The Effect of Telephone-Based Intervention (TBI) in Alcohol Abusers: A Pilot Study

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Objective: *The present study was to examine the efficacy of Telephone-based intervention (TBI) with alcohol abusers.*
Material and Method: *Sixty individuals suffering from alcohol abuse were randomly assigned to either the intervention group (n = 30) (in which the TBI was modified based on the combination of motivational interviewing and supportive techniques), or the control group (n = 30) (in which the participants received mail concerning health promotion). Each participant in the intervention group received individual weekly therapy sessions of 20 to 30 minutes via telephone for six weeks. Simultaneously, the participants in the control group received weekly mails for six weeks. Assessment was done at weeks 0, 6, and 18. The primary outcome was defined as a change in the amount of alcohol consumed and the number of days spent drinking. Anxiety, depression, and self-esteem were also compared between the two groups. All were analyzed by intention-to-treat.*
Results: *After 18 weeks, 54 out of the original 60 participants had complete data sets. The mean amount and frequency of alcohol consumption was significantly lower in the intervention group than in the control group (4.1 days $\pm$ 2.0 vs. 2.8 days $\pm$ 2.0, $p < 0.01$). At the end of week six, 37.3% of participants in the experiment group (compared with 11.8% of the control) had successfully decreased their alcohol consumption ($\chi^2 = 16.49$, $df = 1$, $p < 0.001$, with an NNT = 1.69). The frequency of drinking, as determined by the number of drinking days per week, was significantly lower in the experiment group from baseline than in the control group at week 6 ($\chi^2 = 18.20$, $df = 1$, $p < 0.001$, with an NNT = 1.8). There was no difference between week 6 and the end of week 18 regarding amount and frequency of drinking in both groups. There was no difference in depressive, anxiety and self-esteem scores between the two groups over time and these factors were found to have no effect on alcohol consumption in either group. A common problem reported in the telephone group was connection failures.*
Conclusion: *Telephone motivational interviews showed promise in being effective in reducing the frequency and amount of drinking for non-treatment-seeking primary care patients who abuse alcohol. Moreover, the effect of the intervention lasted for at least three months. Limitations of the present study are discussed.*

Keywords: *Telephone-based intervention, Psychotherapy, Alcohol abuse*

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Alcohol consumption in Thai people increased up to 17% in amount between 1997 and 2001. National statistics indicate that 32.7% (16.1 million) of the population over 15 years of age drink alcohol[1]. Prior research suggests that brief intervention tactics such as motivational interview (MI) (5 to 15 minutes of behavioral counseling with 1 to 3 follow-up contacts) can reduce drinking and decrease health care use, motor vehicle crashes, criminal justice system involvement and related expenditures[2-4]. Motivational interviews (MI) were tested with a Thai sample and found to be effective[5].

One of the major concerns regarding treating alcohol-related disorders is that many abusers do not seek treatment. Apart from face-to-face intervention, other modalities such as telephone, mail, and Internet are applied in order to increase the possibility for them to access health care services and to enhance their motivation for change. Unfortunately, many of these alternative modalities have yielded unsteady efficacy in a number of studies[6-8].

The telephone method, however, proved to be helpful in various clinical situations, ranging from individuals with medical conditions to individuals

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with suicidal risk[9,10]. Its benefits included quick accessibility, a reduction of transportation problems, decrease of stigma, and a possible increase in compliance and motivation for change in alcohol or substance usage. McKay et al[11] compared three methods of intervention and found that the telephone method produced better outcomes than standard 12-step group counseling in all measures examined and better outcomes than RP (relapse prevention) in some of the measures. Additionally, Brown et al[12] conducted a randomized controlled trial of telephone intervention using motivational enhancement to compare with mail intervention and found it promising. A more recent research study reported that brief intervention by the telephone method proved to be a promising method in helping problem drinkers who had never sought treatment[13].

Although these results sound promising, the present method of intervention has never been examined in Thailand before. Thus, the main objective in the present study was to test the effectiveness of a telephone-based intervention based on motivational interviewing in a Thai sample of alcohol abusers.

Material and Method

Manual development

All investigators had a background of supportive psychotherapy, which they were encouraged to use along with the motivational interview technique specifically designed for alcohol abusers. The manual was designed collectively regarding the components of interview, techniques of interview and determined indices of each phase. The research team consisted of psychiatrists, psychiatric residents, a social worker, and a psychologist who routinely employed dynamically supportive-oriented psychotherapy in their clinical practice. They were provided a half-day workshop for learning about integrating motivational interviewing techniques into their usual practice with patients suffering from alcohol use disorders. In order to ensure the reliability of interviewers and their adherence to the manual, sessions were tape recorded and discussed weekly. Comments were made by the expert to judge the extent to which each interview each followed the manual. Field testing was carried out until sufficient reliability was reached before the trial.

Eligibility

Eligible subjects were at least 18 years of age, able to complete the questionnaires and able to communicate by telephone, had positive screening by the Thai version of the Alcohol Use Disorders Identification Test (AUDIT)[14,15] and met DSM-IV TR[16] criteria for alcohol abuse by the Thai version of Mini-Neuropsychiatric Interview (MINI)[17,18]. Participants who were pregnant, being treated for alcohol dependence or hospitalized were excluded.

Recruitment

Advertisement of the project was posted in Chiang Mai province in April and May 2008. The prospective subjects were people who lived in Chiang Mai province, patients who came to Maharaj Nakorn Chiang Mai University hospital because of any illness except alcohol dependence, and the patients' relatives who were interested in the project. Informed consent was given after screening positive by AUDIT. All participants received the package of questionnaires. Then, they were randomly assigned to the experiment or the control group. The protocol was approved by the Ethics Committee of the Faculty of Medicine, Chiang Mai University.

Intervention

Intervention group

The subjects were informed that they would receive six weekly sessions of 20-30 minute phone calls from the interviewer in order to help them set goals and develop coping strategies for drinking problems. The interviewers employed a supportive manner to help the subject deal with other issues involved in alcohol consumption (*e.g.* work problems, family problems, grief).

Telephone-based intervention (TBI) was adapted from Motivational Interview (MI) and is based on aspects of cognitive dissonance models by Miller and Rose[19]. TBI was modified from three sessions of 45-50 minutes of face-to-face interview, with shorter session times and longer periods of intervention required. The intervention was gradually planned with the client over the course of six consecutive sessions. First, the participants were asked about their history, personality, defenses, coping strategies, and any other factors associated with their alcohol related problems. Subsequently, they were asked about their personal, achievable goals in handling alcohol issues. Factors that helped or hindered the participants to attain their goals were carefully assessed. Case specific approach was used to help each participant deal with their unique problems. If the participants were not yet committed to change, information about the impact of alcohol on physical, emotional health were delivered to foster

motivation. There was no termination rule, even if the participant had not yet committed in the third session. Participants who were ready to invest in changing their drinking behavior were helped to design, implement, and refine a behavior change plan.

Participants were assisted in setting their drinking targets, and aided in developing strategies to deal with biological, psychological, or social problems (such as withdrawal, insomnia, anxiety and family problems).

In the following session, participants were helped to assess the effectiveness of their plans and strategies. The process would be reassessed if the targeted goal had not yet been achieved. Participants were reminded of termination at session 5 in order to prepare them for an end to clinical intervention and to help them identify resources for further future support.

Control group

In order to avoid uncontrollable issues of discussion during telephone conversations, the authors chose the mailing method for the control group. Control subjects received a two-page pamphlet on general healthy lifestyles excluding alcohol or other substance topics. The subjects were asked to confirm the arrival of each pamphlet by a telephone call.

Primary outcome measure

The main dependent variables were the percentage change in alcohol consumption days and the percentage change of standard drinks at weeks 6 and 18 compared to baseline (week 0). Data was gathered directly from questionnaires and interviews. The number of subjects who decreased their drinking was compared in both groups.

Secondary outcome measure

Secondary outcome measures included the scores of anxiety, depression, and self-esteem. There was a comparison between intervention and control group at baseline, week 6, and end point (week 18).

Measurements

Thai Depression Inventory (TDI)

TDI developed from Thai Beck Depression Inventory, SDS, HRDS, and HADS by Lortrakul & Sukkanich[20]. It is a 20-item self-report scale. Respondents used a 4-point scale ranging from 1 (no symptom) to 4 (mostly severe), such that higher scores are associated with greater feelings of depression. This scale showed a high correlation with Hamilton Depression Rating Scale (HDRS). The severity of depression was scored as follow; < 20 no depression, > 21 mild depression, > 35 major depression, > 40 severe major depression. In the present study sample, TDI has a good reliability with Cronbach's alpha of 0.87.

Thai version of the State Trait Anxiety Inventory (STAI)

Thai-STAI is a 20-item rating scale of anxiety trait and state measurement[21]. STAI is a common trait anxiety scale developed by Spielberger et al[22]. It is a 20-item instrument that represents trait anxiety. Respondents used a 4-point scale ranging from 1 (not at all) to 4 (mostly), such that higher scores are associated with greater feelings of anxiety. In the current study, the Thai STAI had a satisfactory internal consistency (Cronbach's alpha = 0.88).

Thai Rosenberg Self-Esteem Scale

Rosenberg Self-Esteem Scale is a widely used scale for measuring level of self esteem[23]. It is a 10-item questionnaire with a 4-point Likert scale, ranging from "strongly agree" to "strongly disagree". Higher scores are associated with higher levels of self-esteem. In the present study, the Thai version had acceptable internal consistency (Cronbach's alpha = 0.83).

Statistical analysis

Student t-tests were used to test the difference between total alcohol consumption after non-normal data was transformed using square root. Chi-square test and/or Fisher exact test were employed to test the difference between subjects who decreased their consumption and those who did not. Statistical significance was defined as $p < 0.05$. The authors performed intention-to-treat analyses, assuming that all missing three-month drinking data were identical to the baseline. The authors subsequently performed responder analyses, considering only subjects who provided three-month drinking data. SPSS version 17 was used.

Results

Fig. 1 shows how the subjects were recruited in the present study. Table 1 shows the characteristics of both groups. There was no difference between the demographic data except for marital status. Most of the subjects were male (86.40%), had a high school level of education, and were employed.

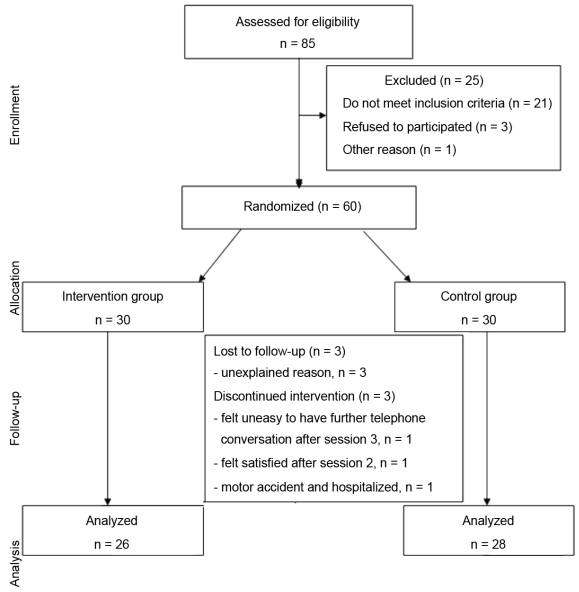

Fig. 1 The study flow chart

Table 2 shows that there was a more significant reduction of drinking days in the telephone group than in the mail group at the end of week 6 (mean difference 2.1 ± 1.7, $p < 0.001$ vs. 0.1 ± 1.7, ns, for drinking days; and mean difference 5.6 ± 5.7, $p < 0.05$ vs. 0.1 ± 5.4, ns for drinks per time. There was no significant difference of mean between two groups with regard to both outcomes. Likewise, no significant difference between two groups regarding depression scores, anxiety scores, and Rosenberg self-esteem scores.

Fig. 2 shows that there was a more significant reduction of drinking days in the telephone group than in the mail group ($t = 4.8$, $p < 0.01$) after week 6 but not at the end of week 18. Fig. 3 shows a significant reduction of the subjects' standard drinks at the end of week 6 but not at week 18 ($t = 3.7$, $p < 0.01$), with effect sizes of 0.6 and 0.3, respectively.

Judging from the number of subjects who were able to decrease their consumption days, the authors found that the telephone group had 3.95 times fewer drinking days than the mail group ($\chi^2 = 16.487$, $p < 0.01$ t2-t1; NS t3-t2, RR = 3.952 (1.744-8.955)). The subjects in the telephone group cut down the amount of consumption 4.3 times more than the mail group ($\chi^2 = 17.041$, $p < 0.01$, RR = 4.266 (1.709-10.647). Number needed to be treated (NNT) was 1.8 to reduce drinking days at week 6 and 2.31 of the reduction of the amount of alcohol consumption at week 6.

Some problems related to telephone intervention found in the telephone group were connection failures, inability to keep up with appointment times, distracting surroundings such as loud noises, and misunderstanding by partner (58.3%, 41.7%, 20.8% and 4.2% respectively).

Discussion

The results were consistent with a number of studies[11,12,24] in the same vein, the intervention group did better than the control group. The subjects in the intervention group significantly decreased both the

Table 1. Demographic data

Characteristic	Telephone group (n = 30) n (%)	Mail group (n = 30) n (%)	p-value
Gender (% male)	84.60	84.50	0.310
Marital status	Single, 14 (42)	Married, 17(51)	0.046*
Education	High school, 15 (50)	High school, 18 (54)	0.485
Occupation	Employee, 20 (60)	Employee, 19 (57)	0.109
Income	5,000-10,000 baht, 23 (69)	5,000-10,000 baht, 21 (63)	0.114
Age, mean $\pm$ SD (min-max)	34.08 $\pm$ 6.73 (24-46)	38.14 $\pm$ 9.37 (23-55)	0.075
Age when first drank, mean $\pm$ SD (min-max)	18.85 $\pm$ 5.30	18.96 $\pm$ 6.02	0.944
Age when regularly consumed, mean $\pm$ SD (min-max)	25.00 $\pm$ 8.39	26.69 $\pm$ 9.32	0.491
Co-morbidity			
None	20 (67)	21 (70)	NS
Anxiety disorder	6 (20)	5 (16.7)	
Depressive disorder	1 (3.3)	1 (3.3)	
Nicotine dependence	3 (10)	3 (10)	

* $p < 0.05$, NS = non-significant

Table 2. Intention-to-treat analysis

	Baseline		Week 6		Week 18		Difference (mean ± SD) (95% CI)		p-value
	n	mean ± SD	n	mean ± SD	n	mean ± SD	Week 6 vs. baseline	Week 18 vs. baseline	
Drinking days per week									
Mail group	30	4.00±2.00	28	4.10±2.00	27	3.90±1.80	0.10±1.70	0.19±1.60	<0.001
Telephone group	30	4.90±1.90	26	2.80±2.00	26	2.60±1.90	2.10±1.70** (1.3-3.1)	2.40±2.00* (1.2-3.2)	0.02+
Standard drinks per time									
Mail group	30	23.70±22.10	28	23.80±22.60	27	22.70±22.30	0.10±5.40	1.00±5.80	<0.001
Telephone group	30	19.20±15.20	26	14.20±14.80	26	13.40±14.80	5.60±5.70** (2.6-8.9)	6.40±9.50* (1.1-9.8)	0.02++
Thai depression inventory scores									
Mail group	30	9.48±7.88	28	10.46±8.99	27	9.48±7.88	NS		
Telephone group	30	10.25±10.82	26	10.15±10.19	26	10.25±10.82			
Anxiety scores									
Mail group	30	23.22±10.40	28	21.48±11.90	27	19.30±11.50	NS		
Telephone group	30	23.74±10.70	26	19.76±11.20	26	19.24±11.30			
Rosenberg self-esteem scores									
Mail group	30	20.93±4.46	28	21.63±4.46	27	22.11±4.77	NS		
Telephone group	30	19.51±4.06	26	19.52±4.06	26	20.70±5.34			

* $p < 0.05$, ** $p < 0.01$, + Cohen effect size d = 0.66, ++ Cohen effect size d = 0.32, NS = non-significant

Table 3. Comparison of the number needed to treat (NNTs) at week 6 and endpoint

	NNT (95% CI)	
	Endpoint vs. baseline	Week 6 vs. baseline
No. of subjects who decreased drinking days	2.28 (2.05, 2.51)	1.80 (-1.8, 2.2)
No. of subjects who decreased amount of consumption	2.31 (2, 2.5)	1.69 (1.5, 1.9)

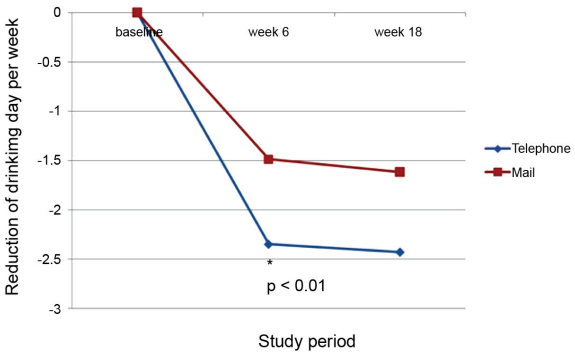

Fig. 2 The reduction of drinking days from baseline between the intervention and control groups

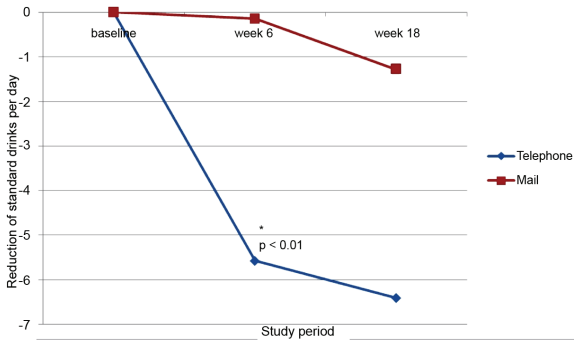

Fig. 3 The reduction of amount of standard drinks from baseline between the intervention and control groups

frequency of drinking days per week and quantity of drinking per time. Cohen's effect size[25] treatment was 0.6 and 0.3 in reducing drinking days and amount, respectively. This indicates that telephone intervention was more helpful at cutting down the frequency of alcohol use than at reducing the amount of drinking. The authors could not conclude a difference between men and women since there was too small a number of female participants in each group to compare. The NNT (1.8) also helped clarify the results in that it indicated that of every 1.8 individuals who received intervention, one would be successfully able to reduce the frequency and amount of drinking. It is important to note that the effect of intervention in the telephone group lasted for three months even after the invention program had stopped.

Both groups were less anxious as time went by, and there was no significant difference between intervention and control group. Surprisingly, data showed that intervention had no impact upon anxiety, and the lower score in both groups could be explained by regression to the mean. At the same time, it was unclear why there was a higher level of self-esteem in the control group. Unlike anxiety and self-esteem, there was no change in depression score for both groups. This might be attributed to the fact that this sample group had a low level of depression at baseline.

Overall, it appeared that the modified motivational interview telephone intervention was effective in reducing the number of drinking days and the amount of drinks.

The present study has several limitations. First, the authors relied on data about the consumption of alcohol from the subjects' questionnaires and from the interviews. A more precise method such as quick drinking screen (QDS) or Timeline Followback[26] may be considered in the next study. Second, although the telephone method is an easy way to contact patients, there are potentially several limitations to such contact methods.

Mobile phone use, while convenient, was not always reliable. Method of contact should be carefully considered. Finally, a larger number of subjects and more reliable measures to track the changes including a longer period of following-up after cessation of the intervention (more than 3 months) should be further investigated.

Conclusion

Telephone motivational interviews showed promise in being an effective method to reduce the frequency and amount of drinking for non-treatment-seeking primary care patients who abuse alcohol. The experimental group's data was significant in its implications although it showed small to medium effect size compared to control group. In addition, the effect of intervention lasted for three months.

Potential conflicts of interest

This project was funded by the Faculty of Medicine, Chiang Mai University, Thailand.

Authors' contributions

Wongpakaran T and Wongpakaran N designed the study. All authors performed TBI intervention, and collected the data. Wongpakaran T and Petcharaj K performed statistical analyses, and wrote the manuscript draft. Wongpakaran N reviewed and revised the manuscript.

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ผลของการใช้การให้การแทรกแซงทางโทรศัพท์ในผู้ที่ดื่มสุรา: การศึกษานำร่อง

ทินกร วงศ์ปการันย์, กชนันทน์ เพ็ชรราช, ณหทัย วงศ์ปการันย์, สังวรณ์ สมบัติใหม่, ธีระรัตน์ บริพันธกุล, ดนัย อินทรกำแหง, กมลพร วรรณฤทธิ์

วัตถุประสงค์: *การศึกษานี้เป็นการตรวจสอบประสิทธิภาพของการให้การแทรกแซงทางโทรศัพท์ในผู้ที่ดื่มสุรา*

วัสดุและวิธีการ: *ผู้ที่มีปัญหาการดื่มสุรา (alcohol abuse) จำนวน 60 ราย ถูกสุ่มเข้ากลุ่มทดลอง และกลุ่มที่ให้การแทรกแซง กลุ่มละ 30 ราย โดยกลุ่มทดลองจะได้รับการให้การแทรกแซงทางโทรศัพท์ซึ่งเป็นการผสมผสานระหว่างการให้จิตบำบัดแบบประคับประคองกับการสัมภาษณ์เพื่อสร้างแรงจูงใจ อาสาสมัครในกลุ่มทดลองจะได้รับจิตบำบัดดังกล่าวสัปดาห์ละหนึ่งครั้ง ๆ ละ 20-30 นาทีเป็นเวลา 6 สัปดาห์ ในขณะที่กลุ่มควบคุมได้รับจดหมายส่งเสริมสุขภาพสัปดาห์ละหนึ่งครั้ง มีการประเมินในสัปดาห์ที่ 0, 6 และ 18 ผลที่ต้องการศึกษาหลักคือการเปลี่ยนแปลงของปริมาณการดื่ม และจำนวนวันที่ดื่มในแต่ละสัปดาห์ มีการเปรียบเทียบภาวะวิตกกังวล ซึมเศร้า และความภาคภูมิใจในตนเองระหว่างสองกลุ่ม ใช้การวิเคราะห์แบบ intention-to-treat*

ผลการศึกษา: *เมื่อครบ 18 สัปดาห์ อาสาสมัครจำนวน 54 ราย จาก 60 ราย อยู่จนครบกำหนดการวิจัย ในสัปดาห์ที่ 6 พบว่าจำนวนวันที่ดื่มโดยเฉลี่ยในหนึ่งสัปดาห์ในกลุ่มทดลองลดลงมากกว่ากลุ่มควบคุมอย่างมีนัยสำคัญ (4.1 วัน $\pm$ 2.0 เทียบกับ 2.8 วัน $\pm$ 2.0, $p < 0.01$) ร้อยละ 37.3 ของกลุ่มทดลองลดปริมาณการดื่มลงได้ ในขณะที่กลุ่มควบคุมลดการดื่มลงคิดเป็นร้อยละ 11.8 ($\chi^2 = 16.49$, $df = 1$, $p < 0.001$, ค่า NNT = 1.69) ความถี่ หรือ จำนวนวันที่ดื่มในหนึ่งสัปดาห์ลดลงในกลุ่มทดลองมากกว่าในกลุ่มควบคุมในสัปดาห์ที่ 6 ($\chi^2 = 18.20$, $df = 1$, $p < 0.001$, ค่า NNT = 1.8) ไม่มีความแตกต่างเรื่องปริมาณการดื่ม และความถี่ในการดื่มระหว่างสัปดาห์ที่ 6 และสัปดาห์ที่ 18 ไม่มีความแตกต่างในคะแนนของภาวะซึมเศร้า วิตกกังวล และความภาคภูมิใจในตนเอง ระหว่างทั้งสองกลุ่มในสัปดาห์ที่ 6 หรือ 18 และปัจจัยดังกล่าวไม่มีผลต่อการดื่ม ปัญหาที่พบบ่อยในกลุ่มทดลองคือการโทรศัพท์ติดต่อไม่ได้*

สรุป: *การสร้างแรงจูงใจโดยวิธีโทรศัพท์พบว่ามีประสิทธิภาพในการลดความถี่ และปริมาณการดื่มในผู้ที่ดื่มสุราที่ไม่ได้มารับการรักษาในโรงพยาบาลตามปกติ ยิ่งไปกว่านั้นผลของการรักษานี้อยู่นานอย่างน้อยสามเดือนจากการติดตามผล ได้มีการอภิปรายถึงข้อจำกัดของการวิจัยครั้งนี้*