Health Promotion Program by Buddhism Approach to Minimizing Food Borne Diseases in Household

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ABSTRACT

This Quasi-experimental research design was implemented to examine the effectiveness of health promotion program according to Buddhism doctrine using pre-test and post-test questionnaires. Buddhism doctrine approach is a right understanding process (Samma-dithi), which focuses on wisdom realized by hearing or reading (Suta-maya-pannas), (2) wisdom realized by thinking, reflection or contemplation (Cinta-maya-panna) and (3) wisdom realized by practice or experience (Bhavana-maya-panna). Yanyaw sub district, Sawankalok district in Sukhothai province was purposively selected based on high prevalence rate of food borne disease, readiness and willingness to participate of researchers. 60 housewives were chosen to be the samples of study. The analysis statistic was pair T-test. Results showed that after implement, the housewives group had significant higher scores ($p < 0.001$) of knowledge, and practice than that prior to participate the program.

Since the foodborne diseases reducing according to Buddhism doctrine program was effective, the program should be adopted to solve foodborne disease problems in other communities. Furthermore the program should be reproduced by the involved the subjects as the trainers to educate other housewives in their own community.

Key words: Health promotion program, buddhism doctrine, foodborne diseases

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Introduction

Foodborne diseases are leading cause of illness and globally kill an estimated 2.1 million people annually, mostly are children in developing countries.[1] A Foodborne disease is defined by the World Health Organization (WHO) as a disease of infectious or toxic nature caused by, or thought to be caused by, the consumption of contaminated food or water.[2] Foodborne diseases take a huge toll on human health. The microorganisms documented to cause food poisoning comprise approximately 50 species of fungi, bacteria and viruses.[3] Foodborne bacteria refer to a group of bacteria predominantly transmitted to human via food; this group of bacteria can cause two main types of diseases including foodborne intoxication and foodborne infection. Recently, the incidence of foodborne diseases has been increasing, probably resulting from changes in livestock industry, ways of living, transportation, pathogen virulence, demographic characteristics or diagnostic capability.

Major foodborne diseases resulting from bacteria in food of animal origin include salmonellosis, campylobacteriosis, listeriosis, Vibrio parahaemolyticus gastroenteritis, and E. coli infection.[4] Foodborne illness is a major problem around the world. Recently, more foodborne disease outbreaks involve agricultural products as the vehicle and viruses as the source of contamination[5] ; and foodborne diseases mediated by pathogenic microorganisms or microbial toxins are an important global public health problem.[6]

One of the most common causes of food poisoning is bacteria transmitted from food not being properly cooked or kept at a proper temperature. This carries a nasty risk of food poisoning. The food hygiene rules should be followed every time, not some of the time, as is unfortunately sometimes the case.[7] The food is handled, cooked and provide to the consumer are substantially important to the public health[8] since they would possibly be exposed to various contamination sources[9] if housewive has not taken into account the food sanitation condition or good hygienic practices. Foods from kitchen in household with a poor hygienic condition may, in the worst case, become a source of food poisoning and other serious infectious diseases for the family member.

In Thailand, Buddhism has influences over Thai people in their daily lives. Thai people usually follow Buddhism for the problem solving. In the Buddhist context, various methods of systematic reflection are given including the method of "how to think". One must engage the mind and consider matters thoroughly in an orderly and logical manner through application of critical and systematic reflection. The researchers were, therefore, interested in studying the health promotion program according to Buddhism Doctrine. The study aims to examine the effectiveness of health promotion program base on Buddhism for minimizing Foodborne Diseases in household.

Methods

This Quasi-experimental design was implemented to examine the effectiveness of health promotion program according to Buddhism Doctrine using pre-test and post-test questionnaires. Sawankalok district in Sukhothai province was purposively selected based on high prevalence rate of foodborne disease, readiness and willingness to participate of researchers. The statistic showed that the morbility rate of diarrhea in Sawankalok district were 2038.17 and 2453.48 per 100,000 population in the year 2007 and 2008[10] respectivly. Yanyao sub-districts were chosen to be the site of study by purposive sampling. The research procedure was divided into three phases: preparatory, implementation, and evaluation phases. In preparatory phase, the researcher spent approximately three months to prepare our study sites by building network connections, selecting housewives, and studying knowledge and practice for food contamination reduction of housewives. The subjects included in this study were 420 housewives from Yanyao sub-districts, and recruiting only 60 low score of knowledge and practice for food contamination reduction of subjects to participate in the activities.

In implementation phase, health promotion program according to Buddhism doctrine activities were carried out by the responsible housewives and the researchers. The Buddhism doctrine approach was developed base on Ariya-sacca, the researcher raised the issues to be discussed in the meeting as follows: Problem (Dukkha-Suffering): Was there any problem of the community originated from diarrhea? How? Cause of problem (Samutai - Cause of Suffering): What was the cause of the problem? Why? With whom? Guideline for solution (Nirot - Extinction of suffering): What should we do to reduce or eliminate the problem? Solution performance (Makka-Four paths leading to Nirvana): How to solve a problem?

The resulting brainstorm of using group process lead to the step of right understanding (samma-ditthi) module. Buddhism categorized wisdom into three types: (1) wisdom realized by hearing or reading (Suta-maya-pannas) This module, the participants learn about food contamination, classification and hazards of foodborne disease. This module lasted 3 hours and its activities were organized in four small groups and one large group. The main trainer was a staff from Naresuan University. (2) wisdom realized by thinking, reflection or contemplation (Cinta-maya-panna) This module, the participants learn about the impact of foodborn disease on health food sanitation, personal hygiene and understand first aid for diarrhea and patient transfer system. This module lasted 6 hours and its activities were reflection and discussion in four small groups and one large group. The main trainer was a staff from Naresuan University. (3) wisdom realized by practice or experience (Bhavana-maya-panna) This module, the participants learn about cleaning of containers, dressing of food handlers, hygienic practice in food cooking, preventing contamination from infected wound, prevention of contagious diseases. This module lasted 12 hours and its activities were all organized in one large group.

The main trainer was a staff from Naresuan University.

For evaluation phase, pre-test and post-test evaluations were based on the validated questionnaires that modified it to fit the context of this study. The questionnaires had three sections: (1) knowledge of foodborne disease. The Reliability coefficient of Knowledge (Reliability = 0.6578) was found out by using the formula K-R_{21} of Kuder Richardson. Possible scores were ranged between 0-20 points. A mean score and standard deviation of the group were used to classify subjects into 3 groups as follow: Good level: scores > Mean + S.D. Moderate level: scores = Mean ± S.D.Low level: scores < Mean ± S.D. (2) practice of food contamination reduction. (3) coliform bacteria contamination testing in foods and food containers/utensils prepared by the Department of Health which renders sensitivity in the range of 95-100%. For testing of coliform bacteria contamination, samples/specimens were collected by using test kit SI-2 including 3 food samples in each household, 3 swab-specimens from food containers/utensils and also 1 swab-specimen from a housewive's hand.

As data collection, the pre-test was administered on the first day of the implementation phase and after close phase the post-test was administered. Data analyses were performed using descriptive statistics (frequency, mean, standard deviation, and percentage) inferential statistics (paired-*t* test) to evaluate changes of participants' knowledge, and practice. Pre-test and post-test evaluations with two weeks apart were collected in this last phase.

Results

All subjects participated in pre-test and post-test evaluations without any lost to follow up. Personal characteristics of all the subjects were shown in Table 1. A majority of subjects in this study were aged 40-49 years old, had only primary school education (grades 1-6), and had been cooking for family for more than 10 years. A majority of subjects had annual household income more than 30,000 Baht. (Table 1)

Knowledge, and practice were each categorized into three levels (Table 2) using their mean score and standard deviation of all the subjects from pre- and post-evaluations. Scores greater than the mean plus s.d. was categorized as good; scores between the mean plus and minus s.d. was categorized as moderate; scores less than the mean minus s.d. was categorized as low[10-11]. In the housewive group, most subjects had low to moderate levels of knowledge prior to program implementation and after the program almost the subjects had at least moderate level of knowledge. These significant shifts from low to moderate and moderate to good levels. In terms of practice level, in the housewive group most subjects had moderate level of practice before receiving the program and there were fourteen subjects with an increase level of practice from low to moderate levels. Details of all the levels of knowledge, and practice were shown in Table 2.

Table 1 Personal characteristics

Characteristics	Experimental group (n = 60) Number (%)
Age	
< 30	9 (15)
30 - 39	16 (26.6)
40 - 49	22 (41.5)
50 - 59	12 (36.6)
> 60	1 (1.6)
Mean ± S.D.	43.5 ± 9.8
Min - Max	23 - 61
Education level	
illiteracy	- -
grades 1-6	38 (63.3)
grades 7-9	15 (25)
grades 10-12	7 (11.6)
Duration in cooking for family	
less than 5 year	2 (3.3)
between 5-10 years	11 (18.3)
more than 10 years	47 (78.3)
Annual household income	
less than 10,000 Baht	1 (1.6)
between 10,000-20,000 Baht	5 (8.3)
between 20,001-30,000 Baht	19 (31.6)
more than 30,000 Baht	35 (58.3)

Table 2 Levels of knowledge, and practice on food borne reduction between pre- and post-test in housewives group

Levels of knowledge, and practice		Experimental group	
		Pre - test	Post - test
		Number (%)	Number (%)
Knowledge level			
Low	(0 - 10)	22 (36.6)	1 (1.6)
Moderate	(11 - 15)	35 (58.3)	44 (73.3)
Good	(16 - 20)	3 (5)	15 (25)
Practice level			
Low	(0 - 18)	15 (14.6)	1 (1.6)
Moderate	(19 - 25)	39 (80.5)	45 (75)
Good	(26 - 30)	6 (4.9)	14 (23.3)

The results of the health promotion program according to Buddhism doctrine process assessment before and after receiving the program. All the mean scores of knowledge and practice on food borne reduction were significantly increased after receiving the program. The total knowledge, and practice scores were increased from 11.30 to 14.31 and 21.80 to 24.76, respectively. Details of comparisons of mean scores of knowledge, and practice are shown in Table 3.

Table 3 Comparisons of mean scores before and after applying The Buddhism Doctrine process on knowledge, and practice on food borne reduction

Experimental group Variables	Total score	Pre		Post		Paired t-test	*p-value*
		Mean	S.D.	Mean	S.D.		
Total knowledge score	20	11.33	3.14	14.31	2.21	9.74	< 0.000
Total practice score	30	21.80	4.09	24.76	3.02	8.32	< 0.001

In terms of the number of Coliform bacteria contamination by food, utensil and hand of housewives, it was found that all the number of food contamination, utensil contamination and food handlers contamination were decreased after receiving the program. The total Coliform bacteria contamination by food, plate and hand of housewives were decreased from 22.7 to 2.2 and 23.3 to 1.6 as well as 26.6 to 1.6 respectively (Table 4).

Table 4 The number and Percent of Coliform bacteria contamination by food, utensil and hand of housewives

Foods and utensils		Before (Positive)		After (Positive)	
		Number	Percent	Number	Percent
Foods					
Food samples	n=180	41	22.77	4	2.2
Utensil					
Chopping boards	n=60	17	28.33	5	8.3
Knives	n=60	11	18.33	1	1.6
Glasses	n=60	20	33.33	3	5
Spoons, forks	n=60	12	20	-	-
Plates	n=60	14	23.3	1	1.6
Food handlers					
Hands of housewives	n=60	16	26.6	1	1.6

Discussion

The health promotion program according to Buddhist doctrine for reducing the foodborne disease in farmers was effective as shown in the results of significantly increased knowledge and practice scores after subjects receiving the program. The result of the program was consistent with other studies of health promotion program for the safe use of pesticides in Thai farmers of Janhong.[12]

Since the health promotion program was effective, because the Buddhist doctrine is aiming to instruct people to be reasonable and think before taking actions. The researcher thinks Buddhist doctrine is appropriate for problem solving in the community because of its systematic means and its simple steps which can positively influence Buddhists to use reasons to examine outcomes/results. On the other hand, the program should be adopted to solve pesticide used problems in other communities. Furthermore, the program should be reproduced by involving the subjects as the trainers to educate other housewives in their own community. Lastly the concept of a participatory learning program may be used in solving problems of other diseases such as dengue hemorrhagic fever, hypertension, and diabetes mellitus.

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โปรแกรมส่งเสริมสุขภาพในการลดโรคจากอาหารเป็นสื่อ ในระดับครัวเรือนด้วยหลักวิถีพุทธ

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บทคัดย่อ

การวิจัยกึ่งทดลองนี้ เป็นการศึกษาเพื่อประเมินประสิทธิผลของโปรแกรมการลดโรคจากอาหารเป็นสื่อด้วยหลักวิถีพุทธโดยใช้การทดสอบความรู้และการปฏิบัติการป้องกันโรคด้วยแบบสอบถามก่อนและหลังการเข้าสู่ขบวนการ พื้นที่ศึกษาคัดเลือกแบบเฉพาะเจาะจงในพื้นที่ที่มีอัตราป่วยด้วยโรคอุจจาระร่วงสูงได้แก่ ตำบลย่านยาว อำเภอสวรรคโลก จังหวัดสุโขทัย กลุ่มตัวอย่างคือแม่บ้านที่เป็นผู้ประกอบอาหารให้สมาชิกในครัวเรือน จำนวน 60 คน สถิติที่ใช้ได้แก่ paired T-Test ผลการศึกษาพบว่าแม่บ้านที่เข้าสู่ขบวนการมีความรู้และการปฏิบัติในการป้องกันโรคเพิ่มมากขึ้นกว่าก่อนการทดลองโปรแกรมอย่างมีนัยสำคัญทางสถิติ แสดงว่าโปรแกรมการลดโรคจากอาหารเป็นสื่อในระดับครัวเรือนด้วยหลักวิถีพุทธมีประสิทธิผล และสามารถนำไปขยายผลในชุมชนที่มีสภาพปัญหาใกล้เคียงกัน และแม่บ้านควรขยายองค์ความรู้ไปยังผู้อื่นที่ไม่ได้เข้าร่วมขบวนการต่อไป

คำสำคัญ: โปรแกรมส่งเสริมสุขภาพ, หลักวิถีพุทธ, โรคจากอาหารเป็นสื่อ

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