

The Effect of Community Empowerment Intervention Program on Reducing Alcohol Consumption among Villagers in Mahasarakham Province, Thailand

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Abstract: Thai people tend to consume more alcohol beverage. Alcohol consumption ranked 3rd as the most important cause of total life years lost by Thai. This research consisted of 2 phases. The cross sectional descriptive study was conducted in the first phase among 115 subjects at Ban Hua Nong, the experimental village and 164 subjects at Ban Khea Lek as the control village in Mahasarakham province to identify alcohol consumption problems. The second phase, randomized control trial aimed to develop and implement community empowerment in intervention program to reduce alcohol consumption. It was to determine the outcome of intervention program in terms of changing knowledge, attitude, participation, satisfaction, AUDIT score and blood examination from laboratory result among randomly sampling of 40 subjects from the experimental group who received the intervention and another 40 subjects from the control group. The study was conducted from November, 21, 2010 to April, 30, 2011. Data were collected using an interview and a questionnaire. Statistical analysis such as frequency, percentage, mean, standard deviation and ANCOVA were used. The result showed that most of the subjects in experimental and control groups had alcohol consumption (54.78%, 46.34%), hazardous alcohol use (69.23%, 56.82%) used to have an accident related to alcohol consumption (17.31%, 14.77%). Comparisons the mean differences of variable scores on alcohol problems between both groups before and after the intervention such as knowledge, attitude, AUDIT, satisfaction, participation, uric acid, triglyceride and GGT of experimental group were statistically significant higher than the control group ($p < 0.05$). However, the other variables, SGOT and SGPT were not statistically different ($p > 0.05$). It can be concluded that community involvement in an Intervention Program was successful for helping drinkers to reduce and stop drinking alcohol. This program should be widely implemented in other similar communities under the principles of community participation. Action research or clustered randomized control trial should be further appropriate research designs to test more measures to reduce alcohol consumptions in various settings and contexts.

Key words: Empowerment Intervention Program, reduce alcohol consumption, knowledge, attitude, satisfaction, participation, Thailand

INTRODUCTION

The World Health Organization (WHO, 2004) estimated that there were about 2 billion people worldwide consuming alcoholic beverage and 76.3 million with diagnosed alcohol use disorders. Thai people tend to consume more alcohol beverages. The average beer consumption/person/litre in 1998-2003 were 21.3, 14.7, 25.1, 24.5, 25.8 and 54.1, respectively. The average wine consumption/person/litre were 0.10, 0.20, 0.30, 0.35, 0.40 and 3.6 by the years 1998-2003 and the average alcohol consumption/person/litre by the years, 1998-2003 were 37.9, 29.8, 39.3, 41.6, 40.9 and 81.7, respectively. Alcohol was the second most risk factors that cause death and disability in Thai population. The most recent burden of disease study in 1999 Disability-adjusted Life Years (DALY) in Thailand; death from alcohol is 4%

(17,000 deaths), death and disability is 5.8% (540,000 years). Estimated economic lost from alcohol in 2003 was 13,007-33,652 million bath and 0.22-0.56 of Gross Domestic Product (GDP) (Bureau of Policy and Strategy, Ministry of Public Health, 2005). Alcohol dependence and harmful use caused a total of 5.6 and 3.9 million years lost among males and females, respectively. This made alcohol consumption ranked 3rd as the most important cause of total years lost by Thai males (Aramrattana, 2006).

Alcohol can damage nearly every organ and system in human body; it is psychoactive and can induce alterations in most if not all brain system and structures. Its use contributes to >60 diseases and conditions including chronic diseases such as alcohol dependence and liver cirrhosis and acute health problem such as injury. Statistics from the Ministry of Public Health

(MOPH) indicated increasing trends of alcohol related mortality and morbidity. During 1977-2003, the annual mortality rates from liver disease and cirrhosis showed a slight increasing trend at 11.8 deaths/100,000 populations/year in 2003. MOPH admission statistic during 1999-2004 showed an obvious increasing trend in liver disease caused by alcohol. Admission rates were for liver disease caused by alcohol were 29.6 cases/100,000 populations/year in 2004 (Aramrattana, 2006). On a population level, alcohol-related harm was not confined to the relatively small number of heavy drinkers or people diagnosed with alcohol use disorders.

Even non-drinkers can become victims of alcohol-related aggression such as light and moderate drinkers which were the majority of the population in many areas who occasionally drink at high risk levels while being individually responsible for a fewer harm than heavy drinkers were collectively responsible, die to their greater numbers for the largest share of alcohol burden on society. The alcohol drinking behavior surveyed in Mahasarakham province in 2004 indicated that 45% of those who drank were the working age-group (15-39 years old) followed by 40-50 years old (44%). They drank 2.3 days week⁻¹ in average.

The volume of mixed white whisky consumption in 2004 was 4,781,220 L whereas in 2005 was decreased to 4,168,340 L. However, beer consumption increased during 2004-2005 from 6,048,925-8,651,153 L.

The latest survey on alcohol consumption in Mahasarakham province during March to May, 2007 which sampling the samples from population of every district, the results showed that drinking divided by sex, male and female were 27.6 and 14.3%, respectively. The AUDIT screening results showed the proportion of drinkers of low risk, risk and high risk were 77.69, 10.25 and 12.06%, respectively. The above figure could infer that the high risk group of Mahasarakham province was high as 42,000 persons (a total population 940,000 persons), the province then declared the Reduce Drinking Project since, 2005 while the Provincial Public Health Office acted as the secretary of the project, aimed at minimizing alcohol drinking among the population. Community involvement has been identified as a key driver in drug and alcohol addict. The key success factors were good relationship, trust and mutual respect.

The Community Intervention Program in reducing alcohol was successful when it starting from problem identification, finding causal factor, planning, implementation and evaluation of an agreed program intervention was the key driver for reduction of alcohol

consumption in community also found. The researcher gives high value to the Community Intervention Program for reducing alcohol consumption. Therefore had develop a Community Intervention Program and tested in Kantarawichai district on the effect for the drinkers. To determine the outcome of Community Empowerment Intervention Program which were applied to the rural drinkers in term of knowledge scores, attitude, participation scores, satisfaction scores, AUDIT score, SGOT, aspartate aminotransferase (SGPT), plasma Gamma Glutamyl Transferase (GGT), uric acid and triglyceride.

MATERIALS AND METHODS

This research aimed to study the effects of Community Empowerment Intervention Program at Hua Nong village of Kamrieng district, Mahasarakham province. The study was conducted between November, 2010 to April, 2011. This research applied the Randomized Control Trial design (RCT) which was a pre- and post-test (Table 1).

Selecting experimental and control villages: The inclusion criteria to select two villages to be assigned as an experimental and a control groups were those two villages in Mahasarakham province which had similar characteristics including; readiness for any public interventions, villagers voluntarily joint the alcohol reducing consumption program had appropriated population size, convenient to access and had similar socioeconomic conditions. Finally after screening all the villages with the above criteria the researcher selected.

Experimental village: Ban Hua Nong Moo 10 Khamrieng sub-district, Kantarawichai district with 115 households and 513 villagers.

Control village: Ban Khealek, Kao Yai sub-district, Kantarawichai district with 164 households and 600 villagers.

Selecting samples from the experimental village: The population from the experimental village under investigation and the conditions set forth for the alcohol reducing program were including:

Table 1: Randomized control trail design

Population groups	Before	Intervention	After
Experimental group	O1	X1	O2
Control group	O3		O4

O1, O3: Data was collected before the intervention; O2, O4: Data was collected after the experimental intervention; X1 = Community Intervention Program

- Alcohol drinkers who were not <20 years old
- Those drinkers volunteer to quit alcohol consumption
- Their family and relatives promised to the drinkers to reduce alcohol consumption or quit alcohol
- Key community leaders participated in the alcohol reducing program were; community development facilitator, local administrative organization officer, local health officer, village head, local wisdom philosopher, teacher, religious leader, health volunteer and grocery owner

Selecting samples from the control village:

- Alcohol drinkers who were not <20 years old
- Those drinkers volunteer to participate in the program

Sample size determination: The sample size was determined using the guiding equation of Lemeshow and Organization (1990) which was:

$$n / \text{group} = \frac{2 \times \sigma^2 [Z_{\alpha} + Z_{\beta}]^2}{(\mu_1 - \mu_2)^2}$$

Calculated : n/group = 40 individuals

This study should collect at least 40 individuals of for both the experimental and comparison groups by simple Random Sampling Technique. The interventions are community leader capacity building, community mobilization and evaluation.

Experimental group: The study used Community Empowerment Program to facilitate the drinkers to reduce alcohol consumption. The drinkers received alcohol consumption reduction interventions which applied the community involvement principles. The interventions consisted of Buddhist chanting (Sarapunya) and meditation, self-control learning, knowledge on alcohol consumption problems, impact of alcohol survey, good versus bad points of change and not to change, self reward learning, experience from quitting alcohol, personal capacity examination, setting behavioral changing goals and commitments.

Control group: No treatment intervention was applied to the control group. The drinkers were basically received ordinary health service which involved normal health education by public health personnel. It was a routine service delivered by local health organizations nationwide. The instruments in this study included:

- Structure questionnaire which consisted of 6 parts; demographic data, alcohol drinking behaviors, knowledge on alcohol problems, attitude on alcohol problems, AUDIT scores, participation assessment and satisfaction assessment. Three experts were consulted during construction of questionnaire for its validity. The part of attitude, satisfaction and participation were tested for its reliability in 30 samples (other than the experimental and control groups) its Cronbach's alpha coefficient was 0.86. The field researcher after trained by the researcher collected the data from drinkers in the experimental and control villages before and after the interventions
- Laboratory test from clot blood samples which were collected from drinkers in both experimental and control groups before and after the interventions for uric acid, triglyceride, SGOT and SGPT by well trained staff and were tested in Mahasarakham Hospital excepted for GGT test which was done in Rajavithi Hospital

After data collection, data was coded and analyzed using the STATA Program:

- Descriptive statistics were used for explaining demographic characteristics of the population and subjects; frequency, percentage, mean and standard deviation
- Inferential statistics which applying ANCOVA to determine the mean different of each outcome variable (knowledge, attitude, AUDIT score, participation, satisfaction, triglyceride, uric acid, SGOT, SGPT and GGT. The results were presented for mean different, 95% CI and p-value

RESULTS

Characteristics of experimental and control groups

Experimental group: Majority of them were males (52.5) with the average age of 46.55±10.45 years old. Most of them were married (85%), finished primary education (67.5%), farmers (82.5%). Their median monthly income was 5,000 baht (min:max = 500:30,000 baht). The average family size was 4.4±1.57 persons. Most of them did not have chronic disease (72.5%). Almost all of them had family members drank alcohol (95%) had friends drank alcohol (67.5%) and had information on alcohol problems from health personnel (92.5%) (Table 2).

Control group: Majority of them were females (57.5%) with the average age of 45.03±10.81 years old. Almost all were married 95%, finished primary education 67.5%,

Table 2: Personal characteristics of the experimental and control group

Personal characteristics	Experiment (n = 40)		Control (n = 40)	
	No.	(%)	No.	(%)
Sex				
Females	19	47.5	23	57.5
Males	21	52.5	17	42.5
Age				
<30 years	2	5	2	5
31-40 years	0	0	2	5
41-50 years	20	50	21	52.5
>50 years	18	45	15	37.5
Mean±SD	46.55±10.45		45.03±10.81	
Median (min, max)	47 (23, 71)		45 (23, 65)	
Marital status				
Single	4	10	2	5
Married	34	85	38	95
Widow/divorced/ separated	2	5	0	0
Educational attainment				
Primary	27	67.50	27	67.50
Secondary	10	25	9	22.50
Occupation				
Farmers	33	82.5	30	75
Workers	4	10	4	10
Government service/ state enterprise	1	2.5	1	2.5
Merchandise	0	0	1	2.5
Others	2	5	4	10
Monthly income				
≤5,000 baht	24	60	27	67.5
5,001-8,000 baht	7	17.5	3	7.5
8,001-10,000 baht	4	10	8	20
>10,000 baht	5	12.5	2	5
Mean±SD	6675±5659.74		±3568.02	
Median (min, max)	5000 (500,30,000)		4750 (1000,15,000)	
Family member				
1-2 persons	4	10	7	17.5
3-4 persons	20	50	21	52.5
≥5 persons	16	40	12	30
Mean±SD	4.4±1.57		4.13±1.68	
Median (min, max)	4 (1, 8)		4 (1, 7)	
Had chronic health problems				
No	29	72.50	29	72.5
Yes	11	27.50	11	27.5
Had family member drank alcohol				
No	2	5	0	0
Yes	38	95	40	100
Had close friend drank alcohol				
No	13	32.5	20	50
Yes	27	67.5	20	50
Information sources on alcohol problems (can answer >1)				
Television/radio	27	67.5	26	65
Health personnel	37	92.5	36	90
Print materials	19	47.5	10	25

farmers 75% with median monthly income of 4750 baht (min:max = 1000:15,000). The average family size was 4.13±1.68 persons. Most of them did not have chronic health problems (72.5%).

All of them had family members drank alcohol, half had close friend drank alcohol and 90% received information concerning alcohol problems from health personnel (Table 2).

Before the intervention: The control group had statistically significant higher mean score of knowledge on alcohol problems than the experimental group 1.95 scores (95% CI = 1.33-2.57, p<0.001). The attitude score of the control groups were also 5.85 scores (95% CI = 4.16 to 7.53, p<0.001 statistically significant higher than the experimental group. Mean satisfaction score of the experimental group was not statistically significant higher than those of the control group 3.02 scores higher (95% CI = -0.63 to 6.68, p = 0.1). Average participation score of the experimental group were not statistically significant higher than those of the control group (3.00 scores higher (95% CI = -0.78 to 6.74, p = 0.11).

Concerning alcohol consumption problems the experimental had statistically significant more problems than the control group identified by the AUDIT scores of the experimental group were 5.93 scores (95% CI = 3.22-8.62, p<0.001) higher than those of the control group. Mean TG of the experimental group were statistically significant higher than those of the control group 79.39 scores (95% CI = 11.29-172.01, p = 0.027). Mean of other health status indicators of the experimental groups were not statistically significant higher than those of the control group including: mean different of uric acid is 0.23 (95% CI = -0.38 to 0.82, p = 0.456), mean different of GGT is 20.18 (95% CI = -49.67 to 128.12, p = 0.378), mean different of SGOT is 12.07 (95% CI = 0.30-28.40, p = 0.046), mean different of SGPT is 1.26 (95% CI = -9 to 12.90, p = 0.721) (Table 3).

In term of knowledge on alcohol problems, it was found that the mean different after and before the interventions of the experimental group was statistically significant higher than the control group 1.49 scores (95% CI: 0.87-2.11, p<0.001). The mean different of attitude score after and before the interventions of the experimental group was statistically significant higher than the control group 11.11 scores (95% CI: 9.18-13.04, p<0.001). The mean different of satisfaction scores after and before the interventions of the experimental group was 4.73 scores statistically significant higher than the control group (95% CI: 2.32-8.77, p<0.001). The mean different of participation score after and before the interventions of the experimental group was 6.06 scores statistically significant higher than the control group (95% CI: -3.25 to 11.28, p<0.001). The mean different of AUDIT scores after and before the interventions of the experimental group was 6.08 scores statistically significant higher than the control group (95% CI: -7.94 to -4.23, p = 0.001).

Table 3: Comparing the mean score of knowledge, attitude, satisfaction, participation, AUDIT scores and health status indicators between the experimental and control groups before the interventions

Factors	Mean (SD)		Mean different (95% CI)	p-values
	Experimental group (n = 40)	Control group (n = 40)		
Knowledge	5.45 (1.36)	7.40 (1.55)	-1.95 (-2.57 to -1.33)	<0.001
Attitude	26.79 (3.00)	32.64 (4.00)	-5.85 (-7.53 to -4.16)	<0.001
Satisfaction	26.02 (8.90)	23.00 (7.40)	3.02 (-0.63 to 6.68)	0.10
Participation	27.35 (9.11)	24.35 (7.5)	3.00 (-0.78 to 6.74)	0.11
AUDIT score	15.28 (6.10)	9.35 (5.75)	5.93 (3.22 to 8.62)	<0.001
Triglyceride	165.30 (102.64)	244.69 (192.25)	-79.39 (-172.01 to -11.29)	0.027
Uric acid	6.02 (1.26)	5.79 (1.23)	0.23 (-0.38 to 0.82)	0.456
GGT	139.58 (261.31)	119.40 (150.72)	20.18 (-49.67 to 128.12)	0.378
SGOT	44.73 (40.57)	32.66 (18.73)	12.07 (0.30 to 28.40)	0.046
SGPT	35.60 (34.41)	34.34 (18.19)	1.26 (-9.00 to 12.90)	0.721

Table 4: Compare the mean different of knowledge on alcohol problems, attitude on alcohol problems, satisfaction scores, participation scores, AUDIT scores, triglyceride, Uric acid, GGT, SGOT and SGPT Between before and after the interventions of the experimental and comparison groups

Factors	Experiment (n = 40)		Control (n = 40)		Adjusted mean difference (95% CI)	p-values at 6 months
	Baseline	6 months	Baseline	6 months		
Knowledge	5.45 (1.36)	7.90 (1.68)	7.40 (1.55)	7.88 (1.50)	1.49 (0.87 to 2.11)	<0.001
Attitude	26.79 (3.00)	40.33 (4.91)	32.64 (4.00)	35.02 (4.66)	11.11 (9.18 to 13.04)	<0.001
Satisfaction	26.02 (8.90)	48.20 (5.88)	23.00 (7.40)	42.85 (7.64)	4.73 (2.32 to 8.77)	<0.001
Participation	27.35 (9.11)	48.40 (5.35)	24.35 (7.50)	36.52 (4.42)	6.06 (3.25 to 11.28)	<0.001
AUDIT scores	15.28 (6.10)	4.98 (4.10)	9.35 (5.75)	8.41 (5.03)	-6.08(-7.94to-4.23)	<0.001
Triglyceride	165.30 (102.64)	148.48 (98.42)	244.69 (192.25)	279.41 (205.62)	-74 (-127.76 to -21.56)	0.006
Uric acid	6.02 (1.26)	5.58 (1.17)	5.79 (1.23)	5.97 (1.24)	-0.56(-0.88to-0.23)	0.001
GGT	139.58 (261.31)	95.87 (152.48)	119.40 (150.72)	142.19 (250.05)	-62.89 (-119.35 to -6.44)	0.029
SGOT	44.73 (40.57)	48.13 (29.37)	32.66 (18.73)	63.46 (129.15)	-21.31(-63.23 to 20.61)	0.315
SGPT	35.60 (34.41)	27.58 (16.37)	34.34 (18.19)	56.76 (127.20)	-29.57 (-69.87 to 10.74)	0.149

The mean different of triglyceride after and before the interventions of the experimental group was 74.66 mg dL⁻¹ statistically significant higher than the control group (95% CI: 21.56-127.76 mg dL⁻¹, p = 0.006). Uric acid was also similar. The mean different of uric acid after and before the interventions of the experimental group was 0.56 mg dL⁻¹ statistically significant higher than the control group (95% CI: -0.88 to -0.23 mg dL⁻¹, p = 0.001).

On the other hand, the mean different of GGT after and before the interventions of the experimental group was 62.89 U L⁻¹ statistically significant higher than (95% CI: 6.44-119.35 U L⁻¹, p = 0.029). The mean different of SGOT after and before the interventions of the experimental group was 21.31 U L⁻¹ non statistically significant higher than the control group (95% CI: -20.61 to 63 U L⁻¹, p = 0.315). Similarly, the mean different of SGPT after and before the interventions of the experimental group was 29.56 U L⁻¹ non-statistically significant higher than the control group (95% CI: -10.73 to 69, p = 0.149) (Table 4).

DISCUSSION

It was clear that the Community Empowerment Intervention Program which applied to the rural drinkers were effective to health reducing the alcohol

consumptions. It showed two steps of improvements; there were improvements of knowledge score on alcohol problems, attitude scores on alcohol problems, participation scores on alcohol reduction interventions program, satisfaction scores on alcohol reduction interventions program as following; the mean different of knowledge on alcohol problems after and before the interventions of the experimental group was statistically significant higher than the control group 1.49 scores (95% CI: 0.87 to 2.11, p<0.001), the mean different of attitude score after and before the interventions of the experimental group was statistically significant higher than the control group 11.11 scores (95% CI: 9.18 to 13.04, p<0.001), these improvement outcomes; there were improvements of alcohol drinking behaviors (reduced drinking) and health outcomes as following; the mean different of AUDIT scores after and before the interventions of the experimental group was 6.08 scores statistically significant higher than the control group (95% CI: -7.94 to -4.23, p = 0.001), the mean different of uric acid after and before the interventions of the experimental group was 0.56 mg dL⁻¹ statistically significant higher than the control group (95% CI: -0.88 to -0.23 mg dL⁻¹, p = 0.001), the mean different of triglyceride after and before the interventions of the experimental group was 74.66 mg dL⁻¹ statistically significant higher than the

control group (95% CI: 21.56 to 127.76 mg dL⁻¹, p = 0.006), the mean different of SGOT after and before the interventions of the experimental group was 21.31 U L⁻¹ non statistically significant higher than the control group (95% CI: -20.61 to 63 U L⁻¹, p = 0.315).

The mean different of SGPT after and before the interventions of the experimental group was 29.56 U L⁻¹ non statistically significant higher than the control group (95% CI: -10.73 to 69, p = 0.149). The mean different of GGT after and before the interventions of the experimental group was 62.89 U L⁻¹ statistically significant higher than (95% CI: 6.44-119.35 U L⁻¹, p = 0.029).

These positive results should be from the community involvement interventions. This program applied religion practices and socio-culture measures to facilitate family and community actions in supporting drinkers to reduce and stop drinking. The program could gain participation and support from families, villagers and community. Geist-Martin *et al.* (2003) studied the influence of family and friends in helping those alcoholics in reduction of drinking. They found that family and friend could much help alcoholic by supporting them with understanding advices and any other helping hands. The family and community were fully participated in identifying problems, measures to help managing the problems. From the citizen viewpoint, participation enables individuals and groups to influence agency decisions in a representational manner (Glass, 1979). Participation in identifying need to change was one of the key successes which were supported by the study of Staffrom and Ostergren (2008) found that the decrease in alcohol-related accidents and violence among 15-16 years old in Trelleborg between 1999 and 2002 was likely to be attributed to the identified need for reduction in excessive drinking and frequency of distilled spirits consumption. The community was able to develop and implemented the alcohol consumption reduction measures with relevant to the Buddhist rural context.

Holder and Reynolds (1997) studied 3 communities in alcohol reduction and they found the process of creating public policy for alcohol reduction in community was vital. This would lead to the success of community program intervention. Goodheart and Laitman (2005) found that the alcohol reduction campaign would be successful or not depending on the degree of community cooperation. Community participation was one of the most effective measures which got supports from other studies including Baranowski *et al.* (2002) which found that the community involvement could be a driver for reducing consumption. Hingson and Howland (2002) also found comprehensive community intervention

approaches may have considerable potential to reduce college-age drinking problems, especially given the success of these programs in reducing alcohol-related problems and in preventing health compromising behaviors among youth. The improvement in term of liver function of uric acid, triglyceride and GGT could confirm the reduction of alcohol intake which resulted in the reduction of the liver enzymes and improved metabolism. It was confirmed by the study claimed that GGT, MCV, SGOT and SGPT were objective indicators of alcohol dependence. GGT can also be used for follow up. In addition, these tests can be useful adjuncts to clinical examination for the assessment of alcohol dependence during annual medical examinations. Morbidity values of GGT, MCV, SGOT and SGPT have been claimed to be efficient indicators of alcoholism. Further, it has been found that abstinence from alcohol results in reversal of biochemical and hematological values (Whitehead *et al.*, 1978; Ray, 1989; Vaswani and Desai, 1999; Chaudhury *et al.*, 2002).

CONCLUSION

The studied clearly proved that the Community Involvement Interventions Program which applied religion practices and socio-culture measures to facilitate family and community actions in supporting drinkers to reduce and stop drinking was successfully help drinkers to reduce and stop drinking alcohol. One of the key success factors was clearly understand the context of the community and drinker and fully participation of the community in developed and implemented their own policy reducing and stopped drinking alcohol. This in Community Involvement Interventions Program principles should be widely adopted and implemented in the communities with has similar setting. It could identify the good practices and measures which could help controlling alcohol consumption problems. Action research or cluttered randomized control trial should be further appropriate research designs to test more measures to reduce alcohol consumptions in various setting and contexts.

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REFERENCES

- Aramrattana, A., 2006. Health consequences of drinking alcohol. Proceedings of the 2nd National Conference on Alcohol Consumption and Related Problems, (ACRP'06), Bangkok, Thailand -.
- Baranowski, T., C.L. Perry and G.S. Parcel, 2002. How Individual Environment and Health Behavior Interact: Social Cognitive Theory. In: Health Behavior and Health Education: Theory, Research and Practice, Granz, K., B.K. Rimer and F.M. Levis (Eds.). 3rd Edn. Jossey-Bass, San Francisco, CA., USA., pp: 165-184.
- Bureau of Policy and Strategy, Ministry of Public Health, 2005. Health policy in Thailand 2005. Chapter 1: Health Policy. <http://bps.ops.moph.go.th/webenglish/HealthPolicy5.pdf>.
- Chaudhury, S., S.K. Das, B.S. Mishra, B. Ukil, P. Bhardwaj, R. Bhardwaj and N.L. Dinker, 2002. Physiological assessment of male alcoholism. *Indian J. Psychiatry*, 44: 144-149.
- Geist-Martin, P., K. Horsley and A. Farrell, 2003. Working Well: Communicating Individual and Collective Wellness Initiatives. In: Handbook of Health Communication, Thompson, T.L., A. Dorsey and K.L. Miller (Eds.). Lawrence Erlbaum, Mahwah, NJ., USA., pp: 423-443.
- Glass, J.J., 1979. Citizen participation in planning: The relationship between objectives and techniques. *J. Am. Plann. Assoc.*, 45: 180-189.
- Goodheart and Laitman, 2005. An Integrated Environment Framework: Education, Prevention, Intervention, Treatment and Enforcement. In: Changing the Culture of College Drinking: A Socially Situated Health Communication Campaign, Lederman, L.C. and L.P. Stewart (Eds.). Hampton Press, Cresskill, N.J., ISBN-13: 978-1572735934, pp: 179-192.
- Hingson, R. and J. Howland, 2002. Comprehensive community interventions to promote health: Implications for college-age drinking problems. *J. Stud. Alcohol Suppl.*, 14: 226-240.
- Holder, H.D. and R.I. Reynolds, 1997. Application of local policy to prevent alcohol problems: Experiences from a community trial. *Addiction*, 92: 285-292.
- Lemeshow, S. and W.H. Organization, 1990. Adequacy of Sample Size in Health Studies. John Wiley and Son, Chichester, ISBN: 9780471925170, Pages: 239.
- Ray, R., 1989. Alcoholism: Diagnosis and phenomenology. Proceedings of the Indo-US Symposium on Alcohol and Drug Abuse, November 21-26, 1986, National Institute of Mental Health and Neuro Sciences (NIMHANS), Bangalore, India.
- Staffrom, M. and P.O. Ostergren, 2008. A community-based intervention to reduce alcohol-related accidents and violence in 9th grade students in Southern Sweden: The example of the Trelleborg Project. *Accid. Anal. Prev.*, 40: 920-925.
- Vaswani, M. and N.G. Desai, 1999. Sensitivity and Specificity of ADH as a biochemical marker in alcohol dependence. *Indian Context Res. Commun. Alc. Subst. Abuse*, 20: 135-140.
- WHO, 2004. Global status report: Alcohol policy. Department of Mental Health and Substance Abuse Geneva, Switzerland.
- Whitehead, T.P., C.A. Clarke and A.G. Whitefield, 1978. Biochemical and hematological markers of alcohol intake. *Lancet*, 1: 978-981.