prevalence and risk factors of alcohol consumption. For example, Ursua et. al., (25) in his study argued that there were no significant differences between young men and women on the rate of alcohol consumption or binge drinking. Lein et al., (26) had reported that there was no significant association between exposure to traumatic–events and increased alcohol consumption. Some studies also reported that moderate alcohol consumption prevents depressive symptoms (27), while others say more studies especially randomized controlled trials on low and moderate alcohol consumption are needed for explicit conclusions (28).

Therefore, studies that address the prevalence of alcohol consumption, factors associated to high rate of alcohol consumption, and the efficacy of interventions to reduce harmful alcohol consumption among

conflict–affected population like in Tigray–Ethiopia remains inconsistent and insufficient. Such inconsistencies are affecting the development and implementation of effective alcohol policies and interventions, which is missing in many African countries including Ethiopia (29). Therefore, more studies are required to duplicate the evidences and fill the knowledge gap in this specific areas.

On the other hand, screening and brief–interventions (SBI) in primary health care have been reported to be effective in reducing harmful alcohol consumption and its health consequences (30). However, existing literatures recommend that substantially more studies on the prevalence and risk factors of alcohol consumption and effective interventions that reduce harmful alcohol consumption are highly required in conflict–affected populations (31). So, rigorous studies on alcohol consumption among conflict–affected population are strongly essential to formulate suitable and effective intervention mechanisms for the reduction of harmful alcohol use and its consequences.

Evidence on the screening and brief–intervention for alcohol consumption among conflict–affected population in low–income countries like Ethiopia remains limited. This scarcity of data hampers the development and implementation of effective alcohol policies and interventions unless further studies address the gap.

By assessing post–war alcohol consumption and evaluating the efficacy of brief interventions, the present research examines the prevalence, associated factors and outcomes of Brief–Intervention among conflict–affected hospital outpatients. Findings are expected inform policymakers and health professionals in designing targeted initiatives that encourage abstinence or healthier drinking behavior, thereby improving outpatients outcomes. Moreover, the study aims to provide health professionals and researchers with evidence on utility of brief interventions in reducing excessive alcohol consumption in outpatient settings. These results may also contribute to the formulation of evidence-based policies and clinical management programs tailored to conflict-affected populations.

Consequently, rigorous investigation of post-war alcohol consumption in Tigray public hospitals is essential to establish effective intervention mechanisms that prevent and mitigate unhealthy alcohol use among hospital outpatients.

Methods

Design

A randomized controlled trial with 6-month and 12-month follow-ups was the design used to examine the efficacy of screening and brief intervention if it reduces hazardous or harmful drinking among hospital outpatients.

Participants

The stud included outpatients of Suhul General Hospital who attended the hospital during the study period. Outpatients were screened for alcohol related problems, and those identified as hazardous or harmful drinkers were randomized into intervention and control groups using block randomization.

Eligibility criteria

Inclusion criteria: Participants who were aged 18 years or older, of either sex, those able to provide an interview, and those with AUDIT score of 8 to 19 were eligible to be randomized to the control and intervention groups. Eligibility were assessed using medical records and directly by asking patients about their ability to provide an interview prior to enrollment.

Exclusion criteria

Participants were excluded from SBI if they were younger than 18 years, unable to provide an interview, or have an AUDIT score of less than 8 or greater than 19.

Randomization

During the baseline assessment, about 70 outpatients with AUDIT score of 8 to 19 were identified. Then, each outpatient was randomized either to the control or intervention group using a four-sized block randomization to ensure that equal numbers of outpatients were assigned into each group. A lottery method was used to randomly select the sequences for each block in the four-sized block randomization. The data collection team and the counselor were blind to the participants' allocation to either the intervention or control group.

Procedure

A simple random sampling technique was employed to select participants from adult outpatient departments (OPD) of Suhul General Hospital. Outpatient records were used to generate the initial sampling frame. Each eligible participant was assigned a unique identification number, and a lottery method was applied to randomly select Outpatients for baseline alcohol screening. Two trained interviewers (qualified psychiatry nursing) took written informed consent and then interviewed outpatients privately using interviewer-administered AUDIT questionnaire as they waited for their medical visit at Suhul General Hospital. Interviewers scored the alcohol section and sent outpatients who scored 8 and above for men and 7 and above for women on the AUDIT questionnaire to the supervisor. Then the supervisor randomized outpatients with an AUDIT score of 8 to 19 for men and 7 to 19 for women into the control and intervention groups. However, outpatients with an AUDIT score of 20 and above were referred to the psychiatry OPD of Suhul General Hospital for further management. A counselor who were blinded to the allocation delivered the brief intervention for all participants in the intervention group. Both groups were followed up at 6-months and 12-months of the intervention

session, and the assessments were done by the two interviewers (one interviewer assessed one group) who were blind to the allocation of the participants.

Measures

A researcher-designed questionnaire was used to record information on participants age, sex, religion, marital status, educational status, occupation. The Alcohol Use Disorders Identification Test (AUDIT) was used as the screening instrument for alcohol consumption (32). AUDIT is a reliable and validated 10-item tool developed by the World Health Organization (33, 34) to identify alcohol consumption problems, including hazardous use, harmful use, and probable dependency (35). AUDIT is a valid and reliable tool to detect problems related to alcohol consumption among Ethiopian outpatients with an internal consistency of Cronbach's α = 0.9, and with 94% and 84% sensitivity and specificity, respectively (34). AUDIT score of 1 or more was considered to report an overall rates of alcohol consumption. A Cut-Off score of 8 for men and 7 for women were applied to classify participants as having AUD. Based on the AUDIT scoring system, participants were categorized as follows: abstainers (scores zero in AUDIT), low-risk drinkers (scores below the cut-Offs), hazardous alcohol use (scores of 8–15), harmful alcohol use (scores of 16–19), and probable alcohol dependence (scores ≥ 20). This categorization allowed for a standardized assessment of alcohol use patterns among the study population.

Brief Intervention

Control Group

Participants randomized into the control group received the baseline, the 6-month and 12-month follow-ups assessments only.

Intervention Group: Participants randomized into the intervention group received the baseline, the 6-month and 12-month follow-ups assessments. Additionally, this group had received personalized feedback on their drinking behavior, patient education brochures (leaflets), simple advice and brief-counseling on reducing hazardous or harmful alcohol consumption at a single session. Session duration and steps of the counseling were based on the manual called "Brief–Intervention: for hazardous and harmful drinking", which is prepared by WHO (36).

Statistical Analysis

Collected data were first checked for completeness, and variables were coded and compiled in a Microsoft excel. The dataset was then imported into Stata version 15 for statistical analysis. Missing values were addressed using mean imputation, and the data were examined for outliers. Descriptive statistics including frequencies, proportions, mean, and standard deviation were used to summarize the data. Independent sample t–test, and Mann–Whitney U test were used to compare the mean and median of normally distributed or none–normally distributed AUDIT scores between control and

intervention groups, respectively. Repeated measures ANOVA was performed to test the main effect of time measurements on AUDIT scores of intervention group.

Results

Baseline screening and Randomization

We identified 1260 hospital outpatients of which 1039 screened and agreed to participate in the trial. Of the 1039 screened for alcohol, data from 117 outpatients were excluded due to incomplete response in more than 5% of the alcohol use disorders identification test (AUDIT) items. So, the final analysis was done on 922 participants. Of the 922 that were analyzed, 846 (91.76%) screened negative for hazardous or harmful alcohol use, 76 (8.24%) scored 7/8 or more in the AUDIT questionnaire. Using block randomization, 70 participants that were identified to be hazardous or harmful alcohol users (scores 7/8–19) were randomized into 35 in the control group and 35 in the intervention group, while 6 participants that met criteria for probable alcohol dependence (AUDIT score of ≥ 20) were referred to the psychiatric outpatient department of Suhul General Hospital. As illustrated in Fig. 1, response rates were the same in both the first and second follow-up interviews. At the 6 and 12 month follow-up interviews, the response rates for control and intervention groups were 82.9% and 74.3%, respectively. In the control group, 6 participants declined to complete the 6 and 12 months follow-up interviews, resulting in a dropout rate of 17.1%. In the intervention group, 9 participants declined at both time points, yielding a dropout rate of 25.7%. For this reason, the analysis was done for 55 participants, 29 in control and 26 in intervention, respectively.

Implementation of Brief Intervention

Alcohol use disorders identification test (AUDIT) score was done by interviewers. Allocation of outpatients into control and intervention groups were performed by one supervisor. The rest including (1) Feedback and information, (2) Establish Goal, (3) Give advice, and (4) Encouragement were implemented by counselor.

Participants Characterstics

Table 1 summarizes and compares the demographic characteristics and AUDIT scores of participants across study conditions. The study groups differed in both demographic profiles and levels of alcohol consumption. For instance, females comprised 38.5% of the intervention group compared with 20.7% of the control group, and majority (82.8%) of the participants in control group were married compared with 57.7% the participants in intervention group. Although baseline mean AUDIT scores were similar between groups, disparities became evident at the 6 and 12 month follow-up interviews, highlighting inequalities between the control and intervention groups. Detailed information is presented in Table 1.

Table 1
Sample demographic characteristics and ADUIT scores stratified by study condition

Variables		*Controls*		*Intervention*		*Total*	
		Freq	*%*	*Freq*	*%*	*Count*	*%*
Age	*18–42*	*17*	*58.6*	*15*	*57.7*	*32*	*58.2*
	43–77	*12*	*41.4*	*11*	*42.3*	*23*	*42.8*
Sex	*Female*	*6*	*20.69*	*10*	38.46	16	29.09
	Male	*23*	79.31	*16*	*61.54*	*39*	*70.91*
Religion	*Orthodox*	*27*	*93.10*	*25*	*96.15*	*52*	*94.55*
	Muslim	*2*	*6.90*	*1*	*3.85*	*3*	*5.45*
Marital status	*Married*	*24*	*82.76*	*15*	*57.69*	*39*	*70.91*
	Others	*5*	*17.24*	*11*	*42.31*	*16*	*29.09*
Education	*Illiterate (can't read & write)*	*8*	*27.59*	*5*	*19.23*	*13*	*23.64*
	Elementary (Grade 1–8)	*11*	*37.93*	*12*	*46.15*	*23*	*41.82*
	High-school (Grade 9–12)	*5*	*17.24*	*5*	*19.23*	*10*	*18.18*
	College and above	*5*	*17.24*	*4*	*15.38*	*9*	*16.36*
Occupation	*Employed*	*10*	*34.48*	*7*	*26.92*	*17*	*30.91*
	Unemployed	*19*	*65.52*	*19*	*73.08*	*38*	*69.09*

**Others = Unmarried, Separated, Divorced, Widowed*

Effect of Brief-Intervention

Table 2 presents the comparison of mean and median AUDIT scores between control and intervention groups across three time points. At baseline, the mean AUDIT score of control group (mean=10.31, SD = 2.51) was nearly identical to that of interventions (mean = 10.35, SD = 2.50), with a non-significant mean difference of−0.0358 (p-value: 0.958; 95% CI: -1.39 to 1.32). By the six-month follow-up, however, the control group was exhibited a higher mean AUDIT score than the intervention group by 3.28 points, which is a statistically significant difference (p-value: 0.003, 95% CI: 1.17 to 5.38). At the 12-month follow-up, a Mann-Whitney U test conducted on 55 participants (29 in control, 26 in intervention group) confirmed a significant difference in median AUDIT scores ($z = 5.405$, $p = 0.000$), indicating that participants who received the brief-intervention had a substantially lower alcohol consumption levels than those in the control group. A repeated measures ANOVA performed on 26 individuals in the intervention group also demonstrated a significant main effect of time on AUDIT scores ($F(2, 50) = 73.41$; $p < 0.001$), suggesting that alcohol use patterns changed significantly across measurement occasions. The between-subject effect of person was also significant ($F(25, 50) = 2.94$; $p = 0.001$), reflecting individual variability in AUDIT

scores. Over all, these findings provide strong evidence that the brief-intervention effectively reduces alcohol consumption over time.

Table 2
Comparisons of mean and median AUDIT scores between groups across time.

Independent t-test comparing mean AUDIT scores at baseline and 6 month follow-up						
Variabl (Screening time)	***Mean score (SD) of control***	***Mean score (SD) of intervention***	***Mean difference***	***t (df)***	***P-value****	***95% CI***
Baseline (T_1)	*10.310 (2.51)*	*10.346 (2.50)*	*−0.0358*	*−0.530 (53)*	*0.958*	*-1.39–1.32*
6 month (T_2)	*10.28 (3.74)*	*7 (4.04)*	*3.28*	*3.12 (53)*	*0.003*	*1.17–5.38*
Mann-Whitney U test comparing median AUDIT scores at 12 month follow-up						
Varriable	**Group**	**n**	**Median (IQR)**	**Rank sum**	**U/z-value**	**p-value**
AUDIT score (Time 3)	*Control*	*29*	*11* (9–14)	*1130*	*z = 5.405*	*< 0.001*
	Intervention	*26*	*2* (1–4)	*410*		
Repeated measures ANOVA result across three time points						
Source of Variation		**Partial SS**	**df**	**MS**	**F-value**	**p-value**
Model		*1185*	*27*	*43.89*	*8.16*	*< 0.001*
Person (Between-subjects)		*395.28*	*25*	*15.81*	*2.94*	*0.001*
Time (Within-subjects)		*789.72*	*2*	*394.86*	*73.41*	*< 0.001*
Residual		*268.95*	*50*	*5.38*	—	—
Total		*1453.95*	*77*	*18.88*	—	—

**t=Independent t−test, SD=Standard deviation, df=degree of freedom, CI=Confidence interval*

Discussion

The present study evaluated how a screening and brief alcohol intervention could affect alcohol consumption among hazardous and harmful drinkers. According to the present study, there was a non-significant AUDIT score difference between control and intervention groups at baseline. However, a significant AUDIT score differences were emerged between groups at the 6-month and 12-month follow-up assessments, as well across repeated measurement occasions. These findings provide strong evidence that a brief-intervention had significantly reduced hazardous and harmful alcohol consumption among interventions compared to controls.

These results are consistent with prior studies, including those reported by Rosáio et al. (37), Chi et al. (38), and Kuwabara et al. (39), which similarly demonstrated the effectiveness of screening and brief-interventions in reducing hazardous and harmful drinking patterns. However, results of the present study are inconsistent to the findings reported by Hansen et al.(40).

This study possesses notable strengths, as it was conducted in a general hospital setting where information on alcohol consumption and alcohol use disorders (AUDs) is particularly relevant due to the presence of comorbidities. Furthermore, the use of a cross-nationally standardized instrument (AUDIT), and the application of a randomized control trial using a single control group provides strong internal validity by minimizing biases, ensuring fairness, and maximize the statistical power of the results of this study.

Despite its strengths, this study subject to certain limitations related to its design and sampling methods, which may affect validity of the findings. Reliance on a convenience sample restricts external validity, as findings may not be generalized beyond the study population. The single control group design used in this study may also limits the comparative scope of the results. Thus, while the results are robust for causal testing, such a design must be interpreted cautiously in terms of generalizability and ethical implications.

Conclusion

According to the present study, the screening and brief intervention has effectively reduced excessive alcohol consumption, especially hazardous and harmful drinking among outpatients at Suhul General Hospital. The effectiveness of the brief intervention was evident at 6-month, and 12-month follow-ups.

Up to the knowledge of the researchers, this alcohol screening and brief interventional study is the first study in Tigray, Ethiopia. For this reason, replication of these findings (longitudinal studies) is warranted to better understand the effectiveness of screening and brief intervention on reducing hazardous or harmful alcohol use. Furthermore, integrating routine alcohol screening and implementing awareness-creation programs are recommended to reduce the prevalence of alcohol use problems and mitigate associated health consequences among outpatients.

Declarations

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Author contribution

AGW was responsible for study concept, study design, data interpretation, data analysis, statistical analysis, and manuscript preparation. EHG and WAG were responsible for data interpretation, statistical

analysis, manuscript preparation, and manuscript editing. MGH and HMG were responsible for data acquisition and data analysis. All authors reviewed the manuscript.

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Data Availability

All data supporting the findings of this study are available from the corresponding author upon a reasonable request.

This study was reviewed and approved by the ethical committee of Aksum University, and all procedures complied with the “Declaration of Helsinki”. Written informed consent of all study subjects was obtained prior to data collection. Participants were informed of their right to withdraw from the interview at any stage without any consequence to their clinical care.

Consent for publication

Not applicable

Competing Interests

The authors declared that they do not have any conflict of interests in the publication of this paper.

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Figures

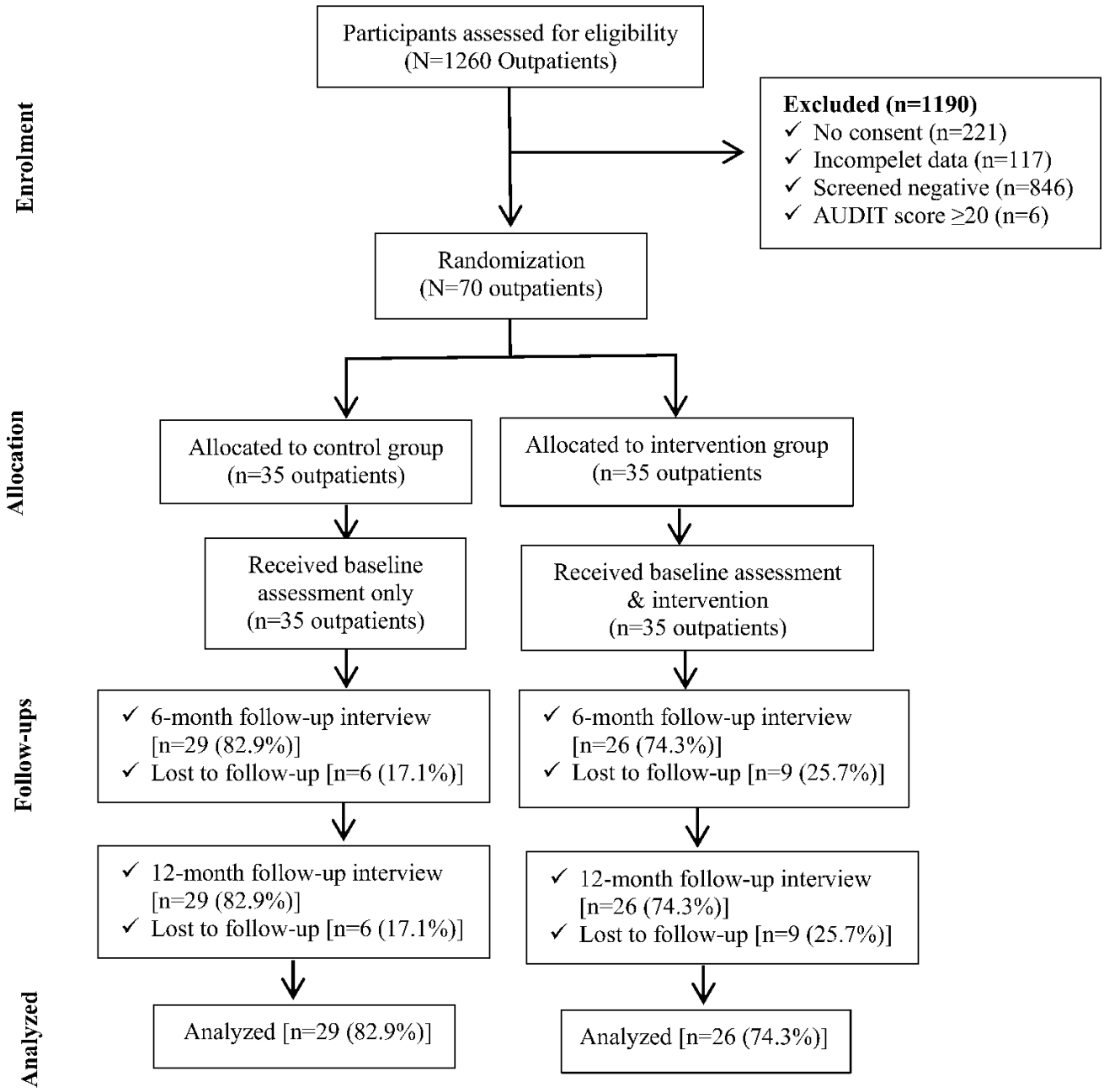


Figure 1: Participants' Flow-chart in the trial.

Figure 1

See image above for figure legend